Accounting and Auditing with Application

www.aaa.reapress.com

Acc. Aud. Appl. Vol. 1, No. 3 (2024) 115-123.

Paper Type: Original Article

Investigation of the Relationship between Intangible Assets and Risk Management with Audit Fees

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Citation:

Received: 11 March 2024 *Revised: 20 June 2024* *Accepted: 26 July 2024*	Khatareh, H. (2024). Investigation of the relationship between intangible assets and risk management with audit fees. *Accounting and auditing with application, 1*(3), 115-123.

Abstract

This study investigates the relationship between intangible assets and risk management with audit fees in companies on the Tehran Stock Exchange. This research is quasi-experimental in the field of accounting and auditing. The regression estimation using the panel data method is used to estimate the models. The statistical sample of this research includes 143 companies listed on the Tehran Stock Exchange from 2013 to 2021. The hypotheses were analyzed using the Generalized Least Square (GLS) method in the statistical software Eviews. The research results showed that intangible assets do not significantly affect audit fees. Risk management has a negative and significant effect on audit fees. Risk management negatively and significantly affects the relationship between intangible assets and audit fees.

Keywords: Audit fees, Intangible assets, Risk management.

1 | Introduction

Financial statements provide much information a company's creditors and investors need. The auditor's role is also critical because of this reliance on financial statements. The audit of financial statements is essential because audited financial statements can assure investors and creditors that they have been provided with valid and reliable information. Therefore, auditing financial statements can add economic value to a company. Given the importance of audit services and the impossibility of directly observing audit quality, finding an effective way to control audit quality is necessary.

Audit fees are the most important aspect of audit quality control and management. The fee for audit services is an essential condition for ensuring audit quality. A high audit fee does not indicate the cost of a higher-quality audit. Still, in addition to good audit quality, audit institutions have a standard fee for doing their work, and the fee they receive is naturally higher than these fees. If there is competition in the market, audit firms

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10.22105/aaa.v1i3.41

may receive lower fees and lose their clients. If the audit institutions charge much more fees than the expenses incurred in conducting the audit, society's view on the quality of their work will be accompanied by doubts. Therefore, examining the factors that affect audit fees is a problem that needs to be examined from various aspects [1].

Previous research shows that intangible assets on the balance sheet are related to audit fees. Researchers and experts consider intangible assets a critical factor for a successful company, and increasing a product's or company's value is essential. Therefore, the performance of intangible asset management has increased significantly, which has led to the increase of intangible assets and has become a significant concern. Unfortunately, the traditional financial reporting framework does not capture future benefits due to the non-physical nature of intangible assets and the associated uncertainty. Audit services require a fee, usually called an audit fee, which means that all fees paid by a company for audit services are paid and provided to the auditor.

The amount of the audit fee is influenced by the size of the client's company, the complexity of the audit, and the audit risk. The audit of intangible assets presents challenges different from those of auditing tangible assets. Therefore, the audit of the company's financial statements related to intangible assets increases the difficulty level, the auditor's time and risk, and the audit fee. There is also positive evidence regarding audit and administrative costs [2] found that risk management is related to audit fees due to the auditor's assessment of inherent risks and controls by pricing the auditor's production costs [3]. Therefore, the relationship between intangible assets and risk management with audit fees is presented as the main issue of this research.

2 | Literature and Hypotheses

2.1 | Audit Fees

Technological progress has made the world a smaller and more compact place. Undoubtedly, the industrial revolution has had a significant impact on the way we live and work. Today's business and professional world has undergone many changes. Globalization has spread not only to businesses but also to various professions. As a result, the demand for greater precision in the results of professional work and its costs has increased, and it is no longer possible to rely on traditional systems and methods. The auditing profession has not been exempt and unable to keep pace with its rapidly changing environment. Over the past few years, the profession has undergone several changes due to increased competition among audit firms.

The importance of this issue is especially seen in recent years and after the establishment of the Society of Official Accountants of Iran in our country. After the establishment of the Society, the monopoly of the audit work market was broken, and fierce competition was formed among the auditors—an event that happened in most developed countries a long time ago. From the early 1970s to the early 2000s, most auditing institutions focused on their own growth rather than on professional values.

In such a situation, the audit will be successful if the auditor can make the best estimate of his fee according to the characteristics of the audited entity and, while maintaining the quality of the work, it can be performed at the minimum cost. The amount of the fee paid to the auditor can affect the quality of the audit work in two ways: first, the more the fee is considered for the auditor, the more his effort will be, and the quality of the work will increase, but in this case, auditors become financially dependent on their clients, and as a result, due to the concern of losing a job, they may not perform audit practices properly, which of course can have harmful financial consequences for them later [4].

It should be noted that this approach to auditing is consistent with the view of [5], an approach in which independent auditing is considered a subset of the organization's financial reporting system. In this view, audit services are viewed as a desirable economic product for the entity owner. As a result, the audit fee for the entity owner is a function of the cost-benefit principle, and this service, like any commercial product, is beneficial to the extent that its benefits outweigh its costs. Although, according to the above approach, the employer is obliged to audit due to fulfilling his legal obligation towards the users of financial statements

(shareholders, creditors, etc.), determining the factors that affect the audit cost helps the employer benefit from this service. I need to understand better and know why he is incurring this cost. It is evident that awareness of this issue accelerates and facilitates the audit work, and due to the participation of the employer, a higher-quality audit will be performed [6].

Auditing has a long history. Auditing was born when the need to control various financial operations, especially state funds, was felt. After the Renaissance and the development of world trade, the need for accounts and books increased. Therefore, the principles of double-entry bookkeeping were born in Italy in the 15th century. The Industrial Revolution created large factories, and from the formation of small capitals and their participation, large capitals were created, finally leading to the creation of the stock exchange and the securities market.

Three main hypotheses can be proposed regarding the need for auditing [7]: 1) representation hypothesis, 2) confidence building hypothesis, and 3) accreditation hypothesis.

I. Representation hypothesis: this hypothesis refers to the role of auditing in reducing the problems and risks of ignoring ethical principles. Based on the agency hypothesis, the auditor is an integral part of the contractual mechanism in the relationship between the agent and the owner, which is created to control and monitor the costs of the manager's agency.
II. Confidence-building hypothesis: according to this hypothesis, the auditor helps to reduce wrong decisions in the capital market, and the investor tries to choose a reliable auditor to show the capital market that the company's operations will be transparent and appropriate. Potential investors will also use these signs to make their investment decisions.
III. Accreditation hypothesis: based on this hypothesis, which has received much less attention from researchers and theorists compared to the previous two hypotheses, it is possible that the auditing profession is not responsible for the reliability of results and financial statements, but on the other hand, investors believe that if they suffer a loss as a result of using misleading financial statements, the auditors should pay for it and compensate their losses; therefore, auditors may be held accountable in cases where losses are caused to investors. As a result, auditors should consider this risk when pricing their services, and the weaker the results of the company's operations (low profitability or loss), the higher this risk, the higher the audit fee.

2.2 | Intangible Assets

The standard defines seventeen intangible assets as identifiable non-monetary assets that are not objective. Intangible assets are assets that are not physical. Intangible assets (including brands, intellectual property, ideas, and business methods) are contrasted with monetary and physical assets (such as real estate, vehicles, equipment, securities, and cash). Today, many of an organization's assets are intangible assets that traditional accounting methods cannot measure. Intangible assets represent an organization's skills and capabilities as a source of sustainable competitive advantage and economic growth and development. In the 1980s, approximately 80% of the market value of U.S. companies was made up of tangible assets. Gradually, as the knowledge-based economy became dominant, the importance of tangible assets potentially declined and became more important in contrast to intangible assets. Studies show that intangible assets account for around 60% of the market value of UK companies. Most of this market value is associated with the company's brand or portfolio. Empirical evidence has also shown that the brand is related to the company's value and contributes to its performance.

Intangible assets represent opportunities for future growth and profitability that can increase the company's market value. They are also a measure of core capabilities and competitive advantages that explain the gap between the company's market value and its book value.

2.3 | Risk Management

Risk management is the identification, analysis, and economic control of risks or the possibility of risks that can threaten the assets and income of a financial entity. Risk management is the same system designed to regulate operations to deal with uncertainty or the possibility of deviation. Risk management acts like a forward-looking radar, scanning the uncertain future to identify and avoid things that might cause a significant risk or discover a critical opportunity. On the other hand, in recent years, managers have paid a lot of attention to corporate earnings reports. Managers are interested in maintaining profit growth because their compensation is often tied to the company's profits. Accounting profit and its components are among the information people use when making decisions [8]. Enterprise risk management has an important impact on companies' business due to its capabilities; it effectively prevents unexpected situations, directs potential events, and affects companies' income and profit [9].

2.4 | Intangible Assets, Risk Management, and Audit Fees

Audit services require a fee, usually referred to as an audit fee, which means that all fees paid by a company for audit services are paid to and provided by the auditor. The amount of the audit fee is influenced by the size of the client's company, the complexity of the audit, and the risk. Auditing intangible assets presents challenges different from auditing tangible assets such as real estate, factories, and equipment. Intangible assets do not require physical confirmation; conversely, they have a level of certainty and complex calculations, especially goodwill [10]. Therefore, the audit of the company's financial statements on intangible assets increases the level of difficulty and time of the auditor and later affects the audit fee [3].

Considering the importance of audit services and the impossibility of direct observation of audit quality, finding an effective method of audit quality control is essential. The most important aspect of audit quality control and management can be considered the audit fee. The characteristics of the auditor of the audited entity determine the audit fee. The characteristics of the audited unit, including agency costs, can affect the fee by influencing the three descriptive factors of risk, volume, and complexity of the operations of the audited unit [11].

The study hypotheses are:

H1: intangible assets have a significant effect on audit fees.

H2: risk management has a significant effect on audit fees.

H3: risk management significantly affects the relationship between intangible assets and audit fees.

3 | Research Method

3.1 | Statistical Population and Sample Size

The research community is all the companies listed to the Tehran Stock Exchange between 2013-2021. To carry out the research, in each year from 2013 to 2021, the information of the companies listed to the stock exchange, which have the following characteristics, was collected:

I. To ensure comparability, the companies' fiscal year should end each year at the end of March.
II. They have continued their activities and changed their financial period during the research.
III. All information necessary for the research should be available from the companies.
IV. Do not belong to banks and financial institutions (investment companies, financial intermediaries, holding companies, leasing and insurance companies).
V. Companies must be listed on the stock exchange before 2013.

Based on the above characteristics and using the systematic elimination method, 143 companies were selected as the research's statistical sample.

3.2 | Variables Study and Model

Model (1) was used to test the hypotheses of the study.

$$LNAFEE_{it} = \beta_0 + \beta_1\ INTANG_{it} + \beta_2\ RMC_{it} + \beta_3\ INTANG_{it} \times RMC_{it} + \beta_4\ DIBOC_{it} + \beta_5\ BOC_{it} + \beta_6\ BIG_{it} + \beta_7\ ROA_{it} + \beta_8\ SIZE_{it} + \beta_9\ LEV_{it} + \varepsilon_{it} \quad (1)$$

Dependent variable

Audit fee (LNAFEE): calculated according to the natural logarithm of the company's audit costs [3].

Independent variable

Intangible assets (INTANG): the book value of the company's intangible assets is calculated according to the natural logarithm [3].

Modifier variable

Risk management of the company (RMC): to measure company risk management, the standard deviation of annual sales to total assets and the standard deviation of return on assets are used [9]. According to the following relationship:

$$ERM = \frac{SD(NS)}{SD(ROA)}.$$

In the above equation, ERM is the company's risk management, NS is the ratio of net sales to total assets, and ROA is the return on assets. Since the variable is a modifier, it equals one if it is greater than the average of the calculated figures and zero otherwise. Risk management is an indicator that the company does not have risk management higher than 50% of the companies and that the company's risk is managed well.

Control variables

Board independence (DIBOC) is calculated as the ratio of independent board members to the total number of board members [3].

The number of members of the audit committee (BOC) is the number of members of the company's audit committee [3].

Return on Assets (ROA): the ratio of net income to total assets [3].

Firm size (SIZE): calculated as the natural logarithm of the book value of the firm's total assets [3].

Financial leverage (LEV) is obtained by dividing total liabilities by assets [3].

Auditor type (BIG): To measure this variable, it is equal to one if the auditor is an accounting firm and zero otherwise.

4 | Finding

4.1 | Descriptive Statistics

Table 1 contains descriptive statistics of the studied data for use in linear regression, providing information about the central indicators (mean, median, maximum, and minimum) and data dispersion (standard deviation, skewness, and kurtosis). It also contains the descriptive statistics of the variables related to the main model to test the hypotheses.

Table 1. descriptive statistics.

Variable	Mean	Median	Max	Min	Sd.
LNAFEE	5.574	6.856	10.337	0.693	2.975
INTANG	8.394	8.298	14.567	0.00	2.165
DIBOC	0.653	0.600	1.000	0.000	0.185
BOC	2.884	3.000	5.000	0.000	0.958
ROA	0.145	0.123	0.673	-0.581	0.155
FSIZE	14.756	14.518	21.327	11.035	1.641
LEV	0.545	0.546	1.824	0.031	0.204
Dummy Variable		**Number**	**Percent**		
RMC		643	0.499		
BIG		234	0.181		

In this Table, the lowest average is related to the asset return variable (0.145), and the highest is associated with the company size variable (14.756). Also, among the research variables, the highest standard deviation is related to the audit fee variable (2.975), and the lowest standard deviation is related to the asset return variable (0.155).

4.2|Normality Test

This test is checked and carried out using the Jarque-Bera (JB) statistics. If the probability level of JB's test is low, less than 0.05, the null hypothesis, i.e., the normality of the series, is rejected. The results of this test are shown in *Table 2*.

Table 2. Results of JB test.

Model	Test Type	Statistics	Sig.	Test Result
Research model	JB	1.350	0.501	The normality of errors

As *Table 2* shows, the significance level of the model's disturbance term is greater than 0.05, which indicates the normality of the errors.

4.3|Model Analysis

The research hypotheses will be tested using the regression *Model (1). Table 3* shows the results of estimating the model of the research hypotheses using Eviews10 software and the Generalized Least Squares (GLS) estimation method.

The results of *Table 3* show that the P-value of the F-test is equal to 0.000, which is less than 0.05, and since the F-statistic shows the overall validity of the model. As a result, this model is significant with 95% probability and has high reliability. Also, the results show that the adjusted coefficient of determination of the model is 0.573. This number indicates that the model's explanatory variables can explain 57% of the changes in the dependent variable. Since the Durbin-Watson statistic of this model is equal to 2.318 and this value is between 1.5 and 2.5, there is no autocorrelation model.

H1: the results of *Table 3* show that the P-value calculated for the independent variable of intangible assets (0.539) is more significant than 0.05, and the estimated coefficient of this variable (0.007) is positive. As a result, intangible assets do not significantly affect the company's audit fee. Based on this, the first research hypothesis is accepted at the 95% confidence level that intangible assets significantly affect audit fees.

Table 3. Estimation results.

Variable	Coeff.	Std. Error	T-Stat.	Prob.
Intang	0.007	0.012	0.613	0.539
Rmc	-0.169	0.080	-2.107	0.035
Intang×Rmc	-0.021	0.009	-2.390	0.017
Diboc	-0.291	0.081	-2.688	0.007
Boc	-0.026	0.009	-2.776	0.005
Roa	0.095	0.101	0.947	0.343
Size	0.480	0.013	34.580	0.000
Lev	0.473	0.088	5.332	0.000
Big	1.448	0.150	6.627	0.000
C	-1.894	0.211	-8.956	0.000
R^2 0.592		Adjusted R^2 0.581		
D-W stats. 1.699	F-stat. 953.455		F-test prob. 0.000	

H2: the results of *Table 3* show that the P-value calculated for the independent variable of risk management (0.035) is less than 0.05, and the estimated coefficient of this variable (-0.169) is negative. As a result, risk management negatively and significantly affects companies' audit fees. Based on this, the second research hypothesis is accepted at the 95% confidence level that risk management significantly affects audit fees.

H3: the results of *Table 3* show that the P-value calculated for the variable INTANG×RMC (0.017) is less than 0.05, and the estimated coefficient of this variable (-0.021) is negative. As a result, it can be said that risk management has a negative and significant effect on the relationship between intangible assets and audit fees. Based on this, the third research hypothesis is accepted at the 95% confidence level that risk management significantly affects the relationship between intangible assets and audit fees.

5 | Conclusion

The results of hypothesis testing in the previous section show that the significance calculated for the independent variable of intangible assets is more significant than 0.05, and the estimated coefficient of this variable is positive. As a result, intangible assets do not significantly affect the company's audit fee. Based on this, the first research hypothesis is accepted at the 95% confidence level that intangible assets significantly affect audit fees. This result contradicts [3], [11] findings. This is because of the low percentage of intangible assets used in Iranian-listed companies, which eliminates its effect on audit fees.

On the other hand, accurately measuring intangible assets is very complicated, and different methods may produce different results. Therefore, audit fees for intangible asset valuation can be difficult and complex. Thus, the inability to accurately determine the value of intangible assets has little impact on the Company's audit fees.

The results of hypothesis testing in the Previous section show that the significance calculated for the independent variable of risk management is less than 0.05, and the estimated coefficient of this variable is negative. As a result, risk management negatively and significantly affects companies' audit fees. Based on this, the second research hypothesis is accepted at the 95% confidence level that risk management significantly affects audit fees. With proper risk management, the audit firm can reduce the risks associated with performing the audit. This means reducing the likelihood of errors, legal and financial problems, disputes with clients, and other audit-related risks. On the other hand, conducting an audit under high-risk conditions

increases the audit fee, and conducting an audit under low-risk conditions reduces the audit fee due to risk management. This result is consistent with the research findings [3], [11].

The results of hypothesis testing in the Previous section show that the significance calculated for the variable INTANG×RMC is less than 0.05, and the estimated coefficient of this variable is negative. As a result, it can be said that risk management has a negative and significant effect on the relationship between intangible assets and audit fees. Based on this, the third research hypothesis is accepted at the 95% confidence level that risk management significantly affects the relationship between intangible assets and audit fees. This result is consistent with the research findings [3], [12].

After completing the steps of scientific research, if the study is based on a systematic and research-oriented process, the researcher can give opinions about the findings and results of the research, as well as solutions and suggestions to improve the current situation and expand the research. The researcher has made some suggestions.

I. Managers can increase investment in risk management and provide risk management training to their employees to reduce the cost of audit fees in the company.
II. Managers of listed companies should achieve a balance between audit risk values and audit costs while optimally managing risk.
III. By the topic of the research, the following suggestions are made for future research:
IV. It is suggested that the results of this research should be analyzed separately in different industries and compared across industries.
V. It is suggested that similar research be conducted in the top 50 listed companies.
VI. It is suggested that ownership structure variables be used as moderator variables in the relationship between intangible assets and audit fees.

Data Availability

Data is available from the Codal web (www.codal.ir).

Data Availability

All data are included in the text.

Funding

This research received no specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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