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The Relationship between some Firm's Operational Characteristics and ICS effectiveness: An evidence from non- financial firms listed in the Egyptian Stock Exchange

Abstract

The purpose of this paper is to study and test the effect of Firm operational characteristics on the effectiveness of internal control structure.

The study investigated the impact of the firm operational characteristics (measured by four drivers; Firm size, Firm age, Leverage, Sales growth) on the effectiveness of internal control structure (measured by an index according to **COSO (2013) Framework**).

Simple regression were used to test the research hypotheses. **The sample used in the current study consists of** 103 non- financial firms listed in Egyptian Stock Exchange during the period (2016–2021).

The research concludes that there is a significant positive relationship for both (**Firm Size, Firm Age, Leverage, Sales Growth**) on the effectiveness of internal control structure.

Keywords: Firm operational characteristics, The effectiveness of Internal control structure.

This research is derived from Master's thesis for the researcher, entitled "The effect of Accounting complexity of the audit client's operations on the effectiveness of internal control structure".

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العلاقة بين بعض الخصائص التشغيلية للشركة وفعالية هيكل الرقابة الداخلية: دليل من الشركات غير المالية المقيدة بالبورصة المصرية

ملخص البحث

استهدف البحث دراسة واختبار أثر بعض الخصائص التشغيلية للشركة علي فعالية هيكل الرقابة الداخلية. حيث تم التركيز علي الخصائص التشغيلية التالية (حجم الشركة، وعُمر الشركة؛ ونسبة الرفع المالي، ومعدل نمو المبيعات)، كما تم قياس فعالية هيكل الرقابة الداخلية بمؤشر وفقاً لإطار COSO (2013). وقد اعتمد الباحث علي نماذج الانحدار البسيطة لاختبار فروض البحث. وبلغت عينة الدراسة 103 شركة غير مالية مقيدة بالبورصة المصرية خلال الفترة (2016- 2021). وخلص البحث، إلي وجود تأثير معنوي ايجابي لكل من (حجم الشركة، عُمر الشركة، نسبة الرفع المالي، معدل نمو المبيعات) علي فعالية هيكل الرقابة الداخلية.

الكلمات المفتاحية: الخصائص التشغيلية للشركة، فعالية هيكل الرقابة الداخلية.

1. Introduction

The quality of financial reporting depends on some important information qualitative characteristics such as predictive and feedback value, timeliness, neutrality and representational faithfulness based on **FASB** (Bimo et al., 2019; Ying, 2016). And the extent to achieve this quality depends on various factors; including firm characteristics and the effectiveness of internal control structure (Lotfy et al., 2021; Dashtbayaz et al., 2019; Bimo et al., 2019).

The internal control structure (ICS) is a mean and a tool to an end not the end itself (Lotfy et al., 2021). Firm management is responsible for the integrity of the design and operations of the internal control structure, to be able to provide reasonable assurance about the reliability of the information contained in financial statements, and to comply with laws and regulations, as well as to ensure the effectiveness and efficiency of the firm's operations (Abo Ala, 2019).

According to **COSO (2013)** framework, the internal control structure (ICS) 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**”.

As for the effectiveness of internal control structure (ICSE), It means “**the degree to which the directors believe the organizational goals have been met or by how reliable are published financial statements, or by the degree of compliance with appropriate laws, regulations, rules and guidelines**” (Lotfy et al., 2021; Onumah et al., 2012).

Moreover, the effectiveness of internal control structure (ICSE) is affected by a set of firm operational characteristics, the most important of which are; Firm size, Firm age, Leverage, yearend, Loss (Bardhan et al., 2015; Soodanian et al., 2013; Bentley et al., 2017; Dashtbayaz et al., 2019; Rostami& Bazarghani, 2019).

Prior studies reached conflicting results, on the strength and direction, of the relationship between firm operational characteristics and the effectiveness of

internal control structure (Soodanian et al., 2013, Rostami& Bazarghni, 2019; Bimo et al., 2019).

So the research problem can be expressed in how to answer the following question practically; Do the operational characteristics of nonfinancial firms listed in Egyptian Stock Exchange affects the effectiveness of internal control structure (ICSE) of these firms?

The objective of this Research is to study and investigate the impact of the firm operational characteristics (measured by four drivers; Firm size, Firm age, Leverage, Sales growth) on the effectiveness of internal control structure of the nonfinancial firms listed in Egyptian Stock Exchange during the period (2016–2021).

The importance of this research is traced back to its alignment with forging research, which dealt with studying and testing the impact of firm characteristics on the effectiveness of internal control structure (ICSE). Given that Arab academic research, especially Egyptian, suffer from a significant scarcity in this field. **Despite the many research motives, the most important ones is;** narrowing the research gap in this field, especially in academic research that uses the content analysis methodology, and develop an index to measure the effectiveness of internal control structure (ICSE).

The limitation of This research is obvious in studying and testing the relationship between firm operational characteristic measured in terms of (firm size, firm age, leverage, and Sales Growth), only, excluding other determinants of the firm operational characteristic (such as; loss, segments, yearend and profitability) which are outside the scope of the research, and the effectiveness of internal control structure (ICSE) using an index in a sample of only non-financial firms listed in the Egyptian Stock Exchange, rather than including in the sample both; private companies that are not listed in the Egyptian Stock Exchange, in addition to financial institutions, whether they are listed or not listed in the Egyptian Stock Exchange. Finally, the generalization of the research results is

conditioned by the controls used in selecting its' sample and the methodology used to test its' hypotheses.

The remainder of the paper will be organized as follows: section 2 discusses prior literature related to firm operational characteristics and the effectiveness of internal control structure, and the relationship between the firm operational characteristics and the effectiveness of internal control structure and forming the hypotheses. Section 3 discusses the research methodology and design, section 4 presents the empirical results and conclusion.

2. Literature review and hypotheses development

2.1 Firm operational Characteristics:

The firm operational characteristics are one of the most important and influential points on the management's motives and it's choice of alternatives and different accounting policies, as firms differ among themselves with regard to the operational characteristics, which in turn affect the uncertainty associated with the firms' operation, practices, and management motives (Sharaf, 2019; Talkhan, 2017).

According to El Araby (2022) Firm operational characteristics can be defined as “a set of features that reflect the technical and organizational aspects, ownership structures and administrative orientations, funding sources, accounting policies, the financial position of firms, and their material, human and technological capabilities, which is a basis for distinguishing between them”.

Prior studies (Talkhan, 2017; Sharaf, 2019; Zatoot, 2019; Soodanian et al., 2013; Bimo et al., 2019) were concerned with addressing the impact of the firm operational characteristics on many different variables due to the importance of their impact.

With regard to the determinants of the firm operational characteristics, some studies (Talkhan, 2017; Soodanian et al., 2013; Bimo et al., 2019; Dashtbayaz et al., 2019; Lotfy et al., 2021; Rostami & Bazarghani, 2019) agree that these determinants are the most important; firm size, firm age, loss, financial leverage, growth, yearend and firm complexity.

The researcher concluded that, There are many determinants related to a firm's operational characteristics, but the most important ones are (firm size, firm age, financial leverage and sales growth), which has affected many variables in different academic researches, but effectiveness of internal control structure is found to be one of the most important variables in question . From this framework, the researcher set out, in this context, to study and test the impact of firm operational characteristics on the effectiveness of the internal control structure in an emerging economy as that of Egypt.

2.2 The effectiveness of internal control structure

Prior studies (Ying & Niu, 2009; Lotfy et al., 2021; Dashtbayaz et al., 2019; Rostami & Bazarghani, 2019; Bimo et al., 2019; Phornlaphatrachakorn, 2019; Rice & Weber, 2011; Soodanian et al., 2013) have agreed on the importance of internal control structure, which has become a valuable mechanism in helping firm achieve its objectives, goals, and target. It also can enhance financial reporting quality and rectify governance problems. Finally, they have agreed that the implementation of an effective internal control structure is an important element in guaranteeing the financial reporting quality, as well as the effectiveness of internal control over compliance, effectiveness of internal control over reporting, and the effectiveness of internal control over operation.

According to (Saeed, 2014; Gift, 2018) the effectiveness of internal control structure is achieved when this structure is designed and operated to prevent, detect, and correct ,in a timely manner, material misstatements in financial statements. And this view is consistent with what Ali (2020) indicated that the effectiveness of internal control structure is based on two basic elements, namely, **the extent of the effectiveness of the internal control structure design** (which reflects the ability of management, as the primary responsible, to design this structure in a way that prevents, detects, and corrects material misstatements in a timely manner), and **the extent of the effectiveness of operations of the internal control structure** (which refers to the actual operation of the various components of this structure, as it is designed to achieve its' three objectives).

In the other words, the availability of the five components of the internal control structure (ICS) according to **COSO (2013)** framework, is a measure of the effectiveness of internal control structure (ICSE) which are; Control environment, Risk assessment, Control activities, Information and Communication, and Monitoring (Lotfy et al., 2021; Chen et al., 2017; Saeed, 2014).

The researcher concluded that internal control structure is one of the most essential elements in firms, which is working to achieve the firm's goals and the effectiveness of this structure is, affect and is affected, by many determinants of the firm operational characteristics, in different "ways" and different "directions", which in turn influences the financial reporting quality.

2.3 Analysis of the Relationship between the firm operational characteristics and the effectiveness of internal control structure, and research hypotheses development

Prior studies (Soodanian et al., 2013; Bentley et al., 2017; Abo Ala, 2019; Doyle et al., 2007; Rice & Weber, 2011; Lai et al., 2020; Jokipii, 2010) agreed that there are many determinants related to firm operational characteristics, (such as; firm size, firm age, leverage, loss, yearend, firm operation complexity), that may directly and /or indirectly affect the effectiveness of internal control structure. In view of the conflicting results regarding the direction of this relationship, the researcher will not adopt a specific direction for the influential relationship under study, therefore, the research hypotheses can be derived as follows:

2.3.1 Firm Size and The effectiveness of internal control structure

Regarding to firm size, Doyle et al. (2007) found that firm size is negatively associated with reported control deficiencies; and viewed size as a proxy for investment in internal control structure, this is because the larger firms have the ability to provide adequate financial, human, and material resources, therefore, have a strong internal control structure compared to small firms. Also, they used their results as evidence that control problems are less likely to exist in larger

firms. By contrast (Rice & Weber, 2011) study indicate that when control weaknesses do exist larger firms are less likely to report those weaknesses.

On the contrary, Jokipii (2010) study found that firm size has a significant positive effect on an internal control structure and indirect effect on the effectiveness of internal control structure. And Abo Ala (2019) pointed out that larger firms have a strong and effective internal control structure. Also Lai et al. (2020) added that there is a significant positive association between the small size of firms and internal control weaknesses. **Considering the literature and background that were presented in this section, the first hypothesis is as follows:**

H₁: Firm size significantly affects the effectiveness of internal control structure of non- financial firms listed on Egyptian Stock Exchange.

2.3.2 Firm Age and The effectiveness of Internal control structure

Another factor that is a likely determinant to the effectiveness of internal control structure is the age of the firm. Doyle et al. (2007) study expected that the age of the firm affect its' ability to establish proper internal control structure, and added that the need for it is unique to each firm's particular operating environment, it also referred that the older the firm the more likely they have "ironed out the kinks" in their internal control procedures, finally, it found that material weaknesses in internal control structure⁽¹⁾ are more likely for firms that are younger.

Also (Melegy, 2016; Abo Ala, 2019) indicated that younger firms suffer from weaknesses in the internal control structure because they are often less stable, more likely to be exposed to agency conflicts, and less experience in designing an effective internal control structure. Thus, Lai et al. (2020) agreed with the previous studies that the disclosure of material weaknesses in internal control structure are more likely to occur for firms with resource constrains i. e ., for younger firms. **Considering the literature and background that were presented in this section, the second hypothesis is as follows:**

H₂: Firm Age significantly affects the effectiveness of internal control structure of non- financial firms listed on Egyptian Stock Exchange.

2.3.3 Financial aspects (Leverage, Sales Growth) and The effectiveness of Internal control structure:

Many research papers (Smith et al., 2018; Rostami & Bazarghani, 2019; Lotfy et al., 2021; Dashtbayaz et al., 2019) focused on studying the effect of financial aspects of audit client`s firm, (such as; profitability, cash flow from operations, loss, leverage, bankruptcy, earning per share), on the effectiveness of internal control structure. And the financial aspects reflect “the financial and monetary status of the audit client`s firm, sources of funding, the activities of his firm and its financial growth” (Amr, 2022).

The accounting literature (Doyle et al., 2007; Abo Ala, 2019; Bentley et al., 2017) provides consistent results that firms which disclose a material weakness in internal control structure are smaller in size, overleveraged, have poor financial performance, and are growing rapidly. Regarding to Rice& Weber (2011) the firm in poor financial health may lack the necessary resources to conduct adequate tests of internal control structure.

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- (1) The material weakness in the internal control structure in accordance with auditing standard AS No.5) Public Companies Accountants Oversight Board (PCAOB) has been defined as **“an integrated set of material deficiencies in internal control, which are likely to result in material misstatements of the annual or interim financial statements that are not prevented or detected in a timely manner”**.

Moreover, a study of Soodanian et al. (2013) found that there is a direct and significant relationship between internal control structure weaknesses and financial health, measured by loss before extraordinary items, and an indirect significant relationship, measured by bankruptcy, also found that there is a direct and significant relationship between internal control structure weaknesses and fast growth of the firm, measured by sales growth.

Rostami & Bazarghani (2019) stated that there is a significant relationship between leverage and internal control structure weaknesses, as well as the significant relationship between sales growth and internal control structure weaknesses. As well as Lai et al. (2020) study provide an evidence indicates that material weaknesses in internal control structure is more likely to occur for firms with near loss and bankruptcy.

On the contrary, both of (Hoitash& Hoitash, 2018; Bae et al., 2021) results are consistent, they found that there is no significant relationship between leverage, sales growth and material weaknesses in internal control structure. In line with prior studies, the researcher will focus on testing the effect of financial leverage, and sales growth. **Considering the literature and background that were presented in this section, the third and fourth hypotheses are as follows:**

H₃: financial leverage significantly affects the effectiveness of internal control structure of non- financial firms listed on Egyptian Stock Exchange.

H₄: sales growth significantly affects the effectiveness of internal control structure of non- financial firms listed on Egyptian Stock Exchange.

3. Research Design and Methodology

3.1 Population and Sample of the study

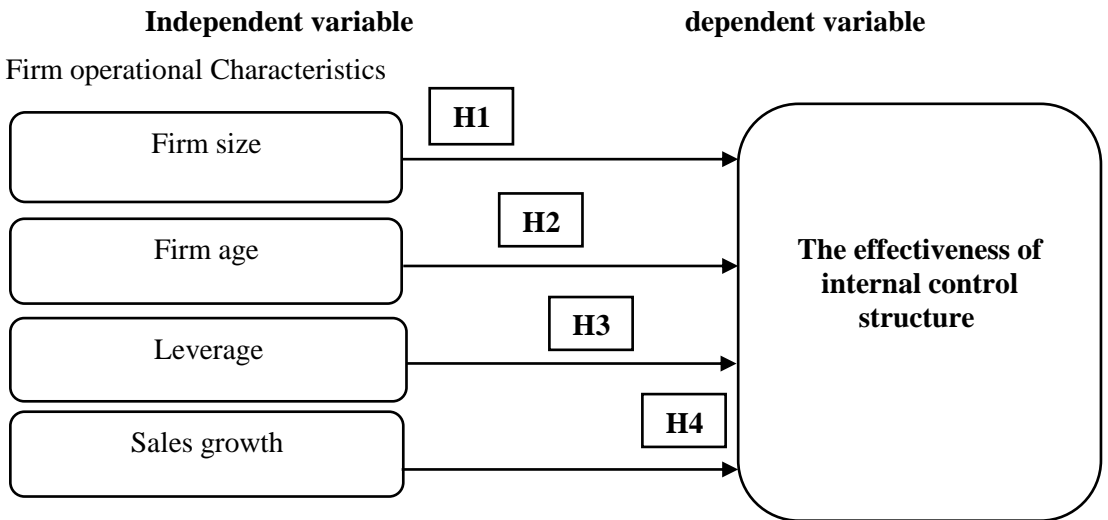
The study population consists of non-financial companies listed in the Egyptian Stock Exchange during the period from 2016 to 2021⁽¹⁾. The research focused on

⁽¹⁾ The study period was determined from 2016–2021 for more than one reason, the most important of which are; After the adoption of the International Financial Reporting Standards in Egypt in 2015, some of which focus on the problems of accounting for hedging operations, fair value, comprehensive income and its components, and other areas that require personal judgment on the part of the financial accountant, especially regarding complex accounting reports.

judgmental sample from this population, where financial companies were excluded from the scope of the study due to the different nature of their activities and the rules governing this activity differs from those of non-financial companies, as well as companies not listed in the Stock Exchange, in addition to companies listed in the stock Exchange but prepare their financial statements in a foreign currency (Abozaid et al., 2020). The final sample consisted of 600 firm-year observations.

3.2 Research Design and measurements

In this paper, the researcher is concerned about **The Effect of Firm Operational Characteristics on the effectiveness of internal control structure**, the research design as is follows:



Panel (1)

Source: researcher design

Table 1: Definition and measurement of study variables:

Variable	
Independent variable: Firm Operational Characteristics	
1. Firm size (FSIZE)	Nature logarithm of total firm assets (Bimo et al., 2019).
2. Firm age (AGE)	Logarithm of the number of years the company have been listed on the Stock Exchange (Soodanian et al., 2013).
3. Leverage (LEV)	Total liabilities divided by total assets (Bae et al., 2021).
4. Sales growth (SALES GRW)	Index that is equal to one if the sale is greater than average industry sales, otherwise it is equal to zero (Bentley et al., 2017)
Dependent variable: The effectiveness of internal control structure (ICSE)	The effectiveness of internal control structure index (Chen et al.,2020; Abo Ala, 2022)

3.3 Research model

Sample linear regressions analysis are used to test the effect of the independents variables on the dependent variable, the models as are follow:

$$ICSE = \beta_0 + \beta_1 FSIZE + \epsilon_{it} \quad (1)$$

$$ICSE = \beta_0 + \beta_1 AGE + \epsilon_{it} \quad (2)$$

$$ICSE = \beta_0 + \beta_1 LEV + \epsilon_{it} \quad (3)$$

$$ICSE = \beta_0 + \beta_1 SALES GRW + \epsilon_{it} \quad (4)$$

Where: **ICSE**, **FSIZE**, **AGE**, **LEV**, **SALES GRW** as described in the previous table, ϵ = error term, it = for firm i in year t.

4. Empirical Findings

4.1 Descriptive statistics of data

The descriptive statistics of the independents and dependent variables are shown in table (2). It is clear from the table that the mean value of the firm size

(8.8185) is higher than its standard deviation (.76675), and that the minimum value and the maximum value fluctuates between (6.05- 10.80). Likewise the mean value of the firm Age (1.1948) is higher than its standard deviation (.30702), and that the minimum value and the maximum value fluctuates between (-.60- 1.61). And in contrast the mean value of both Leverage and Sales Growth (.4876 - .2583) are less than their standard deviation (.68257- .43808), and their minimum and maximum values range between (.00- .00), (9.39- 1.00), respectively.

Table 2: Descriptive Statistics

	Mean	Min	Max	SD	N
ICSE	.5309	.26	.79	.09307	600
FSIZE	8.8185	6.05	10.80	.76675	600
AGE	1.1948	-.60	1.61	.30702	600
LEV	.4876	.00	9.39	.68257	600
SALES GRW	.2583	.00	1.00	.43808	600

4.2 Correlation analysis

Table 3: Pearson correlation between dependent and independent variable

	ICSE	FSIZE	AGE	LEV	SALES GRW
ICSE	1.00				
FSIZE	0.254**	1.00			
AGE	0.103*	-0.037	1.00		
LEV	0.099*	-0.078	0.066	1.00	
SALES GRW	0.213**	0.693**	-0.113**	-0.011	1.00

** = significant at 0.001 level, * = significant at 0.05 level.

Table (3) represents the association between ICSE and the independent variables. ICSE is positively and significantly associated with FSIZE and SALES GRW with a Pearson correlation coefficient (0.254- 0.213) ($p < 0.01$), respectively. Also, ICSE is positively and significantly associated with AGE and LEV with a Pearson correlation coefficient (0.103- 0.099) ($p < 0.05$), respectively.

4.3 Hypotheses testing

Table 4: simple regression results

Variables	Model1			Model2			Model3			Model4		
	B	T	sig	B	T	sig	B	T	sig	B	T	sig
Constant	.259	6.087	.000	.494	32.454	.000	.524	112.710	.000	.519	120.348	.000
FSIZE	.031	6.431	.000	-	-	-	-	-	-	-	-	-
AGE	-	-	-	.031	2.528	.012	-	-	-	-	-	-
LEV	-	-	-	-	-	-	.013	2.432	.015	-	-	-
Sales GRW	-	-	-	-	-	-	-	-	-	.045	5.343	.000
R ²	.065			.011			.010			.046		
Adjusted R ²	.063			.009			.008			.044		
F	41.355			6.393			5.916			28.548		
Sig(F)	.000			.012			.015			.000		

Table (4) reports the results of simple regressions as follows: The results of model (1) above shows that the calculated value of the (F) Statistic (41.355) increased from its tabular value (3.84), which indicates the significance of the model to test that relationship. The explanatory power of the Adjusted R² model was (0.063), meaning that the independent variable explains (0.063) of the changes in the dependent variable. **And by analyzing the regression coefficients, it was found that there is a significant positive effect of the firm size on the effectiveness of the internal control structure by (0.031), at a probability value (0.000).**

Next, the results of model (2) above shows that the calculated value of the (F) Statistic (6.393) increased from its tabular value (3.84), which indicates the significance of the model to test that relationship. The explanatory power of the Adjusted R² model was (0.009), meaning that the independent variable explains (0.009) of the changes in the dependent variable. **And by analyzing the regression coefficients, it was found that there is a significant positive effect of the firm age on the effectiveness of the internal control structure by (0.031), at a probability value (0.012).**

Also, the results of model (3) above shows that the calculated value of the (F) Statistic (41.355) increased from its tabular value (3.84), which indicates the significance of the model to test that relationship. The explanatory power of the Adjusted R² model was (0.008), meaning that the independent variable explains (0.008) of the changes in the dependent variable. **And by analyzing the**

regression coefficients, it was found that there is a significant positive effect of the firm size on the effectiveness of the internal control structure by (0.013), at a probability value (0.015).

Finally, the results of model (4) above shows that the calculated value of the (F) Statistic (28.548) increased from its tabular value (3.84), which indicates the significance of the model to test that relationship. The explanatory power of the Adjusted R² model was (0.044), meaning that the independent variable explains (0.044) of the changes in the dependent variable. **And by analyzing the regression coefficients, it was found that there is a significant positive effect of the firm size on the effectiveness of the internal control structure by (0.045), at a probability value (0.000).**

8. Discussion and Conclusion

The result of the present study showed that there is a positive and significant relationship between firm size and the effectiveness of internal control structure. The result of this study agrees with the result concluded by (Soodanian et al., 2013; Bardhan et al., 2015; Lotfy et al., 2021; Jokipii, 2010), and contradicts the result of (Rostami& Bazarghani, 2019; Rice & Weber, 2011; Doyle et al., 2007).

There is also a positive and significant relationship between firm age and the effectiveness of internal control structure. Such a result is a line with that of (Bardhan et al., 2015; Lotfy et al., 2021), and contradicts with (lai et al, 2020, Soodanian et al., 2013).

Furthermore, there is a positive and significant relationship between firm leverage and the effectiveness of internal control structure. The result of this study is following that of (Rostami& Bazarghani, 2019; Bae et al., 2021; Hoitash& Hoitash, 2018)

In the end, there is also a positive and significant relationship between firm sales growth and the effectiveness of internal control structure. (Soodanian et al., 2013; Bentley et al., 2017) and contradicts with (Bardhan et al., 2015; Bae et al., 2021).

References

- AboZaid, E.M., Elshaabany, M.M., & Diab, A.A. (2020). The impact of audit quality on narrative disclosure: Evidence from Egypt. *Academy of Accounting and Financial Studies Journal*, 24(1):1-14.
- Abo Ala, M. F. (2022). Using internal control structure quality in explaining the relationship between related parties' transactions and firm's value: An Empirical Study. *Journal of Financial and Commercial Studies and Research, Faculty of Commerce* – Damietta University, 3(1) part2. 201-261.
- Abo Ala, M.A. (2019). The effect of audit quality on the relationship between internal control weakness and Stock Price Crash Risk: An Empirical study Companies Listed in the Egyptian Stock Exchange, *Alexandria Journal of Accounting Research*, 5(3): 1-72.
- Ali. A. (2020). Determinants of the auditor's judgment quality on the material weakness in the internal control structure in small and medium firms. A Working paper presented to the fourth scientific conference of the faculty of commerce- Tanta University- The impact of the corona covid-19 on the national economy, proposals and solutions. *The scientific Journal for Commerce and Finance*, 40 (faculty conference 2020- part 1): 89-108.
- Amr. A. (2022). *The effect of financial and non- financial aspects of both audit firm and its client on the auditor's professional judgment accuracy regarding going concern – An applied study on listed companies in EGX*. Unpublished PhD thesis, Department of Accounting, Faculty of Commerce, Alexandria University.
- Bae, G.S., Choi, S.U., Lamoreaux, P.T., & Lee, J.E. (2021). Auditors' fee premiums and low -quality internal controls. *Contemporary Accounting Research*, 38(1): 586-620.

- Bardhan, I., Lin, S., & Wu, S. L. (2015). The Quality of Internal Control over Financial Reporting in Family Firms. **Accounting Horizons**, 29(1): 41-60.
- Bentley, K.A., Newton, N.J., & Thompson, A.M. (2017). Business Strategy, Internal Control over Financial Reporting and Audit Reporting Quality. **Auditing: A Journal of Practice & Theory**, 36(4) : 49-69.
- Bimo, I.D., Siregar, S.V., Hermawan, A.A., & Wardhani, R. (2019). Internal Control over Financial Reporting, Organizational Complexity, and Financial Reporting Quality. **International Journal of Economics and Management**, 13(2): 331-342.
- 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.
- Chen, H., Yang, D., Zhang, X., & Zhou, N. (2020). The Moderating Role of Internal Control in Tax Avoidance: Evidence From a COSO-Based Internal Control Index in China. **The Journal of the American Taxation Association**, 42 (1): 23-55.
- Committee of Sponsoring Organization of the Treadway Commission (COSO). (2013). Internal Control – Integrated Framework. Available at: <https://WWW.COSO.org> .
- Dashtbayaz, M.L., Salehi, M., & Safdel, T. (2019). The effect of internal controls on financial reporting quality in Iranian family firms. **Journal of Family Business Management**, 9(3): 254-270.
- Doyle, J., Ge, W., & McVay, S. (2007). Determinants of Weaknesses in Internal Control over Financial Reporting. **Journal of Accounting and Economics**, 44(1-2): 193-223.

- El Araby. M. (2022). *The effect of firms ' operating characteristics on the accuracy of auditor opinion in the accountability state authority and Private accounting firms– An empirical study on the firms listed on Egyptian Stock Exchange*. Unpublished Master`s Thesis, Accounting Department, Faculty of Commerce– Alexandria University.
- Gift, E.O. (2018). Internal control and financial performance of hospitality organization in Rivers State. *European Journal of Accounting, Auditing and Finance Research*, 6(3): 32–52.
- Hoitash, R., & Hoitash, U. (2018). Measuring Accounting Reporting Complexity with XBRL. *The Accounting Review*, 93(1): 259– 287.
- Jokipii, A. (2010). Determinants and consequences of internal control in firms: a contingency theory based analysis. *Journal of Management& Governance*, 14(2): 115–144.
- Lai, S.M., Liu, C.L., & Chen, S.S. (2020). Internal Control Quality and Investment Efficiency. *Accounting Horizons*, 34(2): 125–145.
- Lotfy, S., Shehata, S., & Ramadan, M. (2021). The Effect of Internal Control Structure Quality on Firm's Financial Performance – An Applied Study on Companies Listed in The Egyptian Stock Exchange. *Alexandria Journal of Accounting Research*, 5(1): 1140 – 1182.
- Melegy. M. (2018). Impact of the ownership structure and the characteristics of the board of directors on the accounting conservatism in financial reporting: Evidence from the Egyptian Environment. *The scientific Journal for Commerce and Finance*, 34(1): 245–304.
- Onumah, J. M., Kuipo, R., & Obeng, V. A. (2012). Effectiveness of internal control system of listed firms in Ghana. *Accounting in Africa*. 12(1): 31–49.
- Phornlaphatrachakkorn, K. (2019). Internal control quality, accounting information usefulness, regulation compliance, and decision– making success: evidence from canned and processed foods businesses in Thailand. *International Journal of Business*, 24(2): 198– 215.

Public Company Accounting Oversight Board (PCAOB). 2007. ***An audit of internal control over financial reporting that is integrated with an audit of financial statements and related independence rule and conforming amendments.*** Auditing standard No.5. Available at: <https://pcaobus.org> .

Rice, S. C., & Weber, D. P. (2011). How effective is Internal Control Reporting under SOX 404? Determinants of the (Non-) Disclosure of Existing Material Weaknesses. ***Journal of Accounting Research***, 50(3). Available at:

https://www.researchgate.net/publication/228299342_How_Effective_is_Internal_Control_Reporting_Under_SOX_404_Determinants_of_the_Non-Disclosure_of_Existing_Material_Weaknesses.

Rostami, V., Bazarghani, Z., & Rostami, A. (2019). New evidence on the determinants of internal control weaknesses. ***Iranian Journal of Accounting, Auditing & Finance***, 3(2): 65-81.

Saeed. S. (2014). ***The impact of the effectiveness of the internal control structure at the level of conditional accounting conservatism in the financial statements with an applied study on Egyptian companies.*** Unpublished Master's Thesis, Accounting Department, Faculty of Commerce- Alexandria University.

Sharaf. E. (2019). The Impact of Operational Characteristics of the Companies on The Perceived Quality of the External Audit: An Empirical Study on a Sample of Non-Financial Companies Listed in the Egyptian Stock Exchange In the Period From 2016 to 2017. ***Alexandria Journal of Accounting Research***, 3(1): 67- 155.

Smith, A. L., Zhang, Y. J., & Kipp, P. (2018). Cloud-Computing Risk Disclosure and ICFR Material Weakness: The Moderating Role of Accounting Reporting Complexity. Available at:

<https://ssrn.com/abstract=3326737> .

- Soodanian, S., Jamshidinavid, B., & Kheirollahi, F. (2013). The Relationship between Firm Characteristics and Internal Control Weaknesses in the Financial Reporting Environment of Companies Listed on the Tehran Stock Exchange. *Journal of Applied Environmental and Biological Sciences*, 3(11): 68-74.
- Talkhan. E. (2017). *The Impact of the International Financial Reporting Standards Adoption on the Relation between Accounting Information and Firm Value Measurement with Application on the Egyptian Listed Companies*. Unpublished PhD thesis, Department of Accounting, Faculty of Commerce, Alexandria University.
- Ying, Y. (2016). Internal control Information Disclosure Quality, Agency Cost and Earnings Management – Based on the Empirical Data from 2011 to 2013, *Modern Economy*, 7(1): pp. 64.
- Ying, Z., & Niu, D. (2009). Characteristics of firm with effective internal control: evidence from Chinese companies. *International Conference on Interaction Sciences: Information Technology, Culture and Human*, 2(1): 1263- 1268.
- Zatoot. M. (2019). The Effect of the operational characteristics of companies on the relationship between audit quality and quality of financial reports: An Applied Study on Listed Companies in the Egyptian Stock Exchange. *Alexandria Journal of Accounting Research*, 3(1): 193-266.