



Research Paper

## The Effect of Information Disclosure on Market Reaction with Meta-Analysis Approach

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### ABSTRACT

The present research aims to conduct meta-analysis of the effect of information disclosure on market reaction. In order to integrate the results of different researches and identify the determinants of relations between information disclosure and market reaction, we used meta-analysis methodology as a quantitative statistical method. To perform the meta-analysis method, the scientific magazines all over the world (the published papers relating the research variables from 1990 to 2020) were identified and gathered as statistical population and. As a result, 86 studies were analyzed using systematic removal. The results of the relating studies published during this period indicate that most of these studies are heterogeneous. By classifying these studies based on different measurement criteria of information disclosure and market reaction and also by calculating the intragroup statistics along with identifying the factor of this heterogeneity, we found that these diverse measurement criteria used in the mentioned studies are considered as contradiction factors in research results. We also found that there is no meaningful relation between Non-financial information component, company cycle, type of industry and company size with market reaction whereas there is a meaningful relation between financial information and market reaction.

## 1 Introduction

The investigation of annual reports of the companies shows that the quality of information disclosed in such reports is different and contradictory and as a result, the difference in information disclosure of companies is more probably due to management thinking and his intellectual philosophy and preference in information disclosure for investment purposes. It should be noted that no research has studied meta-analysis of the effect of information disclosure on market reaction so far; so, the mentioned topic has research vacuum.

The aims of disclosure are reaching the performance evaluation, forecasting the profitability trend in the future and managing the business corporation in how to use the limited resources. The issue of

information disclosure not only encompasses limited group of finance users but also the need wide range of society people such as professional assemblies, creditors, state, investors and other financial decision makers. Despite the extensive studies and investigations about information disclosure [5;28;8;32] the findings of researches about the effect of information disclosure on market reaction indicate some contradictions and inconsistencies. For example, [10] answered two following questions in their research namely "mandatory disclosure against voluntary disclosure in markets with informed and uninformed customers":

Why the sellers don't disclose information voluntarily?

Who loses or gains from voluntary or mandatory disclosure?

They indicated that very few people realize disclosure and voluntary disclosure may not be useful whereas mandatory disclosure is useful for informed customers and is neutral for uninformed customers. In their research, [13] investigated the market reaction to the voluntary disclosure of restatements. Their research indicated that management disclosure relating the restatements will result to market reaction during giving financial restatements. During studying the effect of disclosure variable on market reaction, some researches such as; [7]; [35] and; [13] found a meaningful relation between these two variables while the research findings of; [27] didn't show any meaningful relation. Also, there was a meaningful relation between mandatory disclosure and market relation for informed customers in a research done by; [10] while no meaningful relation was indicated between voluntary disclosure and market reaction. In their international research, [15] dealt with market reaction to mandatory disclosure of non-financial information. Their research results show that market reaction to the disclosure of nonfinancial information is positive and investors expect future benefits from such disclosures. Given the previous contradictory results, this research conducted a meta-analysis about this part of literature by identifying and gathering the relating empirical studies in order to make the final conclusion possible to better understand information disclosure in market reaction by merging results and identifying different factors in the results of studies, because as noted in the previous sections, the related researches didn't show any similar results information disclosure and market reaction.

Experiences and researches performed in different countries show that business corporations often don't desire to increase the level of financial information disclosure without legal pressures or professional obligations. That's why the institutions and bodies of the most countries which supervise the Stock Exchange obliged companies to improve quality and to increase the quantity of financial information disclosure by enforcing specific regulations. There are more than three goals for disclosure in financial reports. They include: evaluating the performance of a business corporation, assessing the resource utilization and forecasting the profitability trend. It should be noted that one of the main reasons of removing companies from the Tablet of Stock Exchange is that they don't observe the policy of information disclosure. Based on the information disclosure regulations, all companies accepted in the Stock Exchange are obliged to disclose the following information to the Stock Exchange and the public in accordance with the specified regulations:

Seasonal, midterm and annual financial statements and reports. Date of holding general meeting and extraordinary general meeting and the decisions made in those meetings. Personal information of individuals who hold classified and secret information. The companies are also obliged to disclose the following important information to Stock Exchange immediately:

The events that affect activity, financial condition and the issuer performance results.

The decisions and conditions that affect capital structure and financing.

Other important information that affect issuer securities price and investors decision.

## 2 Theoretical Framework

In this research, the meta-analysis was used in order to better summarize the opposed results of diverse investigations conducted about the influence of voluntary and mandatory disclosures of financial and nonfinancial information on capital market. Today, in developing countries, capital market is considered as a tool to increase investment and economic growth. One of the important inducers of financial market is the existence of complete and transparent information. In other words, the lack of information will result to exchange cost increase and disability of market to better allocate resources. Asymmetry of information may lead to incorrect valuation of company and there may be an impetus to correct that incorrect valuation by disclosing more information. [20] define disclosure as follows: "in general, disclosure is reflection of information". But, accountants take a more limited meaning for disclosure and consider it as reflection of financial information of a business corporation in format of financial reports which are issued annually. [1] believes that disclosure encompasses information that is useful for normal investors and doesn't mislead the reader. More clearly, disclosure principle means that no important attractive information should be omitted or hidden. [40] completed their research in the United States namely "the empirical analysis of financial disclosure quality of the firms".

They believed that information disclosure of the firms can take different forms and annual reporting to shareholders is an important form periodic disclosure of the firms. According to Circular-Directive 2014/95/EU, nonfinancial information disclosure in management annual reporting is information about policies, risks and results about environmental issues, social aspects, work force, respecting human rights, anti-corruption issues and diversity in board of directors. This circular is used to provide a more comprehensive picture of investors and other beneficiaries' consistency. In recent decades, the number of corporations which disclose nonfinancial information has increased significantly. For example, the number of corporations which issue sustainability reports has increase from less than 50 corporations in 1995 to more than 6000 corporations in 2015; [38]. In this case, effective factors include the stakeholder groups' pressures on companies to disclose information about environmental and social effects of their activities and also procedures relating the governance.

Moreover, the interest of inventors to nonfinancial data is increased; for example, increasing government regulations about environmental issues has led to increasing unadjusted disclosure of environmental debts. As a result, previous literature approves that corporations with superior performance for ESG (environmental, social and governance) have better access to funds and financial resources and corporations which issue sustainability report less capital cost. Most of last researches are conducted in accordance with corporate voluntary disclose method. In contrast, several financial mandatory disclosure regulations have recently provided. Researches show that mandatory disclosure plans obliged companies to improve their operating performance in accordance with environment, food safety and water; [15]. According to efficient market hypothesis (EMH), market should be big and cash. Information should also be available to investors at any time in terms of accessibility and cost. Transactions cost should also be less than expected return on investment and investors should have enough funds and financial resources in order to use inefficient cases until they exist.

Many criticisms and arguments could be used against efficient market hypothesis. Among these criticisms and arguments, we can refer to "January effect" which says that investors usually gain more in the first month of each year. In fact, these arguments express that there are some predictable patterns to determine share price and this in turn questions the subject of being accidental for changes. Some other financial economists also say that share price is always influenced by profitable behavior of investors not by available information in the market. The main reason for information disclosure need is

information asymmetry and interest conflict between managers and investors. In this regard, disclosure strategy of the company plays an important role in decreasing information asymmetry level between managers and foreign investors because information asymmetry may result in incorrect valuation of company and there may be an impetus to correct that incorrect valuation by disclosing more information. This research is practically useful for companies, researchers, finance students and professors, financial and credit institutions and banks and eventually legislators and government in order to lend facilities and determine credit terms so that they not only provide a clear insight into the reasons of existence of contradictions around different statements of information disclosure and market reaction, but also an integrated view for users to use that information.

### 3 Research Background

[8] investigated the disclosure of information relating the derivatives using public notifications about market reaction. Their research results indicate that when companies explicitly disclose information, the gold market and stock market will subject to positive or negative reaction of share price in disclosing companies and other companies due to changing market viewpoint towards future. As a result, they reached a meaningful relation between information disclosure and information demand [32] investigated stock return reaction and its fluctuations to information supply and demand. Their empirical evidence indicated that primary general information is influenced by stock return and eventually showed that the impact of general information on stock return and fluctuations is influenced by two following factors:

Disclosing the reports of company and market.

Properties of participants in the market and interpretations of precise news and risk-taking. [9] studied the relation between voluntary disclosure of corporate social responsibility and share prices of companies accepted in Italian Stock Exchange. Their research was conducted during 2002 to 2007 by a regression model about all companies accepted in Italian Stock Exchange which issue the corporate social responsibility report. Results indicated that disclosing social positive behaviors of employees has positive effect on share price increase whereas disclosing other social responsibilities of environment and its relation with society has negative effect on share price.; [18] dealt with the investigation of relation between voluntary disclosure improvement and information content of share price. This investigation was conducted on 2084 companies during 1982 to 1995. The result was that voluntary disclosure level improvement will result to share price fluctuation decrease. Disclosure policies of the companies will also lead to positive effect on information content of share price and share return of those companies.; [43] investigated the ability of creating value by voluntary disclosure. They began to study 129 production companies accepted in Stock Exchange in Istanbul for financial year 2010. The results of this research showed that capital market participations react to voluntary disclosure of companies. In other words, investors give more value to companies which do more voluntary disclosure and this will lead to value increase of these companies.

### 4 Research Methodology

The research hypotheses are stated as follows:

Hypothesis 1: There is a significant relationship between information disclosure and market reaction.

Hypothesis 2: Financial information and non-financial information adjust the relation between information disclosure and market reaction.

Hypothesis 3: property such as size and age of the company and industry type adjust the relation between information disclosure and market reaction.

Difference in models type, Measurement tools and research positions make the comparison between researches more difficult. Therefore, using contradictory results of researches, publishing, interpreting, assessing and recognizing their weaknesses require a solution based on appropriate review and analysis and utilization of evidence and combined method. This writing uses a meta-analysis method to gain a unique result. In this method, the results of diverse researches are combined together and new more integrated results are gained using statistical methods. In a meta-analysis research, researcher makes the form of general concepts to use powerful statistical methods by recording them. The main role of a meta-analysis method is to coordinate and integrate the results of conducted researches. A meta-analysis research is essentially a practical quantitative project. If the research has only statistic t and statistic z, then the statistic r is calculated as follows:

$$r = \sqrt{\frac{t^2}{(t^2 + df)}} \quad (1)$$

$$r = \frac{Z}{\sqrt{N}} \quad (2)$$

In equation (2), N is sample number and in equation (1), df is degree of freedom and is calculated in accordance with sample number and estimation parameters in regression. In this research, the population of interest is the articles (the articles resulting from conducted empirical researches) in connection with the effect of information disclosure on market reaction all over the world. These articles are identified and collected from website of foreign magazines and internet database of scientific magazines. As a result, among 188 collected studies, given the related restrictions, 86 studies were analyzed using systematic removal method. These studies are selected in accordance with the following Tables.

**Table 1:** Method of Selecting Information Disclosure Studies and Their Effect On Market Reaction in Order to Conduct a Meta-Analysis

Number Of Initial Studies	188
Exclusion criteria for studies	
Articles that did not have a Q1, Q2 index	(33)
Articles not published in jcr journals	(16)
Articles that did not have the same statistical method	(6)
Articles that were not related to research variables	(30)
Articles whose correlation coefficient or statistics are not reported	(7)
Papers indexed at conferences and seminars	(4)
Journal articles that were blacklisted	(6)
Final sample	86

**Table 2:** Number of Articles Collected from Domestic and Foreign Resources and Databases

Database Of Data And Information	Number Of Articles
Elsevier	43
Springer	17
Science Direct	15
Emerald	8
Google scholar	32
Magiran	54
Other	19
Total	188

### Advantage of Meta-Analysis

High generalizability

Responsiveness

Statistical power and accuracy

Heterogeneity test

Use of protocol

Calculate the effect size

Hypothesized

Although meta-analysis is secondary research, it is empirically significant and conceptually seeks to discover new facts from old data, and usually, when meta-analysis findings are inconsistent with conventional knowledge of the subject, the issue in question indicates the existence of a conceptual vacuum and thus opens a new perspective for researchers to complete theoretical knowledge. In general, it can be said that meta-analysis:

Quantitative analysis is secondary analysis.

Its data sources are the results of research that has been done in the past. Instead of an individual or a company, the subject is a study, and because it is actually a combination of data from several studies to produce a single estimate, it is statistically a multifactorial method. Its purpose is to identify the relationship or effect of variables in various studies that are examined by the size of the effect. Used only in quantitative research including correlation, experimental and experimental simulation. Tries to overcome the problem of low statistical power of research with a small statistical sample.

Traditional statistical techniques such as F, t, etc. tests are not suitable for such a comparison. Because their values are a function of the sample size.

## 5 Research Variables

**Dependent Variable:** Dependent variable of this research is market reaction and we will explain its indexes in this article.; [11] considers two types of reaction and behavior in studies relating to event effect or information content for the market which are appeared as dependent variables in this research:

Individual market reaction

Overall market reaction

In the case of individual market reaction, the parameter of transaction volume indicates the reaction of individuals in capital market and the parameter of price indicates the overall market reaction to event occurrence. Of course, there is no reason for individual reaction and overall reaction of the market to be the same. For example, the whole market may doesn't react to part of information but this information may lead to increase or decrease of transaction volume because of heterogeneous expectations of investors or the existence of changes in their risky preferences; [11]; [14]; [31] and; [24] used stock market value to explain market reaction. Stock market value is calculated by share price and logarithm of multiplying share price and number of shares or stocks in the company.;

[4] used market model to estimate daily return and cumulative abnormal return in order to gain market reaction.; [37]; [29]; [22]; [24]; [35] used cumulative abnormal return to study the changes in reaction level of market to information disclosure. Also, [12] introduced share price changes and; [17] and; [16] defined return rate as measurement criterion of market reaction. Cumulative return is geometric sum of daily return. Daily return of companies is adjusted by subtracting daily return of market. In this research, price fluctuations of stock market which indicate market reaction are measured by following criteria.

**Table 3:** Measurement Formula of Return

Indicator	Type	Formula
R	Average Return	$R_{it} = \alpha_i + \beta_1 R_{mt} + \epsilon_{it}$
AR	Abnormal Return	$AR_{it} = R_{it} - E(R_{it})$
CAR	Cumulate Abnormal Return	$CAR_{it}(T1, T2) = \sum_{t=T1}^{T2} (AR_{it})$
RT	Effective Return	$RT = P_t - P_{t-1}$

**Independent variable:** Independent variable of this research is disclosure level and we will explain its indexes. In the following section, measurement method of disclosure level by both indexes is defined in detail. Voluntary disclosure level is measured based on indexes offered by; [3] which are derived from the comments Jenkins Committee. In Botosan model, the utilized indexes were extracted by corporate strategic reports and grading figures of American companies. 71 indexes were investigated in terms of not being mandatory based on accounting or legal standards and then were defined in six general parts in Table 4. Their components and how to score each of them are expressed in the following sections. Voluntary disclosure score is calculated by dividing total score of 6 sections by receivable total score i.e. 134 scores. In this case, disclosure level is measured by index which is used by; [26] in the booklet of Stock Exchange Declarations. Disclosure level is measured as follows:

$$DSCOR_{it} = DIS_{it} / DIS_j \quad (3)$$

$DSCOR_{it}$  =Level of company disclosure i in year t

$DIS_{it}$  =Total disclosure of company i in year t

$DIS_j$  =Total score in the Jensen index

**Table 4:** Components of Voluntary Disclosure Level Assessment

Indicator	Number Of Indicators
Background information	17
A summary of the important historical results	8
Key of non-financial statistics	10
Information of each section	7
Forecast information	10
Management discussion and analysis	19
Total	71

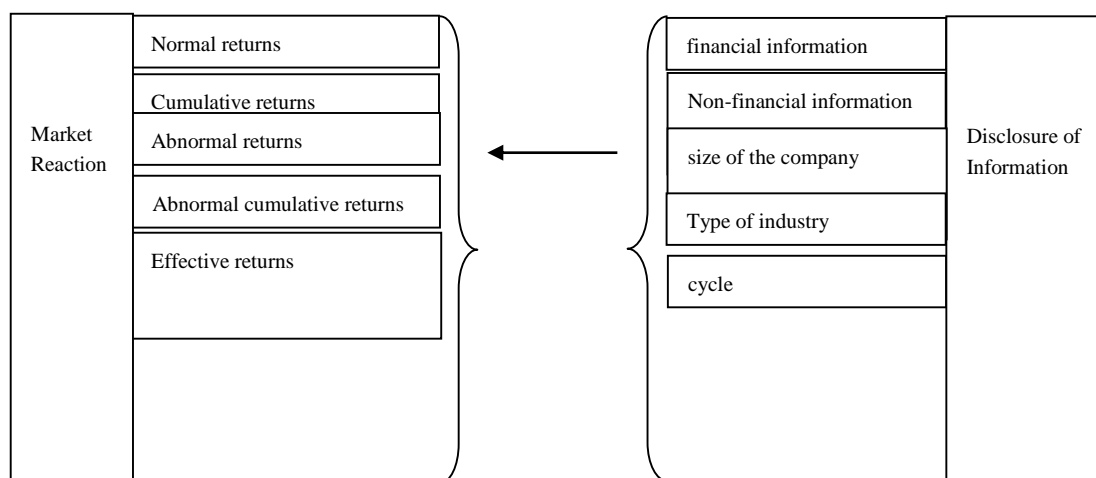
Disclosure level of each country is a number between zero and one and is calculated as scores of disclosed cases in Jensen model divide by the whole disclosure cases. This index in fact is a non-weight criterion for disclosure measurement which is introduced and used by; [26]. The conceptual model of the research is presented in Fig. 1.

Financial and Non-Financial Information

Non-Financial Information- NFI

Information on the structure of the board of directors, information on manpower, environmental performance report, report on the company's social activities, holding company training courses, information

on after-sales service, number of employees, intellectual and human capital.



**Fig. 1:** Conceptual Model of Research

**Financial Information- FI**

Liquidity ratio, debt ratio, activity ratio, changes in working capital, changes in capital structure and, capital structure, financing policy, return on assets, return on equity, revenue forecast, cash flow forecast, major customers, suppliers, Report price changes, Information processing. In general, financial and non-financial information is presented separately in Table 5:

**Table 5:** Financial and Non-Financial Information Disclosed by Companies

Non-Financial Information	Financial Information
Information about the structure of the board	Liquidity ratio
Manpower information	Debt ratio
Environmental performance report	Activity ratio
Corporate social activity report	Working capital changes
Holding company training courses	Changes in capital structure
After sales service information	Information processing
Number of Employees	Financing policy
Intellectual and human capital	Return on assets
	Return on equity
	Revenue forecast
	Money forecast
	Main customers
	Suppliers
	Report price changes

Company Size: Ahmado Nichols also believes that the production and dissemination of information is a costly activity, and large companies are likely to have the resources and expertise to publish high-disclosure financial statements and, of course, to comply more with disclosure rules. Therefore, it can be concluded that in large companies, the cost of each unit of disclosed information decreases and as a result, large companies perform more disclosures. According to [35] states that due to the economic possibilities in information production and storage, large companies are relatively willing to spend more resources on information production and information disclosure. Larger companies are more than small



companies. Type of Industry: Also, companies in one industry may insist on disclosing certain items of information, but these items may not be relevant to other industries.

Company Cycle: There is also a belief about the life of the company that the amount of mandatory disclosure of the company is affected by its life, and companies with more history and better organized, are more likely to provide more information in their annual reports than younger companies.

## 6 Research Findings

The results of using and conducting a meta-analysis and its effect on the whole statistical sample are reflected in separate Tables. In meta-analysis approach, heterogeneity test of effect size is first considered in order to test the research hypotheses and determine the type of meta-analysis pattern used to test intended hypothesis. If data is homogeneous, we will use fixed effects pattern and if data is heterogeneous, random effects pattern will be used. The related results are shown in Table 6 and 7.

**Table 6:** Heterogeneity Test of Effect Size

Independent and dependent variable in each hypothesis	Heterogeneity test H			Test result
	value I <sup>2</sup>	p-value	Q Statistics	
Disclosure of information with market reaction	90.219	0.000*	2116.297	Random effects
financial and non-financial information with market reaction	95.211	0.000*	3863.245	Random effects
Company characteristics such as size, cycle and type of industry with market reaction	84.702	0.000*	379.136	Random effects

Source: findings of researcher

\*The significance levels are 5 percent

In Table6, the quantity of statistic Q for all variables shows high heterogeneity and meaningfulness level of test Q is less than meaningfulness level 6 percent. Since this index is sensitive to increase in the number of effect size and since the ability of this test for rejecting homogeneity will increase by increasing the number of effect size, square I is considered as another index to use for this case. The quantity of I<sup>2</sup> for intended variables which is larger than 75 percent shows that heterogeneity of the effect size is relatively high; so, null hypothesis (hypothesis 0) is rejected and alternative hypothesis (hypothesis1) is approved based on heterogeneity of the effect size of mentioned variables.

**Table 7:** The Results of Tests Based on Fixed or Random Effects

Independent and dependent variable in each hypothesis	p-value	z Statistics	confidence interval		SAverage effect size	Test result
			Lower bound	upper bound		
Disclosure of information with market reaction	0.000*	7.869	1.082	1.140	1.111	Confirm
financial and non-financial information with market reaction	0.000*	5.877	1.099	1.207	1.152	Confirm
Company characteristics such as size, cycle and type of industry with market reaction	0.913*	-0.109	0.888	1.112	0.994	Reject

Source: findings of researcher

\*The significance levels are 5 percent.

Therefore, due to heterogeneity, random effects pattern is used to estimate the effect size of these variables. Given that after studying the hypotheses of meta-analysis, we concluded that we should use random effect model to combine the results for effect size report, so the effect size report for the studies conducted in random model is shown in Table 7. In the following, we will examine the results of the effect of moderator variables, which are presented separately in Table 8.

**Table 8:** Statistical Inference of Moderator Variables

confidence interval		Average effect size	Sample size	observations	variable
1.110	1.055	6.092	3,015,084	484	Total studies
0.158	0.111	11.192	1,272,527	146	financial information
0.088	-0.009	1.603	61,781	40	Non-financial information
0.046	-0.034	0.294	24,730	42	size of the company
0.114	-0.145	-0.239	428	6	Type of industry
0.072	-0.076	-0.054	11,971	11	Company life cycle

First Hypothesis of Research: Meta-analysis results of the first hypothesis are shown in Table 9 "There is a significant relationship between information disclosure and market reaction".

**Table 9:** Meta-Analysis Results of the First Hypothesis

Test re- sult	heterogeneity test H				Test H0		confidence in- terval 95%		Aver- age ef- fect size	Independent and dependent variable in each hypothe- sis
	Test re- sult	I2	p- value	Q-value	p-value	z-value	Lower bound	upper bound		
A signifi- cant and positive	Ran- dom ef- fects	90.219	*0.000	2116.297	*0.000	7.869	1.082	1.140	1.111	Disclosure of information with market re- action

Source: findings of researcher

\*The significance levels is 5 percent

**Table 10:** Meta-Analysis Results of the Second Hypothesis

Test re- sult	Heterogeneity test H				Test H0		confidence in- terval 95%		Aver- age ef- fect size	Independent and dependent variable in each hypothe- sis
	Test re- sult	I2	p- value	Q-value	p-value	z-value	Lower bound	upper bound		
A signifi- cant and positive	Ran- dom ef- fects	99.182	*0.000	17725.044	*0.000	11.192	0.111	0.158	0.135	financial infor- mation with market reac- tion
mean- ing- less	Ran- dom ef- fects	81.327	*0.000	208.853	*0.109	1.603	-0.009	0.088	0.040	non-financial information with market re- action

Source: findings of researcher

\*The significance levels are 5 percent.

Total 86 studies, investigated the relation between disclosure factor and market reaction. Their meta-

analysis results are shown in Table 9. The confidence interval (CI) is reported positive for these studies and the positive quantity for the mean z also denotes the positive relation between the relating variables. Given the meaningful level between variables, the relation between disclosure of information and market reaction is meaningful. Also, homogeneity test conducted for studies shows high level of heterogeneity which will result in random effects selection. Second Hypothesis of Research: Meta-analysis results of the second hypothesis are shown in Table 10. "The type of information disclosed (financial, non-financial) adjust the relation between information disclosure and market reaction".

186 observations out of 484 general observations have selected the types of financial and non-financial information as a factor of disclosure and examined its relationship with the market reaction, the results of their meta-analysis are shown in Table 10. The reported confidence interval of this number of studies is positive and also the positive mean number z for financial information indicates a positive relationship and for non-financial information indicates a positive relationship between the relevant variables, according to the amount of significance between the variables The disclosure between financial information and the market reaction is significant and positive. Also, the test of homogeneity between studies shows a large amount of heterogeneity that leads to the selection of random effects. Given that the specific properties of the financial information variable (research independent variable) change the relationships reported at the level of all related studies, this feature is a moderating variable and is a factor of conflict between related studies. Therefore, the second hypothesis is confirmed. Third Hypothesis of Research: Meta-analysis results of the third hypothesis are shown in Table 11. "Features such as the size and cycle of the company and the type of industry adjust the relationship between information disclosure and market reaction".

**Table 11:** Meta-Analysis Results of the Third Hypothesis

Test result	Heterogeneity test H				Test H0		confidence interval 95%		Average effect size	Independent and dependent variable in each hypothesis
	Test result	I2	p-value	Q-value	p-value	z-value	Lower bound	upper bound		
meaningless	Fixed effects	6.745	*0.379	10.723	0.957*	-0.054	-0.076	0.072	-0.002	Company cycle And market reaction
meaningless	Random effects	81.338	*0.000	26.792	0.811*	-0.239	-0.145	0.114	-0.016	Type of industry And market reaction
meaningless	Random effects	90.104	0.000*	414.309	0.769*	0.294	-0.034	0.046	0.006	size of the company And market reaction

Source: findings of researcher

\*The significance levels are 5 percent.

Out of 484 studies, 59 studies examined the characteristics of the company such as the life of the company - the type of industry and the size of the company with the market reaction, the results of their meta-analysis are shown in Table 11. The reported confidence interval of this number of studies is positive and also the negative number of mean z indicates a negative relationship between the variables of industry type and company life with market reaction, considering the amount of level of significance between variables, significance between these variables and market reaction. Not observed. Also, the test of homogeneity between studies shows a large amount of heterogeneity regarding the variables of

firm size and type of industry, which leads to the selection of random effects, but in the case of firm life, due to homogeneity, a fixed effect relationship was chosen.

## 7 Conclusions

The present research aims to meta-analyze the effect of information disclosure on market reaction. Eventually, the results of research hypotheses indicated that the researches which were conducted for effective factors on market reaction of the companies were diverse and heterogeneous and they showed the necessity of conducting such a research with meta-analysis approach. Since the type and method of measuring information disclosure are considered as variables for adjusting the relation between them, some researchers such as; [13] investigated the reaction of market to voluntary disclosure of restatements. Their research indicated that restatements disclosure by management will result in market reaction during disclosing the restatements. According to [33] from the viewpoint of stakeholder theory, information disclosure is influenced by the authority of domestic and foreign stakeholders. Different stakeholders influence the goals and properties of the company and force the company to disclose information for the sake of information needs of stakeholders. On the one hand, legitimacy theory influences the information disclosure level from the viewpoints of company properties and corporate leadership. On the other hand, corporate leadership and ownership structure are considered as factors that indicate the level of company response to stakeholder's demand. It is expected that the companies which have suitable corporate leadership mechanisms and more dispersion for ownership, are attractive for stakeholder's demand to disclose more information. In their research, [44] investigated the market reaction to disclose reportable events of financial reporting standard<sup>31</sup>.

Their results indicated that reportable events disclosed in relation to auditor change have information contents for investors and will result in abnormal cumulative return about 2.75 percent to 5.53 percent in three-days period and weekly period respectively around declaration publication. In their research as factors affecting the information disclosure of the companies, [42] investigated the relation between big companies' properties (including ownership type, auditing company size and company size) and information disclosure using meta-analysis method. They used 16 articles published during 1997 and 2006 in order to study the effective factors. Their research has shown that auditing company size has meaningful relation with information disclosure of big companies. [6] investigated the effect of auditing report type on share price behavior of the companies in Taiwan. Their results indicated that publication of unacceptable auditor report makes negative return for investors. Therefore, difference in the types of auditing components is considered as one of the reason for the existence of contradiction between the results of these studies. Stock Exchange is recommended to enact laws and regulations to calculate the real value of the companies, their information transparency and better understanding their performance so that the companies accepted in Stock Exchange at least are forced to disclose more transparent information about their financial statements for consecutive years.

In addition, one of the necessary measures is more control over Stock Exchange as a reference institution to make accounting standards for quality of accounting information and quality of information disclosure. It is also necessary to identify important regulatory deficiencies and weaknesses and make necessary measurements for increasing disclosure quality by enacting laws and regulations or accounting standards. Additionally, legislators can use reliable results of meta-analysis to determine the importance of information disclosure properties and its effects on capital market reaction and enactment of suitable laws and regulations. Investors and creditors as external users are recommended to pay attention to using disclosed financial statements of the companies and comprehensiveness of disclosed information

in order to make decisions in investments. Investors also can use reliable results of meta-analysis researches to assess the accuracy of accounting information during making decisions for buying and selling securities. This research not only gives a clear insight into the causes of existence of contradictions about the effect of information disclosure on market reaction but also provide an integrated view for audiences. Results of available contradictions in individual studies are shown as follows after integrating them with meta-analysis test.

The type of information disclosed (financial, non-financial) adjust the relation between information disclosure and market reaction". Considering the contradictory results of individual studies of disclosure of various types of information (financial and non-financial) on the market reaction of researchers such as [43], [15] who achieved inconsistent results; In the present study, using the post-telephone meta-analysis method of conflicting research data, we reached a consistent conclusion. Accordingly, the effect of various types of financial information (such as: annual profit, accounting profit, cash profit, profit growth rate, financial leverage, book value of all three, return on assets, etc.) and non-financial (such as: environmental news, disclosure of responsibility Social company, social trust, etc.) have been completely different in the reaction of the stock market.

Therefore, various types of information are provided as plugins. The results of the sovereignty meta-analysis are from the impact of disclosure of financial information on the stock market, but the market does not react to non-financial information and no correlation is observed between them; This means that shareholders in your financial analysis should be added mainly to financial information. In the reports of companies, attention has been paid to forecasting the capital market. The future of the corporate stock market does not help. Size and cycle of the company and the type of industry adjust the relationship between information disclosure and market reaction". According to the contradictory results of individual studies in the research of [31, 26, 40, 22] regarding the disclosure of information on Market reaction is the cause of discrepancies in the results due to the variables that modify the characteristics of the company such as the size and life of the company and the type of industry in which the company operates.

These variables were analyzed in the present study using meta-analysis It is because the characteristics of the company, such as the life and size of the company or the type of industry, cannot provide specific guidance on using the stock market to choose the best investment option for financial market participants. Researches are recommended to deal with the following topics in their future researches. From a wider perspective, the role of some variables such as competing environment, economic conditions, institutional mechanisms and other common ones used in information disclosure. Because of the role of economical and commercial environment and the activity of companies in different industries which aren't dealt with in this research, researchers are recommended to conduct supplementary and integrated researches by considering different organizational conditions, competing environmental and economic conditions. Finally, researchers are recommended to deal with other issues such as conducting complementary research with a concentration on transparency effectiveness and properties of information disclosure and other properties of financial reporting in order to increase the quality of capital market and conduct a complementary research with a concentration on the effectiveness of reports, controls and domestic and foreign supervisors and consideration of weaknesses in control and other properties of information disclosure in order to increase the quality of disclosure.

## References

- [1] Abbasi Astamal, M. Zeinali, M. Baradaran Hassanzadeh, R. *Explain and Prioritize Information Disclosure Factors Related to Sustainable Development Accounting with Fuzzy Approach*, *Advances in Mathematical Finance and Applications*, 2021, **6**(4), P.851-868 Doi: 10.22034/AMFA.2020.1900209.1429

- [2] Belkaoui-Riahi A., *Level of multinationality, growth opportunities and size as determinants of analysts ratings of corporate disclosure*,. accounting organizations and society, 2001,**19**(2), P. 115-220.
- [3] Botosan, C., Plumlee, M. A. *A re-examination of disclosure level and the expected cost of equity capital*. Journal of Accounting Research , 2002, **40**(1), P. 21-40
- [4] Brown, S., Warner, J., *Using Daily Stock Returns: The Case of Event Studies*, Journal of Financial Economics , 1985, **14**, P. 3-31. Doi:10.1016/0304-405X(85)90042-X
- [5] Burke, J., Hoitash, R., Hoitash, U., Xiao, S., *The Determinants, Textual Properties, and Consequences of U.S. Critical Audit Matter Disclosure*,. Financial Accounting , 2020. P.1-73.
- [6] Chu, C.-H., Hsu, J., Young, W., *Price Behavior of Qualified Companies around the Audit Report and Report Announcement Days: The Case of Taiwan*, Journal of International Financial Management and Accounting , 2011,P.114-130. Doi:10.1111/j.1467-646X.2011.01047.x
- [7] Etemad, c., Amir khani, k., Rezaei, M., *Value content of mandatory disclosure*, Quarterly Journal of the Stock Exchange , 2013,13, P.235-252.
- [8] Fernando, C., Hoelscher, S., Raman, V., *The Informativeness of Derivatives Use: Evidence from Corporate Disclosure through Public Announcements*, Journal of Banking and Finance , 2019, P.1-59.
- [9] Fernandes, N., Lel, U., Miller, D., *Escape fromNewYork:The market impact of loosening disclosure requirements*, JournalofFinancialEconomics , 2010, P.129–147.
- [10] Fishman, M., Hangerty, K., *Mandatory versus voluntary disclosure in markets with informed and uninformed customers*, Journal of Law, Economics and Organization , 2003, **1**(19), P.45-63.
- [11] Foster, G. *Stock Market Reaction to Estimates of Earnings per Share by Company Officials*. 1973.Journal of Accounting Research . Doi: 10.2307/2490279
- [12] Gelb, D. S., Zarowin, P., *Corporate disclosure policy and the informativeness of stock prices*, Review of Accounting Studies , 2002, **7**, P.33–52.
- [13] Gordon, E., Henry, E., Peytcheva, M., *Discretionary disclosure and the market reaction to restatements*, Review of Quantitative Finance and Accounting , 2013, **41**(1), P.75-110.
- [14] González, N., Callado-Muñoz, F., *QuarterlyARTICLEDo investors react to corporate governance news? An Anempirical analysis for the Spanish market*, BRQ Business Research Quarterly , 2015, P.1-13.
- [15] Grewal, J., Riedl, E., Serafeim, G., *Market Reaction to Mandatory Nonfinancial Disclosure*, Working paper , 2017, P.1-47.
- [16] Griffin, P., Sun, Y., *Going green: Market reaction to CSRwire news releases*, J. Account. Public Policy, 2013. P.93-113.
- [17] Gupta, P., Kennedy, K., Weaver, S., *Corporate Governance And Firm Value:Evidence From Canadian Capital Markets*, Corporate Ownership and Control , 2009, P.293-307.
- [18] Haggard, S., Martin, x., Pereira, R., *Does Voluntary Disclosure Improve Stock Price Informativeness?* Financial Management , 2008, **37**(4), P.747-768.

- [19] Hajian, N., Anwari Rostami, A. A., Rahmani, A., Azar, A., *Investigating the effective factors on the level of information disclosure of companies listed on the Tehran Stock Exchange*, Financial Accounting Research, 2015, 7(1), P.71-92.
- [20] Hendriksen, E. S., Van Breda, M. F., *Accounting Theory*, 5th edition. United States of America. 1992: IRWIN. Inc.
- [21] Hemmati, H., Jalili, A., *Investigating the rate of disclosure of intellectual capital information in the financial reports of companies listed on the Tehran Stock Exchange*, Accounting and Auditing Research, 2013, P.1-21.
- [22] Horton, J., Serafeim, G., *Market reaction to and valuation of IFRS reconciliation adjustments: first evidence from the UK*, Rev Account Stud , 2010, P.725–751.
- [23] Hossein poor, A., Poor heidari, H., *Investigating the relationship between mandatory and Valuantry disclosure with the value of companies' share*, Financial management perspective , 2015, 5, P. 9-28.
- [24] Ianniello, G., Galloppo, G., *Stock market reaction to auditor opinions – Italian evidence*, Managerial Auditing , 2015, 30(6/7), P. 610- 632.
- [25] Iran, Accounting, K. T., Audit, s., *Accounting Standard No. 37, Financial Instruments Disclosures*, Corporate Audit, 2018
- [26] Jensen, M.C., Meckling, W.H., *Theory of the firm: managerial behavior, agency costs and ownership structure*, Journal of Financial Economics, 2002, 3, P. 305-360.
- [27] Kashani, M., Rahmani, A., Parchini, s., *The relationship between voluntary disclosure and non-executive managers*, Accounting and auditing reviews , 2010, P.85-100.
- [28] Karimi Khorami, A., Zareie Sodani, A., Ahmadi, S., *Investigate the Economic Consequences to the Timing of Earnings News Forecast for Accepted Corporates in Tehran Securities Exchange*, Advances in Mathematical Finance and Applications, 2020, Doi:10.22034/AMFA.2021.1924367.1570
- [29] Kargarpour, KH., Khodadadi, V., Jorjorzadeh, A., Salehid, A., Kaab Omeira, A., *Idiosyncratic Risk and Disclosure of Corporate Social Responsibility: Emphasizing the Role of Corporate Governance*, Advances in Mathematical Finance and Applications, 6(1), 2021, P.95-117. Doi: 10.22034/amfa.2020.1878505.1293
- [30] LENNOX, C., SCHMIDT, J., THOMPSON, A., *Why are expanded audit reports not informative to investors? Evidence from the UK*, Corporate Control and Organization , 2020. P.1-60.
- [31] Lorraine, N. H., Collison, D. J., Power, D. M., *An analysis of the stock market impact of environmental performance information*, Accounting Forum , 2004. P.7-26.
- [32] Mahdavi, Gh., Daryaei, N., *Investigating the relationship between company size, type of industry and profitability with disclosure of environmental and social accounting information*, Empirical Accounting Research, 2015,1(8).
- [33] Mechelli, A., Cimini, R., Mazzocchetti, F., *The usefulness of the business model disclosure for investors' judgements in financial entities. A European study*, Revista de Contabilidad – Spanish Accounting Review , 2017, P.1-12.
- [34] Moussa, F., Delhoumi, E., Ouda, O. B., *Stock return and volatility reactions to information demand and supply*, Research in International Business and Finance, 2017, 39, P.54-67.

- [35] Naser, K., Alkhatib, K., Karbhari, Y., *Empirical evidence on the depth of corporate information disclosure in developing countries: the case of Jordan*, International Journal of Commerce and Management, 2002, **12**(3/4), P.122- 34
- [36] Negre, E., vcrdier, M., Cho, c., *Disclosure strategies and investor reactions to downsizing announcements: Alegitimacy perspevtive*, Account . public policy. 2017
- [37] Owusu-Ansah, S., *The impact of corporate attributes on the extent of mandatory disclosure and reporting by listed companies in Zimbabwe*, International Journal of Accounting , 1998, **33**(5), P.605–631.
- [38] Pourheidari, A., Hosseinpour, H., *Investigating the relationship between mandatory and optional disclosure with the value of companies' shares*, Financial Management Perspective, 2015, **5**, P. 9-28.
- [39] Roosenboom, P., A. van Dijk, M., *The market reaction to cross-listings: Does the destination market matter?* Journal of Banking and Finance , 2009, P.1898–1908.
- [40] Serafeim, G., Ioannou, I., Cheng, B., *Corporate Social Responsibility and Access to Finance*, Strategic Management Journal , 2014, **35**(1), P.1-23.
- [41] Setayesh, m. H., Kazem Nejad, M., Zolfaghari, M., *Investigating the effect of disclosure quality on stock liquidity and capital cost of companies listed on the Tehran Stock Exchange*, Journal of Financial Accounting Research, 2012.Third Year, **3**, P.55-74.
- [42] Singhavi, S. S., Desai, H. B., *An empirical analysis of the quality of corporate financial disclosure*, The Accounting Review, 1971, **46**(1), P.129-138.
- [43] Souissi, M., Khlif, H., *Meta-analytic review of disclosure level and cost of equity capital*, International Journal of Accounting and Information Management, 2012, **20**(1), P.49-62.
- [44] Tabeli, H., Morad zadeh, M., Kashi, M., Drohi, z., Hoseeini, s., *Investigating the effect of quality disclosure and voluntary disclosure of information on information asymmetry*, Public Management Research , 2018, **42**, P. 201-227.
- [45] Uyar, A., Kiliç, M., *Value relevance of voluntary disclosure: evidence from Turkish firms*, Journal of Intellectual Capital, 2012, **13**(3), P. 363-376.
- [46] Whisenant, J., Sankaraguswamy, S., Raghunadan, K., *Market reactions to disclusrse of reporTable events*, Journal of Practice and Theory, 2003, **22**(1), P.181-194.