

Investigating the weak managers' ethical behaviours on stock price crash risk and the financial reporting quality

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(Communicated by Javad Vahidi)

Abstract

Changes in stock prices in the market are considered normal; but, the issue that always worries investors is the issue of sudden changes in stock prices. Also, one of the major sources of information used by capital market participants is the financial reports published by the companies, periodically made available to the public as the basis for the potential and actual investor decisions to buy and sell and invest in the stock market. Therefore, the ethical behaviour of managers in the organisation is considered as a key factor in the success of the organisation and gaining the trust of investors. Therefore, based on this argument, the purpose of this study is to design a model to examine the weak managers' ethical behaviours on stock price crash risk and financial reporting quality using a sample of 134 companies listed on the Tehran Stock Exchange from 2018 to 2020. Also, the research hypotheses test was conducted using structural equation modelling. The results showed that the weak ethical behaviours of managers in the companies increase stock price crash risk. The second hypothesis also shows that the weak managers' ethical behaviours also reduce financial reporting quality

Keywords: Weak managers' ethical behaviors, stock price crash risk, financial reporting quality
2020 MSC: 91B05

1 Introduction and preliminaries

The focus of business units is on maximizing profits, meeting competitive challenges, emphasizing short-term results, and providing a variety of accounting services, putting accountants in an environment full of conflict and pressure that has led to unethical consequences for them [37]. The increasing complexity of organizations and the increasing rate of unethical, illegal and irresponsible work in the workplace have drawn the experts' attention to the discussion of ethics and its various effects. Therefore, according to the ethical principles in practice, there is always a right solution and others believe that the right solution depends on the situation, conditions and recognition that the solution is right, and ultimately is the responsibility of the individual [19]. Considering ethical principles by the managers in organizations will lead to the proper guidance, leadership, and control of human resources. Therefore, when ethical principles are followed by the managers, there will be a good opportunity to increase the comparability of financial statements and the quality of financial reporting. Some researchers believe that the decline of moral values in society leads to the violation of moral standards [12]. Meanwhile, according to [40], the financial scandals of

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companies, which are due to non-compliance with ethical principles, have not only caused uncertainty in accounting figures, which is the most important part of the financial reports but also, have reduced investors' confidence in the financial statements prepared by management. One phenomenon that can cause investors to lack confidence is a stock price crash. Stock price crash generally occurs due to the bubble in the company's stock price, and this is due to management measures such as delaying the release of bad news and accelerating good news the release, tax evasion, and lack of transparency of financial information and ultimately financial reporting quality [15, 22]. The biased provision of financial information has led to restrictions on the control of opportunistic management behaviours. In this regard, one of the important mechanisms to prevent the above problems and, consequently, increase financial reporting quality and the stock price crash risk, is the issue of managers' ethical behaviour.

Ethics is one of the most important factors in the success of any business unit, and this issue has become more important, especially after the recent moral scandals. The manager's moral balance is a sign of his competence and from a psychological point of view, a manager's management ethics has a significant impact on the success of an organization [14]. Managers who do not pay attention to the ethical principles in their management field do not achieve the desired success and as a result fail [1] and this in itself can be a factor to increase the risk of a stock price crash and consequently reduce financial reporting quality through manipulating the company's financial statements. Therefore, the scope of ethics in management is very wide and includes various issues [6]. Thus, training and understanding of organizational ethics by the managers increases the understanding and awareness of the organizational goals.

Robinson and Bennett [33] argue that deviations from organizational norms from right or wrong behaviours are different in terms of justice, law, and ethics; this difference is due to the lack of motivation to meet social norms. Among unethical behaviours in the workplace, sabotage, dismissal, lying, theft, mystical abuse and employee absence can be referred. According to De George [8], ethics is known as a company goal in the form of ethical values and norms that are provided to the employees in a written form. In a study to determine managers' views on the causes of unethical behaviours, managers were interviewed and showed that the behaviours of executives and other managers and organizational regulations are the main sources of unethical behaviours. Employees also believe that the hidden, implicit, and overt forms of recognized ethical principles (such as leadership and corporate culture) are more effective in shaping ethical behaviour than its explicit forms (e.g. code of conduct and ethical committees) [11]. Therefore, by understanding the importance of corporate ethical values, researchers have distinguished between corporate values and corporate culture. Hunt et. al. [16] conducted the first study to examine the differences between the two concepts. They defined the values of corporate ethics as a combination of individual values of managers and formal and informal ethical policies of the organization. The results of this study indicated that corporate values are the central dimension of the corporate culture. Many studies have examined the implications of corporate ethics. Some have suggested that various ethical criteria relate to employee behaviour and commitment [41]. Research results show that high-level organizational values affect the disclosure of illegal and immoral activities outside the organization [38], organizational commitments [16], organizational contradictions [43], and behavioral intentions [44]. Some believe that ethical codes will not be successful in shaping behaviour in the organization unless the employees understand these codes in a practical way in their organization in order to have high-level moral values [42]. Elias [11] examined the characteristics of the ethical understanding of earnings management and found that the individual's moral consciousness (such as idealism and relativism) and the degree of understanding of social responsibilities are important characteristics of ethical principles of earnings management. Results of these studies showed that the accountants with a high (low) understanding of social responsibility find earnings management activities more (less) unethical. Therefore, the study of the managers' ethical views on corporate governance and financial reporting quality can be examined based on the above theories.

2 Theoretical foundation of research

Ethics is a pervasive subject that covers all aspects of human life and consists of a set of rules governing how people treat each other, on which rational individuals have agreed in order to secure their fraudulent interests, provided that others follow those rules [36]. The word "ethics" is the business term coming from the Greek word *Athos* meaning character, habit, and behaviour [39]. Researchers have defined the term ethics, referring to fairness, truth, and correctness, in deciding what is good and what is bad, and to the activities and rules that establish responsive behaviour between individuals and groups. Others describe morality as follows: "Being moral and acting morally includes taking actions to ensure that moral behaviour is always and in all circumstances observed and conducted" [9].

Much of the research on ethical decision-making in accounting has been based on perceptual perspectives, emphasizing individual decisions as well as those that influence the individual's choices and actions in the face of ethical issues

[45]. Following Piaget's ideas, researchers state that individual learning, or in other words, perceptual development, is a necessary precondition for moral reasoning. The first ethical research in accounting was mainly based on Kohlberg's perceptual-moral development model. On the other hand, the recent scandals of companies and the creation of crises have led to the reconsideration of culture and ethical values in large companies [2]. Accountants have been widely criticized for failing to warn unethical, seemingly legitimate and correct management behaviours [31] which are seen as illegitimate by others [11].

However, there is an agreement that managers face considerable pressure from the conflict of interests and agency theory to manage earnings; this pressure causes some of them to be overly exposed to immoral behaviours [11]. Martin et. al. [26] found that the stock exchange commission has increased its scrutiny of earnings management activities in recent years in line with the agency theory since some of these activities are indeed fraudulent. The existence of interests is not a new issue in the ethical environment of the organization [27]. In another study, corporate executives were interviewed to determine the causes of unethical behaviours and perspectives of the managers. Managers showed that the behaviours of senior officials, other top executives, and organizational regulations were the main sources of unethical behaviours. Also, employees considered hidden, implicit, and unclear forms of formalized ethical principles (such as leadership and corporate culture) than its explicit forms (such as codes of conduct and ethical committees) more effective in shaping ethical behaviours [11].

By understanding the importance of corporate ethical values, researchers have distinguished between corporate values and corporate culture. Hunt [16] conducted the first study to examine the differences between the two concepts. They defined corporate ethics as "a combination of the individual values of managers and the formal and informal ethical policies of the organization. Their results showed that corporate values are the central dimension of the corporate culture. Many studies have examined the implications of corporate ethics. Some have suggested that various ethical criteria relate to the employees' behaviour and commitment [41]. Research results showed that high-level organizational values affected the disclosure of illegal and immoral activities outside the organization [38], organizational commitments [16], organizational conflicts [43], and the intentions of ethical behaviours [44]. Some argue that a code of conduct will not be successful in shaping behaviours in the organization unless employees understand these codes in practice in order to have high-level ethical values in their organization [42].

Elias [11] examined some features of the ethical understanding of earnings management. He found that one's moral consciousness (such as idealism and relativism) and the degree of understanding of social responsibilities are important characteristics of the ethical principles of earnings management. The first study found that accountants with a high (low) understanding of social responsibility considered earnings management activities to be more (less) unethical.

It seems that the requirement for the accountants to keep up with the changes and developments and not fall behind, enough awareness and insight, knowledge of the ethical values prevailing in the environment and flexibility in the face of the changes ahead. Success in the organization is due to the creation and application of ethics management in the organization. Organizational ethics start with building trust. The more trust in the organization, programs and (senior, middle and senior) managers, the greater the commitment to the organization and tasks. Building trust will increase organizational capacity to respond to environmental needs; because building trust will create synergy in the organization. The lower the employee trust in the managers and the organization, the more the managers will have to pay to control the employees' behaviours, which will be less effective. Building trust is created by predicting behaviour. In the modern management theories, such as agency theory, corporate governance, stakeholder theory, information asymmetry theory (wrong choice and moral hazard), and even a number of critical theories, ethical issues are of particular interest. Therefore, the study of the managers' ethical views on the stock price crash risk and financial reporting quality can be examined based on the above theories. Therefore, based on the above arguments, the research hypotheses were formulated as follows:

Hypothesis 1: Weak ethical behaviours of managers affect the stock price crash risk.

Hypothesis 2: Weak ethical behaviours of managers affect financial reporting quality.

3 Empirical background

Ferrell [13] examined the business ethics and social responsibility of the company according to the role of the brand based on a sample of 351 respondents from customers. Their findings showed that business ethics can influence customers' attitudes and that companies try to disclose the issues related to social responsibility in order to retain their customers and their attitudes. They found that business ethics, which leads to a business attitude in customers, has a significant correlation with corporate social responsibility. Nakpodia and Adegbite [28] examined the relationship between corporate governance and ethics using a qualitative method (interview) in three elitist - political, cultural

and religious groups in Nigeria. They found that corporate governance mechanisms and elite interventions could affect institutional areas. In his research, El Gammal [10] examined the relationship between corporate governance ethics and social responsibility disclosure using data from a questionnaire presented in small and medium enterprises in the Middle East and North Africa. Based on the statistical method of the structural equation modelling, they concluded that the company's ethical practices have a significant and positive effect on corporate governance and in turn, corporate governance has a significant and positive effect on the disclosure of corporate social responsibility. The results also showed that there is an interaction between corporate governance and the relationship between ethics and corporate social responsibility. Houqe [30] examined the relationship between corporate ethics and auditor choice using a sample consisting of 132,853 company years between 1998 and 2007 in 46 countries around the world. They found that ethical values in large corporations are more inclined to use large audit firms. They also showed that this is further reinforced by the size of the CEOs. Khajavi [21] examined the ethics-based conceptual framework for accounting and financial reporting with an analytical-critical approach. Using the content analysis method they reviewed valid and relevant texts in the field of ethics and financial reporting. The results of their research indicated that basing ethical values in accounting and financial reporting can lead to the main role of accounting, "transparency". Salehi [35] examined the relationship between corporate governance mechanisms and ethical decision-making of internal auditors and the effect of experience on it. The results showed that internal auditors are sensitive to ethical issues and other basic corporate governance mechanisms are correlated with the ability of the internal auditor's ethical reaction in face of difficult situations. Royaei and Bayat [34] studied teaching ethics in accounting with the approach of examining the effect of moral motivation on moral behaviour. The results indicated that students at both individual and organizational levels have almost the same moral behaviours; also, there was no significant relationship between moral motivation and decision making in individual situations; but, there was a significant relationship between creating moral motivation and decision-making related to the organization and work environment. In their study titled "The effect of financial managers' ethical perspectives on the quality of corporate financial reporting", Etemadi and Dianti Deilami [12] concluded that given the positive effect of the managers' idealistic view on the quality of financial information, it seems necessary that professional institutions and authorities plan to strengthen the idealism of managers and, as a result, improve the quality of financial statements.

4 Materials and methods

The present study was applied in terms of purpose and descriptive correlation in terms of data collection. Also, it was deductive-inductive in terms of reasoning method and cross-sectional and based on the path analysis method. The required data of the selected companies were extracted by referring to the financial statements and explanatory notes along with the financial statements of the companies listed in the Tehran Stock Exchange available in the Codal system, Tehran Stock Exchange website and the new Rahavardnovin software. Data on the managers' ethical behaviours were also collected by sending a questionnaire to the financial managers of the sample companies. The final analysis of the collected data was performed using structural equation modelling and PLS software. The steps of structural equation modelling were as follows: first, the model's goodness fit (including measurement model fit, structural model fit, and general model fit) and then the research hypotheses were tested. The statistical population in this study consisted of the companies listed on the Tehran Stock Exchange from 2018-2020 that had the following conditions:

1. The financial unit of the company was located within Tehran;
2. The fiscal year of the company ended in the last month of winter;
3. They were not intermediary or holding companies.

After reviewing the companies in terms of the mentioned characteristics, a total of 134 companies were selected as the sample of the study.

5 Research variables and their measurement

The studied variables in this study, including dependent, independent and control variables, were measured as follows:

Independent variable

The Independent variable of this study was weak ethical behaviours of managers measured by the questionnaire of Lopez and Medina [25] including some elements (of values and mission components, reward and punishment, ethics training, the impact of leadership on improving ethical environment and processes, ethical rules and codes).

Dependent variables

The first dependent variable of this study was financial reporting quality for measuring which the presented models for the earnings management were used:

Model 1. Dechow and Dichev [7] model was used in the following form:

$$\Delta WC_t = \beta_0 + \beta_1 CFO_{t-1} + \beta_2 CFO_t + \beta_3 CFO_{t+1} + v_t$$

where, ΔWC_t represents variations in the working capital of year t compared to the previous year, CFO_{t-1} is operating cash flows of year $t-1$, CFO_t is operating cash flows of year t , CFO_{t+1} is operating cash flow of year $t+1$ and v_t is residual error in the model. The error component of this model shows estimation error of total accruals and an inverse criterion of the earnings quality.

Model 2. The Mc Nichols [29] model, which is a modification of the Dechow and Dichev [7] models, also falls into the second category. The symbolic expression of this model is as follows:

$$\Delta WC_t = \beta_0 + \beta_1 CFO_{t-1} + \beta_2 CFO_t + \beta_3 CFO_{t+1} + \beta_4 \Delta Sales_t + \beta_5 PPE_t + v_t.$$

where, ΔWC_t represents the change in the working capital of year t compared to the previous year, CFO_{t-1} is operating cash flow for year $t-1$, CFO_t operating cash flow for year t , CFO_{t+1} is operating cash flow of year $t+1$, $\Delta Sales_t$ is change in the sales of year t compared to the previous year, PPE_t is property, plants and equipment for year t , and v_t is the residual error of the model.

The criterion for the quality of accruals is the standard deviation of the residual error of the mentioned model, and the lower value of this number indicates the desired characteristic of earnings.

Model 3. Jones model [20] was used as follows:

$$TA_{i,t} = \Delta CA_{i,t} - \Delta CL_{i,t} - \Delta CASH_{i,t} + \Delta STD_{i,t} - DEP_{i,t},$$

where, TA is company i 's total accruals in year t , $\Delta CA_{i,t}$ is change in company i 's current assets between years t and $t-1$, $\Delta CL_{i,t}$ is change in the current liabilities of company i between years t and $t-1$, $\Delta CASH_{i,t}$ is change in the cash flow of company i between years t and $t-1$, $\Delta STD_{i,t}$ is change in the current long-term debt of company i between years t and $t-1$, and $DEP_{i,t}$ is depreciation cost of company i between years t and $t-1$.

After calculating the total accruals, the parameters of α_1 , α_2 , α_3 , were estimated through the following equation in order to determine non-discretionary accruals:

$$TA_{i,t}/A_{i,t-1} = \alpha_1(1/A_{i,t-1}) + \alpha_2[(\Delta REV_{i,t} - \Delta REC_{i,t})/A_{i,t-1}] + \alpha_3(PPE_{i,t}/A_{i,t-1}) + \epsilon_{i,t}.$$

Model 4: Modified Jones Model [20]

The Jones model was modified by Dechow and Dichev [7] with the addition of a variable as follows:

$$TACC_t/A_{t-1} = \beta_0 + \beta_1 1/A_{t-1} + \beta_2(\delta REV_t - \Delta REC)/A_{t-1} + PPE_t/A_{t-1} + \epsilon$$

where, ΔREC shows the changes in the receivables of this year compared to the previous year.

-The first criterion for stock price crash risk: Negative Skewness of Stock Returns (NCSKEW) This criterion has been used in accordance with the research of [5, 23, 24, 32]. This criterion is calculated through Equation (5.1)

$$NCSKEW_{it} = -[n(n-1)^{\frac{3}{2}} \sum W_{i,\theta}^3] / [(n-1)(n-2)(\sum W_{i,\theta}^2)^{\frac{3}{2}}], \quad (5.1)$$

where, $W_{i,\theta}$ is specific monthly returns of company i in month θ and n is the number of monthly returns observed during the fiscal year. In this model, the higher the negative skewness coefficient, the more the company will be exposed to

the stock price crash risk. The firm-specific monthly return denoted by $W_{i,\theta}$ is equal to the natural logarithm of 1 plus the remaining number ($\epsilon_{i,\theta}$), calculated from Equation (5.2).

$$W_{i,\theta} = \ln(1 + \epsilon_{i,\theta}), \quad (5.2)$$

where, $\epsilon_{i,\theta}$ is the residual return of company i in month θ , calculated through the residual values obtained from the estimation of the following model:

$$r_{i,\theta} = \alpha + \beta_{1i}r_{m,\theta-2} + \beta_{2i}r_{m,\theta-1} + \beta_{3i}r_{m,\theta} + \beta_{4i}r_{m,\theta+1} + \beta_{5i}r_{m,\theta+2} + \epsilon_{i,\theta}, \quad (5.3)$$

where, $r_{i,\theta}$ is the stock return of company i in the month θ and $r_{m,t}$ is the market return of the month θ .

To calculate the monthly market return, the beginning of the month index was deducted from the end of the month index and the result was divided by the beginning of the month index.

-The second criterion for stock price crash risk: Down-to-up volatility (DUVOL)

The second criterion for stock price crash risk is the down-to-up volatility (DUVOL), measured by calculating the mean specific return of companies; then, the related data were divided into two sub-groups of below and above the mean and the standard deviation of each was calculated separately. Equation (5.4) was then used to calculate the down-to-up volatility:

$$DUVOL_{i,t} = \log\left(\frac{Down_{i,t}}{Up_{i,t}}\right) \quad (5.4)$$

$Down_{i,t}$ is the standard deviation of the observations below the mean and $Up_{i,t}$ is the standard deviation of the observations above the mean for the specific return of company i in year t.

-The third criterion of stock price crash risk : Firm-specific monthly return

The third criterion of stock price crash risk was the firm-specific monthly return according to the research by Andreou et. al. [3], Callen and Fang [4], Hutton et. al. [15] and Kim et. al. [22] calculated as follows:

$$W_{j,t} = \ln(1 + \epsilon_{j,t}),$$

where, $W_{j,t}$ is the specific monthly return of firm j in month t during the fiscal year. $\epsilon_{j,t}$ is the residual return of company j in month t as well as the residual of the model in the following equation:

$$r_{j,t} = \alpha_j + \beta_{1j}r_{m,t-2} + \beta_{2j}r_{m,t-1} + \beta_{3j}r_{m,t} + \beta_{4j}r_{m,t+1} + \beta_{5j}r_{m,t+2} + \epsilon_{j,t},$$

where, $r_{j,t}$ is the stock return of company j in month t during the fiscal year, and rm is the market return in month t. To calculate the monthly market return, the beginning of the month index was deducted from the end of the month index and the result was divided by the beginning of the month index.

The fourth criterion for stock price crash risk: Extreme sigma

Andreou [3] stated that extreme sigma is used to establish a quantitative and continuous measure of stock price crash risk. Also, extreme sigma is defined as outlier returns with respect to the standard deviation of a particular company:

To calculate this variable, the following equation was used.

$$EXTR_SIGMA = -Min\left[\frac{W\bar{W}}{\partial_W}\right]$$

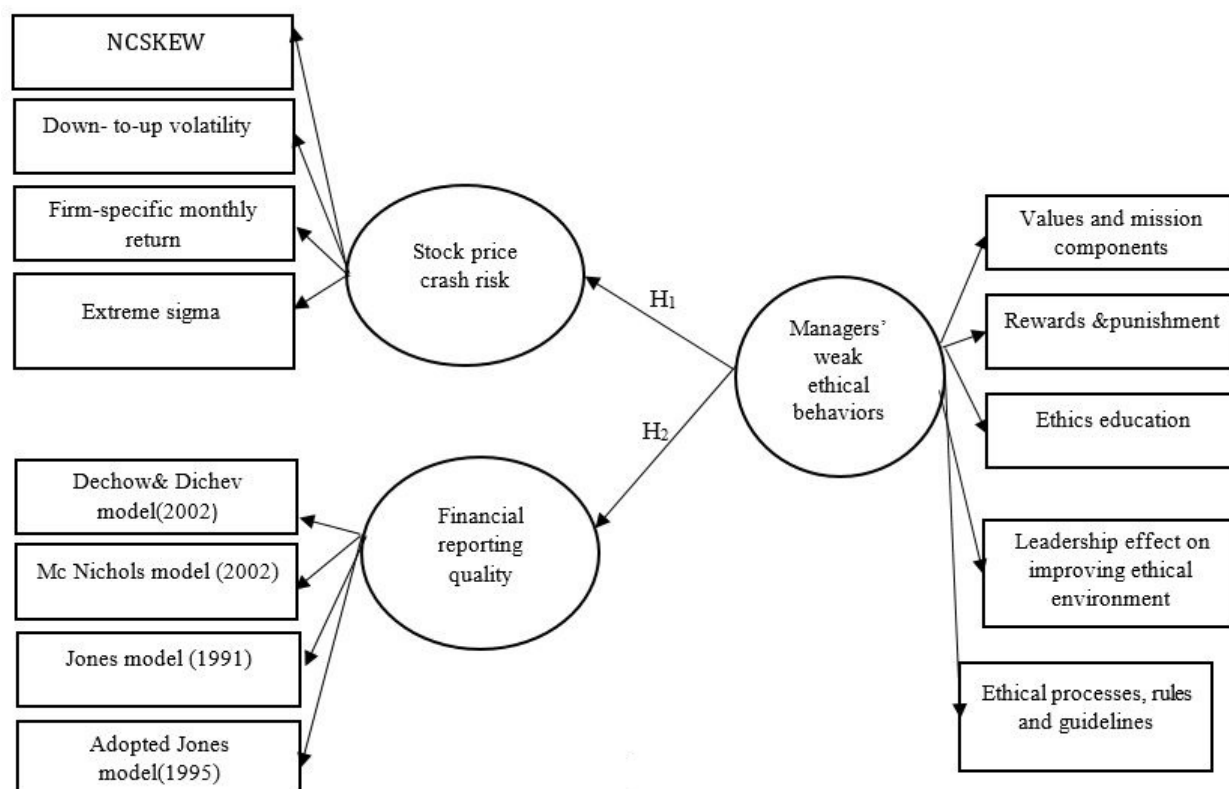
where, \bar{W} is firm-specific average monthly return and ∂_W is standard deviation of firm-specific monthly return.

Control variables

Company size was the control variable of the study, obtained using natural logarithm of total assets of the companies in the related year. The other control variable of the study was financial leverage obtained from the ratio of the company's total liabilities to total assets.

Conceptual model

Conceptual model of the study is reflected in Figure 1.



6 Results

Descriptive statistics of the research variables are reflected in Table 1.

Table 1: Descriptive statistics of the research variables

Variables	Mean	Median	Max	Min	sd
NCSKEW	-0.569	-0.769	3.721	-3.929	2.145
Down-to-up volatility	-0.448	-0.541	1.294	-2.125	1.027
Specific monthly return	-0.536	-0.683	1.973	-1.671	1.563
Extreme sigma	-1.78	-2.56	3.318	-1.236	2.916
Dechow and Dichev model	0.0158	0.0134	0.1138	-0.059	0.2351
Mc Nichols model	0.0035	0.0027	0.0120	-0.0193	0.1068
Jones model	-0.0053	0.0054	0.0813	-0.0661	0.2275
Adopted Jones Model	0.0597	0.0486	0.1556	-0.0452	0.2813
Company size	6.301	6.256	4.863	8.138	0.647
Financial leverage	0.598	0.602	0.273	1.213	0.212

As seen in Table 1, the mean of the negative skewness of stock returns and down-to-up volatility are -0.569 and -0.448, respectively, higher than the values reported in the research of [5, 24]. This indicates that the sample companies in this study are more prone to stock price crashes. A review of the financial reporting quality based on earnings management models showed that in most sample companies, managers had slightly manipulated their financial statements, which was due to the establishment of appropriate corporate governance systems in most companies. Financial leverage, which was calculated through the ratio of total liabilities to total assets of the companies, had a mean value of 0.598 and a median of 0.602. The minimum and maximum values of this variable were also 0.273 and 1.213, respectively.

Goodness of fit of the models

In measuring the goodness of fit of the model, the consistency criterion was used, estimated through factor loading by Cronbach Alpha and combined consistency. The criterion value for the suitability of the factor load coefficients

was 0.4. Because, the higher this value is concerning a given structure, the more role that index plays in explaining that structure [17]. According to Table 2, all coefficients of factor loads are more than 0.4, indicating the goodness of fit of the measurement models used in this study.

Table 2: Factor load of each of the latent variables

Variables	Name in the model	Sub-structure	Factor load
Stock price crash risk	CRASH	NCSKEW	0.945
		DUVOL	0.998
		CRASH-P	0.953
		STRA-SIGMA	0.805
Financial reporting quality	FRQ	Dechow & Dichev	0.933
		McNichols	0.940
		Jones	0.866
		Ad. Jones	0.798
Managers' weak ethical behaviors	EB	MCV	0.793
		RP	0.951
		EE	0.885
		LIMB	0.763
		PRG	0.749

Cronbach Alpha coefficients and combined consistency were fit if they were higher than 0.7. Since consistency coefficient value was between 0 and 1, it indicated the lack of consistency and a 1% consistency. Therefore, the closer the Cronbach Alpha to 1, the better it was [17]. According to Table 3, the relevant values for all structures were higher than 0.7, indicating the appropriate consistency of the research measurement models.

Table 3: Cronbach Alpha coefficients and combined consistency of latent variables

Latent variables	Name in the model	Cronbach Alpha coefficient	Combined consistency coefficient
Stock price crash risk	CRASH	0.843	0.954
Financial reporting quality	FRQ	0.755	0.839
Managers' weak ethical behaviors	EB	0.810	0.878

Structural model fit

The structural model, unlike research measurement models, does not deal with explicit variables; rather, the latent variables of the research along with the relationships between them are examined in it. The first criterion for examining the structural model fit in a study is the R^2 coefficients related to the endogenous (dependent) variables of the model. R^2 is a measure that indicates the effect of an exogenous variable on an endogenous variable and three values of 0.19, 0.33, and 0.67 in the study were considered the weak, medium and strong R^2 values. It means that this index examines the general predictability of the model. That is, whether the tested model has been successful in predicting endogenous latent variables or not (Davari and Rezaadeh, 2018). According to Table 4, the R^2 value has been calculated for the endogenous variable of the research; thus, according to the criterion value, the goodness of fit of the structural model of the research was confirmed. It should be noted that this coefficient is not calculated for exogenous variables.

Table 4: Endogenous variables' R^2 results

Endogenous variables	Name in the model	R^2
Stock price crash risk	CRASH	0.514
Financial reporting quality	FRQ	0.612
Managers weak ethical behaviors	EB	0.705

The second criterion for examining the fit of the research structural model is the Q^2 value of the endogenous variables in the model. This criterion determines the predictability of the model (Hansler et al., 2009). Each of the three values of 0.02, 0.15, and 0.35 for this criterion identify weak, medium, and strong predictability for the relevant structure, respectively. According to Table (5), the Q^2 value of the endogenous variable is more than 0.15, which indicates the strong predictability of the model and confirms the proper fit of the structural model of the research.

Table 5: Results of the Q^2 criterion in the model prediction

Total	SSE	SSO	$Q^2 = 1 - \frac{S}{SSO}$
Stock price crash risk	49	308	0.831
Financial reporting quality	63	432	0.905
Managers' weak ethical behaviors	72	489	0.921

General goodness of fit of the model

After examining the goodness fit of the measurement models and the structural model, the general model of the structural equations of the research should be examined using goodness of fit criterion (GOF). The general model included both parts of the measurement and structural model; by confirming its fit, the fit measurement was completed in the model. For examining the general goodness of fit of the model, the GOF criterion was used as follows [17]:

$$GOF = \sqrt{\overline{communalities} \times \overline{R^2}}$$

Where, $\overline{communalities}$ was common mean of latent variables and $\overline{R^2}$ was the mean determination coefficient of the endogenous variables of the model. Three values of 0.01, 0.25 and 0.36 were considered as weak, medium, and strong values for the GOF of GOF, respectively. Since the value obtained for the research model was 0.487, the general goodness of fit of the research model was confirmed.

7 Results

After examining the fit of the measurement models and the structural model and general goodness of fit of the model and according to Figures 1 and 2, the hypotheses test results were examined, the results of which are presented in Table 6.

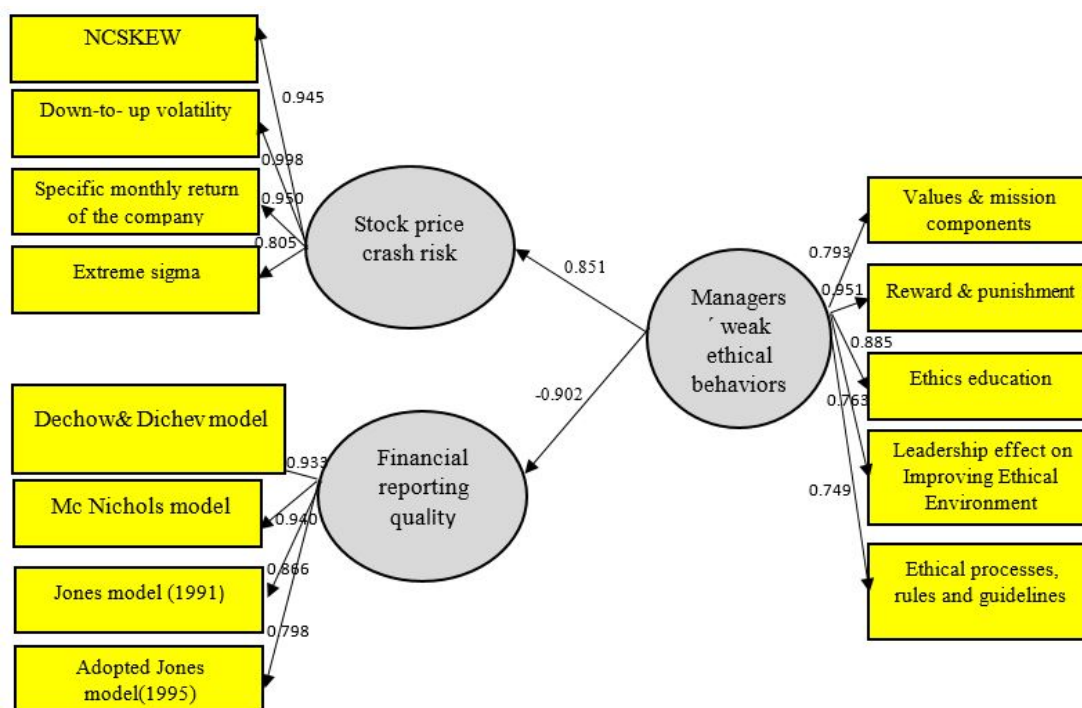


Figure 1: Research model with standardized path coefficient

As seen in Table 6, the path coefficient between the weak managers' ethical behaviour and the stock price crash risk was positive (0.851) and its t-statistic (7.526) was greater than 1.96, indicating a significant negative correlation between them. Accordingly, the first hypothesis of the research was accepted. Also, according to the result obtained from testing the second hypothesis of the research, the path coefficient between the ethical behaviour of managers

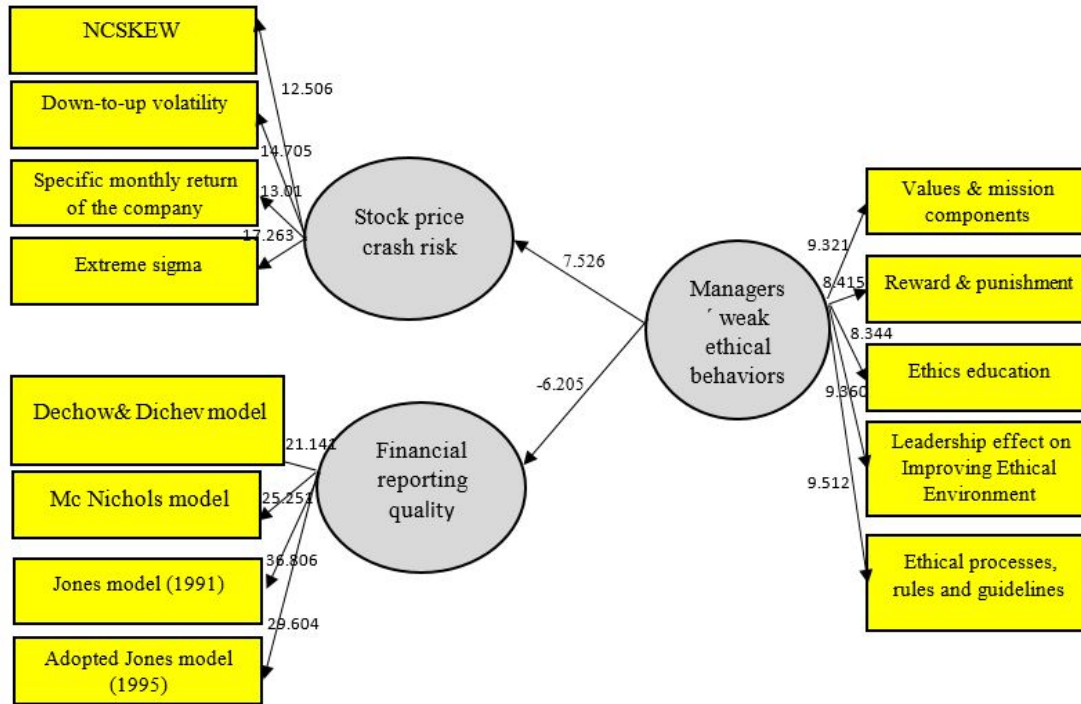


Figure 2: Research model with t-values

Table 6: Results of the research hypothesis test

Path	Abbreviation sign	Path coefficient	T statistics	Hypothesis test result
Managers' weak ethical behaviors → Stock price crash risk	Eb → crash	7.526	0.851	Accepted
Managers' weak ethical behaviors → Financial reporting quality	Eb → frq	-6.205	-0.902	Accepted

and financial reporting quality (-0.902) and its t-statistic (-6.205), which was greater than 1.96 indicated a negative correlation between them. Therefore, the second hypothesis of the research was accepted.

Discussion and conclusion

The present study aimed to develop a model to investigate the weak managers' ethical behaviours and their effects on the stock price crash risk and financial reporting quality in the companies listed on the Tehran Stock Exchange. In this study, 93 companies were used in 2020 and tested using structural equation modelling. Therefore, based on this, two research hypotheses were formulated.

The first hypothesis test showed that the weak ethical behaviours of managers affected the stock price crash risk. Based on the obtained result, the weak ethical behaviours of managers, which is due to the non-compliance with ethical principles, not only cause uncertainty in accounting figures, which is the most important part of financial statements but also reduce investors' confidence in the financial statements prepared by the manager. It has been reduced by management.

One of the areas that can lead to the lack of confidence of investors is the phenomenon of stock price crash risk. The obtained result is consistent with Salin et. al. [36] and Waweru [45]. Also, according to the second hypothesis, the ethical behaviours of managers affect the financial reporting quality. This can be argued that with the expansion of the capital market and the separation of the owner from the manager, agency problems arise. One of the agency's problems is moral hazards. Therefore, by considering agency theory, especially the problem of ethical risks, managers can have the motivation to manipulate earnings in order to maximize their benefits. Therefore, the formation of ethical principles reduces the manipulation of managers and consequently increases financial reporting quality.

Considering that ethics is important, especially after the recent scandals and because professional ethics is one of the important factors of corporate social responsibility and corporate governance has a significant impact on corporate social responsibility, it is suggested that the CEOs, as a part of the corporate governance structure, formulate professional ethical code. Also, due to the importance of professional ethics in creating mutual trust between managers and owners, it is suggested that regulatory bodies require the establishment or development of ethical principles in the organizations and the Tehran Stock Exchange as a regulatory body makes it an obligation for the related organizations.

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