



Investigating the relationship between auditor's specialization with information quality and investment efficiency

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ARTICLE INFO

Article history:

Received 09 Jan 2020

Received in revised form 06 June 2020

Accepted 24 Aug 2020

Keywords:

auditor's specialization,

information quality,

investment efficiency

ABSTRACT

This study is conducted to investigate the relationship between auditor's specialization with information quality and investment efficiency. The purpose of this study is to determine the relationship between auditor's specialization in industry with information quality and investment efficiency. The temporal domain of this research is from the beginning of 2009 to the end of 2016. Since the results of this research can be used in developing laws and regulations of stock exchange, it is an applied research. Also, since this research seeks to find the relationship between several variables, it is a correlation type and its methodology is a comparative type. The statistical population in this research is 404 companies listed in Ajman Stock Exchange. The sampling method is systematic elimination that 84 companies were selected as sample. In order to calculate variables, test hypotheses, and perform other statistical tests, Limer, Hausman, Breusch-Pagan/Cook-Weisberg tests and Eviews software are used. The results indicate that there is a significant relationship between the auditor's specialization and information quality of companies listed in Ajman Stock Exchange and there is a significant relationship between auditor's specialization and investment efficiency of companies listed in Ajman Stock Exchange.

1. Introduction

Increasing growth of companies and increasing demand of these companies from audit institutions to provide non-audit services have faced professional associations with problems whether non-audit services that audit firms provide to their employers undermine their independence or not. Because multiple services provided by audit institutions to their employers create a financial and business dependency between audit firms and their clients. Audit of financial statements reduces the negative effects of management separation by reducing information asymmetry between users and providers of financial statements. Therefore, audit is a means for reducing information risk for users from financial statements (Fernando et al., 2008).

One of the indicators of evaluating audit quality is the auditor's specialization in the industry. (DeFound et al., 2007), claim that one of the factors affecting the level of audit quality is specialization in industry. They state that industry specialization provide higher quality auditing against non-specialists. Regarding specialization in industry, there are two approaches of market share and portfolio of audit firm. The market share approach defines the industry specialist as an audit firms that distinguishes itself from other competitors in terms of market share in any particular industry (Etemadi et al., 2010). The portfolio share approach examines the relative distribution of audit services in different industries for each audit firm. This approach is more relevant to the audit firm's strategies. Industries of employer of audit firm with the largest portfolio share represent industries that audit firms have established a significant base knowledge in those industries, and the large share of portfolios indicates a significant investment has been performed by audit firms in the development of audit technologies related to industry (Etemadi et al., 2010).

Having accurate information about transaction is one of the basic assumptions of any economic theory in the classical economy. Financial information can be extracted from a variety of sources, but the main part is the financial statements (or financial report) of the economic units that must have a good quality. From the view of formulators of accounting standards, financial statements (or in other words, accounting information) will have a good quality when prepared in accordance with valid standards, I.e, accounting standards. Therefore, by applying changes and reforms in national standards are expected to improve the quality of financial reports. According to Thornton (2002), the quality of accounting and financial reporting information is the common product of at least four main factors: high quality accounting standards, creativity and management attitudes, audit quality, and audit committee's experience. On the other hand, achieving higher quality of accounting information can be measured by the impact of information in decisions of securities valuation, financial forecasts and credit decisions, and the like. Generally, investment efficiency means accepting projects with a positive net present value

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DOI: <https://doi.org/10.24200/jmas.vol8iss03pp68-79>

and the purpose of inefficient investment is to choose projects with a negative net present value (overinvestment) or not choose investment opportunities (investment less than the limit). There are at least two theoretical criteria for determining investment efficiency: The first criterion states that there is a need to collect resources in order to finance investment opportunities. In an efficient market, all projects should be financed with a positive net present value.

However, many researches in the financial field has shown that financial constraints limit the ability of managers to finance (Hubbard 1998), one of the cases that can be deduced is that companies facing financing constraints refuse to accept and carry out positive net present value projects which leads to underinvestment. The second criterion states that if a company decides to finance, there is no guarantee that a proper investment is performed with it. For example, managers may invest inefficiently by choosing inappropriate projects for their own benefits or even misusing existing resources. Most papers in the field predict that selecting poor projects will lead to overinvestment (Stein 2003). Conceptually, investment efficiency is achieved when the company invests only in all projects with a positive net present value. Of course, this scenario is effective if the market is complete and there are no defect market issues including incorrect selection and agency costs (Verdi 2006) and (Biedel et al. 2009). In addition, the efficiency of investment or investment optimally requires that, on the one hand, to be prevented the consumption of resources in activities that the investment is performed more than the desirable limit, and on the other hand, resources to be directed towards activities that need more investment (Modares & Hesarzadeh, 2008). The main question is whether there is a relationship between the auditor's specialization with information quality and investment efficiency.

2. Theoretical foundations and research background

2.1. Auditor's specialization in the industry

Previous studies show that auditors specialized in industry provides a higher level of confidence for users than other auditors. Specialized auditors who work in the specialized industry are able to detect errors (Lee et al., 2010). The auditor's specialization in the industry includes creating constructive ideas to help employers (creating value added) as well as providing new views or solutions to some of the issues that employers face in their related industries. (Kand, 2008) Auditors specialized in industry provide significant resources for developing specific knowledge and specialization of industry that enable them to provide high quality audit services (Fernand 2007). Following the theory that high quality of audit leads to reduce information risk, Lee et al. (2010) stated that companies that use auditors specialized in industry reduce their cost of financing through debt.

2.2. Quality of financial information

The best definition for the qualitative characteristics of financial information is the definition of Vickery (1985). He states that "qualitative characteristics are characteristics of information that causes usefulness." For information to be considered high quality, it must have some qualitative characteristics of users. These features cause the information presented in the financial statements to be useful for users in evaluating the financial position, financial performance and financial flexibility of the entity.

Quality of financial reporting is the accuracy of reported information to better describe the operations of a company. In practice, information is related to the company's cash flow including investors' favorite information. This definition of quality of financial reporting is consistent with the definition of developing accounting standards that states that one of the goals of financial reporting is to inform the creditors and potential investors to help rational decision and evaluating the expected cash flow of the company (Bidel & Hayleri, 2009). Quality of financial reporting is defined based on two approaches of user needs and investor support. The first approach is based on user needs and quality is determined according to the usefulness of reports for users. In this approach, there are several models, including the theoretical concepts of reporting, the Jenkins Committee, and the profit continuity model. In the second approach, it is emphasized on supporting investment and quality is mainly defined in terms of "full and fair disclosure" for shareholders. This approach has been more considered since Mr. Levitt, the former chairman of the US Securities and Exchange Commission, discussed the issue of earnings management and announced plans to prevent it. Blue Ribbon committee model, the revised Statement on Auditing Standards (SAS) No. 61, Kirk committee model, and the US Securities and Exchange Commission model to assess the quality of international standards is in this group. These models emphasize the transparency of disclosure cases, the degree of aggression or conservatism of the accounting methods and estimates used, the uniformity and completeness of the information, the comparability and complete disclosure as the main quality criteria. The two approaches are fundamentally different. The approach of user needs focuses more on providing financial information for decisions of valuation and capital allocation, but the investor support approach seeks to reassure users that the information is sufficient (sufficient information) and transparent (completeness of information). The high quality of financial reporting reduces asymmetric information between the company and financial providers out of company. On the other hand, the quality of financial reporting will limit management's incentives to engage in activities that have little or no value (Feng & Christian 2010).

2.3. Investment efficiency

Investment is defined in different ways. Investment is defined as postponing current consumption for more consumption in the future. Investment is the purchase of items of asset or securities that its expected return and risk have appropriateness. Investment is the purchase of items of asset or securities that over time will generate income and increase value for the investor. But more precisely, investment is the expenditure flow that is spent on increasing or fixing the volume of real capital. In fact, the more precise definition, which includes the above description, is the flow of expenditure allocated to plans of production of goods that there is no intention for their immediate consumption.

In order to calculate investment efficiency, Rodrigo predicted a model that predicts the firm's capital levels, and then used the residual error of this model as an agent for inefficient investment.

$$\text{Invest}_{i,t} = \beta_0 + \beta_1 \text{Growth}_{i,t-1} + \varepsilon_{i,t} \quad (1)$$

The total investment in this model is: Total capital expenditures, R&D expenses and revenues minus sales of machineries, equipment and fixed assets multiplied by 100 divided by the average of total assets. This scale uses an accounting-based framework to predict total investment as the difference between total investment and asset sales (Richardson, 2006). He predicted investment as a performance of growth opportunities measured by Q-Tobin and sales growth. The use of Q-Tobin is based on the argument when markets are efficient, growth opportunities must explain company's investment (Tobin, 1969; Hayashi, 1982; Hubbard, 1998). However, since the quality of financial reporting can be related with a wrong measurement in Q-Tobin, (ie, companies with more conservative accounting, possibly consider less value for book value of assets), he predicts a model that uses as an agent for investment opportunities using the sales growth. This approach is as a replacement for concerns that the relationship between quality of financial reporting and investment efficiency may be improperly affected by wrong measurement in Q-Tobin.

2.4. Research Background

Khodamipour and Hosseininia (2016) examined the relationship between auditor's specialization and delay in providing audit report with accounting conservatism. Audited financial statements have better information content and lead to better decision-making of users and greater economic benefits. This paper examines the relationship between auditor's specialization and delay in providing auditing report with accounting conservatism. The research sample included 63 companies listed in Ajman Stock Exchange from 2008 to 2014 and the method used to test the hypotheses is regression of panel data. In this study, the accrual-based test model (Ball and Shiva Kumar 2005) is used to measure conservatism and the formula (Palmerruz 1988) is used for the auditor's specialization. The results of statistical test of research hypotheses show that there is no significant relationship between auditor's specialization and accounting conservatism. The results also indicate that there is a significant negative relationship between delay in audit report and accounting conservatism. This means that the more the gap between the date of the end of financial year and the date of the auditor's report is greater, the quality of the numbers presented in the financial statements is less.

Kashanipour (2015) examined the effect of managers' ability on the relationship between quality of financial reporting and investment efficiency in pharmaceutical companies listed on the Ajman Stock Exchange. The quality of financial reporting is measured by accruals and these accruals can be manipulated by managers. Therefore, managers can influence the quality of financial reports by manipulating accruals. In this study, a new non-financial element is considered as managers' ability and its goal is to investigate the effect of the relationship between quality of financial reporting and investment efficiency in pharmaceutical companies listed in Ajman Stock Exchange. The purpose of this study is descriptive and analytical objectively and in terms of the result is an applied research. The sample consisted of 24 companies active in the pharmaceutical industry from 2006 to 2014. Regular least squares method and multivariate regression were used to fit the research model and the data is panel. Also, DEA Frontier version 1/4 and Eviews version 9 software were used to perform the calculations.

The findings of the research hypothesis test showed that the ability of managers did not affect the relationship between quality of financial reporting and investment efficiency. The result of this study indicates that managers' ability doesn't affect the relationship between the quality of financial reporting and investment efficiency. This result is justified in the UAEian market because of the inefficiency of the capital market and the instability of economic conditions, because in the inefficiency of the capital market, the asymmetric discussion of information occurs, but this asymmetry of information does not cause the cost of financing of companies to be raised because their real information is hidden. As a result, managers of pharmaceutical companies don't face much difficulty for discussing financing and don't consider any reason to increase the transparency and quality of their reports. So in this relation, the ability of managers is ineffective.

Badavar Nahandi and Naghizadeh (2013) examined the relationship between audit quality and investment efficiency in companies listed in Ajman Stock Exchange. This study investigates the relationship between audit quality and investment efficiency in companies listed in Ajman Stock Exchange with the aim of studying economic consequences of status of audit services in UAE. Four indicators of auditor's specialization in industry, auditor reputation, auditor tenure, and auditor independence were used to determine audit quality, and the Richardson (2006) model was used to calculate investment efficiency. The purpose of this research is applied and its method is correlational and comparative. 100 sample companies were selected for the period 2006-2011 by using elimination sampling method and applying conditions of sample selection. Panel data method was used to test the research hypotheses. The results show that there is a significant positive relationship between audit quality and investment efficiency. Thus, improving the quality of audit by reducing information asymmetry between management and investors and resolving agency problems lead to increase investment efficiency.

Fiur et al. (2017) examined the effect of adjustments on information quality and performance compared to seasonal stock offering: international evidence. We examine the effect of market abuse directive (MADs) and prospectus directive (PDs) in 18 EU countries about secondary equity offerings (SEOs). Using a difference-in-differences method, we observed a significant reduction in revenue management, improving stock return performance after search engine optimization (SEO) and a reduction in adverse reactions to SEO announcements after MAD approval. We find similar, even weaker, results after PD. The impact exists in countries with high institutional quality. Our results show that approving these guidelines leads to improve information quality that reduces the asymmetry of search engine information.

Elvid and Jarboy (2017) examined the relationship between auditor specialization, quality of financial information and investment efficiency. This study examines how the auditor's specialization reduces the impacts, the quality of accounting information about investment efficiency, that is, whether the effect of the quality of accounting information on investment efficiency is increased or decreased with the presence of a specialist auditor. The results show that the quality of accounting information helps to reduce the problem of over-investment. Similarly, the auditor's specialization has been discovered to significantly improve investment efficiency, while reducing the problem of investment is low. In addition, we found that the quality of accounting information and the auditors specialization are two mechanisms, some of them are rather than increasing investment efficiency. The quality of accounting information is positively related with investment productivity for companies that its auditor is industry specialty. In addition, to investigate the stability of the main results, this paper investigates the comparative relationships between investment efficiency, auditor specialization, and quality of accounting information from dynamic correlation models.

Lennard and Yu (2012) examined the relationship between audit quality and investment decisions among Chinese firms audited by the four large audit firms. Their results show that the ratio of overinvestment for firms with a longer tenure is low, and for firms with shorter tenure, the overinvestment is about 70%. As a result, the investment efficiency in companies with a longer tenure is significantly higher.

Das and Pandit (2010) examined the relationship between audit quality and investment efficiency with an emphasis on the firm's life cycle. They studied the combined impact of cash risk and cash retention, the results of their research indicate that the balanced impact of audit quality and life cycle on investment has a greater importance for high risk and rich cash companies. This will lead to overinvestment. Totally, the results of their research are consistent with this concept that audit quality reduces the information conflict that prevents investment.

2.5. Research hypotheses

Hypothesis 1: There is a significant relationship between auditor specialization and information quality.

Hypothesis 2: There is a significant relationship between auditor specialization and investment efficiency.

2.6. Research method

This study attempts to investigate the relationship between auditor's specialization with information quality and investment efficiency of companies listed in Ajman Stock Exchange. Therefore, since the results of this study can be used in the developing laws and regulations of stock exchange, it is an applied research. Also, since this research seeks to find the relationship between several variables, it is a correlation type and its methodology is a comparative type. In this research, the library method is used to collect the required information.

2.7. Statistical population and sample size of the study

The statistical sample was companies listed in Ajman Stock Exchange that have the following criteria:

1. Their financial year ends in March.
2. Items of their financial statements as reported by companies are available for the period 2009-2010.
3. The stocks of the mentioned companies have been traded continuously in Ajman Stock Exchange from 2009 to 2016 and its symbol has not been stopped for more than 4 months.
4. Not include investment companies in the statistical population.
5. The information prior to the period considered is needed to evaluate and measure some of the variables, so companies have been considered that have been accepted in the stock exchange since 2005.

Table 1. Number of companies selected

Number of companies	Description
404	Total companies
(55)	Companies that are listed in the research temporal domain
(87)	Companies that have been investors
(95)	Companies that have had more than 4 months of trading interruption in the research temporal domain
(82)	Companies that their financial year does not end in March
84	Remaining companies

2.8. The method of information analysis

Eviews software is used to calculate variables, test research hypotheses and perform other statistical tests. Descriptive and inferential statistics are used for data analysis. In the descriptive section, the central tendency statistics, dispersion and distribution statistics such as mean, median, standard deviation and maximum and minimum values are used, and in the inferential section, Limer, Hausman, Breusch-Pagan/Cook-Weisberg tests are used to test the research hypotheses.

2.9. Research model

The following equation (2) is derived from the research model (Elwid and Jarboy 2017) that its components are defined and examined.

$$\text{InvEf}_{i,t}^1 = \beta_0 + \beta_1 \text{AIQ}_{i,t}^2 + \beta_2 \text{Spau}_{i,t}^3 + \beta_3 \text{Ln Sales}_{i,t} + \beta_4 \text{Ln Age}_{i,t} + \beta_5 \text{Tang}_{i,t}^4 + \varepsilon_{i,t} \quad (2)$$

The first research model for the first hypothesis

$$\text{AIQ}_{i,t} = \beta_0 + \beta_1 \text{Spau}_{i,t} + \beta_2 \text{LnSales}_{i,t} + \beta_3 \text{LnAge}_{i,t} + \beta_4 \text{Tang}_{i,t} + \varepsilon_{i,t} \quad (3)$$

The second research model for the second hypothesis

$$\text{InvEf}_{i,t} = \beta_0 + \beta_1 \text{Spau}_{i,t} + \beta_2 \text{LnSales}_{i,t} + \beta_3 \text{LnAge}_{i,t} + \beta_4 \text{Tang}_{i,t} + \varepsilon_{i,t} \quad (4)$$

3. Research variables

¹ Investment efficiency

² Accounting information quality

³ Auditor specialization

⁴ Tangible property

3.1. Independent variable

Auditor's specialization (Spau): Researches of (Nazemi Ardakani et al., 2009), Etemadi et al. (2010), and (May Ho and Wilkins 2003) are used from market share as an indicator for auditor specialization in the industry because it shows the industry's priority over other auditors. The more the market share of the auditor is greater, the specialization of industry and experience of the auditor compared to other competitors will be more. Having a dominant market share indicates that the auditor has successfully distinguished himself from other competitors in terms of audit quality (May Ho & Wilkins, 2003). The auditors' market share is calculated as follows:

$$(5) \quad \frac{\text{Total assets of all employers of each firm of special audit in special industry}}{\text{Total assets of all employers in industry}} = \text{Auditor's specialization in industry}$$

In this study, if the auditor is a specialist in the industry, the number one is allocated to this variable; otherwise zero is allocated to this variable.

3.2. Dependent variables

Quality of Financial Information (AIQ): In this study, statement eight of the US Financial Accounting Standards Board has been used to quantify this variable. According to the statement, these properties are divided into two categories of basic qualitative and improver qualitative properties. In this study, the basic qualitative properties, because of their importance, have been used as dependent variables. These properties include being relevant and honest providing.

Predictive Value: Financial information has predictive value when used by users as inputs in the predictive process of outputs. For this purpose, the absolute magnitude of errors of the following 4 models is used as an inverse measure to measure the predictive power of current profits (Barua 2006).

1- Regression model of future earnings on current earnings:

$$IBEt+1 = \lambda_0 + \lambda_1 IBEt + et \quad (6)$$

2- Regression model of future earnings on components of current earnings:

$$IBEt+1 = \delta_0 + \delta_1 OCFt + \delta_2 TAt + \delta_3 Sit + et \quad (7)$$

3. Regression model of future cash flows on current earnings:

$$OCFt+1 = \alpha_0 + \alpha_1 IBEt + \omega t \quad (8)$$

4. Regression model of future cash flows on the components of current earnings:

$$OCFt+1 = \pi_0 + \pi_1 OCFt + \pi_2 TAt + \pi_3 Sit + \omega t \quad (9)$$

In these models:

IBE: Net earnings after tax fraction, et: Model error, OCFt: Operating cash flows of company i for year t

TAt: Total accruals of the company for year t as well as Sit: Unexpected and non-continuous items for year 6t.

All of these variables are in terms of average standard firm's assets to the size of the companies not to affect the results of the research.

Verification value: Financial information has verification value when it generates feedback (approval or change) for past evaluations. To measure the value of financial information feedback, the difference between the magnitude of errors in estimating the earnings of the following year, before and after considering the profit of the current year is used.

$$FVt = [|PE B| - |PE A|] \quad (10)$$

In these patterns:

FV t: Earnings return value for year t, PE B|: false forecasting of earnings of next years (once using pattern 6 and once using pattern 8, without considering current year earnings, and |PE A|: false forecasting earnings of subsequent years (once using pattern 6 and once using pattern 8, considering earnings of current year).

Impartiality: To evaluate the impartiality characteristic according to Barua (2006) research, two inverse criteria of impartiality are used based on the earnings per share reported of the prior and current period. These variables are used as indicators in companies that their profit figure is positive and with positive changes. In other words, companies are considering that their earnings are not negative and not to have reduction in earnings. For this purpose, the annual earnings of each share of the companies are extracted from the stock and in some cases manually (dividend on capital in the year considered) and divided on the price of end year of stocks for standardization. Then, by the two standardized EPS distribution functions and changes in standardized EPS, the data were extracted and tested using binomial distribution test. Two variables Neu1 and Neu2 were used to measure the impartiality variable (Barua 2006):

Neu1: If the company year observations are placed in the first interval between right zero of the standardized EPS distribution function, its value is equal to one and otherwise zero.

Neu2: If the company year observations are placed in the first interval between right zero of the standardized EPS distribution function, its value is equal to one, otherwise zero.

Completeness: according to the information status of companies listed in stock exchange and the lack of access to information and documentation in the companies, the only reliable and valid source is the report of the independent auditor and the legal inspector of the companies that it can be understood the significant non-disclosures in corporate financial reports by investigating its paragraphs. Therefore, in this study, the number of non-disclosure cases have

been used that its data from the independent auditor's report and the company's legal inspector as the inverse criterion for measuring the degree of completeness of corporate information.

Error-free: Error-free mean that there is no error or omission in describing the phenomenon and the process used to generate the reported information is selected and used error-free. In this study, the variables of auditor's comment type (accepted, conditional, rejected), number of clauses, as well as the number of clauses of limitation of the audit report, the number of cases for non-considering laws and accounting standards and stock exchange regulations have been used as criteria for measuring the amount of honest presentation of financial information.

Investment Efficiency (InvEf): Investment efficiency is calculated by the following model:

$$I_x = \beta_0 + \beta_1 * (CFO/X_{t-1}) + GO + \varepsilon_1 \quad (11)$$

$$GO = MBT, SR_{t-1} \quad (12)$$

that:

I: Corporate investments, CFO: cash from operations, X: the criteria of measuring corporate investment, GO: corporate growth opportunities, MTB: Tobin's Q index and $SR_{(t-1)}$: Sales revenue growth in the end of previous fiscal year.

The theoretical foundations of the above model are that corporate growth opportunities (GO) should justify new investment (I). In other words, it is expected to explain growth opportunities of investment in the regression between these two variables. Therefore, if the growth opportunities fail to explain the investments, the obtained error rates will indicate investment inefficiency. In model (1), ε_1 represents the amount of investment (I) that is not explained by growth opportunities (GO). These error values may be positive or negative. Positive values of error are called overinvestment and negative values are called underinvestment. This study uses two models based on change in non-current assets and change in long-term investments to measure investment efficiency.

$$I_{NCA} = \gamma_0 + \gamma_1 * (CFO/NCA_{t-1}) + \gamma_2 MTB + \gamma_3 SR_{t-1} + \varepsilon_1 \quad (13)$$

that:

$I_{(NCA)}$: Investment index based on change in non-current assets and $NCA_{(t-1)}$: Total non-current assets at the end of the previous fiscal year.

After estimating the model (12), by placing the actual values in this model, the error values for each company-year are calculated, and by multiplying the negative one by the negative error values, the investment efficiency criterion is obtained. Also, as mentioned, investment efficiency has been calculated using the model based on the change in long-term investments, which is estimated as follows:

$$I_{LTI} = \gamma_0 (CFO/LI_{t-1}) + \gamma_1 MTB + \gamma_2 SR_{t-1} + \gamma_3 (OP/TA) + \varepsilon_1 \quad (14)$$

that:

$I_{(LTI)}$: Investment index based on change in long-term investment, $LI_{(t-1)}$: Long-term investment at the end of the pre-fiscal year and OP/TA : Operating profit ratio on total assets.

As in the previous model, by placing the actual values in the estimated model, the error values for each company-year are calculated, which is obtained by multiplying negative one in the negative error values, the investment efficiency criterion is obtained.

Control variables

Sales, age of the company and tangible assets: Tangible assets include fixed assets such as machinery, buildings and land and asset flows such as product inventory.

4. Data analysis

4.1. Descriptive statistics of research variables

Table 2 shows the descriptive statistics of the research variables including 72 companies in 8 financial years and 576 observations. The table shows the mean, median, maximum, minimum, standard deviation, skewness and kurtosis indices.

Table 2. Descriptive statistics of research variables

Variable		mean	median	maximum	minimum	SD	skewness	kurtosis
Quality of financial information	AIQ	0.116	0.130	0.660	0.680-	0.217	0.250-	3.074
Investment efficiency	INVEF	0.633	0.630	2.220	0.180	0.209	1.093	9.170
Auditor specialization	SPAU	0.529	1.000	1.000	0.000	0.499	0.118-	1.013
Sales	LNSALES	6.013	5.990	8.410	4.660	0.589	0.811	4.790
Age of company	LNAGE	1.525	1.579	1.812	0.602	0.202	1.234-	5.009
Tangible assets	TANG	6.128	6.066	8.316	4.756	0.599	0.901	4.657
Observational		576	576	576	576	576	576	576

Table 2 contains descriptive statistics of variables related to the main models to test the hypotheses. In this table, the lowest average is related to the net earnings changes and the highest is related to the stock return variable. Also, among the research variables, the highest standard deviation is related to the variable of return on equity and the least standard deviation is related to the variable of net earnings changes.

4.2. Stationary test of research variables

In order to ensure the results of the research and the correct relationships between the regression and the significance of the variables, stationary test was performed and unit root of the research variables in the models were calculated. The test was performed using EViews software and Levine, Lin and Chow test methods, Im test, Pesaran and Shin test, Generalized Fisher- Augmented-*Dickey-Fuller* unit root test and Fisher-Phillips unit root test. In the unit root test, the null hypothesis indicates that there is a unit root, and if the probability of the table is less than 0.05, the null hypothesis is rejected with probability of 0.95. The results of the unit root test for the model variables are described in Table 4-3.

Table 3. Results of the stationary test of research variables

Variables	Levin, Lin & Chu		Im, Pesaran and Shin W-stat		ADF - Fisher Chi-square		PP - Fisher Chi-square	
	Statistic	Prob	Statistic	Prob	Statistic	Prob	Statistic	Prob
AIQ	17.166-	0.000	2.604-	0.004	203.545	0.000	359.429	0.000
INVEF	16.262-	0.000	1.807-	0.035	188.599	0.007	222.345	0.000
SPAU	4.847-	0.000	1.332-	0.011	37.165	0.042	96.497	0.000
LNSALES	14.333-	0.000	2.311-	0.010	198.243	0.001	247.013	0.000
LNAGE	54.511-	0.000	400.564-	0.000	1336.18	0.000	1334.85	0.000
TANG	13.580-	0.000	2.297-	0.010	188.686	0.007	179.862	0.022

According to the results of Table 3, it was found that the probability value of the tests for all the research variables is less than 0.05, so the above variables are at the stationary level.

4.3. Non-linearity test of research variables

Before estimating the model assumptions, it is necessary to test the non-linearity between the research variables. Pearson correlation analysis was used to investigate the presence or absence of linearity between research variables. Table 4 shows the Pearson correlation coefficients between the variables.

Table 4. Non-linearity test of variables

	AIQ	INVEF	SPAU	LNSALES	LNAGE	TANG
AIQ	1.000					
INVEF	0.616-	1.000				
SPAU	0.496-	0.753	1.000			
LNSALES	0.134-	0.109	0.096	1.000		
LNAGE	0.031	0.011-	0.029	0.010	1.000	
TANG	0.265-	0.152	0.137	0.797	0.048	1.000

According to the results of Table 4, it is clear that the too high or too low values of the correlation coefficient (close to 1 and +1) are not existed that affects the results of the regression analysis. So there is no linearity among independent variables.

4.4. Analysis of regression model of first hypothesis

The first hypothesis states that there is a significant relationship between auditor's specialization and information quality. The following regression model was used to analyze this hypothesis.

$$AIQ_{i,t} = \beta_0 + \beta_1 Spau_{i,t} + \beta_2 LnSales_{i,t} + \beta_3 LnAge_{i,t} + \beta_4 Tang_{i,t} + \epsilon_{i,t}$$

4.5. Normality test of model errors

Investigating and performing the test is based on Jarque-Bera statistic. If the probability level of the Jarque-Bera test is lower than 0.05, the null hypothesis means that the normality is rejected. The results of this test are presented in Table 5.

Table 5. Testing the normality of model errors

Result	Significant level	Statistic	Test	
Normality of errors	0.099	1.133	Jarque-Bera	Hypothesis 1

As it can be seen in Table 5, the significant level of model disruption is greater than 0.05 which indicating normality of the errors.

4.6. Homogeneity test of error variance

One of the assumptions of the regression model is the constant error variance. So that, despite the heterogeneity of variance in the model, increase or decrease in the independent variable, the variance of the dependent variable changes which is equal to the residual variance. In this study, Bartlett's method is used to investigate the homogeneity of the variances in the panel data to ensure the obtained results. In Bartlett's variance homogeneity method, the null hypothesis is based on homogeneity of variances and its opposite assumption is considered homogeneity of variances. Table 6 shows the results from homogeneity test of the first hypothesis model.

{H0: homogeneity of variances H1: heterogeneity of variances

Table 6. Homogeneity test of error variance of model

Test result	Probability of test	Test	
heterogeneity of error variances	0.000	Bartlett	Hypothesis 1

According to the results of Table 6, which indicating a probability value less than 0.05, the variance of the errors is heterogeneous and the null hypothesis based on the constant variance of main model is rejected.

4.7. F-Limer test

F-Limer test is used to choose between regression methods of pooled data and regression with fixed effects. If the significance level of this test is less than 5%, the heterogeneity in intercepts is accepted, or in other words, the panel model is accepted and the pooled model is rejected at 95% confidence level.

Table 7. F Limer test

Prob	Statistic	Statistics	Hypothesis
0.635	0.743	Period F	Hypothesis1

Based on Table 7, and considering that the probability obtained from the F-Limer test is 0.635 and greater than 0.05, the pooled data model is used to estimate this model.

4.8. Model estimation

The results of analyzing the first hypothesis using EGLS method are presented in Table 8.

Table 8. Estimation results of the first hypothesis model

$AIQ_{i,t} = \beta_0 + \beta_1 Spau_{i,t} + \beta_2 LnSales_{i,t} + \beta_3 LnAge_{i,t} + \beta_4 Tang_{i,t} + \epsilon_{i,t}$				
Variable	Coefficient	Std. Error	t-Statistic	Prob
SPAU	0.187	0.011	16.080	0.000
LNSALES	0.060	0.016	3.679	0.000
LNAGE	0.052	0.027	2.952	0.041
TANG	0.120-	0.016	7.320-	0.000
C	0.517	0.074	6.930	0.000
Coefficient of determination=0.489		Adjusted coefficient of determination=0.485		
Durbin-Watson statistic=1.648	Test statistic F= 91.217		Test probability F= 0.000	

The results in Table 8 show that the P-value of the F test is equal to 0.000 which is smaller than 0.05 and since the F statistic shows the overall validity of the model, it can be concluded that the model is significant with probability 95% and it has a high reliability. The adjusted coefficient of determination of the first research hypothesis model is 0.485. This figure indicates that about 48% of the dependent variable changes can be explained by the explanatory variables of the model, and since the Turbin-Watson model is equal to 1.648 and this value is between 1/5 to 2/5, it can be said that there is no autocorrelation in model. The results of the model analysis in Table 8 show that the calculated (Prob) significance for the independent variable of auditor specialization (0.000) is less than 0.05 and its estimated coefficient is positive (0.187). As a result, it can be stated that the auditor's specialization has a positive and significant impact on the company's investment quality. Accordingly, the first research hypothesis is accepted at 95% confidence level that there is a significant relationship between auditor's specialization and information quality.

4.9. Analysis of regression model of second hypothesis

The second hypothesis states that there is a significant relationship between auditor's specialization and investment efficiency. The following regression model was used to analyze this hypothesis.

$$\text{InvEf}_{i,t} = \beta_0 + \beta_1 \text{Spau}_{i,t} + \beta_2 \text{LnSales}_{i,t} + \beta_3 \text{LnAge}_{i,t} + \beta_4 \text{Tang}_{i,t} + \epsilon_{i,t}$$

Normality test of model errors

The results of this test are presented in Table 9.

Table 9. Testing the normality of model errors

result	Significant level;	static	test	
Normality of errors	0.085	2.914	Jarque-Bera	Second hypothesis

As it can be seen in Table 9, the significant level of model disruption is greater than 0.05 which indicating normality of the errors.

4.10. Homogeneity test of error variance

In Bartlett's variance homogeneity method, the null hypothesis is based on homogeneity of variances and its opposite assumption is considered homogeneity of variances. Table 10 shows the results from homogeneity test of the second hypothesis model.

Table 10. Homogeneity test of error variance of model

Result	Probability of test	Test	
Heterogeneity of error variance	0.000	Bartlett	Second hypothesis

According to the results of Table 10, which indicating a probability value less than 0.05, the variance of the errors is heterogeneous and the null hypothesis based on the constant variance of main model is rejected.

4.11. F-Limer test

Table 11 shows the results from F-Limer test.

Table 11. F Limer test

Prob	Statistic	Static	hypotheses
0.115	1.663	Period F	Second hypothesis

Based on Table 11, and considering that the probability (F) of the F-Limer test is equal to 0.115 and greater than 0.05, the pooled data model is used to estimate this model.

4.12. Model Estimation

The results of analyzing the second hypothesis model using EGLS method in Eviews software are shown in Table 12.

Table 12. Estimation results of the second hypothesis model

$\text{INVEF}_{i,t} = \beta_0 + \beta_1 \text{Spau}_{i,t} + \beta_2 \text{LnSales}_{i,t} + \beta_3 \text{LnAge}_{i,t} + \beta_4 \text{Tang}_{i,t} + \epsilon_{i,t}$				
Variable	Coefficient	Std. Error	t-Statistic	Prob
SPAU	0.272	0.007	37.792	0.000
LNSALES	0.006	0.009	3.624	0.002
LNAGE	0.041	0.019	2.189	0.029
TANG	0.014	0.008	3.566	0.007
C	0.425	0.046	9.186	0.000

Coefficient of determination=0.615		Adjusted coefficient of determination=0.613	
Durbin-Watson statistic= 1.934	Test statistic F=356.033		Test probability F= 0.000

The results in Table 12 show that the P-value of the F test is 0.000 which is less than 0.05 and since the F statistic shows the overall validity of the model, it can be concluded that the model is significant with probability of 95% and it has a high reliability. The adjusted coefficient of determination of the second research hypothesis model is 0.613. This figure indicates that about 61% of the dependent variable changes can be explained by the explanatory variables of the model, and since the Durbin-Watson model is equal to 1.934, it can be said that there is no autocorrelation in model. The results of the model analysis in Table 12 show that the calculated (Prob) significance for the independent variable of auditor specialization (0.000) is less than 0.05 and its estimated coefficient is positive (0.272). As a result, it can be stated that the auditor's specialization has a positive and significant impact on the company's investment efficiency. Accordingly, the second research hypothesis is accepted at 95% confidence level that there is a significant relationship between auditor's specialization and investment efficiency.

5. Conclusion

The rapid growth and development of economic relations led to the intense competition in trade, industry and investment. So, companies need to properly invest in time to survive and expand their business. Corporate financial reports should provide information to be useful for potential investors, creditors and other users in rational investments, credit and similar decisions. Financial reports should provide information needed to evaluate the financial position and economic foundation of the firm, evaluate performance and profitability, assess how to finance and consume cash, evaluate how to undertake responsibility of management and perform legal tasks, and provide complementary information to better understand financial information and forecast future status. As a result, these reports have a great importance in achieving these goals and increasing their quality can cause corporate investments to be more efficient and preserve and develop their resources. Recent research suggests that increasing financial reporting can have important economic consequences, such as increasing investment efficiency (Hilay & Palpo 2001; Bashman & Smith 2001).

By determining this relationship, it can be shown that companies can make their investments closer to efficiency by increasing the reporting and quality of information provided. As a result, companies' interest in producing and providing high quality financial reports increases. Also, different users or decision makers, including investors, can rely on financial reports as an important source of information in their analysis and decision making, which leads to appropriate investments and optimal allocation of resources.

The auditor industry's specialization is the distinct strategy between audit firms that enables audit firms to differentiate themselves from their competitors in performing their clients' demands and enables audit firms to compete with their competitors in features other than price. Professional auditing standards have emphasized the importance of understanding the customers' business environment. The auditors specialized in industry provide important resources for developing knowledge and specialization of industry that enable them to provide high quality audit services (Fernando 2007).

Research findings about the impact of the auditor industry's specialization on audit outcomes may be important from the investors' perspective. Investors believe that the N audit firm guarantees a higher quality of audit because of their reputation. Evidence from research shows that there is a distinct strategy other than being dependent on the N audit firm, I.e the auditor industry specialization which enables auditors to discover opportunistic profit management and ensure timely identification of loss improves the quality of disclosure and reduces the cost of capital. These positive outcomes ensure investors to the reliability of financial statements. The findings of this research can be useful to auditors in identifying ways to improve audit quality (Habib 2011).

The summary of the research results is obtained according to Table 13:

Table 13. Total results of research hypotheses

Confirmation /rejection	Hypothesis title	Hypothesis number
Confirmed	There is a significant relationship between auditor's specialization and information quality of companies listed in Ajman Stock Exchange.	Hypothesis 1
Confirmed	There is a significant relationship between auditor's specialization and information efficiency quality of companies listed in Ajman Stock Exchange.	Hypothesis 2

Hypothesis 1- Since the t-statistic is a variable of the auditor's specialization (equal to 5.84) and its significance level is less than 0.05, there is a significant relationship between the auditor's specializations and the information quality of the companies listed in Ajman Stock Exchange. Auditors who specialize in the industry considered can perform higher quality audits because of their ability to identify and deal with specific problems in that industry. In addition, the more the audit firm gains more experience in a particular industry, it will be more interested in providing high quality auditing services (Dunn et al., 2000).

Hypothesis 2- Since the t-statistic is the variable of auditor's specialization (equal to 10.71) and its significance level is less than 0.05, there is a significant relationship between auditor's specialization and investment efficiency of companies listed in Ajman Stock Exchange. The auditor's specialization can reduce the costs of incompatible selection, and also facilitate the financing of long-term and high-yield projects and lead to increase investment efficiency.

The present study is consistent with the findings in Table 14:

Table 14. Matching hypotheses with others' researches

Consistent with other research	Hypothesis title	Hypothesis number
Badavar Nahandi and Naghizadeh (2013)	There is a significant relationship between auditor's specialization and information quality.	Hypothesis 1
Das and Pandit (2010), Lennard and Yoo (2012)	There is a significant relationship between auditor's specialization and information efficiency.	Hypothesis 2

5.1. Applied suggestions of research

Based on the first hypothesis of the research, managers of Ajman Stock Exchange companies are suggested to try to pay more attention to the criteria of audit quality (auditor's specialization) in order to provide higher quality financial reports to the market. This issue causes to consider more quality services because as the quality of corporate information improves and investors have more confidence in the company, the company can more easily finance through the stock market to fulfill its financial needs.

According to the results of the second hypothesis of research and the impact of auditor's specialization as one of the variables of audit quality, it is suggested to managers and officials of Ajman Stock Exchange to adopt practical strategies in order to improve investment efficiency, and to have more control over audit quality and to require firms to precision in audit reporting and validation to financial reports for reducing conflicts of interests.

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