



Salma Essam Lotfy¹

Demonstrator

Faculty of commerce

Alexandria University

prof. Shehata Elsayed Shehata²

Professor of Accounting and Auditing,

Faculty of Commerce,

Alexandria University

Dr. Maha Shafik Ramadan³

Associate Professor of Accounting

Faculty of commerce

Alexandria University,

October University

for Modern Sciences and Arts

The Effect of Internal Control Structure Quality on Firm's Financial Performance An Applied Study on Companies listed in the Egyptian Stock Exchange

Abstract

The study tests the effect of the internal control structure quality (ICSQ) on the firm's financial performance using a sample of companies listed in the Egyptian stock exchange. The ICSQ is measured by a multi-dimensional index based on COSO framework that measures the ICSQ through the existence and function of the 5 COSO components and their related seventeen principles and the extent to which the ICS is free from material weaknesses. Firm's financial performance is measured by the earnings per share (EPS). A pilot study is conducted to include the opinion of the financial experts and testing the checklist which is then filled through a content analysis of the firm's financial statements, reports, company's websites and other published documents. Research hypotheses were tested using regression models conducted by SPSS packages. Results provided evidence that high ICSQ improves the firm's financial performance of companies listed in the Egyptian Stock Exchange. The paper was also concerned with studying the individual impact of each of the five COSO components on the firm's performance. Results revealed that Control activities was the only component that has a positive significant impact of the firm's performance. The Study also showed a positive and significant effect for firm size and firm's age which were used as control variables on the firm's performance.

Key words: Internal Control Structure Quality, Firm Performance, Control Environment, Risk Assessment, Control Activities, Information and Communication and Monitoring.

¹E.mail: salmaessam@alexu.edu.eg

²E.mail: Shehata2001eg@yahoo.com

³E.mail: mahabdelaziz@msa.eun.eg and maha.shafik1@alexu.edu.eg

أثر جودة هيكل الرقابة الداخلية على الأداء المالي للشركات "دراسة تطبيقية علي الشركات المقيدة فى البورصة المصرية"

ملخص البحث

تهدف الدراسة إلى اختبار الأثر الكلي والتفصيلي لجودة هيكل الرقابة الداخلية على الأداء المالي للشركات باستخدام عينة من الشركات المقيدة فى البورصة المصرية. وقد تم قياس المتغير المستقل وهو جودة هيكل الرقابة الداخلية ومكوناته الخمس باستخدام مؤشر متعدد الأبعاد يعتمد على الإطار العام الني وضعته لجنة COSO لقياس جودة وفاعلية المكونات الخمس لهيكل الرقابة الداخلية والمبادئ ذات الصلة ومدى خلو هيكل الرقابة الداخلية من التحريفات الجوهرية. أما عن المتغير التابع وهو الأداء المالي للشركات فقد تم قياسه من خلال ربحية السهم. وقد تم استخدام الدراسة التجريبية لجمع آراء الخبراء الماليين في قائمة البحث التي يتم ملؤها بعد ذلك من خلال تحليل محتوى لكل التقارير المالية والمستندات المنشورة علي الموقع الالكتروني للشركات محل الدراسة. وقد تم اختبار فروض الدراسة باستخدام نماذج الانحدار والبرنامج الاحصائي للعلوم الاجتماعية SPSS. وقد أسفرت نتائج الدراسة أن جودة هيكل الرقابة الداخلية تهدف إلى تعزيز الأداء المالي للشركات المقيدة فى البورصة المصرية، كما أوضحت النتائج التأثير المعنوي والايجابي للأنشطة الرقابية على الاداء المالي للشركات دون باقي المكونات الأربعة الأخرى. وفيما يتعلق بالمتغيرات الرقابية محل الدراسة وهما عمر الشركة وحجمها، فقد أسفرت نتائج الدراسة على تأثيرهما المعنوى والايجابى على الأداء المالي للشركات.

الكلمات المفتاحية: جودة هيكل الرقابة الداخلية، الأداء المالي للشركات، بيئة الرقابة ، تقييم المخاطر، أنشطة الرقابة، المعلومات والاتصال، المتابعة.

1-Introduction

Organizations all over the world look forward to achieving their predetermined objectives whether they are profit or not for profit organizations. Although profit organizations seek to maximize profit while non-profit organizations aim to satisfy the social needs, both need an effective supervision which can be reached through a proper internal control structure (ICS) (Burbano & Ostler, 2017). According to (COSO)¹ framework 2013, the internal control structure can be defined as “ a process affected by an entity’s board of directors, management and other personnel, designed to provide a reasonable assurance regarding the achievement of objectives relating to operations, reporting, and compliance” (COSO, 2013.p. 3).

The internal control structure aims to achieve the following three categories of objectives: Effectiveness and efficiency of operations, reliability of financial reporting, compliance with applicable laws and regulations. That’s why a reliable financial reporting process results in increasing the confidence of the public towards the organization to invest in the company, thus it generates revenue, increases the price of the stocks, improves its ability to operate efficiently and effectively, overcomes the threats and benefits from the opportunities (Njeri, 2014). Moreover, the compliance to the applicable laws and regulations prevents non-compliance cost such as penalties.

Effective ICS also safeguards the firm’s assets and avoids the misuse of assets, fraud² and corruption³, hence the effective internal control structure enhances

(¹) The Committee of Sponsoring Organizations of the Treadway Commission (COSO) is a joint initiative of the five private sector organizations: the American Accounting Association (AAA), the American Institute of Certified Public Accountants (AICPA), the Financial Executives International (FEI), the Institute of Management Accountants (IMA) and the Institute of Internal Auditors (IIA), formed in 1985. It is dedicated to provide leadership through the development of frameworks and guidance on enterprise risk management, internal control and fraud deterrence (Protoviti, 2017).

² Fraud is an intentional act by one or more individuals among management, those charged with governance, employees, or third parties, by using deception to obtain an illegal advantage (IFAC, 2014).

³ Corruption is defined as the abuse of power or use of position of trust for private gain (Ionescu, 2010).

the financial performance since according to Njeri (2014) the financial performance is defined as the firm's ability to operate efficiently, profitably, survive, grow and react to the environmental opportunities and threats.

Moreover, financial performance is defined also as a measure of company's policies, procedures and operations in monetary terms and also the firm's overall financial health over a given period of time (Kinyua et al.,2015). Companies need to measure their financial performance as a base for various decisions such as manager's incentives decisions, since financial performance is used as a base to calculate the incentives. Another importance for the financial performance measure is to compare between the past and current performance of the firm to decide whether the organizational operations or policies need to be improved.

Egyptian companies need to focus on tools to improve their financial performance to solve the current financial difficulties they face (Mohamed, 2020; Ibrahim, 2017). However, many companies in Egypt are suffering critical financial problems due to the severe inflation, financial and economic circumstances (Mohamed,2020; Ibrahim, 2017). This situation increases the likelihood of risks, errors, fraud, corruption, waste, misuse of firm's assets, meanwhile it decreases the efficiency and effectiveness of their operations, the reliability of financial reporting and the compliance with applicable laws and regulations (Njeri, 2014). All these problems need an effective internal control structure to be applied so that the organizations can improve their financial performance. On the other hand, the financial problems faced by the Egyptian managers nowadays demotivate them from applying and implementing an effective internal control structure as implementation costs the organization a lot of resources such as time, effort, personnel and money (Mohamed,2020; Ibrahim, 2017) mean a while, the internal audit practices in Egypt which bear the responsibility to assess the effectiveness of the internal control structure are still not mature (El-said, 2015, Ebaid, 2011).

Due to recent financial scandals, regulators should place a lot of attention on the internal control structure as a mean to improve the quality of financial reporting and thus the financial performance. Accordingly, the paper aims to study

and test the effect of the internal control structure quality on the firm's financial performance using a sample of companies listed in the Egyptian Stock Exchange.

The study gains its academic importance from highlighting the importance of applying an effective internal control structure and its effect on the firm's financial performance to help policy makers and researchers to set the regulations needed to ensure the quality of the internal control structure and hence improve the firm's financial performance in congruence with recent accounting research in foreign countries such as Kenya (Muhunyo & Jagono, 2018; Ng'etich, 2017; Mwangi & Muturi, 2018; Mary et al., 2014) , Uganda (Etengu &Amony, 2016; Mawanda, 2008), Saudi Arabia (Al-Thuneibat et al., 2015).

At the same time, the study has also an empirical importance because it directs the managers' attention on the importance of the internal control structure as a means to improve the financial performance of the firm. This will motivate them to have an effective and efficient internal control structure through continuous monitoring and improvement of ICS and training and teaching the staff and employees how to strengthen the quality of the internal control structure so that they can survive, succeed, maximize profit, achieve their objectives and don't be driven out of the business, which will finally be reflected in improving the firm's financial performance of firms and the economic sector as whole.

The research contributes to prior literature by narrowing the gap between the academic and empirical research in Egypt in studying the relation between the internal control structure quality and firm's financial performance. In addition, the research tests its hypothesis empirically not through field methodology using questionnaires like most of the studies in this field (Muhunyo & Jagono, 2018; Ng'etich, 2017; Mwangi & Muturi, 2018; Etengu &Amony, 2016; Mary et al., 2014; Aiash, 2014; Gift, 2018; Ejoh & Ejom, 2014).

The research paper is organized as follows: The study's hypotheses are formulated and presented in section 2. Section 3 discusses the research design and the measurement of variables, Section 4 presents the empirical results and the discus-

sion of these results, and finally the last section in the paper is concerned with the conclusions and implications for future research.

2.Literature Review and formulation of Research hypotheses

2.1 The Internal Control Structure Quality and its Components

The internal control structure (ICS) has many definitions, the most known one is the definition provided by COSO in 2013 which defined the ICS as “a process affected by an entity’s board of directors, management and other personnel designed to provide reasonable assurance regarding the achievement of objectives relating to operations, reporting and compliance” (Kinyua et al., P.31). According to the Institute of chartered Accountants of England and Wales (ICAEW), “ internal control system is the whole system of controls, financial or otherwise, established by the management in order to carry out the business of the enterprise in orderly and efficient manner ensure adherence to management policies, safeguard assets and secure as far as possible the

completeness and accuracy of records” (Gamage & Fernando, 2014). Saedi and Dastgir (2017) defined the ICS as a “ process that is executed by the managing council, management and other employees in an institution and its purpose is to gain reasonable confidence in achieving the purpose of effectiveness and efficiency of operations, trustworthiness in financial reporting and binding to the current rules”. Hence, ICS is considered as an approach that enables the managers to assess how effectively an organization functions and how its resources operate (Mahadeen, Al-Dmour, Obeidat & Tarhini, 2016).

Another definition for ICS which is provided by the Office of internal controls is, that the ICS is “ the integration of activities, plans, attitude, policies, and efforts of the people of an organization working together to provide reasonable assurance that the organization will achieve its objectives and mission” (Mahadeen et al., 2016). From the above-mentioned definitions, it can be said that the internal control structure is a mean and a tool to an end and not the end itself and it aims to achieve objectives in one or more separate but overlapping categories. Moreover, the internal control structure is affected by people at all the levels

of the organization. It provides only a reasonable assurance and not an absolute assurance to the entity's management and board (Cheng et al., 2013; Nashwan, 2018; Onumah, Kuipo & Obeng, 2012). ICS is important since it provides the financial statement users with an early warning about future problems (Tseng, 2007). Regarding the definition of effectiveness, effectiveness means achieving the predetermined goals (Gift, 2018).

According to COSO framework in 2013, there are 3 predetermined goals for the ICS: effectiveness and efficiency of operations, reliability of financial reporting, compliance with applicable laws and regulations (COSO framework, 2013). So, it can be concluded that an organization which has an effective ICS is the one which has effectiveness of internal control (IC) over compliance, effectiveness of IC over reporting, effectiveness of IC over operation (Ying & Niu, 2009). In other words, the ICSQ can be measured based on the management's perception of how well the three objectives of ICS are met (Jokipii, 2010); the degree to which the directors believe the organizational goals have been met or by how reliable are the published financial statements, or by the degree of compliance with appropriate laws, regulations, rules and guidelines (Onumah et.al, 2012). Besides, the effectiveness of ICS depends on the flexibility of the ICS and how it is rooted and merged in the processes of the organization. Another definition of ICSQ is that it is an "integrated measurement of internal control capability and operational effectiveness" (Du & Lei, 2016 p.17). An ICS is considered effective when it is built into the entity's infrastructure and forms an integral part of the organization (Ng'etich, 2017). An effective internal control structure increases the likelihood that an entity will reach its goals (GAO, 2014). Based on COSO framework (2013), researchers concluded that an ICS is considered effective if it meets the "key attributes of sound control environment, sound risk assessment process, sound control activities, effective information and communication system and effective monitoring and evaluation system" (Onumah et.al, 2012, p.6).

Prior studies measured internal control structure quality through various methods such as investment in internal control structures or by voluntary disclosure of auditors' reports on internal control structures and financial restatements

(Khilf & Samaha, 2016). ICS effectiveness can be assessed through the cost of an internal audit function, existence of an audit committee (Länsiluoto et al., 2016), the existence of internal control structure material weaknesses (ICSMW) (Lai et al., 2017). However, a study of Chan et al. (2008) found that the larger the firm's size and firm growth, the higher the probability of management and auditors to fail to report internal control structure material weaknesses. Thus, we cannot depend only on reported material weaknesses to evaluate the effectiveness of internal control structure since sometimes the problems of internal control structure is not reported or detected by the managers and auditors or they miss categorize them as control deficiencies or significant deficiencies which are not considered as material weaknesses. Moreover, SOX is not obliged to be applicable in many countries. Even if the firm hasn't reported material weaknesses this doesn't mean that its internal control structure is effective (Onumah et. al, 2012). In other words, the absence of material weaknesses can't be always by itself work as a standalone indicator for the effectiveness of internal control structure.

That's why firms have to use other alternatives to measure the internal control structure effectiveness to be a supplement to the ICSMW. This can be done through indexes that take into consideration more than one aspect since the internal control structure effectiveness is more a multidimensional concept rather than one dimensional concept by considering the relationship between the five ICS components and evaluating all of them when firms assess their internal control structure effectiveness (Länsiluoto et al., 2016; Chen et al., 2017).

The most common determinant and measure of ICSQ is the presence and function of all 5 COSO components of ICS provided by COSO framework (Adu-Frimpong, 2015). According to COSO framework (2013), the 5 COSO components are control environment, risk assessment, control activities, information and communication and monitoring, which should exist and function together in an integrated manner to achieve the organizational objectives (Muhunyo & Jagono, 2018). Some studies used all these 5 components to measure the ICSQ (Sharma & Senan, 2019; Onumah et al. 2012; Kumuthinidevi, 2016; Sultana & Haque, 2011; Wang, 2018; Nashwan, 2018). While others used only a

few of them to measure the ICSQ (Etengu & Amony, 2016; Gift, 2018; Mwangi & Muturi, 2018; Bett & Memba, 2017). Since the current study used them all to evaluate the ICSQ, we have to discuss each one of them in details as follows:

Control environment: It is considered the tone of the top of the organization and its foundation and the base of all other ICS components since it provides discipline, structure, integrity, ethical values, employee competence, management's philosophy, operating style, the leadership and participation of senior management, board of directors and audit committee, assignment of authority and responsibilities, human resource policies (Frazer, 2016; Gamage & Fernando, 2014). For this component to be considered as effective, managers should be a positive example for the staff in the context of high-quality work and compliance to firm's policies and regulations. They should also set clearly the firm's objectives, set clear job description to ensure that the employees understand their tasks and responsibility. The staff should be also rewarded for high qualified work for example: incentives (IFAC, 2018).

Risk assessment: Every organization –regardless its type – is exposed to internal and external risks that must be determined, analyzed, managed to reach its objectives, this process is called risk assessment. The company should assess risks continuously to adjust the mechanisms that are responsible to identify and deal with risks related to internal or external changes that arise in its environment, economy, industry, laws and regulations and operating circumstances (Frazer, 2016; Gamage & Fernando, 2014).

Control activities: According to COSO (2013), control activities are policies and procedures that assure how management instructions are implemented. They include activities such as approvals, authorization, safeguarding of assets, segregation of duties, physical control, actual results reviews, job rotation and adequate documentation. These actions prevent fraud or theft which can result in losses (Frazer, 2016).

Information and communication: Relevant information should be identified and communicated in a suitable time so that the people can carry out their re-

sponsibilities and make decisions adequately. Information systems provide reports of operational, financial and compliance and other related information that enable the users to run and control the business (Frazer, 2016). Effective information and communication processes have to be conducted across two levels: external and internal communication. For external communication (the relation between the firm and the outside stakeholders: financial institutions, regulators, and government agencies) that is done through the published financial statements. Other important information for the decision-making process should be also declared in separate reports or on the company's website. Regarding the internal communication, high quality information should be communicated down, up and across reporting lines to all levels of the entity on a timely basis to appropriate personnel. The means of communication may be informal (verbal) or formal in form of documents and financial reporting (Frazer, 2016). This enable personnel to understand their responsibilities and tasks so that they can perform adequately their key roles to achieve the organization's objectives and make appropriate decisions. Moreover, period meetings should be conducted to communicate any problems or new events. This information is needed by management and other personnel in charge with governance to enable them to manage the entity through planning, budgeting, monitoring performance, allocating resources, pricing, and preparing financial statements for reporting purposes. It is also needed to allow them to identify, assess, and respond to risk factors to reach the organization goals (IFAC, 2018)

Monitoring: It is a process to evaluate the ICSQ over time to take timely corrective actions. This can be done through ongoing monitoring activities, separate evaluations, or a combination of both methods. It can be also conducted via internal auditor's evaluations that may help in detecting deficiencies and recommending methods to correct them (Frazer, 2016; Al-Thuneibat, Al-Rehaily & Basodan, 2015). For effective monitoring, ongoing monitoring is important to be conducted by managers to update the ICS with new changes in the organization or in the environment and to correct any detected weaknesses.

The importance of an effective internal control structure has its theoretical perspectives that shows the importance of its presence and evaluation to the organization. The first theory is the agency theory which attributes' management opportunistic behavior to the conflicting interests between them acting as agents and the owners who are the principals in this relationship (Chenbungwen and Kwasira (2014). This conflict is caused by the information asymmetry caused by the separation of ownership and control since the agent has more information than the principle –since he as manager is involved more in running the business operations and have a direct access to the information– which might affects the principle negatively. This raises the need for the principle to check and monitor whether the agent is working on behalf of the principal's best interest or not. This could be performed through monitoring activities such as a high-quality ICS that includes internal audit, periodical evaluations and ongoing supervisions) (Asiligwa & Rennox, 2017; Muhuyo & Jagongo, 2018; Mwangi & Muturi, 2018; Kisanyanya, 2018).

The positive accounting theory developed by Watts and Zimmerman (1986) can also be used to justify the need for a high-quality internal control structure. According to this theory, management opportunistic behavior has different motives and is driven by self-interest to create wealth and maximize it which raises the need for a high-quality ICS as a tool for the investors to monitor the managers, their behavior and to assure that their actions are in line with the shareholder's interests (Kisanyanya, 2018). Third, the reliability theory which is the core of the current study as it describes the reliability of the system by its ability to complete a certain task within a specified period of time. This could be applied on the ICS and its 5 components mentioned before where each component should be evaluated whether it is successful and reliable or not and as a result, the entire ICSQ is a combination of two possible values "success" and "failure" which based on its components' reliability (Ng'etich, 2017).

The last theory that justifies a need for a high quality internal control structure is the "Fraud triangle theory" developed in 1971 by Dr. Donald Cressy, where he specified three factors that should present for fraud to occur; these are oppor-

tunity, pressure and rationalization representing the three corners of the fraud triangle theory (Gunduz & Önder, 2015; Bonsu, Dui, Muyun, Asare & Amankwaa, 2018). According to the fraud triangle theory, ICSQ is important since it is one of the three corners to commit fraud, it is considered the opportunity and chance for the fraudsters to perpetrate fraud and without a high –quality ICS the fraud is easy to be committed which highlights the importance of ICSQ.

2.2 Financial performance

In general, performance is defined as “ the level of attainment achieved by an individual, term, organization or process” (Ghalem, Okar, Chroqui & Semma, 2016 p.3). While in the business field, performance is understood as the ability of a company to reach its objectives and fulfill its expectation (Grüning, 2002). According to Krause (2005), Performance refers to the level of achievement of pre-determined objectives or it answers the question of how well or badly a work is done (Ghalem et al., 2016). The organizational performance can be divided in various types of performance such as operational performance that can be reflected by the quality of products and services and cost of production (Jahanshahi, Rezaei, Nawaser, Ranjbar & Pitamber, 2012). Customer related performance is also another component of organizational performance that can be measured by customer satisfaction, number of customers’ complaints, solutions provided for customers in case of complaints, number of shipments returned because of poor product quality (Bosilj-Vuksic, Milanovic & Indihar-Stemberger, 2008). Employee performance is also one of the types of performance that influences the organizational performance. It refers to how well the employees perform the tasks assigned to them. This type of performance can be improved by employee trainings to allow them to minimize waste and time while working and operate in an effective and efficient way. It can be measured by employee self – assessment report or an assessment report that is filled by the employee’s manager or employee’s peers. (Anitha, 2014). The most common type of performance especially in the accounting field is the financial performance that can be reflected by ROA, ROE, ROS, ROI, EPS, sales growth and profit growth (Jahanshahi et al., 2012).

Performance measurement is a process of quantifying the efficiency and effectiveness of past actions to determine how well these actions are done in relation to the predetermined plan (Gift, 2018). The firm's performance management is important for any firm to reach an effective management since it measures the outcomes to determine if the company and its processes need improvements (Al-Matari, Al-Swidi & Fadzil, 2014). These measurements also provide significant information to help the managers to monitor the performance and identify needed progress – if any –, improve motivation, detect and communicate problems. That's why we can conclude that the performance evaluation is to the firm's best interest. The firm's performance measurements are usually categorized into two different categories these are: financial performance (that can be measured by return on assets, profit growth, return on investment, these information can be extracted from the financial statements and reports) and non-financial performance (such as quality of products and services and customer satisfaction). The former provides information about past performance that can be easily measured in terms of money while the latter is more common measured by qualitative measures such as quality, innovation and customer satisfaction (Tavakoli & Abu Talib, 2014). In the current study we will focus on the financial performance which depends mainly on accounting – based indicators to be the dependent variable of the study.

Financial performance is considered the top priority of an entity (Al-Thuneibat et al., 2015). One of the most important goals of the company is to enhance and improve their financial performance (Kinyua et al., 2015). It can be defined as a process of measuring the results of a firm's policies and operations in money terms (Etengu & Amony, 2016). In other words, it presents the ability of an organization to run its operations efficiently to be able to create profits (Kisanyanya, 2018). It gives information about the overall financial health over a given period of time. Financial performance is a measure of company's policies, procedures and operations in monetary terms. In other words, it measures the firm's overall financial health over a given period of time (Kinyua et al., 2015). The financial performance is also defined by Njeri (2014) as the ability to operate

efficiently, profitably, survive, grow and react to the environmental opportunities and threats. Managers use financial performance also to evaluate and compare the firm with its competitors in the same year or to compare the firm's performance of the same firm for different years to know its trend whether it is improving or is experiencing a deterioration in its performance. This is important to decide whether the firm needs improvements or correction of weaknesses. The financial performance of the organization is important to many stakeholders whether inside or outside users, the inside users such as the managers who need to know the financial performance to evaluate how well they performed their tasks and to determine the incentives they will receive based on the financial performance, this appraisal of the manager's performance motivate the managers for better revenue generation (Beeler, Hunton & Wier, 1999; Kinyua et al., 2015). In this context they use some indicators to evaluate the financial performance such as the key ratios (ROA, ROI, and ROE), trends (sales, profit, and growth), and operating statistics or through variance analyses between budgets (forecasts) and actual performance or by departmental performance reports (Ng'etich, 2017).

On the other hand, external users seek to know the firm's financial performance because it plays an important role in their decision - making process, for example the creditors will decide whether to lend the organization. Schneider & Church, (2008) found a negative relationship between lender's decisions and the disclosure of material weaknesses of internal control structure, also the suppliers' decision whether to deal with the organization or not. Moreover, investors decide whether and how to allocate their resources in the organization (Tavakoli & Abu Talib, 2014). Besides, it is considered as an indicator to know how well the enterprise is achieving its goals and objectives specially the financial ones (Gift, 2018). It explains the firm's success over a certain period (Al-Matari et al., 2014). From the shareholder's perspectives, the financial performance is a measure of how better off the shareholder is at the end of a period in comparison to his state at the beginning (Ng'etich, 2017). It is also a measure of the added value a company has provided to its shareholders over the total amount of their investments

(Eniola et al., 2016). High financial performance of the company indicates that the firm succeeded in reducing the waste related to its processes and that it achieved its objectives and mission in terms of being efficient, effective and economical meanwhile reaching customer satisfaction (Kinyua et al., 2015; Ejoh & Ejom, 2014).

2.3 Hypotheses Development

Low quality and ineffective ICS could increase the risks faced by the firm (Ashbaugh-Skaife, Collins, Kinney & Lafond (2008). Low ICSQ is a sign that the firm's financial reporting is less reliable, hence the risks which can raise investors' concern about the reliability of financial reports. High risk levels can negatively affect the firm's value and reputation (Ashbaugh-Skaife et al., 2008). Firms with low ICSQ are valued 13% lower (reflected by a decrease in stock prices) than firms with high ICSQ (Li et al. 2016). The disclosure of the ICSMW (a proxy for low ICSQ) has a negative effect on the firm's value due to the negative market reactions, whereas the correction of such weaknesses in the following year improves the stock performance which lessen the public concern towards the company and motivate investors to invest in the firm which has a positive effect on the firm's financial performance.

Regarding the reputation, firms with high quality ICS with no material weaknesses and low risk level usually have good and strong reputation since reputation represents "the extent to which external stakeholders see the firm as good or bad" and it is also the picture of how the public view the firm and its operations. Good reputation can positively affect the firm's financial performance because it is an indicator for the customers that the firm's products and services are valuable, thus; they are ready to pay more for them which is reflected in higher revenues according to Roberts and Dowling (2002). From another point of view, employees are motivated to work harder in firms with high quality ICS and good reputation which could decrease salaries expense and the remuneration costs for these firms. This could be reflected in better cost savings and higher profits which in turn improves the financial performance of these firms. Besides, shareholders and suppliers are also less concerned about risks while dealing with

such firms, so they offer better deals to the firm which results in enhancement of firm's financial performance (Roberts & Dowling, 2002).

From an audit perspective, firms with high ICSW and low ICSQ could suffer higher audit fees. This is because auditors for these firms need more time and effort conducting audit procedures and thus may ask for higher audit fees for these extra efforts and as a compensation for potential litigation risk they can face from unknown material misstatements since these weaknesses are considered as risk factors that can result in material misstatements in financial reports (Lee, 2018). Not only this, but the weak ICSQ could misrepresent outsiders' interpretation of the firm's financial statements by turn can expose it to noncompliance fees and litigation expenses which are considered also as additional expenses that reduce the financial performance.

In addition to this, low quality ICS might stimulate managers to make incorrect investment decisions that motivates managers to use the organizational resources inefficiently and inadequately and to allocate the cash flow resources in inadequate and non-profitable investment projects that could increase management's compensations and rewards and prioritize their own interests at the expense of shareholders (Saedi & Dastgir 2017). From another perspective, low quality ICS with ICSW decreases the information quality thus the investors perceive this information as unrealistic and noisy, hence they reevaluate the firm's risks and future cash flow and might ask for higher risk premiums. This could stimulate managers to reduce the firm's investment levels and by-pass good investment opportunities because investors could not be willing to finance projects for firms suffering from ICSW (Sun, 2015). Such weaknesses could act as indicators for the riskiness for future operations which will result in negative market reactions and investors' uncertainty about the company (Schneider & Church, 2008).

In sum, reviewing the results of above mentioned studies, it can be argued that ICSQ has a positive effect on the investment level and investment efficiency which positively impacts the firm's financial performance. Accordingly, the main research hypothesis can be stated as follows:

H₁: Higher internal control structure quality positively impacts the financial performance of firms listed in the Egyptian Stock Exchange

Many research papers focused on studying the effect of each of the five components of the internal control structure individually. Etengu and Amony (2016) examined the impact of some of the control environment, control activities and monitoring- on the budget performance, financial reporting as proxies for financial performance by using 5 moderating variables: qualifications, experience, availability of funds, change in policy and information technology. Results revealed that control environment, control activities and monitoring significantly impact the financial performance, since control environment contributes by 21% of the changes in financial performance, the control activities contributes by 23% and monitoring contributes by 26% of these changes. Mwangi and Muturi (2018) confirmed these results using semi-structured questionnaire distributed to 1102 employees in super markets in Kenya and provided evidence that the control activities and monitoring positively and significantly affects the financial performance.

Al-Thuneibat et al. (2015) investigated the effect of each of the five COSO components individually and found that firms having a strong control environment can positively affect their financial performance. They argued that if management is harsh towards wrongdoing, employees would await rigorous penalties and only this will discourage employees to perpetrate fraud individually or in collusion with others (Magu & Kibati, 2016). Moreover having competent employees, staff and managers who have the knowledge and skills to perform their assigned tasks properly increase the financial performance because when the operations are done by skilled people, they will be usually efficient and effective with low level of errors and waste and this will affect the financial performance positively.. This agreed with Paul (2015) who concluded that firms with strong corporate governance – which is one of the most important components of control environment – have higher valuation, higher profits and higher sales growth.

A company that has a strong control environment, is a company that has a strong management system, the management gets focused about the operation of

the system and gives feedback to the junior officers about the operation of the system which in turn positively affects the firm's financial performance (Njeri,(2014), Kinyua, Gakure, Gekara & Orwa (2015) and Bett and Memba (2017),

Accordingly, the first research sub-hypothesis can be formulated as follows:

H_{1a}: Higher quality control environment of the firm's internal control structure positively impacts the financial performance of firms listed in the Egyptian Stock Exchange

Concerning risk assessment, Al-Thuneibat et al., (2015) believed that through identifying risks, assessing the likelihood of their occurrence and determining the actions that manage and mitigate the risks and their consequences, the volatility in financial performance can be reduced which can be considered as a positive impact on financial performance. Mualeetharan (2013), (Njeri, 2014; Bett & Memba, 2017) added in this respect that when the managers determine the suitable and desired organizational objectives and therefore the risks related to the attainment of these objectives, they can easily respond to these risks to reduce the critical risks such as fraud risks. The mitigation of the risks positively affects the firm's financial performance. Accordingly, the second research hypothesis can be formulated as follows:

H_{1b}: Higher quality risk assessment of the firm's internal control structure positively impacts the financial performance of firms listed in the Egyptian Stock Exchange

For control activities, studies found contradicting evidence regarding the effect of this component on the firm's performance. Ejoh and Ejom (2014) failed to find an evidence for the existence of a significant effect of control activities on the financial performance of Cross River State College of Education in Tertiary Institutions in Nigeria. On the other hand, Al-Thuneibat et al., (2015) showed that including such policies and procedures that help ensuring that the management directives are carried out as segregation of duties, authorization, documen-

tation, physical count over assets help in enhancing the firm's financial performance.

Njeri (2014) argued in this respect that the execution of control activities such as segregation of duties, implementation of corrective action to respond to weaknesses, train the staff how to implement the accounting and financial management system in an appropriate way, the safeguarding of the company's assets will positively affect the firm's financial performance. Mwangi and Muturi (2018) studied one of the most important control activities which is the actual review for example the budget review that compares the actual expenditure and the budgeted expenditure, determine the variance (if any) and explains the reasons for the variance. These reviews in line with the security system to safeguard the assets rise the cost of committing fraud and this decrease fraud and increase the firm's financial performance. This is in line with the studies of Etengu and Amony (2016), Ibrahim, Diibuzie and Abubakari (2017) and Muraleetharan (2011) that showed that control activities have a positive and significant effect on the financial performance, hence the third research sub-hypothesis could be stated as follows:

H_{1c}: Higher quality control activities of the firm's internal control structure positively impacts the financial performance of firms listed in the Egyptian Stock Exchange

With respect to information and communication, Al-Thuneibat et al., (2015) emphasized that having a high quality information system that positively influences the management ability to make proper decisions such as investing in profitable projects, decrease costs, increase capabilities, set plans to increase sales and revenues may enhance the financial performance if the correct information is transferred on time by a strong information system to appropriate parties. Besides, a strong information system makes sure that all the employees at all levels of the organization fully understand ICS and the tasks they are required to execute and hence they will follow it correctly and accordingly, improve the financial performance of the organization. Bett and Memba (2017) adds that an effective information and communication system can be achieved through setting

clear guidelines and policies throughout the organization as a weak information and communication system can encourage the staff to commit fraud and embezzlement which results in loss of revenues. Accordingly, the forth research sub-hypothesis can be stated as follows:

H_{1d}: Higher quality information and communication component of the firm's internal control structure positively impacts the financial performance of firms listed in the Egyptian Stock Exchange

Finally, monitoring can help improve the firm's financial performance. According to Al-Thuneibat et al. (2015) by continuously evaluating the effectiveness of the ICS to take timely corrective actions, firms can better be able to detect deficiencies, recommend methods to correct them which increase the efficiency and effectiveness of operations and hence increase the financial performance. Njeri (2014) added that the periodic and continuous assessment of the internal control structure to make sure that it is working as intended is important to timely correct any weaknesses of the internal control and avoid their reoccurrence in the future, thus monitoring positively affects the financial performance (Njeri, 2014). This agrees with many previous studies such as Ibrahim et. al., (2017), Mwangi and Muturi (2018), Muraleetharan (2011) and Etengu and Amony (2016) that concluded that monitoring has a positive and significant impact on the financial performance. Accordingly, the last research sub-hypothesis can be stated as follows:

H_{1e}: Higher quality monitoring of the firm's internal control structure positively impacts the financial performance of firms listed in the Egyptian Stock Exchange

3. Research methodology

The empirical study aims to test the impact of the ICSQ on the financial performance of the companies listed in Egyptian Stock Exchange in addition to testing the impact of each of the 5 COSO components of the ICS individually on the firm's financial performance.

3.1 Population and sample of the study

The population of the study consists of all listed companies in Egyptian Stock Exchange after excluding the financial companies due to their special nature that is different from the nonfinancial companies (Sharawy, 2016; Ali, 2018).

The study used secondary data extracted from publicly available reports by companies listed in the Egyptian Stock exchange during the period from 2012 until 2017. This period was selected because Egypt went through two major changes that had a huge effect on the Egyptian economic environment. These events are the Egyptian revolution in 25th of January in 2011 and its long-term effect on the next years in addition to floating the Egyptian currency in November 2016. Sixty companies were selected during the above-mentioned sample period resulting in 360 firm year observations.

3.2 Definition and Measurement of Study Variables

3.2.1. Measurement of Internal Control Structure Quality (ICSQ)

This is the independent variable defined as “integrated measurement of internal control capability and operational effectiveness” (Du & Lei, 2016 p. 17). ICSQ is determined by the effectiveness of the internal control structure in terms of absence of material weaknesses, the existence and function of the 5 COSO components and its 17 COSO principles measured by the internal control structure quality index (Chen et al., 2017) based on the COSO framework and the analytical hierarchy process (AHP) method which is used to quantify a qualitative problem through decomposing a complex problem into easier sub problems. Because each item of the evaluation structure has different effect on the firm’s internal control structure quality, a different weight is given to each item.

The framework includes five COSO components: control environment, risk assessment, control activities, information and communication, monitoring. Each one of them contains more than an evaluation item. The overall structure consists of 5 levels and 77 indicators (in terms of questions in the checklist based on 5 COSO components. The first level includes the five COSO components where each of them is assigned a weight using pilot study while the second level

includes 17 items used to measure the previous five components. Meanwhile the third level contains 21 items related to the previous 17 items that are measured through 77 items that are presented in the form of questions to measure the effectiveness of each component of the above level and the commitment to it (Chen et al., 2017). In the fourth level, the checklist includes two groups of questions based on how they are answered: The first groups of questions are answered by 1 or 0 (1 for yes, 0 for no or vice versa for questions that imply negative attitude) and the second group of questions are having standardized answers (Chen et al., 2017). To standardize the score which is considered the answer of the question, the actual score on this item for the evaluated firm is divided by the maximum score on the same item for all the listed companies in the sample (Chen et al., 2017). For example for the question “IC41101” that asks about the number of board meetings, if the actual number of the board meetings is 12 meetings for a particular firm and the maximum number for meetings for all the evaluated firms in the sample is 24 meetings, then the standardized score for this item is 0.5 (12/24).

After calculating the ICSQ index for each company of the 60 Egyptian listed companies, the degree of each company’s commitment to ICSQ. This is done by calculating the mean of the overall ICSQ index to set it as a cutoff point and the mean of the ICSQ index for each company through the 6 years starting from 2012 till 2017 to reflect the degree of commitment to ICSQ for each company and then setting a decision rule according to which the researcher will decide whether the sampled firms have high or low ICSQ (Kumuthinidev (2016) as follows:

If the Mean of the ICSQ index of the company \leq mean of the overall ICSQ index, then this implies a low ICSQ, and

If the mean of the ICSQ index of the company $>$ mean of the overall ICSQ index, then this implies a high ICSQ

Applying the previous decision criteria and rules, the mean of the overall ICSQ index is 0.389 which is almost 39%. This implies that the Egyptian com-

panies score 39% out of 100% which is a low score since it doesn't reach even the average (50%). This indicates that the Egyptian companies have a low ICSQ and they should put more emphasis to improve their ICSQ. By considering the mean of each company individually, the researcher concluded that 32 company out of 60 companies have a low ICSQ while the remaining 28 company has a satisfactory ICSQ. In other words, almost 54% of the companies in the sample suffer from low ICSQ which can be logically explained due to the poor ICS regulations in Egypt. Such results agree with a study conducted in Ghana (Onumah et al. (2012) and can be attributed to the fact that these developing countries such as Egypt and Ghana have no mandatory regulatory requirements for listed firms to make any disclosure on the state of their ICS (Samaha, Dahawy, Hussainey and Stapleton (2012).

3.2.2 Financial performance

Is the firm's ability to operate efficiently, profitably, survive, grow and react to environmental opportunities and threats (Njeri, 2014) which measured by earnings per share (EPS). EPS are the portion of the company's profit allocated to each outstanding share of a common stock. It is calculated by dividing the net income after subtracting the dividends on preferred stock over average outstanding shares (Magu, 2012; Al-Thuneibat et al., 2015). This measure was selected since it is one of the most important indicators in financial reports representing the company's after-tax profit per share. It is a relatively objective and direct ratio indicator that measures corporate profitability and can better reflect operating conditions (Yang, Gan, Su, 2020; Al Thuneibat et al., 2013 and Paul, 2015)

3.2.3 Control variables of the study

Firm's size: Prior studies concluded mixed results concerning the effect of the firm's size on the financial performance. Some studies of them showed a negative effect based on the structural inertia theory that states that as the organization become larger, the degree of bureaucracy increases. This makes the managers refuse any new changes which results in a deterioration in the profit levels (Ilaboya & Ohiokha, 2016). On the other hand, other studies provided an evidence that the firm's size affects the firms' financial performance positively. Large firms can ben-

efit from economies of scale, higher power and higher competitive level, which give them the chance to enjoy better and higher financial performance (Liargovas& Skandalis, 2010). Firm size is measured by the natural logarithm of client's total assets (Chan et al., 2008; Ali, 2018).

Firm's age: An approximate measure of how young or old is the company and its ability to maintain its image (Ali, 2018). The firm's age can be reflected by the number of years from the firm's founding (Ilaboya & Ohiokha, 2016). The impact of age on firm's financial performance is controversial. Some previous studies agreed that there is a positive impact of the firm's age on the financial performance. Firms which are mature in R&D generate more profit comparatively to younger non-innovative firms (Rafiq et al., 2016). Another study of Ilaboya and Ohiokha (2016) found a significant positive relationship between firm's age, firm's size and profitability as one of the measures of financial performance , which is consistent with the theory of learning by doing since the productivity and efficiency of the firms increase over time through learning from their past experience, in other words as the age of the firm increases, the productivity of the firm increases and thus its financial performance (Balk & Gort, 1993). Hence there is a significant positive impact of the firm's age on the financial performance (Chen et al., 2017). On the other hand, based on the liabilities of obsolescence, organizational performance decreases as age increases. This decline is due to the environmental drift resulted from the manager's belief that the firm is too old to change (organizational inertia). The liabilities of obsolescence assist in explaining this negative impact of the firm's age on the financial performance. They provide an evidence that aging organization with the same strategies results in an external mismatch with the environment which results in an internal inefficiency arising from the organizational aging (Ilaboya & Ohiokha, 2016). The firm's age is measured by the natural logarithm of the number of years since a firm's founding (Ali, 2018).

Table 1: Description and measurement of variable for simple regression analysis

Variable	Measurement
<i>Independent Variable:</i> Internal control structure quality	Internal control structure quality index (Chen et al, 2017)
Control Environment (CE)	Control environment quality index
Risk Assessment (RA)	Risk assessment quality index
Control Activities (CA)	Control Activities Quality index
Information and Communication (IC)	Information and Communication index
Monitoring (MO)	Monitoring index
<i>Dependent Variable:</i> Financial performance	EPS is calculated by dividing the net income after subtracting the dividends on preferred stock over average outstanding shares (Mugwe, 2012).
<i>Control Variables:</i> Firm Size:	Natural logarithm of client's total assets (Chen et.al, 2017; Ng'etich, 2017)
Firm Age	Natural logarithm of the number of years since a firm's founding (Ali, 2018)

4. Empirical Results

This part of the research includes the statistical analysis results. The researchers used a group of statistical analysis as person correlation analysis and regression analysis

4.1 Correlation Matrix

Table (2) presents the correlation matrix of the research variables. The results show that there is a significant positive correlation between the internal control structure quality (ICSQ), control environment, risk assessment, control activities, monitoring and the firm's financial performance at 0.01 level of significance. While the correlation between the ICSQ and information and communication is positive and significant at significant level less than 0.05. Regarding the correlation of each of the 5 COSO components independently, we can conclude that there is a positive and significant correlation between control environment, risk

assessment, ICSQ and monitoring at significant level less than 0.01. On the other hand, there is a negative significant correlation between control environment, information and communication at the same level of significance. Meanwhile at a significant level less than 0.05, the control environment has a positive and significant level with control activities. Concerning the risk assessment component, analysis showed a positive and significant correlation with ICSQ, control environment at the 0.01 and 0.05 significance levels.

Control activities had a positive and significant correlation with monitoring and firm's age and firm's financial performance at significant level less than 0.01. For information and communication component it has a positive and significant correlation with firm's age at significant level less than 0.05.

Regarding the Monitoring component, it has a significant and positive correlation with firm's financial performance at significant level less than 0.05. Concerning the firm's size, it has only a positive and significant correlation with risk assessment at a significance level less than 0.05. Regarding the firm's age, analysis showed a positive and significant correlation with firm's financial performance at a significant level less than 0.01. Concerning the dependent variable (firm's financial performance), it is concluded that it has a positive and significant correlation with ICSQ, control activities and firm's age at significant level less than 0.01 and also a positive and significant correlation with monitoring at a significant level less than 0.05.

Correlations										
		icsq	CE	RA	CA	INFO	Mont	Firmsize	Frmsage	Fperf
icsq	Pearson Correlation	1	.415**	.646**	.707**	.131*	.412**	.017	.086	.179**
	Sig. (2-tailed)		.000	.000	.000	.013	.000	.743	.105	.001
	N	360	360	360	360	360	360	360	360	360
CE	Pearson Correlation	.415**	1	.183**	.116*	-.140**	.204**	.011	-.092	.078
	Sig. (2-tailed)	.000		.000	.027	.008	.000	.839	.080	.140
	N	360	360	360	360	360	360	360	360	360
RA	Pearson Correlation	.646**	.183**	1	.116*	-.034	.026	.110*	.011	.025
	Sig. (2-tailed)	.000	.000		.028	.518	.629	.037	.833	.633
	N	360	360	360	360	360	360	360	360	360
CA	Pearson Correlation	.707**	.116*	.116*	1	-.099	.186**	-.082	.155**	.228**
	Sig. (2-tailed)	.000	.027	.028		.059	.000	.122	.003	.000
	N	360	360	360	360	360	360	360	360	360
INFO	Pearson Correlation	.131*	-.140**	-.034	-.099	1	-.036	-.024	.125*	-.064
	Sig. (2-tailed)	.013	.008	.518	.059		.494	.644	.018	.227
	N	360	360	360	360	360	360	360	360	360
Mont	Pearson Correlation	.412**	.204**	.026	.186**	-.036	1	.044	-.091	.113*
	Sig. (2-tailed)	.000	.000	.629	.000	.494		.410	.083	.032
	N	360	360	360	360	360	360	360	360	360
Firmsize	Pearson Correlation	.017	.011	.110*	-.082	-.024	.044	1	-.040	.100
	Sig. (2-tailed)	.743	.839	.037	.122	.644	.410		.446	.058
	N	360	360	360	360	360	360	360	360	360
Frmsage	Pearson Correlation	.086	-.092	.011	.155**	.125*	-.091	-.040	1	.148**
	Sig. (2-tailed)	.105	.080	.833	.003	.018	.083	.446		.005
	N	360	360	360	360	360	360	360	360	360
Fperf	Pearson Correlation	.179**	.078	.025	.228**	-.064	.113*	.100	.148**	1
	Sig. (2-tailed)	.001	.140	.633	.000	.227	.032	.058	.005	
	N	360	360	360	360	360	360	360	360	360

Table 2 Correlation matrix

**Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

4.2 Research Model

Multi linear regression analysis is used to test the effect of the independent variable on the dependent variable taking into consideration two control variables which are the firm’s size and firm’s age. Then a multi-linear regression is used to test the effect of each of the 5 COSO components (independent variables) on the firm’s financial performance (dependent variable). The model was run using Statistical Package for the Social Sciences (SPSS) (Chen et al., 2017).

4.2.1 Testing the main hypothesis

To test the main hypothesis, concerning the effect of internal control structure quality on firm’s performance, the following research model is used (Chen et al., 2017; Njeri, . 2014; Ng’etich, 2017)

$$FP = \beta_0 + \beta_1 ICSQ + \beta_2 AGE + \beta_3 SIZE + e$$

FP= Financial performance of companies measured by EPS.

β_0 = the y-intercept or constant

ICSQ= internal control structure quality level measured by ICSQ index.

AGE: the natural logarithm of the number of years since a firm’s founding.

SIZE: the natural logarithm of client’s total assets

β_1 and β_3 = regression coefficient of the study variables.

e: error term

The following table represents the result of testing the hypothesis by multiple regression model analyzed by SPSS

Table 3: Result of testing main hypothesis using multiple regression model

Model	Beta	t-statistics	Significance
Constant	-11.465	-3.206	0.001
ICSQ	6.245	3.212	0.001
Firm’s size	0.619	1.996	0.047
Firm’s age	4.097	2.660	0.008
R ²	0.060		
Adjusted R ²	0.052		
F	7.602		
Sig (F)	0.000		

Dependent variable: Firm’s financial performance (EPS)

The summary table (3) above shows that the level of significance was $p= 0.000$ which implies that the regression model is a suitable and good predictor of the effect of the independent variable on the dependent variable. Furthermore, it shows that the independent variable (ICSQ) and the control variables (firm’s size and firm’s age) contribute to 5.2% (Adjusted R squared) of the variation in the dependent variable (firm’s financial performance). Meanwhile, the remaining 94.8% can be due to other factors that are not covered by the model.

The previous table demonstrate the regression coefficient of the predicted variables to determine the significance and the nature of the effect of the independent variable on the dependent variable. The results indicate that the ICSQ (independent variable) ($\beta_2=6.245$, $p=0.001$), firm's size $\beta_3=0.619$, $p=0.047$) and firm's age (control variable) ($\beta_2=4.097$, $p=0.008$) all have a significant and positive effect on the firm's financial performance (dependent variable). This agrees with the study of Ng'etich, (2017) as well as the study of Ilaboya and Ohiokha (2016). Accordingly, an increase in any of the three variables will result in an increase in the dependent variable; thus; the alternate hypothesis will be accepted. Therefore, placing the values into the formula of the multiple regression model will be as follow:

$$FP = -11.465 + 6.245 ICSQ + 4.097 AGE + 0.619 SIZE + \varepsilon$$

4.2 Testing Subhypotheses

In order to test the effect of each of the 5 COSO components on the firm's financial performance individually, a multilinear regression model was constructed in which the 5 COSO components (control environment, risk assessment, control activity, information and communication and monitoring) are considered as independent variables, while the firm's financial performance measured by EPS is the dependent variable. The 5 COSO components are measured by the ICSQ index. This relationship can be represented by the following equation: (Njeri, 2014; Muraleetharan, 2011; Ng'etich, 2017; Muhunyo & Jagongo, 2018; Kisanyanya, 2018)

$$FP = \beta_0 + \beta_1 CA + \beta_2 RA + \beta_3 CA + \beta_4 IC + \beta_5 MO + \beta_6 AGE + \beta_7 SIZE + \varepsilon$$

FP= firm's financial performance measured by Earning's Per Share

β_0 = the y- intercept or constant

$\beta_1 - \beta_5$ = regression coefficient, a measure of sensitivity of variable FP to changes in independent variables.

CE: Control environment measured by ICSQ index.

RA: Risk assessment measured by ICSQ index.

CA: Control activities measured by ICSQ index.

IC: Information and communication measured by ICSQ index.

MO: Monitoring measured by ICSQ index.

AGE: the natural logarithm of the number of years since a firm’s founding.

SIZE: the natural logarithm of client’s total assets

Table 4: Result of testing subhypotheses using multiple regression model

Model	Beta	t-statistics	Significance
Constant	-10.978	-3.006	0.003
Control environment	0.050	0.927	0.354
Risk assessment	-0.025	-0.470	0.638
Control activities	0.195	3.631	0.000*
Information and communication	-0.050	-0.969	0.333
Monitoring	0.073	1.382	0.168
Firm’s size	0.119	2.316	0.021*
Firm’s age	0.140	2.675	0.008*
R ²	0.092		
Adjusted R ²	0.074		
F calculated	5.083		
Sig (F)	0.000		

Dependent variable: Firm’s financial performance (EPS)

The previous table shows that the level of significance was p=0.000 which implies that the regression model is significant in predicting the relationship between the dependent and independent variables. Furthermore, it explains the percentage of the dependent variable (firm’s financial performance) that can be interpreted by the independent variables (5 COSO component) and the two control variables (firm’s size and firm’s age). According to the table, the dependent variable is explained by 7.4% (Adjusted R²) by the independent and control variables. Meanwhile the remaining 92.6% can be due to other factors out of the scope of the model.

The previous table demonstrates the regression coefficient of the predicted variables to determine the significance and the nature of the effect of the independent variables on the dependent variable. The results indicate that the Control environment ($\beta_1 = 0.050$, $p=0.354$) and monitoring ($\beta_5=0.073$, $p=0.168$) have an insignificant positive effect on the firm's financial performance. Unlike the risk assessment ($\beta_2=-0.025$, $p=0.638$) and information and communication ($\beta_4=-0.050$, $p=0.333$) that have an insignificant negative effect on the firm's financial performance. The only component that positively and significantly affects the firm's financial performance is the control activity ($\beta_3=0.195$, $p=0.000$). This means that improving the control activities in the firms will result in an increase of the firm's financial performance. Regarding the control variables, the table reveals that firm's size ($\beta_6=0.119$, $p=0.021$) and firm's age ($\beta_7=0.140$, $p=0.008$) positively and significantly impact the firm's financial performance. Such results agree with Ng'etich (2017), Muhunyo and Jagongo (2018), Etengu and Amony (2016) Ibrahim et. (2017) Mwangi and Muturi (2018) and Njeri (2014) while it contradicts with (Ejoh & Ejom, 2014) who didn't find any significant effect of control activities on the firm's financial performance.

Conclusion

The study investigated the effect of the ICSQ on the firm's financial performance and showed that the ICSQ has a positive and significant effect on the firm's financial performance. In other words, an improvement of the ICSQ leads to an enhancement of the firm's financial performance. A detailed analysis was conducted to investigate which of the 5 COSO components can specifically affect the firm's financial performance. Results showed control activities was the only component that has a significant and positive influence on the firm's financial performance, while the other 4 COSO components have an insignificant effect on the dependent variable. Firm size and age were used as control variables in the study and showed a significant positive effect on the financial performance of firms listed in the Egyptian Stock Exchange. This means large old firms that

possess an effective ICS have a chance to have a better financial performance than small, young firms and firms with ineffective ICS.

The study was also able to measure the degree of sampled firms' commitment to high quality internal control structures and found that majority of the firms are suffering from a low ICSQ. This could be attributed to the non-regulatory disclosure environment in Egypt and the absence of any laws or regulations that oblige managers to disclose the companies' ICSQ status, specially that the internal audit that bear the responsibility to assess the ICSQ is not mature yet in Egypt.

Accordingly, Egyptian regulatory bodies are advised to mandate the disclosure on firm's ICS and penalizing any breach to such disclosure requirements. This will motivate the managers of the Egyptian firms to put great emphasis on the ICSQ and thus increase the firm's financial performance since Egypt has no regulatory requirements for listed firms to make any disclosure on the state of their ICS. Control activities should be further enhanced due to their unique effect on firm's financial performance, by improving the accounting control, budget control, property control, operating control and performance.

The study also provides implications for future research studies as the effect of the ICSQ and its components can be further examined on banks' financial performance. The study can also be replicated with other measures of financial performance such as ROA. ROE in addition to market-based measures such as Tobin Q and Market share prices. The researchers also recommended the extension of the study period to include the effect of the pandemic COVID 19 on the firm's operations, procedures, and financial performance.

المراجع

أولاً: المراجع باللغة العربية

السيد، محمد. (El-said) 2015. أثر المراجعة الداخلية للاستدامة على قيمة الشركة في ظل الإفصاح عن وبدائل واسناد دوريتها كوظيفة- دراسة ميدانية وتجريبية. رسالة دكتوراة. كلية التجارة. جامعة الاسكندرية

الشعراوي، حسام. (Sharawy) 2016. أثر تطبيق إدارة المخاطر على الأداء المالي للشركة - دراسة تطبيقية على الشركات المصرية. مجلة كلية التجارة للبحوث العملية. كلية التجارة. جامعة الاسكندرية. العدد

على، نهي. (Ali) 2018. أثر جودة المراجعة الداخلية على الحد من السلوك الانتهازي للإدارة ومنع الغش بالقوائم المالية - دراسة تطبيقية على الشركات المقيدة بالبورصة المصرية. رسالة دكتوراة غير منشورة. كلية التجارة. جامعة الاسكندرية.

عياش، عبد الوهاب. (Aiaash) 2014. دور الرقابة الداخلية في رفع كفاءة الأداء المالي - دراسة ميدانية على شركات الاتصالات اليمنية. جامعة ناصر

ثانياً: المراجع باللغة الأجنبية

Adu-Frimpong, A. A. (2015). Evaluating the effects of Internal Control in the Operations of financial institutions: A Case Study of Bond Savings and Loans (Doctoral thesis, Kwame Nkrumah University of Science and Technology, Ashanti, Ghana). Retrieved from <http://hdl.handle.net-/123456789/8481>.

Al-Matari, E. M., Al-Swidi, A. K., & Fadzil, F. H. B. (2014). The measurements of firm performance's dimensions. *Asian Journal of Finance & Accounting* 6 (1): 1-24.

Al-Thuneibat, A. A., Al-Rehaily, A. S., & Basodan, Y. A. (2015). The impact of internal control requirements on profitability of Saudi shareholding companies. *International Journal of Commerce and Management* 25 (2): 1-22.

- Anitha, J. (2014). Determinants of employee engagement and their impact on employee performance. *International journal of productivity and performance management* 63 (3): 308–323.
- Ashbaugh-Skaife, H., Collins, D. W., Kinney Jr, W. R., & LaFond, R. (2009). The effect of SOX internal control deficiencies on firm risk and cost of equity. *Journal of Accounting Research* 47 (1): 1–43.
- Asiligwa, M., & Rennox, G. (2017). The Effect of internal controls on the financial performance of commercial banks in Kenya. *IOSR Journal of Economics and Finance* 8(3): 92–105.
- Balk, B. H. and M, Gort. (1993). Decomposing learning by doing in new plants. *Journal of Political Economy*, 101(4):561–583. Retrieved from <http://dx.doi.org/10.1086/261888> Proposal 2017 (accessed on January 21, 2019).
- Beeler, J.D., J.E. Hunton, and B. Wier. (1999). Promotion Performance of Internal Auditors: A Survival Analysis. *Internal Auditing* 14 (4): 3–14.
- Bett, J. C., & Memba, F. S. (2017). Effects of Internal Control on the Financial Performance of Processing Firms in Kenya: A Case of Menengai Company. *International Journal of Recent Research in Commerce Economics and Management* 4(1): 105–115.
- Bonsu, O. A. M., Dui, L. K., Muyun, Z., Asare, E. K., & Amankwaa, I. A. (2018). Corporate Fraud: Causes, Effects, and Deterrence on Financial Institutions in Ghana. *European Scientific Journal* 14(28): 315–335.
- Bosilj-Vuksic, V., Milanovic, L., & Indihar-Stemberger, M. (2008, April). Organizational performance measures for business process management: A performance measurement guideline. *Tenth International Conference on Computer Modeling and Simulation* pp. 94–99, doi: 10.1109-/UKSIM.2008.114.

- Burbano, V., and J. Ostler. (2017). Unethical Behavior by Nonprofit, For-Profit, and Public Organizations: Everybody Cheats, but with Different Objectives and Outcomes. Ross School of Business, University of Michigan, Michigan, US. Retrived from https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Unethical+Behavior+by+Nonprofit%2C+ForProfit%2C+and+Public+Organizations%3A+Everybody+Cheats%2C+but+with+Different+Objectives+and+Outcomes.%E2%80%8F&btnG=
- Chan, K. C., P. Lee, and G. S. Seow. (2008). Why did management and auditors fail to identify ineffective internal controls in their initial SOX 404 reviews?. *Review of Accounting and Finance* 7 (4): 338–354.
- Chebungwen, N., & Kwasira, J. (2014). An assessment of internal control system on financial performance in tertiary training institutions in Kenya: A case study of African Institute of Research and Development Studies. *International Journal of Science and Research (IJSR)* 3(3): 20–40.
- Chen, H., Dong, W., Han, H., & Zhou, N. (2017). A comprehensive and quantitative internal control index: construction, validation, and impact. *Review of Quantitative Finance and Accounting* 49(2): 337–377.
- Cheng, M., D. Dhaliwal, and Y. Zhang. (2013). Does investment efficiency improve after the disclosure of material weaknesses in internal control over financial reporting? *Journal of Accounting and Economics* 56(1): 1–18
- Committee of Sponsoring Organizations. (2013). Internal control–integrated framework. New York, NY: COSO. Retrieved from <http://www.coso.org>. Proposal 2017 (accessed on March25, 2019).
- Du, H., Li, J., & Lei, I. (2016). Research on the relationship between internal control quality and company investment efficiency based on data mining. *Revista Iberica de Sistemas e Tecnologias de Informacao* (E6): 15–27.
- Ebaid, I. E. S. (2011). Internal audit function: an exploratory study from Egyptian listed firms. *International Journal of law and management* 53 (2): 108–128.

- Ejoh, N., & Ejom, P. (2014). The impact of internal control activities on financial performance of tertiary institutions in Nigeria. *Journal of Economics and Sustainable Development* 5(16): 133–143.
- Eniola, O.J. Akinselure, and O. Philip. (2016). Effect of Internal Control on Financial Performance of Firms in Nigeria. (A study of Selected
- Etengu, R. O., & Amony, M. (2016). Internal Control System and Financial Performance in Non-Governmental Organisations in Uganda: A Case Study of International Union for Conservation of Nature. *International Journal of Contemporary Applied Sciences* 3(2): 2308–1365.
- Frazer, L. (2016). Internal control: Is it a benefit or fad to small companies? A literature dependency perspective. *Journal of Accounting and Finance* 16(4): 149–161.
- Gamage, C. T., Lock, K. L., & Fernando, A. A. J. (2014). A proposed research framework: Effectiveness of internal control system in state commercial banks in Sri Lanka. *International Journal of Scientific Research and Innovative Technology* 1(5): 25–44.
- GAO, (2014). Standards for Internal Control in the Federal Government, 1–83.
- Ghalem, Â., Chafik, O. K. A. R., Chroqui, R., & El Alami, Semma, Performance: A concept to define! La performance: Un concept à définir. Faculty of Sciences and Techniques, University Hassan, Casablanca, Morocco.
- Gift, E.O. (2018). Internal control and financial performance of hospitality organizations in Rivers State. *European Journal of Accounting, Auditing and Finance Research* 6(3): 32–52
- Grüning M (2002) Performance-measurement-systeme – Messung und Steuerung von Unternehmenseleistung. Dissertation, Technische Universität Dresden, Frankfurt: Rosh-Buch.
- Gunduz, M., and O. Önder. (2013). Corruption and internal fraud in the Turkish construction industry. *Science and engineering ethics* 19(2): 505–528.

- Ibrahim, N. A. F. (2017). The relationship between corporate social responsibility and employer attractiveness in Egypt: The moderating effect of the individual's income. *Contemporary Management Research*, 13(2).
- Ibrahim, S., Diibuzie, G., & Abubakari, M. (2017). The Impact of Internal Control Systems on Financial Performance: The Case of Health Institutions in Upper West Region of Ghana. *International Journal of Academic Research in Business and Social Sciences* 7(4): 684–696.
- Ilaboya, O. J., & I.F. Ohiokha. (2016). Firm Age, Size and Profitability Dynamics: A Test of Learning by Doing and Structural Inertia Hypotheses. *Business and Management Research* 5(1): 29–39.
- International Federation of Accountants (IFAC). (2018). Guide to using ISAs in the audits of small and medium sized entities 1(4):1–232.
- International Federation of Accountants (IFAC). (2014). Handbook of International quality Control, Auditing, Review, Other Assurance, and Related Services Pronouncements, 1–909.
- Ionescu, L. (2010). Corruption, fraud and internal control. Annals of Spiru Haret University, *Economic Series* 1(4): 123–129.
- Jahanshahi, A. A., Rezaei, M., Nawaser, K., Ranjbar, V., & Pitamber, B. K. (2012). Analyzing the effects of electronic commerce on organizational performance: Evidence from small and medium enterprises. *African Journal of Business Management* 6(15): 6486–6496.
- Jokipii, A. (2010). Determinants and consequences of internal control in firms: a contingency theory based analysis. *Journal of Management & Governance* 14(2): 115–144.
- Khlif, H., and K. Samaha. (2016). Audit committee activity and internal control quality in Egypt: does external auditor's size matter?. *Managerial Auditing Journal* 31(3) :269–289

- Kinyua, J.K, Gakure R., Gekara M., Orwa G. (2015). Effect of Internal Control Environment on the Financial Performance of Companies Quoted in the Nairobi Securities Exchange. *International Journal of Innovative Finance and Economics Research* 3(4): 29-48.
- Kisanyanya, G. A. (2018). *Internal Control Systems and Financial Performance of Public Institutions of Higher Learning in Vihiga County, Kenya* (Doctoral dissertation). Kenyatta University, Kenya.
- Krause O (2005) Performance Measurement – Eine Stakeholder-Nutzenorientierte und Geschäftsprozess-basierte Methode, Technische Universität, Berlin: Spiner-Verlag.
- Kumuthinidevi, S. (2016). A study on effectiveness of the internal control system in the private banks of trincomalee. *International Journal of Scientific and Research Publications* 6(6): 71-91.
- Lai, S. C., Li, H., Lin, H., & Wu, F. (2017). The influence of internal control weaknesses on firm performance. *Journal of Accounting and Finance* 17(6):82-95.
- Länsiluoto, A., A. Jokipii, and T. Eklund. (2016). Internal control effectiveness—a clustering approach. *Managerial Auditing Journal* 31(1): 5-34.
- Lee, J. E. (2018). Internal control deficiencies and audit pricing: evidence from initial public offerings. *Accounting & Finance* 58(4): 1201-1229.
- Liargovas, P. G., & Skandalis, K. S. (2010). Factors affecting firms' performance: The case of Greece. *Global Business and Management Research: An International Journal*, 2(2), 184-197
- Magu, J. K., & Kibati, P. (2016). Influence of Internal Control System on Financial of Performance of Kenya Farmer's Association Limited. *International Journal of Economics, Commerce and Management* 4(4): 783-800.

- Mahadeen, B., Al-Dmour, R. H., Obeidat, B. Y., & Tarhini, A. (2016). Examining the effect of the Organization's Internal Control System on Organizational Effectiveness: A Jordanian empirical study. *International Journal of Business Administration* 7(6): 22-41.
- Mary, M., Albert, O., & Byaruhanga, J. (2014). Effects of Internal Control Systems on Financial Performance of Sugarcane out grower companies in Kenya. *IOSR Journal of Business and Management* 16(12): 2319-7668.
- Mawanda, S. P. (2008). Effects of internal control systems on financial performance in an institution of higher learning in Uganda (*A postgraduate dissertation*). Martyrs University, Uganda.
- Mohamed, S. S. (2020, November). Suggested Model for Explaining Financial Distress in Egypt: Toward a Comprehensive Model. In *Financial Issues in Emerging Economies: Special Issue Including Selected Papers from II International Conference on Economics and Finance* 36: 99-122.
- Mugwe, M. N. (2012). The Relationship between the Independence and objectivity of the Internal Audit Function and Earnings per Share (EPS) in companies listed in NSE (*Unpublished MBA Project*). University of Nairobi, Kenya.
- Muhunyo, B. M., & Jagongo, A. O. (2018). Effect of internal control systems on financial performance of public institutions of higher learning in Nairobi City County, Kenya (Doctoral dissertation) Kenyatta University, Kenya.
- Muraleetharan, P. (2011). Internal control and impact of financial performance of the organizations (special reference public and private organizations in Jaffna district). In *International Conference on Business & Information*.
- Mwangi, J. K., & Muturi, W. (2018). Influence of Internal control mechanism on financial performance of supermarkets in Kenya. *International Journal of Social Sciences and Information Technology* 4(5): 272-288.

- Nashwan, I. M. (2018). Impact of internal control system structures according to (COSO) model on the operational performance of construction companies in the Gaza strip: an empirical study. *International Journal of Business and Management* 13(11): 1-20.
- Njeri, K. (2014). Effect of Internal controls on the Financial Performance of Manufacturing firms in Kenya (Unpublished thesis). University of Nairobi, Nairobi.
- Ng'etich, W. K. (2017). The effect of internal control on the financial performance of firms listed at Nairobi Securities Exchange (Unpublished MBA Project). University of Nairobi, Nairobi.
- Onumah, J. M., Kuipo, R., & Obeng, V. A. (2012). Effectiveness of internal control systems of listed firms in Ghana. *Accounting in Africa* 12 (1): 31-49.
- Paul, G. D., Ebelechukwu, E. C., & Yakubu, S. (2015). Impact of corporate governance on financial performance of microfinance banks in north central Nigeria. *International Journal of Humanities Social Sciences and Education* 2(1): 153-170.
- Protiviti. (2017). The Evolution of Internal Control Protoviti, available at: www.protiviti.com/en-US/Documents/Resource-Guides. (accessed on February 12, 2020).
- Rafiq, S., R. Salim, & R. Smyth. 2016. The moderating role of firm age in the relationship between R&D expenditure and financial performance: Evidence from Chinese and US mining firms. *Economic Modelling* 56(1): 122-132.
- Roberts, P. W., & Dowling, G. R. (2002). Corporate reputation and sustained superior financial performance. *Strategic management Journal* 23(12): 1077-1093.

- Saedi, R., & Dastgir, M. (2017). The Effect of Internal Control Weakness on Investment Efficiency of Companies Listed in Tehran Stock Exchange. *International Journal of Finance & Managerial Accounting* 2(7): 25-31.
- Samaha, K., Dahawy, K., Hussainey, K., & Stapleton, P. (2012). The extent of corporate governance disclosure and its determinants in a developing market: The case of Egypt. *Advances in Accounting* 28(1): 168-178.
- Schneider, A., & Church, B. K. (2008). The effect of auditors' internal control opinions on loan decisions. *Journal of Accounting and Public Policy* 27(1): 1-18.
- Sharma, R. B., & Senan, N. A. M. (2019). A Study on Effectiveness of Internal Control System in Selected Banks in Saudi Arabia. *Asian Journal of Managerial Science* 8(1): 41-47.
- Sultana, R., & Haque, M. E. (2011). Evaluation of Internal Control Structure: Evidence from Six Listed Banks in Bangladesh. *ASA University Review* 5(1): 69-81.
- Sun, Y. (2016). Internal control weakness disclosure and firm investment. *Journal of Accounting, Auditing & Finance* 31(2): 277-307.
- Tavakoli, S., & Talib, N. A. (2014). A Comprehensive Approach to Relationship between COSO ERM and Firm Performance in Construction Industry. *International Research Journal of Applied and Basic Sciences* 8(12): 2214-2220.
- Tseng, C. Y. 2007. Internal control, enterprise risk management, and firm performance (Doctoral dissertation). University of Maryland, College Park.
- Wang, L. (2019, April). Research on Internal Control Construction System of Energy-based Enterprises Based on COSO and Financial Quality. *IOP Conference Series: Earth and Environmental Science* 252 (3): 1-7.

- Yang, L., Qin, H., Gan, Q., & Su, J. (2020). Internal Control Quality, Enterprise Environmental Protection Investment and Finance Performance: An Empirical Study of China's A-Share Heavy Pollution Industry. *International Journal of Environmental Research and Public Health* 17(17):6082
- Ying, Z., & Niu, D. (2009, November). Characteristics of firms with effective internal control: evidence from Chinese companies. *International Conference on Interaction Sciences: Information Technology, Culture and Human* 2(1): 1263–1268.