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Structure of second page until the end of manuscript is as follow:

- *Introduction* Some paragraphs contain explaining the problem, literature review, object (purpose), importance and necessity of it.
- *Literature review* a review of the literature investigates only related researches chronologically and the results exploit at the end of the section theory matrix or conceptual model that document research variables and Formulate research hypotheses.
- *Methodology* including Methods, data collection tools, population, sample size and sampling methods, analysis and model testing hypothesis, definition of study variables and operational definition of them can be in presented the same section that model testing is represented and there is no need to repeat.
- *Results* including the findings compare it with the findings of previous and interpretation of compliance or inconsistency of findings with research findings and theories.

- *Conclusion* includes a summary of the problem, provide a summary of the results and overall conclusion and recommendations based on the results (policy recommendations is necessary only in applied research and, if necessary, recommendations for future research accordant with the research limitations or how development of current research;
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Editor's Note

I am pleased to announce that the Ferdowsi University of Mashhad is publishing Iranian Journal of Accounting, Auditing & Finance (IJAAF). On behalf of the board of the IJAAF and my co-editors, I am glad to present the Volume 1, Issue 1 of the journal in December 2017; the journal will publish four issues in a year. The board includes experts in the fields of accounting, finance and auditing, all of whom have proven track records of achievement in their respective disciplines. Covering various fields of accounting, *IJAAF* publishes research papers, review papers and practitioner oriented articles that address significant issues as well as those that focus on Asia in particular. Coverage includes but is not limited to:

- Financial accounting
- Managerial accounting
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- Taxation
- Accounting information systems
- Accounting education

Perspectives or viewpoints arising from regional, national or international focus, a private or public sector information need, or a market-perspective are greatly welcomed. Manuscripts that present viewpoints should address issues of wide interest among accounting scholars internationally and those in Asia in particular.

Yours faithfully,
Mahdi Moradi
Editor in Chief

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RESEARCH ARTICLE

The Impact of Strategic Corporate Social Responsibility on Tax Avoidance via Job Meaningfulness and the Mediating Role of Ethical Leadership

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Abstract

Purpose of the paper: This research aims to examine the impact of strategic corporate social responsibility on work meaningfulness and tax avoidance through ethical leadership. Standard questionnaires based on Turker (2009), De Hoogh and Den Hartog (2008), and Arnoux-Nicolas et al. (2017) with 84 items were employed to measure the variables. A team of experts confirmed the content validity of the questionnaires, and the reliability of the four questionnaires was supported by Cronbach's alpha, which was equal to 0.902. The statistical population consisted of 90 finance directors at the headquarters of listed companies on the Tehran Stock Exchange in 2021. 73 completed questionnaires were returned, and data analyses were done using structural equation modelling. The results showed that corporate social responsibility significantly affected tax avoidance. In addition, the meaningfulness of work had a significant effect on the inverse relationship of social responsibility and tax avoidance. Moreover, ethical leadership improved this relationship. According to the previous studies and the applied study results, the researcher would like to submit a proposal to the directors and heads of the boards of directors of the Tehran Stock Exchange companies under study. This paper provides new evidence on CSR and tax avoidance in Iranian companies and sheds light on the importance of considering job meaningfulness and mediating the role of ethical leadership. Indeed, this study adds to the CSR literature and integrates it with tax avoidance by signifying the role of job meaningfulness and ethical leadership in the CSR process. By presenting a refined analysis of CSR in a developing country, this research expands the understanding of CSR's expression and the effects on Iranian companies.

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1. Introduction

Sustainable development of society and business has become a magical formula in solving both social problems and the problems of preserving the safe environment necessary for human existence. The ideas of social responsibility are highlighted (Žukauskas, Vveinhardt and Andriukaitienė, 2018). Accepting social responsibilities and observing business ethics by firms and private/public organisations can minimise the risk of a real economic crisis (Amiri, 2008). Social responsibilities have direct and indirect effects on the economic activities of any organisation. Social responsibility leads to social benefits. To meet their goals, economic units need a framework to balance the firm's interests and stakeholders. One of the financial interests of a firm is earning more profit. A wide range of variables affects a company's profitability, such as sales and cost. These variables depend on human force and financial resources, and eventually profitability. However, some managers use gaps in the laws and report a higher profit in financial statements. Such measures are known as tax avoidance activities. Also, the costs incurred for CSR can be used by managers to consider taxation interests related to their corporate tax strategy. In real terms, it can reduce profits and make a lower tax avoidance level (Watson, 2015). Managers need to convince their finance affairs directors to cooperate to do these activities. Therefore, they focus on the psychological characteristics of these directors. One of these characteristics is feeling the meaningfulness of work. According to Albrecht (2013), the meaningfulness of work is a psychological mood in which individuals feel that by doing their job, they contribute to realising a worthwhile cause, which is organisational goals. If individuals see their job as meaningful, they will try their best to fulfil their tasks. In addition, tax avoidance can be considered an essential factor. An ethical leader does not only take their interests into account; they need to assess the impacts of their decisions on everyone (Stansbury, 2009). With this definition, tax avoidance by finance managers can be rooted in one’s psychological characteristics or management style.

With this introduction, this study's central question is whether a firm that respects its social responsibility might try tax avoidance. In addition, is there a risk of tax avoidance when an individual sees their job as meaningful and their managers have an ethical management style?

2. Literature Review

2.1. Social responsibility and its strategic effect

Corporate social responsibility (CSR) is considered an umbrella that covers all the relationships between the business, society, and business ethics (Matten and Moon, 2004). Today, CSR engagement requires more complex and continuous stakeholder awareness and better modernised CSR communication strategies (Amoako, Lord and Dixon, 2017). This has also sharpened the importance of CSR and stakeholder engagement among businesses worldwide (Abugre and Anlesinya, 2019). CSR is the main factor in the survival of any organisation. Companies and institutes function in a society where they find different opportunities to profit and meet their goals. In return for these opportune organisations, the organisation commits to meeting society's needs and demands preferred by stakeholders. Indeed, social responsibility is a concept to define such commitment that organisations should fulfil.

In general, social responsibility is defined as how businesses integrate economic, social, and environmental approaches into values, culture, strategies, decision-making structure, and operations in a transparent and auditable manner. As a result, better processes and procedures are implemented in the organisation to create wealth and improve society's general condition. This concept is widely accepted today, and it is seen in fields such as safety, product, honesty in the advertisement, employees’ rights, environmental sustainability, ethical behaviour, and global responsibility. In addition, there is a wide range of stakeholders, including employees, customers, communities,

environment, competitors, business partners, investors, shareholders, and states. In the field of competition, to gain competitive advantage, create value for customers, and win their satisfaction, CSR has been a critical subject over the past few years so that the institutes that measure quality in different markets perceive CSR as a factor in excellence and their assessments (Heidarian, 2010).

The question about the strategic value of CSR for companies has triggered extensive debates (Heikkurinen, 2012). Researchers have approached this by emphasising that CSR can have a strategic effect through its capacity to alter competitive position in the industry. In addition, CSR can help companies to develop their competitive advantage. Therefore, in general, it has to do with business strategy (Galbreath, 2009).

By adopting a strategic approach, companies can determine their activities and allocate resources to social responsibility. In this way, they can choose to improve their competitive advantage. By accepting CSR as a part of their immediate plan, an organisation can ensure that gaining profit and increasing share values do not compromise treating shareholders ethically.

Strategic CSR brings in the following solutions for companies:

- Creating a balance between creating economic value and social value;
- Management of relationships with stakeholders;
- Identifying and responding to threats and opportunities created by stakeholders;
- Developing sustainable business approaches; and
- Using organisational capacities for humanitarian activities.

Akdoğan, Arslan and Demirtaş (2016) concluded that the strategic effect of CSR on the meaningfulness of work and organisational identity was significant. Aghaie and Kazempour (2016) maintained a positive and significant relationship between social responsibility and the company's performance. Darabi et al. (2016) showed a significant relationship between social responsibility reporting and the risk and value of a company. Moreover, Rhee et al. (2021) concluded that t firms engaging in CSR activities improve more in terms of sustainable employability than firms not engaging in CSR activities.

2.2. Tax avoidance

In recent years, corporate tax avoidance has gained increasing prominence as a subject of discussion (Beer, de Mooij and Liu. 2020). While corporate tax avoidance had already been a significant issue in political and academic debates in the USA as an aftermath of the corporate scandals in the early 2000s (McGill and Outslay, 2004), it took more time in other OECD countries to place tax avoidance on the political agenda. Meanwhile, the public became aware that well-known firms like Google, Apple or Facebook pay almost no taxes outside the U.S., where they earn substantial proportions of their income (Chew, 2016), and many empirical studies support the notion that most enterprises engage in tax avoidance to a substantial effect (Beer, de Mooij and Liu. 2020).

Hanlon and Hitzman (2010) defined tax avoidance as an apparent tax decrease for each accounting profit or cash flow unit. A review of accounting and financial literature showed two general viewpoints about tax avoidance.

The first viewpoint argues that the objective of tax avoidance activities is only to decrease companies' tax debts and liabilities. The proponents of this viewpoint believe that from investors' perspective, tax avoidance is an activity to increase the company's value, and managers should be rewarded for such activities. A clear instance of this viewpoint is manager bonus plans based on profit after tax, which motivates managers to lower the effective tax rate. A great deal of time spent by managers to avoid tax and the risk of penalty if found by regulating institutes are the potential

costs of this approach. Therefore, based on this viewpoint, conflict of interests between managers and shareholders, according to agency theory, is eliminated. At the same time, the company and state relationship is challenged based on stakeholders' theory.

In the second viewpoint, tax avoidance activities cover a broader aspect of agency between managers and shareholders, such as the opportunistic approach of managers and abusing corporate resources. Desai and Dharmapala (2009) believed that the complicacy of tax avoidance activities could provide managers with tools, coverages, and insight that prepare the ground for opportunistic behaviours such as profit manipulation, a transaction with dependents, and abusing corporate resources in managers' favour. In other words, from this viewpoint, tax avoidance and managers' divergence from organisational goals become two sides of one coin. Tax avoidance is considered activities with direct and indirect effects on business units and society. Hanlon and Hitzman (2010) argued that a decrease in tax expenses, increase in cash flows, and increase in shareholders' wealth were among the direct consequences of tax avoidance; and reduction of tax havens, risk of tax increase, increase in tax crimes, decrease in social responsibility, and decrease in the value of firm were the indirect consequences of tax avoidance.

The issue that researchers have primarily considered in this study is the impact of corporate social responsibility on tax avoidance. The association between CSR and tax avoidance is both theoretically and empirically ambiguous. However, most studies find a negative association between CSR and tax avoidance. Nevertheless, results are highly dependent on measuring the respective constructs and other marginal conditions. The comparability of recent research on the issue is limited due to heterogeneous CSR and tax avoidance metrics and a potentially bidirectional relationship (Kovermann and Velte, 2021). Hasseldine and Morris (2013) argued that CSR and tax avoidance are significantly related. Jafari and Isfahani (2013) showed that social responsibility did not affect tax avoidance. Dianati and Rezapour (2014) showed no significant relationship between finance managers' belief in corporate ethics and CSR and their reluctance to follow tax avoidance plans. Still, there was a negative relationship between finance managers' resistance to tax avoidance plans and their participation in tax avoidance plans. Lari Dasht Bayaz, Ghaem Maghami and Kahromi. (2016) showed a positive and significant relationship between cultural, economic, and political-legal elements and tax avoidance. Also, Timbate (2021) revealed that as firms' performance rises further above their aspiration level, they are less likely to show better CSR performances and are also less likely to avoid taxes. Moreover, Chouaibi, Rossi and Abdessamed (2021) showed that companies with no conduction of CSR activities are more aggressive in avoiding taxes than others, confirming the idea that CSR could be seen as a facet of corporate culture that affects business corporate tax avoidance.

The following hypotheses were designed to achieve the objective of the study:

H_1: Social responsibility has a significant impact on tax avoidance.

2.3. Work meaningfulness as a mediator variable

Work meaningfulness means a friendly relationship between the individual and organisation in commitment, loyalty, and sacrifice. In other words, it is a comprehensive mood that contains meaning and objective of personal life through the work. It also includes the number of hours individual works and stays awake (Chalofsky, 2010). Albrecht (2013) defines work meaningfulness as a psychological mood through which people feel they have a positive and valuable role in realising a worthy cause.

Leal, Rego and Cunha (2015) showed that the so-called institutionalisation process that specifically and individually covers individuals in an organisation might impact the meaningfulness of work. Leal, Rego and Cunha (2015) found that the positive effects of meaningful work trivially

mediate between perceptions of CSR and psychological capital. Onkila and Siltaoj (2017) believed that most companies fulfil CSR as a show for the public and highlight it in financial statements; while, it is not completely fulfilled in practice. The reason for this is the formal laws of CRS that are inconsistent with organisational laws. They argued that integrated official rules and hierarchical processes from top to bottom that act as the determinant of social responsibility explain the problem. CSR must be institutionalised in all organisation members as a general census that concentrates on commitment, cooperation, and unity. This means that people should see their work as meaningful before fulfilling CSR. Raub and Blunschi (2014) showed that personnel's awareness of CSR activities has a positive relationship with job satisfaction, participation at work, and creativity. In addition, awareness of CSR has a negative relationship with emotional burnout. These relationships are affected by the perceived importance of tasks. Surajdeep (2016) showed that meaningfulness of work and CSR are significantly related. Akdoğan, Arslan and Demirtaş (2016) demonstrated that meaningfulness of work improves the relationship between CSR and organisational identity. Afsar, Al-Ghazali and Umrani (2020) showed that incremental morality beliefs strengthened the effect of CSR perceptions on work meaningfulness, especially when moral identity centrality was weaker.

The following hypotheses were designed to achieve the objective of the study:

H_2: Social responsibility significantly impacts tax avoidance with work meaningfulness as a mediating variable.

2.4. Ethical leadership as a moderator variable

Respecting ethical concerns is considered a critical factor in some leadership styles. As an independent leadership style, ethical leadership is a relatively new topic of which every aspect is not thoroughly examined. To explain ethical leadership, researchers have argued that leaders shall not only consider their interests when they make decisions (Stansbury, 2009). Several studies have listed the characteristics of ethical leadership such as fairness, honesty, solidarity with followers, etc. Given these characteristics, it is expected that ethical leadership positively affects personnel's attitudes and behaviours. Still, there is limited practical evidence about the effects and outcomes of ethical leadership (Kalshoven and Den Hartog, 2009). Due to the special impacts of leaders' behaviour on their followers' behaviours. Through this, we can determine the probable impacts on other organisational variables and affect them by controlling leadership style (Doustar, Mostaghimi and Ismaielzadeh. 2015).

Brown, Treviño and Harrison (2005) took ethical leadership as a one-dimensional phenomenon and listed several behaviours for ethical leadership. They demonstrated an ethical leader as honest, reliable, fair, and considerate. De Hoogh and Den Hartog (2008) showed that each of these ethical behaviours of leaders has its own specific impact. Therefore, based on the mentioned characteristics by Brown, Treviño and Harrison (2005) and other studies, they introduced three aspects of ethical leadership. The first aspect (ethics and fairness) states that ethical leaders make decisions based on principles and fairness and extent justice at work. The second aspect (transparency of roles) states that these leaders have transparency in their work, promote transparent relationships, and invite their followers to behave ethically. The third aspect is sharing power so that ethical leaders give room to the inferiors to express their ideas and hear their concerns and ideas (De Hoogh and Den Hartog, 2008).

Seif Panahi et al. (2015) argued that ethical leadership has a significant relationship with social responsibility. Wu et al. (2015) studied Chinese companies and showed that ethical leadership positively affects CSR via ethical organisational culture. Zhu, Sun and Leung (2013) showed that ethical leadership affects CSR, which improves the firm's performance and credibility. Ponnu and

Tennakoon (2009) examined the effects of ethical leadership on the attitudes of personnel, such as organisational commitment and trust in leaders. They used the data from 172 middle managers in Malaysian organisations. Their results also supported the positive impact of ethical leadership on organisations commitment and trust in leadership among personnel. Akbari and Faham (2016) argued that personal values positively and significantly impact business ethics and CSR. Also, Business ethics has a positive and significant impact on CSR. Chaudhary (2021) showed authentic leadership leads to more favourable perceptions of Corporate Social Responsibility (CSR), which, in turn, results in enhanced experiences of meaningfulness at work.

The following hypotheses were designed to achieve the objective of the study:

H_3: Social responsibility significantly impacts tax avoidance with ethical leadership as moderator.

H_4: Social responsibility significantly impacts tax avoidance with ethical leadership as a moderator and work meaningfulness as a mediating variable.

A research model was developed to test the hypotheses (Figure 1).

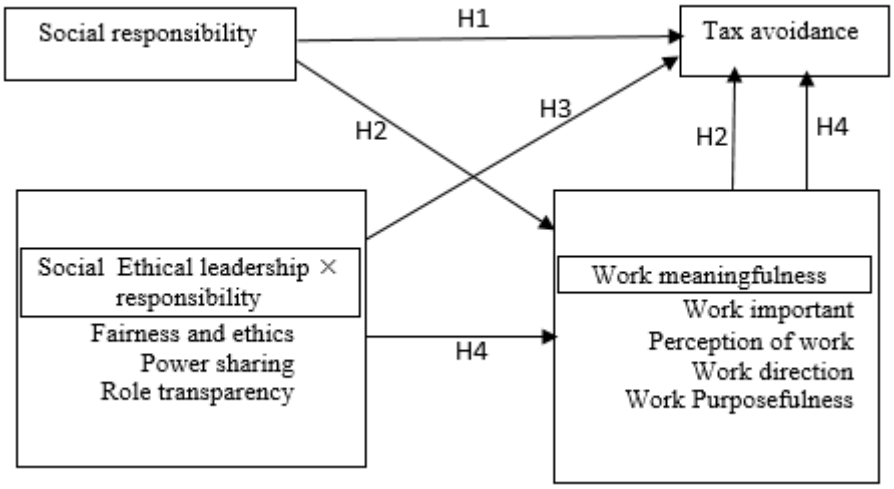

Figure 1. Research operational model (based on Akdoğan, Arslan and Demirtaş, 2016)

3. Methodology

In terms of nature and method, the study is a descriptive-correlational work, and as to objective, it is an applied work. Data gathering was done through library review so that the theoretical ground of the study was determined using the literature in Farsi and English. Afterwards, data gathering was carried out by administering questionnaires among 90 finance managers working at the headquarters of firms in TSE. Experts had confirmed the questionnaire in terms of content validity. The questions were standard questions based on Turker (2009), De Hoogh and Den Hartog (2008), and Arnoux-Nicolas et al. (2017). Other studies have supported the validity of the questionnaires, and to be on the safe side, the content validity of the questionnaires was also checked. Cronbach's alpha of the tool was determined to equal 0.902 in SPSS (v.20). The data collected in the study were managed in Excel. Data analyses and hypotheses tests were done using structural equations modelling (SEM) in Smart.PLS.03.

The study population consisted of all finance managers in TSE firms in 2021. Based on inclusion criteria, 90 managers were selected, and 73 questionnaires were returned completed by the participants.

To keep the items consistent, Likert's five-point scale was used. The questionnaire contains four sections; section one measures social responsibility based on Turker (2009) standard questionnaire. Section two measures the meaningfulness of work (based on Arnoux-Nicolas et al. 2017) with four aspects: the importance of work, perception of work, work direction, and work purposefulness). Section three measures tax avoidance (researcher-designed), of which content validity was supported. And section four is dedicated to ethical leadership, namely fairness, ethics, transparency, and power-sharing.

4. Research Findings

4.1. Construct indices

Table 1 lists the descriptive indices of the constructs or questions of the questionnaire.

Tabe 1. Descriptive indices

Variables	Constructs	Items (n)	Mean	SD	Min	Max
Social responsibility	Social responsibility	20	3.38	0.51	2.05	4.50
Meaningfulness of work	Work important Perception of work Work direction Work purposefulness	15	3.67	0.40	2.20	4.67
Tax avoidance	Tax avoidance	16	3.60	0.36	2.63	4.13
Ethical leadership	Fairness and ethics Role transparency Power-sharing	33	3.59	0.47	2.06	4.30

As listed in the table above, the lowest dispersion is seen with tax avoidance, and the highest dispersion is seen with social responsibility.

4.2. Normal distribution of variables (Kolmogorov-Smirnov test)

Table 2 lists the results of Kolmogorov-Smirnov (K-S) test.

Tabe 2. K-S test results

Variables	K-S test	Sig.	Result
Social responsibility	0.658	0.779	Normal
Meaningfulness of work	1.79	0.003	Non-normal
Tax avoidance	1.07	0.197	Normal
Ethical leadership	1.47	0.025	Non-normal

Given the fact that sig. The value of meaningfulness of work and ethical leadership is less than 0.05; the normal distribution of the questions is not supported. When data distribution is not normal and the sample size is not large enough, PLS is the best choice for data analysis (Davari and Rezazadeh, 2013).

4.3. Internal reliability, combined reliability, and convergent validity of variables

To check internal reliability, combined reliability, and convergent validity, Cronbach's alpha, Dillon-Goldstein, and AVE index were used, respectively. The cutoff point for factor load coefficients was 0.4 (Hulland, 1999). All coefficients between the items and latent variables were acceptable. Cronbach's alpha and combined reliability higher than 0.7 were acceptable, confirming the instrument's reliability.

Convergent validity measures the correlation of each construct with its variables (indices), which

was determined based on the AVE coefficient in PLS. The value of AVE was slightly higher than 0.5, so the instrument's validity was supported.

Table 3. Internal reliability, combined reliability, and convergent validity

Variables	Constructs	Internal reliability		Combined reliability		Validity		p-value
		Cronbach's alpha	t-value	CR	t-value	AVE	t-value	
Social responsibility	Social responsibility	0.90	46.68	0.90	37.58	0.44	7.58	0.000
Meaningfulness of work	Work important	0.52	4.79	0.73	11.52	0.56	13.77	0.000
	Perception of work	0.79	12.06	0.86	24.20	0.61	9.70	0.000
	Work direction	0.48	3.54	0.75	14.50	0.62	18.19	0.000
	Work purposefulness	0.68	6.19	0.80	13.06	0.51	6.55	0.000
	Meaningfulness of work	0.87	18.82	0.90	27.93	0.54	8.80	0.000
Tax avoidance	Tax avoidance	0.88	39.61	0.89	16.98	0.57	7.51	0.000
Ethical leadership * social responsibility (moderating role)		0.95	80.84	0.96	76.04	0.46	7.90	0.00
Ethical leadership	Fairness and ethics	0.81	19.96	0.87	27.79	0.47	8.38	0.000
	Role transparency	0.90	31.97	0.93	44.51	0.58	10.15	0.000
	Power sharing	0.83	14.43	0.86	17.12	0.42	7.71	0.000

4.4. Estimate of study model

Based on the data analysis algorithm in the PLS method and based on the estimate made by measurement models, the structural model was estimated in this section. The structural model examines latent variables and their relationships despite the measurement model. Several measures are used to estimate the structural model, and the most important is significant path coefficient (Z) and t-value. To estimate the structural model using t-value, values higher than 1.96 are considered significant with a level of confidence of 95% (Davari and Rezazadeh, 2013). Table 4 lists the results of the estimate of the study model. The coefficient of path variables is higher than 1.96, indicating the significance of the model's paths and fitness. That is, none of the four hypotheses is rejected.

4.5. Coefficient of determination (R2)

The second measure to estimate the structural model is the R2 coefficient. It determines the effect of an extrinsic variable on an intrinsic variable. As listed in Table 5, the value of R2 for all variables is higher than 0.6, which indicates a good estimate of the structural model.

4.6. Prediction relationship measure (Q2)

Prediction relationship Q2 is an index of the structural model and its quality. The index measures

the model's capability to predict (Davari and Rezazadeh, 2013). As listed in Table 6, the redundancy validity check for all latent dependent variables is positive. Therefore, the quality of the model is confirmed, which also indicates a good estimate of the structural model.

Table 4. Estimated results of the research model

Independent variable	Dependent variable	Path analysis	t-value
Social responsibility	Tax avoidance	-0.462	2.317
Social responsibility	Meaningfulness of work	-0.327	1.98
Meaningful work	Importance of work	0.876	25.95
	Perception of work	0.909	27.004
	Work direction	0.944	62.43
	Purposefulness of work	0.748	10.41
Meaningfulness of work	Tax avoidance	0.808	2.042
Ethical leadership * social responsibility	Meaningfulness of work	1.137	9.614
Ethical leadership * social responsibility	Tax avoidance	0.864	3.251
Ethical leadership	Fairness and ethics	0.936	66.046
	Transparency of roles	0.929	51.14
	Sharing power	0.943	70.79

Table 5. Coefficient of determination (R2)

Variables	Constructs	R2	T-statistics	P-values
Meaningfulness of work	Importance of work	0.767	12.73	0.000
	Perception of work	0.826	14.67	0.000
	Direction of work	0.892	28.23	0.000
	Purposefulness of work	0.559	5.49	0.000
Meaningfulness of work	Meaningfulness of work	0.878	22.23	0.000
Tax avoidance	Tax avoidance	0.66	7.43	0.000
Ethical leadership	Fairness and ethics	0.876	30.66	0.000
	Transparency of roles	0.864	26.90	0.000
	Sharing power	0.890	31.31	0.000

Table 6. Redundancy validity

Variables	Constructs	SSO	SSE	1-SSE/SSO
Meaningfulness of work	Importance of work	207	124.09	0.401
	Perception of work	276	156.95	0.431
	Direction of work	276	136.73	0.505
	Purposefulness of work	276	211.83	0.232
Meaningfulness of work	Meaningfulness of work	690	376.35	0.455
Tax avoidance	Tax avoidance	483	326.54	0.324
Ethical leadership	Fairness and ethics	759	480.59	0.367
	Transparency of roles	759	421.64	0.444
	Sharing power	759	511.53	0.326

4.7. The goodness of fit (GOF) index

The main model covers both measurement and structural models, and by confirming its capability to estimate, the estimation would be completed in the general model.

To examine the estimating capability of the main model, only one measure was used, called GOF. Three GOF values of 0.01, 0.25, and 0.36 are interpreted as low, moderate, and high GOF, respectively. Here, GOF was equal to 0.615, which supported the strong estimating capability of the main model.

5. Conclusion and Discussion

The results showed that social responsibility had an inverse effect on tax avoidance. Companies can earn more profit by paying more attention to social responsibility as a competitive edge and remaining committed to social responsibility to gain more market share. In addition, the company's commitment to meet the needs of all stakeholders, including the government, decreases tax avoidance. Social responsibility significantly impacted tax avoidance with work meaningfulness as a mediating variable. A meaningful work increases the strength of the inverse relationship between social responsibility and tax avoidance. When a finance director finds their job highly important, has an extensive and right perception of the job, has a right perception of the direction of the assigned task, and follows his mission consistent with the organisational goals (i.e. increasing satisfaction in stakeholders), they would feel more committed to social responsibility and more reluctant to avoid tax. The results showed that social responsibility significantly impacted tax avoidance with ethical leadership as a moderating variable. In other words, when the leadership emphasises ethical codes, treats the inferiors with fairness, respects transparency in the tasks assigned to employees, and shares responsibilities and power, the relationship between social responsibility and tax avoidance is moderated so that the inverse relationship between them becomes stronger. Social responsibility significantly impacts tax avoidance with ethical leadership as a moderator and works meaningfulness as a mediating variable. An organisation has a stronger commitment to social responsibility when finance managers find their work meaningful, and the leadership emphasises ethics. In this case, the finance managers avoid using tax avoidance tricks and prepare financial statements as clearly and accurately as possible.

To compare the findings in this work and similar studies, our findings are consistent with Hasseldine and Morris (2013), who found a significant relationship between CSR and tax avoidance. In addition, our results are consistent with Surajdeep (2016), who found that work meaningfulness affects CSR; Ponnu and Tennakoon (2009), who reported that ethical leadership affected personnel's attitudes and refused unethical actions.

Given the findings, more ethics is recommended to managing directors in TSE companies. In addition, the role assignment to inferiors should be clear and transparent to ensure meaningful work from the finance managers' viewpoint. Finance managers need to have a good perception of purposefulness and transparency of their job and be interested in their job. Through these, firms can better fulfil their social responsibilities and enjoy the positive strategic effect of social responsibility on all their activities through obtaining such a competitive advantage. As the results showed, one of the outcomes would be a decrease in tax avoidance.

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RESEARCH ARTICLE

An Empirical Study on the Impact of Macro-Economic Variables on Asian Stock Markets Returns

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Abstract

The stock exchange is one of the most powerful sectors, which contribute significantly to the economy's wealth. It plays a crucial role in economic growth and economic development, to which industry, trade and trade as a whole would be benefiting. Therefore, a significant number of research projects have been devoted not surprisingly to understanding the nature of stock market movements and their general performance. A number of studies have shown that macroeconomic variables have a significant impact on stock market performance, while other studies have at best found an inconclusive relationship. It is also worth noting that most of these studies were conducted on developed markets and rarely touched on the combination of emerging and developed markets. Hence this study aims at understanding the impact of selected macroeconomic variables such as Export growth, Import growth, Trade balance, Inflation rate, Broad money growth and exchange rate on the stock market chosen Indices of five Asian countries such as India, Japan, China, Hong Kong and Singapore. The Augmented Dickey-Fuller test (ADF), Granger causality test, Johansen cointegration test the short-run and long-run cointegration between the variables. Variance decomposition analysis is also used to determine how much of the variability in stock returns is lagged by its own variance. The study's findings reveal a substantial long-run cointegration among the macroeconomic variables and stock indices in the case of Japan, China, Hong Kong, and Singapore. All the macroeconomic variables are integrated into I (1) except for the trade balance in the case of Japan, which is integrated into I (2).

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1. Introduction

In developed capital markets like the United States, Japan, Australia, Canada, and Europe, the relationship between macroeconomic variables and stock market returns has been extensively studied and reported. Macroeconomic factors influence the stock market's success. When valuing stocks, investors take into account macroeconomic variables. Interest rates, exchange rates, inflation, and GDP are significant macroeconomic variables influencing stock market efficiency. Various studies were carried out to establish the relationship between macroeconomic variables and stock prices in the past. Notable among them is one by Chen, Roll and Ross (1986) on the US stock market, which set the tone for a series of recent studies within the Arbitrage Pricing Theory (APT) framework. According to Fama (1981), macroeconomic variables such as the industrial production index positively relate to stock market performance. When the industrial production index increases, the stock returns also increase. Germany's industrial production and interest rate positively correlate with other European stock market returns, such as the United Kingdom, France and Italy (Cheung and Ng 1998; Nasseh and Strauss 2000; Mukherjee and Naka 1995; McMillan 2001; Chaudhuri and Smiles 2004). Previous notable research papers have concentrated only on the influence of the macroeconomic variables in developed markets. Hence to fill in the research gap, a rare combination of the developed market such as Japan and emerging economies such as India, China, Hong Kong and Singapore are taken for research. This empirical research helps the reader understand whether the movement of stock prices of India, Japan, China, Hong Kong and Singapore is subject to some macroeconomic variables change. Investors will find this study as a helpful tool for them to identify some basic economic variables that they should focus on while investing in the stock market and will have the advantage to make their own suitable investment decisions. In this study, 6 macroeconomic variables such as the Export growth, import growth, Trade balance, Inflation rate, Broad money growth and exchange rate are taken and their impact on the indices of BSESensex (INDIA), Nikkei225 (Japan), SSEcomposite (CHINA), Hang Seng index (Hong Kong) and Straits times index (Singapore) is analysed in the short run and the long run using various tools such as Augmented dickey fuller test (ADF), Granger causality test, Johansen cointegration test.

2. Review of Literature

In their time-series study, Asai and Shiba (1995) employed a vector auto-regressions (VAR) model to determine a relationship between Japan's stock market and macroeconomic variables. The study utilised a multivariate specification using the inflation rate, interest rate, industrial production index and stock market development proxy. The study's result indicates a relationship between the stock market and the macroeconomic variables.

Asteriou and Price (2000) employed a vector autoregressions (VAR) model in their time-series study to determine the existence of a relationship between financial development and economic growth in the UK. They also utilised real GDP per capita as a measure of growth. They found evidence that supported a relationship between financial development and economic growth, with the direction being from financial development to economic growth. The result indicates that, contrary to what happens in the Japanese economy, financial development drives economic growth in the UK.

Park and Ratti (2000) also examined the dynamic interdependencies for inflation, real economic activity, monetary policy and stock returns by adopting the VAR model using monthly U.S. data from 1955 to 1998 and concluded that shocks due to the monetary contraction raise statistically significant changes in expected real stock returns and inflation and that these movements are not found in opposite directions.

Herriott and Durham (2001) undertook a fascinating empirical investigation of the connection

between financial development and economic growth in Switzerland, using quarterly time-series data from 1990 to 1999. He used a vector auto-regressive (VAR) estimation framework to specify the model. Herriott and Durham (2001) also used the variable real GDP as a proxy for economic growth and three measures of stock market development (market capitalisation, stock market volume divided by market value and stock market volume divided by GDP) and one measure of the banking sector development (M1). Beltratti and Morana (2006) investigated the relationship between the stock market volatility and macroeconomic variables using S&P500 data from 1970 to 2001. Macroeconomic fundamentals were money supply, interest rate, inflation and industrial production. Hondroyiannis, Lolos and Papapetrou (2004) employed a vector auto-regressions (VAR) model in their time-series study to investigate Greece's financial development/economic growth relationship and found the existence of a relationship. Their study utilised monthly time-series data from 1986 to 1999. Their results indicate a two-way causal relationship between the financial development proxies and growth in the long run. It, however, shows that the effect from the stock market measure was smaller than the effect from the bank measure on economic growth. In another study, Chaudhuri and Smiles (2004) investigated the empirical relationship between real aggregate economic activity and real Australian market stock prices, applying Johansen's multivariate cointegration methodology. They confirmed that real stock return in Australia was correlated to short-term departures from the long-run relationship and varied in real macroeconomic activity.

Thangavelu and Jiunn (2004) obtain contrasting results after employing a vector auto-regressions (VAR) model to examine Australia's relationship between financial development and economic growth.

Similar results were obtained by Van Nieuwerburgh, Buelens and Cuyvers (2006) after an extensive empirical investigation of the long-term relationship between stock market development and economic growth in Belgium using annual time-series data for 1830 to 2000.

Gan et al. (2006) examined the relationships between the New Zealand Stockmarket Index and seven macroeconomic indicators such as CPI, real GDP figures, and domestic retail oil price (ROIL), employing Cointegration from January 1990 to January 2003 tests and Granger-causality test. The analysis showed a long-run relationship between the macroeconomic variables tested and New Zealand's stock market index

Yang and Yi (2008), using annual Korean data from 1971 to 2002, examined the financial development/economic growth relationship in the Korean economy. The study's findings provide evidence that financial development causes economic growth, and that is, there is a one-directional relationship between the stock market and economic growth, running from the stock market to grow.

Chang (2009) employed the GJR-GARCH model and analysed macroeconomic variables' effect on stock return movements in the U.S stock market using monthly data from January 1965 to July 2007. His macroeconomic variables were interest rate, dividend yield, and default premium.

Antonios (2010) also obtained similar results applying the Johansen cointegration and Granger causality tests within the Vector Error Correction Model (VECM), which examined Germany's relationship between stock market development and economic growth. His analysis covered 1965 to 2007 using the stock market overall price index, gross domestic product (GDP) and bank lending rate.

Sariannidis et al. (2010) investigate the impact of several macroeconomic variables on the Dow Jones Wilshire 5000 indexes and Dow Jones Sustainability, using a GARCH model and monthly data from January 2000 to January 2008. The results revealed that changes in returns of crude oil prices inversely affect the U.S. stock market, divergent to the changes in returns to the 10-year bond

price that affect it positively.

3. Research Methodology

The study covers 10 years from Jan 2008 to Dec2017. Monthly closing prices of the select indices of India, Japan, China, Hong Kong and Singapore are taken for research. The selected indices are BSE Sensex, Nikkei225, SSE Composite, HangSeng and Straits times index. The data collected is secondary data. Month wise Closing share prices from January 2008 to December 2017are collected for the study. Monthy data about the select macroeconomic variables such as Export Growth, Import growth, Trade balance, Inflation, Broad money growth, and Exchange rate were collected from the World Bank and ADB database. The share prices were collected from yahoo finance. co and money control.com. Apart from this, various journals, magazines, and articles have been referred to as relevant information. The closing prices are then converted into long-returns; the macroeconomic variables are then tested for stationarity using the Augmented Dickey-Fuller test (ADF), Granger causality test, Johansen cointegration test the short-run and long-run cointegration between the variables. To illustrate the implication of relationships among macroeconomic variables and stock indices.

3.1. Objectives of the study

1. To analyse the impact of the selected macroeconomic variables on the selected Asian Stock market returns.
2. To analyse the short-run and long-run -equilibrium relationship of the macroeconomic variables on Asian stock market returns.
3. To analyse the responsiveness of the selected macroeconomic variables on stock returns.

3.2. Hypothesis tested

1. H_0 –Macroeconomic variables do not Granger cause Asian Stock returns
2. H_0-There is no long-run relationship among the macroeconomic variables and Asian Stock returns

4. Analysis and Interpretation

To conduct a time-series analysis, it is essential to determine the stationary of the data series because if a linear combination of the variables is stationary and integrated of the same order, it indicates that a long-term relationship can exist between the variables of a data series. With this expectation, unit root tests are conducted for the data series of this study. The above summarises the Augmented Dickey-Fuller Test results for all the selected macroeconomic variables. The results of the ADF test indicates that the Null hypothesis of non-stationarity for the data series of India cannot be rejected at any significance level under the ADF test. In the case of the first difference of these variables, the null hypothesis of non-stationarity is rejected by the ADF test at a 1% significance level for all the variables. This implies that the variable has two unit-roots, and hence to integrate order 1, they are differenced a second time. Hence are integrated at I(1).

In the case of Japan, the null hypothesis of non-stationarity cannot be rejected at any significance level under the ADF test in the case of all macro-economic growth except export and import growth

at their levels. In the case of the first difference of these variables, the null hypothesis of non-stationarity is rejected by the ADF test at a 1% significance level for all the variables except Trade balance which has attained stationarity after differencing the variable for the second time.

Table 1: Test for Unit Root among the selected macro economic variables

India	**Constant**		**Constant and trend**	
	Level	Diff1	Level	Diff1
Exporgrowth	-2.303	-14.88	-2.146	-14.883
Importgrowth	-3.251	-12.45	-3.181	-12.435
Tradebalance	-4.958	-11.266	-4.949	-11.22
Inflationrate	-2.024	-8.296	-3.874	-8.27
Broadmoneygrowth	-2.026	-14.09	-5.16	-14.109
Exchangerate	-1.549	-8.164	-2.219	-8.195
Japan	**Constant**		**Constant and trend**	
	Level	Diff1	Level	Diff1
Exporgrowth	-4.207	-4.64	-4.158	-4.664
Importgrowth	-4.107	-4.693	-3.983	-3.627
Tradebalance	-1.232	-2.422	-7.802	-1.201
Inflationrate	-2.161	-7.991	-2.38	-7.98
Broadmoneygrowth	-3.081	-6.119	-3.942	-6.216
Exchangerate	-1.213	-7.856	-2.24	-7.926
China	**Constant**		**Constant and trend**	
	Level	Diff1	Level	Diff1
Exporgrowth	-2.72	-19.239	-2.774	-10.678
Importgrowth	-2.766	-15.995	-2.776	-15.942
Tradebalance	-5.113	-10.963	-6.395	-10.915
Inflationrate	-2.098	-11.044	-2.601	-11.181
Broadmoneygrowth	-0.971	-10.293	-2.208	-10.297
Exchangerate	-2.075	-6.572	-1.615	-6.774
Hongkong	**Constant**		**Constant and trend**	
	Level	Diff1	Level	Diff1
Exporgrowth	-9.161	-10.948	-9.142	-10.904
Importgrowth	-2.781	-11.158	-3.1	-11.1
Tradebalance	-2.513	-9.7	-2.435	-7.573
Inflationrate	-3.175	-12.098	-3.091	-12.089
Broadmoneygrowth	-3.368	-11.22	-3.454	-11.174
Exchangerate	-2.728	-8.965	-1.918	-9.06
Singapore	**Constant**		**Constant and trend**	
	Level	Diff1	Level	Diff1
Exporgrowth	-2.293	-14.98	-2.179	-14.962
Importgrowth	-3.851	-4.838	-3.803	-4.878
Tradebalance	-3.75	-8.829	-4.881	-8.806
Inflationrate	-1.396	-4.524	-1.95	-4.432
Broadmoneygrowth	-1.98	-10.273	-2.512	-5.704
Exchangerate	-1.919	-7.237	-1.874	-7.215

(Source: Researcher's estimate using E views 10)

In the case of China, the null hypothesis of non-stationarity cannot be rejected at any significance level under the ADF test in the case of all macro-economic variables except Trade balance at their levels. In the case of the first difference of these variables, the null hypothesis of non-stationarity is rejected by the ADF test at a 1% significance level for all the variables which has attained stationarity after first differencing. Hence are integrated at I(1).In the case of Hong Kong, the null hypothesis of non-stationarity cannot be rejected at any significance level under the ADF test in the case of all macro-economic variables except Export Growth at their levels. In the case of

the first difference of these variables, the null hypothesis of non-stationarity is rejected by the ADF test at a 1% significance level for all the variables that have attained stationarity after first differencing. Hence are integrated at I(1).In Singapore, the null hypothesis of non-stationarity cannot be rejected at any significance level under the ADF test in the case of all macro-economic variables except import growth at their levels. In the case of the first difference of these variables, the null hypothesis of non-stationarity is rejected by the ADF test at a 1% significance level for all the variables which has attained stationarity after first differencing. Hence are integrated at I (1).

4.1. Granger causality test

The results of the pairwise granger causality between the stock returns and the macroeconomic variables for India, Japan, China, Hong Kong and Singapore are given in Appendix1. The results of the Granger causality test with the F-statistic values and its associated probability values are given. The results of the Granger test were tested at a lag length of 2 .based on the results of the test, the relationship is directional in the case of Export growth and Import growth and unidirectional in the case of trade balance and exchange rate in the case of India.

The relationship is unidirectional in the case of Export growth, Import growth, Trade balance, broad money growth and exchange rate. In the case of Japan, unidirectional in case of, Import growth, Inflation rate and no causal relationship with other variables for China, unidirectional in case of Broad Money growth and Exchange rate and no causal relationship with other variables in case of Hong Kong and the case of Singapore all the macroeconomic variables does not Granger Cause STI returns and vice –versa.

4.2. Johansen cointegration test

To investigate the presence of a long-run equilibrium relationship between the stock price index and the macroeconomic variables, the Johansen cointegration test is used in this study. This method applies the maximum likelihood technique to a VAR model to determine the presence of co-integrating vectors in a non-stationary time series through two likelihood ratio tests of trace test and maximum eigenvalue test. After ensuring that all the series are I(1), the integration test is used to find any cointegration relationship between stock prices and the select macroeconomic variables. The results of the Johansen cointegration test shows one cointegration relationship is found in India, whereas Japan and China have four cointegration relationships. Three co-integrating relationships are found in the case of Hong Kong and Singapore. Hence, there is a significant long-run correlation between stock prices and macroeconomic variables in Japan, China, Hong Kong and Singapore, but significant relation exists in India.

The table2 indicates the rejection of the null hypothesis of no co-integrating vector, at most one co-integrating vector in the case of India and most four co-integrating vectors in the case of Japan and China and three co-integrating vectors in the case of Hong Kong and Singapore at 5% significance level under the Trace test. The cointegration relationship is also justified with the Max Eigen Test values.

Variance Decomposition is another way to analyse VAR model results. It distinguishes the part of the information that one variable contributes to others. The whole error term consists of the

shocking part of the information that affected the variable's own lags, and the information came from other variables' exogenous shocks. Therefore, variance decomposition is used to identify the proportion of other variables. The forecast error variance decomposition measures the percentage of the variance of an endogenous variable that can be attributed to a shock in itself or to another endogenous variable.

Table2. Showing results of Johansen Cointegration Test for Asian Stock Marker returns and select macroeconomic variables

Country		Trace test	0.05Critical value	Max- Eigen Statistic	0.05Critical value
India Sensex	r=0	143.5	125.61	49.43	46.23
	r≤1	94.07	95.75	32.33	40.077
	r≤2	61.74	69.81	23.67	33.87
	r≤3	38.06	47.85	18.83	27.58
	r≤4	19.23	29.79	12.97	21.13
	r≤5	6.25	15.49	5.495	14.26
	r≤6	0.76	3.84	0.76	3.84
Japan Nikkei 225	r=0	189.58	125.61	65.84	46.231
	r≤1	123.74	95.75	46.72	40.077
	r≤2	77.02	69.81	24.36	33.87
	r≤3	52.65	47.85	23.58	27.58
	r≤4	29.06	29.79	16.69	21.13
	r≤5	12.36	15.49	9.41	14.26
	r≤6	2.92	3.84	2.95	3.841
China SSE Composite	r=0	193.58	125.61	63.43	46.23
	r≤1	130.14	95.75	44.87	40.07
	r≤2	85.27	69.81	37.36	33.87
	r≤3	47.9	47.85	24.52	27.58
	r≤4	23.38	29.78	17.21	21.13
	r≤5	6.16	15.49	5.68	14.26
	r≤6	0.48	3.84	0.48	3.84
Hongkong Hang Seng	r=0	176.87	125.61	55.04	46.23
	r≤1	121.82	95.75	48.84	40.07
	r≤2	72.98	69.81	30.05	33.87
	r≤3	42.92	47.85	27.65	25.58
	r≤4	15.27	29.79	11.77	21.13
	r≤5	3.49	15.49	2.87	14.26
	r≤6	0.62	3.84	0.62	3.84
Singapore STI	r=0	153.16	125.61	45.79	46.23
	r≤1	107.37	95.75	33.7	40.07
	r≤2	73.66	69.81	27.29	33.87
	r≤3	46.37	47.85	25.98	27.58
	r≤4	20.39	29.79	14.53	21.13
	r≤5	5.85	15.49	3.26	14.26
	r≤6	2.59	3.84	2.59	3.84

(Source: Researcher's estimate using E views 10

In the short run, the shock to BSE returns can contribute 88.46% on its own, and the shock, in the long run, has decreased by 5%, and the shock of other macroeconomic variables causes only minimal fluctuation in BSE returns. In the case of Japan in the short run, the shock to Nikkei 225 returns can contribute 95.21% on its own, and the shock, in the long run, has decreased by 4%. The shock of other macroeconomic variables causes only minimal fluctuation in Nikkei 225 returns. In the case of China, in the short run, the shock to SSE Composite returns can contribute 90.27% on its own, and the shock, in the long run, has decreased by 15%, and the shock of other macroeconomic variables causes only minimal fluctuation in SSE Composite returns. In the case of Hong Kong, in the short run, the shock Hang Seng returns can contribute 4.31% on its own, and the shock, in the long run, has decreased by 7%, and the shock of other macroeconomic variables causes only minimal fluctuation in Hang Seng returns. In the case of Singapore, in the short run, the shock to STI returns can contribute 94.75% on its own, and the shock, in the long run, has decreased by 2%, and the shock of other macroeconomic variables causes only minimal fluctuation in STI returns.

5. Conclusion

The present study examined short and long term relationships among the selected macroeconomic variables, such as Export Growth, Import growth, Trade balance, Inflation, Broad money growth and exchange rate about the Asian stock market returns of India, Japan, China, Hong Kong and Singapore. Through the statistics of the trace and the maximum eigenvalue, the tests revealed the existence of at least one cointegration vector. Cointegration relationship is found in India, whereas Japan and China have four cointegration relationships. Three co-integrating relationships are found in the case of Hong Kong and Singapore. Hence, there is a significant long-run correlation between stock prices and macroeconomic variables in Japan, China, Hong Kong and Singapore, but significant relation exists in India. The Granger causality test was applied to observe any causal connection and causation movement between selected macroeconomic indicators and Asian stock market indices. The relationship is directional in the case of Export growth and Import growth and unidirectional in the case of trade balance and exchange rate in the case of India.

The relationship is unidirectional in the case of Export growth, Import growth, Trade balance, broad money growth and exchange rate. In the case of Japan, unidirectional in case of, Import growth, Inflation rate and no causal relationship with other variables for China, unidirectional in case of Broad Money growth and Exchange rate and no causal relationship with other variables in case of Hong Kong and the case of Singapore all the macroeconomic variables does not Granger Cause STI returns and vice –versa. This paper is limited to only certain selected macroeconomic variables; future researchers should include more economic variables such as gold price, oil price, GDP etc., to provide more insights into the research. Further, more robust and consistent estimates of the effects of macroeconomic variables on stock market returns could be attained by employing the vector error correction and cointegration analysis. The methodology provides both the short-run and long-run estimates of the effects of macroeconomic variables on stock market returns. This provides another avenue for future research in the domain of the Asian market.

The results of the variance decomposition analysis explain that the changes in returns of the selected indices such as BSE Sensex, Nikkei225, SSE Composite, Hang Seng and STI are influenced by their own shock, and the shock of the selected macroeconomic variables cause only minimal fluctuations in the returns, and similarly the impulse or the shock to the macro variables and in turn caused by its own fluctuations both in the short run and in the long run. Hence the results clearly explain that the fluctuation in the Asian stock returns is influenced by themselves and hence are not dependent on the changes in the macroeconomic variables and vice versa. But the markets can be vulnerable to external shocks, which can seriously complicate the macroeconomic

policy management, hindering their growth in the long run. Hence, policymakers can identify where these economies can further diversify economically to cope with the vulnerability of external shocks. Policymakers need to accelerate efforts to make the international financial system more stable and crisis resilient. Much has been achieved in this respect since the worldwide monetary crisis, but as important deficiencies in regulatory and supervisory frameworks continue, the international financial system remains susceptible to booming and busting cycles, which can entail important economic and social expenses in the brief term.

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Professional Ethical Priorities in Auditing using the Delphi Fuzzy Approach

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Abstract

The bankruptcy of international firms is due to accounting fraud ignorance that finally arises from the decline of morality and forgetting the auditing mission as a self-governing profession. The basis of most auditing performances should be assessed in the behaviours and values of auditors, so professional behaviour and its consequences are among the main research topics in organisational areas. This paper aims to explain the priorities of professional ethics in auditing using the Fuzzy Delphi Approach. In this paper, the Fuzzy Delphi Technique is applied as one of the scientific analysis techniques to reach a consensus among panel members (scholars) for determining the dimensions and indicators of professional behaviour code. A 25-item questionnaire is designed to collect the research data using the results of previous studies. An interview is sent for the panel members, including scholars and specialists with PhD in accounting and 5 years of work experience with research records. The obtained results are analysed using the Fuzzy Delphi Technique. Five aspects and subsequent indicators are detected under environmental, organisational, social, ethical values, and personality trait components. These subsections can direct the managers and planners to develop professional ethics.

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1. Introduction

Professionalism is defined as an individual behaviour in work that, if one lacks such a characteristic in the work setting, will bring about some severe consequences that can contribute to the chance of advancement or even the ability to maintain the career (Kiradoo, 2020). In the preface of the professional code of ethics of the Official Accounting Association of Iran, accounting is one of the most structured and disciplined professions with a high level of credit and trust due to the type of proposed services. The survival of the credit and trust and strengthening rely on the members' intellectual and practical adherence to behavioural and ethical regulations (Saghafi et al., 2011). Adherence to a professional code of ethics designs the future of the profession, and on the other hand, immoral actions of the auditors disrupt the efficiency of capital markets by debilitating the public trust in the profession (Shafer and Simmons, 2008).

While the topic of immoral business and accounting and auditing methods have a long history, the reported incidents emerged in 1970 with the scandal of the Lockheed Company in 1976 in the U.S. and the scandal of an Australian Bank in 1980. Recent cases include the Toshiba scandals in 2015 in Japan, Albertan Motor Association in 2016 in Canada, and Oudberesht in 2016 in Brazil (Enwereuzor et al., 2020). Implicitly, frequent global financial scandals and the roles the accountants and auditors play have affected the professional fame of accounting and auditing and arose some concerns among shareholders regarding the ethical downturn and the condition of accountants and auditors (Oboh, 2019). The history of individual idiosyncrasies among humans dates back to creation time because ancient people were aware of the differences in living in caves or forests (Saeidi & Naseri, 2017). By considering the differences in the modern world, organisational management requirements increase relative to the employed staff. By being aligned with the professional ethics, participation in professional development, participation in borderless activities, overtime, occupational mood and care with partners and customers, in addition to enhancing the quality of work duties, the efficiency and motivation of the staff will decline since such features ask for additional efforts of the employers and resistance against high mental pressure. All these requirements are some elements separated from the professional behaviour of the personnel (Kholina et al., 2019).

Professional ethics is among the serious topics in accounting that contribute directly to the honesty and ability of accountants for attracting public trust. More specifically, a lack of sound and moral training would lead to fraudulent activities (Zarefar & Zarefar, 2016). Fraudulent operations have devastating effects on investment and financial markets since people argue that such behaviours occur due to accountants' immoral behaviour and misinterpretation of them about professional principles that caused an ethical crisis in accounting (Oraka & Okegbe, 2015). Different factors improve the performance, including professional ethics that play a significant role in an organisation that can refer to predictability (Tzabbar et al., 2017; Salajegheh & Safari, 2016). Among other results, we can refer to self-control to move from external controls toward internal controls with the tools of professional ethics. Strong firm management proposes good financial reporting quality and appoints financial accounting experts in the audit committee (Hajering, 2019). Having said such interpretations, it is worth mentioning that several studies carried out within the past years on professional ethics and behaviour and most of them emphasised the necessity of compiling ethical criteria in the workplace, ethical code contents, work ethics and work conscience, practical ethical problems, pathology of culture, and professional ethics in religious techniques. However, no comprehensive study was carried out to assess the professional code of ethics via a procedural model. Hence, the present study aims to review the existing literature of the field and determine different contributing factors to and main components of the topic.

2. Theoretical Principles and Literature Review

A review of theoretical records in professional behaviour shows that many researchers have tried to determine the factors affecting professional behaviour. Each of these researchers has presented various definitions, patterns and theories about the phenomenon of professional behaviour in rejecting different disciplines according to their own perspective and field of expertise. Nevertheless, there is still no consensus among theories. An analysis of the background of the present case shows that the specialised resources of the research subject are very limited, and they have studied professional behaviour in general by passing through the specialised axis of auditors' professional behaviour. Professional ethics is one of the fundamental issues of all human societies.

Unfortunately, less attention is paid to professional ethics in the workplace in our society. While there is a branch called professional ethics in the sciences of management and organisation in the secular West, ethics has not received enough attention in our religious community in management. Our society needs to define the characteristics of professional ethics such as attachment to work, the spirit of participation and trust, interaction with each other, etc., and create a culture for its realisation (Amiri et al., 2010). Many countries in the industrialised world today have reached the insight that ignoring ethical issues and evading social responsibilities and obligations leads to the collapse of the enterprise. For this reason, many successful companies feel the need to develop an ethical strategy. A culture based on ethics must permeate the organisation. Therefore, they have tried to give a special place to research on professional ethics; work ethic comes into play when moving from the personal to the business realm, such as medical ethics, school ethics, engineering ethics and the like (Elias, 2016). Behavioural patterns at the social institutions and organisations unite the religious community. Ethical pattern and communication behaviour is generally defined as the responsibility for the rights of individuals. One way to spread ethics in accounting is to compile ethical codes by international accounting associations and societies, and a review of ethical codes prescribed by international associations indicates that these codes are not comprehensive and generally refer to organisational issues. For example, the ethical codes of the American Institute of Management Accountants include competence, confidentiality, integrity, and fact (Verschor, 2005).

The "American Institute of Certified Public Accountants" also indicates the principles of professional conduct, laws, independence, general accounting principles and standards, accountability to clients, accountability to colleagues, and other responsibilities and procedures as ethical codes. The International Federation of Accountants has also provided the necessary codes of ethics, which has been published by the Iranian Society of Certified Public Accountants in the form of professional conduct for professional accountants and includes generalities and principles, integrity, pragmatism, professional competence and care, confidentiality and professional etiquette.

Birjandi et al. (2017) examined the effect of professional ethics on the auditor's professional skepticism. This study investigates the effect of professional ethics on the auditor's professional scepticism. To this end, the effect of the five components of professional principles and criteria, including independence and impartiality, confidentiality, integrity and honesty and professional competence and skepticism on the auditor's professional doubts, was analysed by conducting a questionnaire distributed among 119 auditors of the auditing organisation and institutions who was a member of the Iranian Society of Certified Public Accountants, including all partners, managers and supervisors of the distributed audit.

The results showed that all five components of professional ethics have a positive and significant effect on the auditor's professional scepticism; However, the greatest impact is related to professional competence and vigilance. Therefore, auditing firms should pay special attention to increasing their employees' professional knowledge and skills to improve judgments and decisions.

Ahmadi et al. (2017) modelled the structures affecting the ethics of the auditing profession by using structural-interpretive modelling from the perspective of professional experts. The bankruptcy

of international companies is rooted in the disregard for accounting violations. This is ultimately due to the decline of ethics and forgetting the mission of the auditing profession as an autonomous profession. Because multiple constructs affect audit professional ethics; Therefore, this study seeks to design a model based on the levelling and separation of structures affecting the ethics of the auditing profession by understanding this issue through structural-interpretive modelling. The study's statistical population included the country's certified accountants in 2019. The sampling method was purposeful sampling. The research methodology is a combination in the qualitative part based on identifying structures affecting the professional ethics of auditing through content analysis of theoretical foundations, empirical background and fuzzy Delphi analysis with the participation of 20 experienced auditing professionals as panel members; and 16 experts participated in the quantitative part through the formation of structural self-interaction matrix seeking structural-interpretive modelling. The results show that the most basic structures affecting the professional ethics of auditing are the structure of competition in the auditing market is the type and power of corporate governance, private or non-private client, the size of the client organisation, non-compromise due to the client threatening to dismiss the auditor, financial problems of auditors and fluctuations in the economy such as rising exchange rates and inflation. These structures are related to environmental and economic indicators. Royaei et al. (2019) analysed the level of observing the regulation of professional behaviour by auditors practising in auditing institutions.

In this research, the auditors practising in member auditing companies of the Institute of Certified Public Accountants observe the Code of Professional Conduct. For this purpose, the auditors in auditing institutions are divided into five senior managers, directors, auditors, senior auditors, and assistant auditors; then, the auditors' four theories and professional ethics are studied.

Hypotheses were analysed using the Statistical Method of Two Society average, and also a questionnaire was used to collect initial Information. The results show that compliance with these regulations by individuals with auditor's ratings is less than other auditors; this means that auditors consider complying with regulations when they are assistant auditors or when entering this profession, they also comply with it at high levels, but this is not true at the level of auditors.

Haeridistia and Fadjarenie (2019) show that independence, professional ethics, and auditor experience affect audit quality. The trust of the government as users of the financial statements depends on the responsibility of the public accountant for the services provided, which is specified in Article 26 of 2011 Code 5 specified in the field of public accountants.

As we know, in January 2016, the ASEAN Economic Community Agreement (MEA) was implemented by ASEAN member countries, including Indonesia. MEA is a course that has ASEAN unified economy through creating a free commerce system among ASEAN member countries. In the MEA course, each profession is required to improve the quality of its competitive position, including the government-trusted public accounting profession. During the MEA course, foreign government accountants can freely enter Indonesia and compete with local government accountants. If several audit failures diminish the government's trust in local government accountants, the role of local government accountants can be replaced by that of foreign government accountants. For this reason, local government accountants need to improve their audit quality to stay competitive with foreign government accountants during the MEA. Miller (2018) conducted a study entitled Professional Ethics Guidelines for Developing Work Identity. This research is descriptive-correlational, and the results of data analysis showed that the components of ethical leadership and ethics in the use of information and communication technology are components of professional ethics that affect the creation of work identity.

3. Research Methodology

The present study is applied in terms of purpose and pragmatism in terms of paradigm with an exploratory approach which has been done considering variables of the code of conduct of professional auditors based on a critical perspective. To collect data, a 25-factor questionnaire was developed using the results of previous research and sent to panel members, including experts and specialists with a doctorate in accounting with at least 5 years of experience and research qualifications. In the next step, the Delphi-fuzzy technique was used to reach group consensus among experts considering identifying the index through interviews with experts and the possibility of bias in their opinions to ensure the accuracy, precision, applicability, and comprehensiveness of the identified steps and eliminate possible biases. In the classical Delphi method, experts' opinions are expressed indefinite numbers. In contrast, experts use their mental competencies to express opinions, indicating the possible uncertainty of these conditions. The probability of uncertainty is compatible with fuzzy sets; Therefore, it is more favourable to obtain data from the natural language from experts and analyse it using fuzzy sets.

4. Research Findings

According to the outlined objectives of the research, the variables of the code of conduct of the professional auditors are identified and validated initially by studying the documents and libraries with the help of the fuzzy Delphi method. the mentioned steps are explained in the following:

A. Identifying the initial indicators after reviewing documents, books, articles;

B. Data qualification with fuzzy Delphi method: Delphi method consists of structured interviews that take advantage of the ideas of experts. This method avoids wasting time and energy on irrelevant or biased decisions since Delphi predictions are made by an analytical and systematic method. This method is used to screen and qualify selected indicators in the present study. After implementing the experimental questionnaire, the first round combined Delphi with questions according to the first criteria was presented to accepted experts. The experts also announced the amount of agreement on a Likert scale. Meanwhile, the last question of the questionnaire was an open question to note the experts' suggested indicators.

C- according to the fuzzy Delphi method, the indicators about which the total de-fuzzy opinions of the experts were more than the threshold value were left in the research process, and other indicators were removed. At this stage, the indicators that were less than the threshold according to experts were removed from the research process, and the Delphi process was repeated for the remaining indicators. Since the experts emphasised the high validity of the remaining indicators in the next round of Delphi, the final selection indicators are presented below.

The table below shows the scores obtained between 1 and 10 for the pessimistic and optimistic, which is obtained according to the opinion of experts about the degree of importance of the sub-criteria and indicators.

Table 1. Variables of professional code of ethics

Aspects	Pessimistic value		Optimistic value		Geometric mean		Sig
	Min	Max	Min	Max	I_m^i	U_m^i	
Environmental	3	8	8	10	4.89	8.94	9.3
Organizational	2	7	8	10	4.5	9.07	8.29
Political	4	5	4	7	4.37	6.42	2.89
Individual	3	8	7	9	5.07	7.86	9.96
Social	3	8	7	9	5.59	7.96	9.73
Personality characteristics	3	8	8	9	5.19	8.48	9.3

Threshold= 8.245

Since the threshold value obtained from the mean significance value is 8.245, among the existing

six aspects, the political aspect, compared with other ones, has a significant value of less than the threshold and is omitted. Thus, the environmental, organisational, individual values and social factors have the effect of more than 80%.

Table 2. Variables of environmental aspect

Aspects	Pessimistic value		Optimistic value		Geometric mean		Sig.
	Min	Max	Min	Max	I_m^i	U_m^i	
Dominant economic conditions	3	8	6	9	5.59	8.24	8.7
No. of rival companies	3	6	4	7	4.31	6.42	5.01
Competitive market conditions	3	7	8	10	5.29	9.17	8.21

Threshold = 7.30

Since the threshold value obtained from the mean significance value is 7.306, among the existing three aspects, the number of rival companies, compared with other ones, has a significant value of less than the threshold and is omitted.

Table 3. Variables of the organisational aspect

Aspects	Pessimistic value		Optimistic value		Geometric mean		Sig.
	Min	Max	Min	Max	I_m^i	U_m^i	
Presence of corporate governance	3	8	7	9	5.65	8.06	10.77
Presence of organizational trust	2	6	4	7	4.06	6.42	5.67
Presence of ethical leadership	3	7	8	10	5.21	8.58	8.28
Organizational culture	3	8	8	10	5.49	8.77	10.16

Threshold = 8.720

Since the threshold value obtained from the mean significance value is 8.720, among the existing four aspects, the aspect of Presence of organisational trust, compared with other ones, has a significant value of less than the threshold and is omitted.

Table 4. The variables of personal values

Aspects	Pessimistic value		Optimistic value		Geometric mean		Sig.
	Min	Max	Min	Max	I_m^i	U_m^i	
Norm values	3	6	4	7	4.31	6.42	5.01
Ethical values	3	8	7	9	4.77	7.96	10.42
Religious values	3	8	7	9	5.49	7.96	10.55
Family values	4	5	4	7	4.18	6.42	3.93

Threshold = 7.477

Since the threshold value obtained from the mean significance value is 7.477, among the existing four aspects, the two aspects of norm and family values, compared with other ones, has a significant value of less than the threshold and is omitted.

Table 5. The variables of social factors

Aspects	Pessimistic value		Optimistic value		Geometric mean		Sig.
	Min	Max	Min	Max	I_m^i	U_m^i	
Accountability	3	8	7	9	5.49	8.06	10.50
Social norms	4	5	4	7	4.18	6.42	2.93

Threshold = 6.715

Since the threshold value obtained from the mean significance value is 6.715, among the existing two aspects, the aspect of social norms, compared with other ones, has a significant value of less than the threshold and is omitted.

Table 6. Variables of personality characteristics

Aspects	Pessimistic value		Optimistic value		Geometric mean		Sig.
	Min	Max	Min	Max	I_m^i	U_m^i	
Honesty	4	8	8	10	5.44	9.58	8.94
Qualification	3	8	8	10	5.46	8.58	10.21
Extroversion	4	5	4	7	4.27	6.42	2.89
Confidentiality	3	7	8	10	5.29	8.77	8.31
Impartiality	3	8	8	10	5.49	8.68	10.2
Creativity	4	5	4	7	4.37	6.42	2.89

Threshold= 7.240

Since the threshold value obtained from the mean significance value is 7.240, among the existing six aspects, the aspect of social norms, compared with other ones, has a significant value of less than the threshold and is omitted.

5. Discussion and Conclusion

The position of morality is vital for admitting a profession in society, and behaviour and adherence to ethical criteria can be considered a reason for the profession's existence. This is the case in the auditing profession, and moral failure can lead to remarkable economic consequences and extensive financial distress. Hence, publishing the professional code of ethics for professional auditors, holding disciplinary committees for official accountants, imposing occupational sanctions are some steps taken by the officials to encourage the use of a professional code of ethics. By interviewing the scholars of the field to determine the variables of the professional code of ethics of independent auditors, this paper defined five leading criteria, and the Fuzzy Delphi Technique has provided the scholar with an opportunity to assess the indicators of every classification accurately.

The first component: environmental factors, economic components and competition, are critical components in independent auditors' professional code of ethics. Economic pressures and competition for saving customers in the competitive structure of the market can cause the factor of independence to be taken for granted in the auditing services and to debilitate the independence of the auditor in some cases because the auditor is always concerned about losing his job and may carry out the services in a satisfactory way.

Second component: organisational factors; as for the organisational factors, corporate governance, organisational culture, and moral leadership are among the major components in the professional code of ethics of the independent auditors. Moral leadership causes the people to operate with a sense of commitment and belonging and show better professional ethics in the organisation. The result of moral leadership of managers is the high moral performance of the staff that brings about the effectiveness and efficiency in organisational performance. By showing appropriate ethical behaviours and attempting to strengthen moral values, managers of organisations can pave the way for enhancing the performance of the staff. So, the organisational leadership style should consider the component of ethical leadership. Some factors, including reciprocal relations, honesty, creating a sense of trust in the staff, real interest in welfare and convenience, adopting partnership management, sound organisational setting, adherence to values in decision-making, and fair behaviour, can enhance professional ethics.

Third component: social factors; accountability is one of the leading components of auditors' professional code of ethics. A professional auditor is responsible for the employer, and his mission is to solve the problem. If he failed to deal with the issue, the professional auditor has not fulfilled

his duty. An accountant, only after gaining the desired result of the employer with all measures and satisfactory consequences, has accomplished his mission. Understanding personal responsibility in return for reporting shows an individual's interpretation of responsibility and duty in fraudulent reporting. Those at a high level of personal responsibility are more willing for fraudulent reporting. In other words, understanding personal responsibility in reporting is associated positively with a warning. Understanding costs related to reporting is an interpretation of reporting damages. The obtained results show that retaliation or threatening to retaliation hinder the decision of people about fraudulent reporting, enhance the sense of responsibility, elevates social commitment of people in organisations, social stability, social health among community people especially educated ones, increase the amount of social capital, and give more access to sustainable development objectives.

Fourth component: individual values; the components of religious values and ethical values are among the key components in the professional code of ethics of the independent auditors.

Fifth component: personality characteristics; accountant's impartiality, confidentiality, qualification, and honesty are among the ethical features indicative of professional regulations and ethical code that emerge appropriately in the operational realm of the auditor. The sufficiency and desirability of the classification and applying them in auditing is not an easy task and may bring about some moral problems in auditing in scheduling and assigning duties, implementing the auditing operation, and/or an auditor's opinion-making. However, the auditors are not willing to inform the authorities about their weaknesses in the auditing process, which would lead to dissatisfaction of senior officials and endanger the face of the profession in the long run, so what is assigned to them should be implemented appropriately. Along with business development, professional ethics in auditing is necessary. Since the profession is based on ethical principles, including honesty, impartiality, qualification, professional care and behaviour, and confidentiality, the immoral behaviour of several firms has unfortunately hurt the career. Since the profession's existence is one of the necessities of society and auditors have a social responsibility, they should be aligned with the ethical regulations.

The main finding of the present study is supervising the significance of personal and behavioural values in the auditing profession. Considering the acquisitive findings of the study, the managers and major policy-makers of organisations should mind that selecting auditors without considering the disciplines of personal values, personality, and ethical characteristics will have a devastating effect on the organisation. Therefore, it is necessary to pay attention to the process of selecting and assigning auditors and consider the value and ethical principles to have auditors based on professional, ethical codes to enhance the quality of performance.

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RESEARCH ARTICLE

The Role of Corporate Governance on the Efficiency of Banks Considering the Mediating Role of Financial Health

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Abstract

This study aimed to examine the financial health of the corporate governance-bank efficiency relationship. The statistical population encompasses all commercial, non-commercial, and specialised banks during 2011-2019. Since its statistical value is low, the sample size equals the statistical population. According to previous studies and various sources, the efficiency of banks was calculated using a nonparametric data envelopment analysis (DEA) method. Corporate governance was computed using the associated dummy variables. The index of financial health determinants was also estimated using the CAMELS system and ranked by Technique For Order Preference By Similarity To Ideal Solution (TOPSIS) method. Findings showed that corporate governance has a significant effect on the efficiency of banks and the financial health of banks. In addition, financial health has a significant effect on the efficiency of banks. Since the study's first hypothesis was not rejected, financial health with an incomplete mediating role significantly affected the relationship between corporate governance and bank efficiency.

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1. Introduction

As money market operators in economics and due to the speed of reflection of the policies of this market in society, banks have an effective role in creating and maintaining sustainable economic growth in society. Banks allow the efficient management of funds and financial investments, strengthening the financial and economic system (Claessens and Laeven, 2005; Ayadi et al., 2015). Therefore, banks need to continuously evaluate their units and reorganisation according to the measurement results to provide more diverse, faster, and more modern services and offer the possibility of competition and survival in special banking services globally. In this regard, due to the serviceability of banks and the variety of services provided, it is essential to examine the performance of banks (Menor and Roth, 2008; Wonglimpiyarat, 2014). The concept of bank performance is defined by efficiency, effectiveness, and profitability (Berger et al., 1993; Paradi and Zhu, 2013; Sharma Sharma and Barua., 2013; Bhatia et al., 2018; De Abreu, Kimura and Sobreiro., 2018). There are two approaches to measure the performance of banks:

1- The production approach assumes that financial institutions serve as producers of services for account holders. This means they should perform transactions on deposit accounts and process documents, such as loans.

2- The intermediation approach or the asset approach believes that banks act as financial intermediaries whose primary role is to obtain funds from savers in exchange for their liabilities. The banks, in turn, will provide loans to others for profit-making (Chu & Lim, 1998).

Berger and Humphrey (1997) argue that the production approach is better for evaluating the efficiency of banks, and the intermediation approach may be more appropriate for evaluating financial banks as a whole. The concept of efficiency as a general performance indicator for all types of businesses was first formulated by Edgeworth (1881) and Pareto (1927), and its empirical implementation was recorded in a book by Shephard (1953). Efficiency in economics is interpreted as the maximum potential ratio between the output and the input of the product development process, which shows the optimal distribution of available resources that would allow achieving the maximum potential (Cvilikas & Jurkonyte Dumbliauskiene 2016). Efficiency indicates how economic resources are used to achieve the goals, and effectiveness indicates the extent to which objectives are achieved. Banks have the most contact with the macroeconomic sector, so any fluctuations and instability can negatively affect the country's macroeconomic (Creel, Hubert and Labondance, 2015). Therefore, the necessary corrections should be made, potential banking losses should be eliminated to ensure the health and stability of the bank, and banks should be analysed and evaluated (Vilen, 2010). Banking health also means the favourable financial and operational situations of a bank. The government should identify the vulnerabilities of the banking system and design regulatory mechanisms using appropriate indicators so that the rights of depositors are realised and ensure stakeholders through the ability of banks to meet their obligations and deal with potential breaches (Hoenig, 2010). Another critical business issue is corporate governance at the beginning of the 21st century. The concept of corporate governance is a tool taken to manage or direct a company. Corporate governance is one of the main factors in improving economic efficiency, which includes a set of relationships between the company management, board of directors, shareholders, and other stakeholders. Corporate governance provides a structure by which firm goals are set, a tool to achieve goals, and determine performance oversight. This system creates the necessary motivation to achieve the firm's goals in management and provides the basis for effective supervision. In this way, companies use resources more effectively (Basel Committee, 2015).

Corporate governance of banks and financial institutions in developing countries, such as Iran, is essential since these countries do not have a strong, long-established financial institution

infrastructure to deal with corporate governance issues. Good corporate governance helps increase the share price and makes it easier to obtain capital (Emad, 2012). Mc Gee (2009) expresses some of the most important benefits of good corporate governance, including risk reduction, performance stimulation, improved access to capital markets, enhanced marketability of goods and services, improved leadership, and demonstration of transparency and social accountability. Corporate governance principles summarise the board's objectives and provide a framework to show how it functions and discharges its responsibilities (Kimberly, 2015). Considering the necessity of effective corporate governance methods to attract and preserve public trust in the banking system, significant progress has been made in establishing the corporate governance system through law. Banks' banking, supervisory, and voluntary actions have also been done in this regard.

On the other hand, depositors and other stakeholders of banks have become more aware of the necessity and importance of the corporate governance system. They are interested in pursuing the establishment of this system. Therefore, it is natural that establishing a comprehensive and effective corporate governance system can affect the development and efficiency of monetary and financial markets, the optimal allocation of resources, the financial health of banks, and prevent banks from facing a liquidity crisis, even the bankruptcy. The banking sector is different from other sectors and industries in many ways. Unlike ordinary commercial institutions, these differences have made bank corporate governance more important than other industries and sectors. When their capital is financed through shareholders' funds, the banks' activities include funds that consist mainly of deposits, making the banks and their managers more responsible for the trust because depositors' funds must be allocated to the most appropriate investment options. However, the lack of corporate governance can destabilise the financial system because the banks determine which end-users receive financial resources and provide the relevant payment tools. Therefore, given the rising level of financial standards and the importance of commercial and specialised banks in the country, it seems necessary to study the effect of corporate governance on the efficiency of banks considering the mediating variable of financial health.

2. Literature Review and Background Review

The term "efficiency" refers to the peak level of performance, which uses the least inputs to achieve the highest output. Efficiency requires reducing the number of unnecessary resources used to produce a given output, including personal time and energy. It is a measurable concept that can be determined using the ratio of useful output to total input. Output (work output) is the total useful work completed without accounting for any waste and spoilage (Banton and Boyle, 2021).

The term "corporate governance" is a Greek word meaning to guide or manage a company (Kahndl, 2011). The International Federation of Accountants (IAEA) defined corporate governance in 2004 as follows: "It ensures the achievement of goals, the control of risks and the responsible use of resources. Hasas Yeganeh (2005) reviewed the views of experts, stating that corporate governance has laws, regulations, structures, processes, cultures, and systems to achieve the goals of accountability, transparency, justice, and respect for the rights of stakeholders. Financial health means being profitable and continuing the economic unit's activity. The financial health of companies, especially banks, is a topic related to the discussion of continuity of activities, bankruptcy, financial helplessness, and the qualitative characteristics of accounting information (relevance and reliability). Therefore, it is necessary to evaluate the performance of companies in the fields of operations, marketing, finance, and accounting (Kristonis, 2005). In 2006, in a paper on a model for financial health, Naidu found that a company has financial health when its profit after tax is positive and real profit growth is positive. A company is helpless when its profit after tax is negative. Helpless companies will not improve their situation in the coming years and thus will be

financially helpless and unable to fulfil their obligations. The loss will encounter all stakeholders. In his view, this stage relates to the conditions of inability to pay debts or pay all debts against the power of liquidity. The Kamel rating system was first approved in 1979 by the Board of Supervisors of Federal Financial Institutions in the United States. This rating system is used by the regulators of the US banking industry, namely the Federal Deposit Insurance Company, the Federal Reserve, and the Monetary Control Agency (Deng, 2013). Large organisations also use this ranking system (Ginevicius and Podvizko, 2011). In terms of performance appraisal, bank ranking can provide all stakeholders and decision-makers with a clear view of the banks' position compared to organisations with similar activities (Islami et al., 2011).

Abdelbadi and Salam(2019) found that interconnected banks drastically reduce their credit risks. The banks whose investment is low must fully play the role of professional communicators to achieve their goals.

Aline Marius et al. (2018) examined banks' corporate governance and efficiency. Their findings showed that the implementation of rigid corporate governance structures is associated with higher costs for banks and lower levels of efficiency. However, during the crisis, the government mechanism significantly increased banks' costs and technical efficiency. They also showed that prudent risk management for higher capital banks is associated with higher costs and technical efficiency.

In 2021, Guindos, Vice-President of the European Central Bank, assessed financial stability vulnerabilities and their implications for financial market functioning, debt sustainability, bank profitability, and non-bank financial sector in Financial Stability Review(FRS). The FSR (Financial Stability Review) exists to promote the awareness of systemic risks among policymakers, the financial industry, and the public, with the ultimate goal being the promotion of financial stability. The FSR focused on addressing some long-standing challenges that affect euro area banks' strength. There is evidence that strengthening the regulatory framework for banks and non-banks and managing climate risks will enhance the long-term resilience of the financial system. Improved economic conditions have reduced near-term tail risks to financial stability; however, supply disruptions and rising energy prices pose inflation and economic recovery risks.

Blatter and Fuster (2021) find strong evidence for scale economies: efficiency and profitability increase with bank size for most banks in the sample. A subset of geographically restrained banks used an instrumental variables strategy that showed that size on efficiency and profitability is likely causal. Scale economies have been more pronounced since 2010 than in the years before the global financial crisis. There is little evidence for scale economies for the largest (systemically important) banks; their relatively lower efficiency and profitability appear driven by certain business model aspects. Their results further indicate that good capitalisation, efficiency, and profitability are compatible.

3. Research Hypotheses

The conceptual model of the research, i.e. examining the role of corporate governance on the efficiency of banks considering the mediating variable of financial health, is as follows:

Research hypotheses are as follows:

H_1: Corporate governance has a significant effect on the efficiency of banks.

$$EFF_{it} = \beta_{\circ} + \beta_1 CG_{it} + BR_{it} + \varepsilon_{it}$$

H_2: Corporate governance has a significant effect on financial health.

$$FH_{it} = \beta_{\circ} + \beta_1 G_{it} + \varepsilon_{it}$$

H_3: Financial health has a significant effect on the efficiency of banks.

$$EFF_{it} = \beta_{\circ} + \beta_1 FH_{it} + BR_{it} + \varepsilon_{it}$$

where FH_{it} is the financial health of the ith bank in time t,
G_{it} is the corporate governance of the ith bank in time t,
BR_{it} is the number of the ith bank branches in time t,
and EFF_{it} is the efficiency of the ith bank in time t.

H_4: Financial health as a mediating variable significantly affects the relationship between corporate governance and bank efficiency.

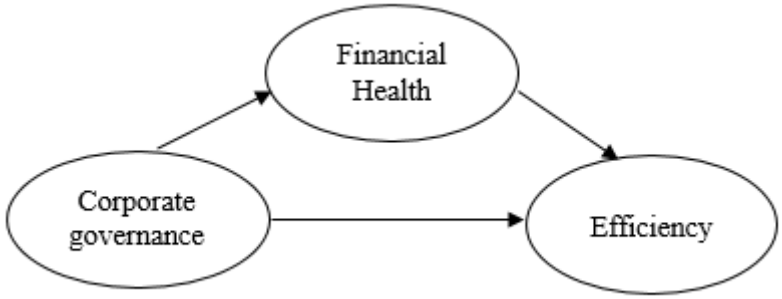

Figure 1. Conceptual model of research

4. Research Methodology

The findings in Table 2 indicate that the data are not normally distributed. The Jark-Bra test was used to confirm the results. The probability of statistics for the variables of efficiency, financial health, corporate governance, and the number of branches is less than 5%. They follow an abnormal distribution. The Spearman test was used because the data were abnormal in this study. In this study, because the performance reporting form of all banks has changed due to the compliance with international financial reporting standards in 2016, the findings were gained regarding how to collect data according to how they are reported. Data envelopment analysis and DEA software were used to calculate efficiency in this research. Inputs used to calculate the efficiency include the number of labour, fixed asset cost, loans, deposit cost, and labour cost; outputs also include the total volume of deposits, investments, net assets, loan cost, and investment cost.

The inputs or inputs are summarised as follows:

Number of Labor: Bank employees are a source of human capital (input) for output production.

Fixed Asset Price: The fixed asset price is obtained through the following formula:

Fixed Assets Cost = (Depreciation Cost + Administrative Expenses)/(Fixed Assets)

In this study, to calculate the total administrative costs and depreciation costs during the years 2011-2015, the sum of administrative costs and another general as well as administrative costs was used. From 2016 to 2019, general costs and administrative and depreciation costs are used.

Loans: This variable is obtained by changing the balance of public sector debt and non-government sector debt variables. In this study, to calculate the changes in 2011, government and non-public sector debts at the end of 2010 up to the beginning of 2011 were used, where public sector debt means debt to the central bank, and non-government sector debt means debt to banks and other institutions, obtained as follows:

Loans = (Government Debt Finish Period - Government Debt Sector First Period) + (Non-Government Debt Finish Period - Non-Government Debt Finish Period)

Deposit Cost: The value of deposits is measured by the average interest paid per Rial of the deposit. In this study, deposits are divided into long-term and short-term investments. The deposit amount is multiplied by the interest rate of each bank for each year. This has been notified to all

banks by the central bank, which is obtained as follows:

Deposit Cost= (Short-term deposit amount in interest rate multiplier + long-term deposit amount in interest rate multiplier)/(Short-term interest rate deposit + Long-term interest rate deposit)

Labour cost: Labor cost is obtained through personnel costs divided by the average number of employees.

Labor cost= (personnel costs)/(average number of employees)

The outputs are also summarised as follows:

The total volume of deposits: Through deposits, it is possible to produce outputs, such as interest and loans. In this study, to calculate the total volume of deposits, the sum of sight deposits, savings and similar deposits, long-term and short-term investment deposits, and other deposits during 2011-2015 was used. However, from 2016 to 2019, the sum of customer and long-term investment deposits was used.

Investments: Investments are the same as direct investment and legal partnership. In this study, from 2011 to 2015, investments include the total legal participation account of the public and non-governmental sector, direct investment account, stock account and foreign partnerships, and other investments and partnerships. During the years 2016 to 2019, it includes the total investment in stocks and other securities, direct investment, and the legal participation account of the non-governmental sector.

Net Assets: In this study, the equity proxy was used instead of the net assets.

Loan cost: Loan cost is obtained as follows:

Loan cost = (Receivables and facilities from income)/(Receivables and facilities) Average

In this study, the sum of profits from granted facilities in common incomes and non-shared incomes was used to calculate the income from facilities and receivables. From 2016 to 2019, it is obtained through income from granted facilities and deposits.

The average facilities and receivables through the average total receivables from the Central Bank - from banks and institutions and public and non-governmental sector facilities were used from 2011 to 2015. So that the sum of these figures for the end of each year First, the next year's period was calculated. Therefore, for the beginning of the 2011 period, the total figures for the end of the 2010 period were used, and then the average was obtained. However, from 2016 to 2019, the average total claims on banks and other credit institutions, claims on the government, granted facilities, and governmental and non-governmental entities were used.

Investment cost: Investment cost is obtained as follows:

Investment cost = (investment from income)/(average investments)

In this study, to calculate the average investments from 2011 to 2015, the total average of direct investment account and stock accounts foreign partnerships and other investments and partnerships were used. The average investment was obtained from 2010 to the beginning of 2011. From 2016 to 2019, the average investment account in stocks and other securities was used. To calculate the income from investments during the years 2011 to 2015. The sum of common and non-common income, which is explicitly stated in the performance of banks, was used. During the years 2016 to 2019, the sum of the income of the granted facilities and the deposit and the commission income was used. The data envelopment analysis method and DEA software were used to calculate the efficiency of this research. The data envelopment analysis method is based on a series of linear programming optimisations, called the nonparametric method. The boundary curve is created from a series of points determined by linear programming in the method. Two assumptions of fixed and variable returns to scale can determine the mentioned points. The data envelopment analysis method is nonparametric because it does not presuppose the basic form of the production function. The data envelopment analysis technique covers all data, and that is why it is called data envelopment

analysis (Abbasian & Mehregan, 2007). Each input or decision-making unit examines the resources to generate outputs in data envelopment analysis. Indeed, decision-makers perform the same activities and have common goals. The corporate governance variable also includes six dummy variables, i.e., their size is determined as zero and one, including optional corporate governance disclosure, profitability, size, financial leverage, dummy company age, and dummy ownership concentration. The focus is on ownership (Meshki Miavaghi and Sarfehjoo, 2017). In this study, the dummy variable of corporate governance disclosure is calculated as follows, according to Meshki Miavaghi and Sarfehjoo (2017). First, a checklist of voluntary disclosure cases in the financial statements and other reports related to the performance of banks is prepared. After reviewing the annual financial statements, explanatory notes, and general assembly reports, each item on the checklist disclosed by the companies is assigned number 1, otherwise 0. Finally, the optional index of corporate governance disclosure is calculated by dividing the sum of disclosed items by the total number of disclosed items:

$$DScore(V)_i = \sum_{i=1} \frac{\mathrm{d}_i}{n}$$

If the item is disclosed, i equals 1; it is 0. The number of cases in corporate governance disclosure in this study is considered as12 cases. These calculations are done for each bank annually. Subsequently, the mean is derived, and finally, if the index number is greater than the mean, it is given 1, and if the index number is less than the mean, it is given 0.

Table 1. Elements in a corporate governance disclosure checklist

Row	Optional index of corporate governance disclosure
1	Details about the Chairman of the Board (background, level of education, specialisation, business experience)
2	Details about other board members (background, level of education, specialisation, business experience)
3	Details about the CEO (background, level of education, specialisation, business experience)
4	List of senior managers (other than board members and CEO)
5	Pictures of board members and CEO
6	Percent of ownership of managers in the company
7	Number of board meetings held and their dates
8	Number of permanent and non-permanent members
9	Change in the ownership structure of the company without changing the way the company is controlled
10	Percent of ownership of institutional shareholders
11	Types of shareholder ownership (real or legal)
12	Existence of an audit committee

Dummy profitability variable: If the company is profitable, i.e., the return on its assets is positive, it equals 1; otherwise, it is considered zero.

Dummy size: To calculate this variable, first, the natural logarithm of the market value of all banks is calculated, and then using the average, the sample companies are divided into two categories, small and large. The big ones are numbered 1, and the other companies are 0.

Dummy financial leverage: If the company's financial leverage is greater than the average financial leverage of all sample companies, it will be equal to 1; otherwise, it will be equal to 0.

Dummy company age: Older banks and institutions are those older than the average age of the sample companies. In this research, the company's age was calculated according to the natural logarithm of the company's life from the date of establishment to the research period. Then, their

logarithmic mean was calculated. 1 is given to old institutions, and 0 is given to other institutions.

Dummy variable ownership concentration: Ownership concentration means how shares are distributed among the shareholders of different companies. In other words, ownership concentration means how much of a company's total stock is owned by a limited number of owners. The smaller the number of shareholders, the more concentrated the ownership. Ownership concentration is calculated using the major shareholder ownership percentage above 5% and the Herfindahl-Hirschman index. This index is obtained from the total square of the percentage of shares owned by the shareholders. This index increases in parallel with the increase in the ownership concentration. If the entire stock belongs to one person, it has the highest value and is calculated equal to 10,000 units. If the ownership structure is dispersed and all shareholders have equal ratios, the index finds the lowest value and is calculated equal to $\frac{10000}{N}$:

$$HHI=\sum_{i=1}^{n}\left(\frac{p_i}{p}*100\right)^2$$

In this research, the average of this index is used. The obtained average is compared with the index number, and finally, if the index number is smaller than the average, the number is 0, and if it is greater than one, number 1 will be given.

The word "perfection" is derived from the first letters of the words: capital adequacy, asset quality, quality management, profitability, and liquidity. In 1996, to establish a risk-focused rating system, the US Federal Reserve changed it to Kamels by adding S to the above index, in which the letter S stands for Market Risk Sensitivity (Roman & Sargu, 2013). These factors identify the health of financial institutions. In this study, financial health is calculated through the research indicators proposed in (Ghafrolahi et al., 2017) as follows:

Capital adequacy: This ratio is obtained by dividing the base capital by risk-weighted assets. This ratio is at least 8% according to the Central Bank regulations for all banks.

Capital adequacy ratio = (capital base)/(risk-weighted asset)

In this study, due to the limitation of full access to the required information according to the instructions of the Central Bank to calculate the capital adequacy ratio, only the capital adequacy ratio disclosed by the banks is sufficient.

Asset quality: Asset quality indicators measure potential credit risk associated with the lending facilities, portfolios, fixed assets, and other assets. It indicates management's ability to identify, measure, monitor, and control this risk. Asset quality includes the following ratios: The ratio of total liabilities to total assets, the ratio of non-current receivables to total facilities, and the ratio of non-current receivables to fixed capital (Ahmadian, 2013). The ratio of income-generating assets includes three other ratios: the ratio of income-generating assets to assets, facilities to total assets, and investments to assets. Revenue-generating assets are those created to earn profit and commission. This ratio shows what percentage of the bank's resources is devoted to profitable activities. In this study, income-generating assets include lending facilities, investments, partnerships, receivables from other banks, partnership bonds (Ahmadian, 2013), and the ratio of facilities to assets (Ghafrolahi et al., 2017).

Quality management: Quality management is measured from two perspectives of efficiency and productivity as follows:

Efficiency includes a ratio of deposits to branches, deposits to assets, a ratio of facilities to branches and the ratio of total facilities to total deposits. Productivity is estimated based on the ratio of the personnel costs to the number of employees personnel, the ratio of administrative costs per number of branches, the ratio of questionable access costs per number of branches, the ratio of profit per staff (Ghafrolahi et al., 2017). Profit is estimated by the number of branches the ratio of the total cost to total revenue, which shows the bank's capacity to cover operating costs with

operating income (Roman and Sargo, 2013; Aspal & Davan, 2014), and the ratio of operating profit to operating expenses, which is the result of dividing the interest received for granted facilities by the interest paid to depositors (Saghafi & Seif, 2005).

Profitability: It is obtained through the following ratios, namely, the return on assets ratio, the ratio of net profit to total assets, the ratio of shared income to non-shared income (Ahmadian, 2013). Also, the ratio of the granted facilities to the bank's total income, the ratio of return on capital, the ratio of net profit to total capital, the ratio of net profit to basic capital, operating profit margin to income ratio and profit margin ratio. Non-shared income refers to incomes that the bank does not share with depositors, and the total income belongs to the bank and its shareholders. The total income from lending, deposit facilities, and net profit (loss) from capital deposits are common income, total commission income, and net profit (loss) from foreign exchange transactions. Other income is considered non-common. (Ahmadian, 2013).

Liquidity: Liquidity includes the following ratios: the ratio of cash assets to total deposits (Ahmadian, 2013), which shows the ability of liquidity to meet liabilities to customers. The ratio of deposit maturity means investment deposit to liquid deposits (i.e., total savings deposit, good loan deposit, and current deposit), fluctuation coverage ratio, cash to cash ratio, short-term debt coverage ratio, including cash to short-term debt, and the ratio of volatile debt is the liquid deposit to the total deposit (Ahmadian, 2013).

Bank size: This index is calculated through the ratio of bank assets to the total assets of 19 study banks.

One of the multi-criteria decision models, namely the TOPSIS method, is used to rank the financial health indicators. Huang and Eun proposed the TOPSIS model in 1981. In this study, individual judgment was not used to calculate the weight of micro-variables related to financial health. The fourth step's findings were considered the final weight of the indicators by the entropy method.

In this research, the number of branches is considered the control variable of the research and another affecting efficiency factor. The variable, namely the number of branches, is used as an indicator to show the level of customer access to the bank, the ability of banks to attract deposits and payment of facilities, and finally earning income and profits of the bank. There is a positive relationship between the number of branches and the efficiency of banks.

This research is a descriptive study of the applied purpose and falls into post-event studies. The library study method was used to review the literature. Information about the research variables was obtained by referring to the performance of banks, the report of the board of directors of banks, and explanatory notes. Kadal site was used for listed banks, and Central Bank Monetary and Banking Research Institute site was used for other non-listed banks. The information available from the Higher Banking Education Institute of Iran was also used. The Monetary and Banking Research Institute of the Central Bank located in Tehran was also referred in person to receive the performance report of the banks. The thematic scope of this study includes examining the role of financial health as a mediating variable on the relationship between corporate governance and bank efficiency. Spatial territory includes private banks (Eghtesade Novin, Ansar, Parsian, Saman, Sina, Karafarin, Iran Zamin, Hekmate Iranian, Gardeshgari), government banks (Tejarat, Saderat, Refahe Kargaran, Mellat), specialised banks (San'at O Ma'dan, Keshavarzi, Maskan, Tose'eh Saderat, Tose'eh Ta'von) and state-owned banks, such as Post Bank.

5. Research Findings

The present study focused on the interval from 2011 to 2019. In this study, the Jark test was used to evaluate the normality or abnormality of the data set. Levin et al. (2002) test were used to assess

research variables' reliability. The Durbin–Watson statistic test was used to determine the correlation. Also, to investigate the absence of autocorrelation between the explanatory variables, the Wi-Fi test, and due to the abnormality of the variables (Jark Bra test finding), the Spearman correlation test was used. The data collection from 19 banks from 2011 to 2019 was done using Excel, Eviews, and Stata software to test the hypotheses.

Table 2-1. Results from descriptive statistics of data

Variable	Observations	Middle	Mean	Σ	Min	Max
Financial Health	171	0.17	0.19	0.11	0.04	0.40
Corporate Governance	171	3.00	2.93	1.17	1.00	5.00
Efficiency	171	1.00	0.95	0.11	0.57	1.00
Branches	171	330.00	676	701	40.0	2257

Table 2-2. Results from descriptive statistics of data

Variable	Skewness	Courtois	Jark-Bera	Prob.
Financial Health	0.43	2.00	12.56	0.001
Corporate Governance	0.04	2.08	6.03	0.49
Efficiency	-2.32	7.21	279.7	0.001
Branches	0.99	2.54	29.9	0.001

The results of the correlation between the variables are presented in Table 3. The null hypothesis of the Spearman test indicates that there is no correlation between the variables. Findings emphasise that efficiency is not correlated with corporate governance and financial health and that the number of branches and financial health is not correlated with the number of branches at a 95% confidence level; showing that an increase or a decrease of corporate governance affects the increase or decrease of the predicted performance decline. The corporate governance variable has a positive and significant correlation with the number of branches at a 95% confidence level, representing that an increase or a decrease in one variable is in the same direction as an increase or a decrease of other variables. The corporate governance and financial health variables have a negative and significant correlation. At a 95% confidence level, it seems that an increase or a decrease in each of them is in the opposite direction of the increase or decrease of other variables.

F-test or Chow test was used to determine the data type (pooled or panel). According to Table 4, since P-value = 0.0001, the data are that of the panel. The Hausman test deals with determining whether the fixed effect estimation algorithm or the random effects is used in the panel data method Since the probability value of the chi-square statistic for the first hypothesis is less than 0.05, the fixed effects algorithm is suitable for the first hypothesis; however, the findings in the table are suitable for the second and third hypotheses of the random-effects model.

The modified parental variance heterogeneity test is used only if the effects model is fixed, and for random effects, only the Woldrich autocorrelation test is used.

The Woldrich autocorrelation test was used to examine the presence or absence of autocorrelation between error terms.

Table 3. Results of correlation between variables

Correlation (probability)	Efficiency	Corporate governance	Financial health	Branches
Efficiency	1			
Corporate governance	0.25 0.74	1		
Financial health	0.06 0.41	-0.41 0.000	1	
Branches	-0.11 0.14	0.22 0.003	-0.06 0.38	1

Table 4. Results of Hausman and F. Limer test

Hypothesis	Test type	Statistics test	Test statistic value	Freedom intensity	P-value
H_1	F limer	F	3.67	(18.5)	0.000
	Hausman	X^2	7.88	2	0029
H_2	F limer	F	4.44	(18.15)	0.000
	Hausman	X^2	0.005	1	0.94
H_3	F limer	F	3.29	(18.15)	0.000
	Hausman	X^2	3.64	2	0.16

Table 5. Results of variance heterogeneity and autocorrelation of error terms

Hypothesis	Adj. variance	Heterogeneity test	Autocorrelation	Woodrich test
	Statistics	Chi^2 test	Statistics	F-probability
H_1	84422	0.0001	17.1	0.000
H_2	-	-	1.94	0.18
H_3	-	-	8.18	0.01

According to Table 5the probability value for the first and third hypotheses is less than 5%, so the null hypothesis is rejected, i.e., there is a correlation between the error terms; however, for the second hypothesis between the terms, there is no correlation.

Table 6. Variance inflation factor (VIF) test results to examine the alignment relationship

Hypothesis	Variables	Coefficient of variation	Uncentered VIF	Centered VIF
1th: Dependent variable efficiency	Corporate governance	-05e6	7.67	1.05
	Branches	-1e1	2.03	1.05
	C	0.0005	7.47	NA
2th: Dependent variable financial health	Corporate governance	035e3	7.29	1.00
	RES1(-1)	-33e5	1.00	1.00
	C	-34e3	7.29	NA
3th: Dependent variable efficiency	Financial health	-32e8	3.97	1.01
	Branches	-39e2	1.94	1.00
	RES1	-32e7	1.00	1.00
	C	-33e5	5.13	NA

According to Table 6, there is no high correlation between the model's independent variables (more than 85%), so there is no alignment problem between the independent variables in any hypothesis, and the variance inflation factor is below 10, so there is no alignment problem.

The Jark-Bra statistic test was used to check the normality of the error terms. According to Figures 1, 2, and 3, since the value of the Jark-Bara statistic is less than 0.05, the error terms of the

distribution are not normal; however, due to a large number of research samples and the central limit theorem, it can be ignored. The hypotheses in the test of normality of error terms are as follows.

H_0 = Error terms are of normal distribution.

H_1 = Error terms are of abnormal distribution.

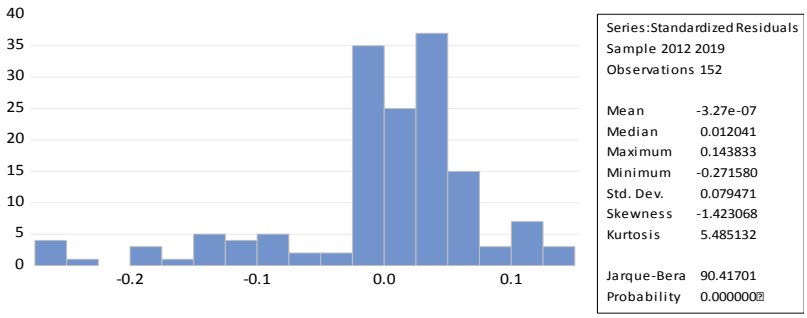

Figure 2. The normality of error terms in the first hypothesis.

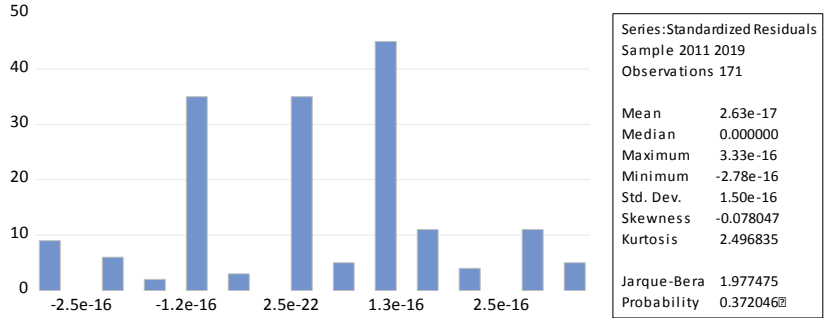

Figure 3. The normality of the error terms in the second hypothesis.

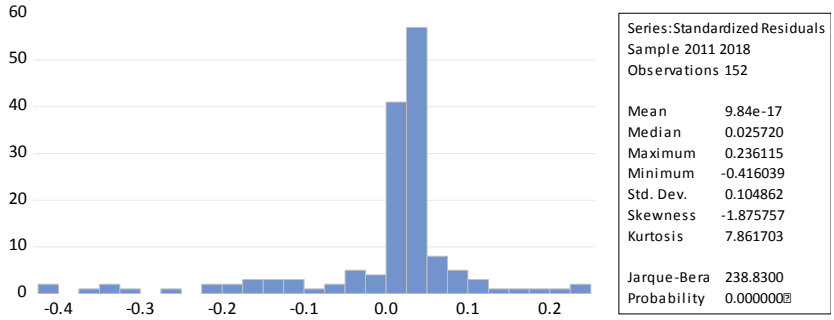

Figure 4. Test of normality of error terms in the third hypothesis

Findings derived from testing Hypothesis 1 show that statistical probability is less than 5%. 95% confidence level shows that the null hypothesis of the model is rejected, i.e., there is a significant correlation between corporate governance and bank efficiency. Also, there is no significant correlation between the number of branches and efficiency. The second hypothesis test shows that

the probability of statistics is less than 5%, so the null hypothesis of the research model is rejected at a 95% confidence level, and corporate governance has a significant effect on the financial health of banks. The probability of statistics in the third model is less than 5%, so the null hypothesis of the model at 95% confidence level is rejected, manifesting that financial health has a significant effect on the efficiency of banks.

Table 7. Final estimate of the statistical model of hypotheses

Hypothesis	**Regression by**	**EGLS method**			
H_1	Variable	Coefficient	T-statistics	Σ	Probability
	Corporate Governance	0.004	0.97	0.004	0.33
	Branch	-05e-9.4	-0.44	0.0002	0.65
	C	0.99	6.92	0.14	0.000
	AR(1)	0.28	0.03	0.09	0.003
	Coefficient	0.38			
	Adj. Coefficient	0.28	F statistic	3.82	
	DW statistics	1.77	F probability	0.0001	
H_2	Corporate Governance	-0.04	+14e-4.6	-17e-7.4	0.000
	RES1(-1)	0.30	1.2e+15	-16e9.7	0.000
	C		1.14e+15	-16e2.7	0.000
	Coefficient	1.00			
	Adj. Coefficient	1.00	F statistic	+31e4.49	
	DW statistics	0.31	F probability	0.0001	
H_3	Financial Health	0.15	2.036479	0.07	0.043
	Branch	-0,05e-1.4	-1.25	-05e1.1	0.21
	RES1(-1)	0.49	7.18	0.06	0.000
	C	0.92	48.55	0.02	0.000
	Coefficient	0.24			
	Adj. coefficient	0.23	F statistic	15.99	
	DW statistics	2.02	F probability	0.000	

6. Discussion and Conclusion

According to the obtained empirical evidence, in this study, at a 95% confidence level, the corporate governance variable significantly affected bank efficiency. Implementation of corporate governance increases the efficiency and profitability of banks. A positive relationship was found between efficiency and the number of branches. According to the results of the second hypothesis, it was found that corporate governance has a significant effect on the financial health of banks, i.e., the establishment of a comprehensive and effective corporate governance system can develop optimal allocation of resources as well as financial health in financial and monetary markets, and it is also effective in preventing bankruptcy derived by the liquidity crisis in the context of banks.

To improve the efficiency of banks, the grounds for establishing proper corporate governance through a sound banking system should be provided to meet the information needs of investors, shareholders, and other users to improve the country's economy. The present study's findings can provide the necessary knowledge of the inefficiencies in banks to the managers of banks and financial institutions to improve and increase their efficiency and eliminate the existing shortcomings in banks.

The importance of corporate governance mechanism as a security system is essential when it comes to the health of banking. A review of the third hypothesis showed that financial health has a

significant effect on the efficiency of banks and confirms that their poor performance can cause financial and economic crises. According to the experimental findings of this study, if the role of banks' financial health is considered as a mediating variable in the correlation between corporate governance and the efficiency of banks, the fourth hypothesis of the research is realised, and corporate governance has a significant effect on the efficiency of banks, considering the mediating role of financial health. In this study, since the first hypothesis was rejected at a 95% confidence level, financial health as a mediating variable and the role of mediation are incomplete. This means that corporate governance has a significant effect on the efficiency of banks concerning the role of imperfect financial health mediation.

Corporate governance may stabilise the banking system, improving the performance of the banking system. A stable banking system creates an efficient financial intermediary and enables it to be more successful in allocating resources to investments, thus improving economic growth and investment. Having a stable banking system increases the efficiency of the banking system and improves the distribution of resources in the economy.

High efficiency, corporate governance, and financial health attract more customers and increase their market share and profitability.

As stated in the research topic, efficiency, corporate governance, and financial health of banks are very important and should be considered by bank managers. Certainly, a bank can emphasise economic areas and development plans that meet its users' needs. This will attract institutional investors and the entry of stray capital into society and improve the efficiency of banks. Maximising the interests of shareholders, paying attention to the interests of stakeholders and other beneficiaries, increasing efficiency, corporate governance, and financial health of enterprises are the main goals of the economy of any society.

As a result, to achieve the above goals and improve the efficiency of banks, the grounds for establishing proper corporate governance through a sound banking system should be provided to meet the information needs of investors, shareholders, and other users to improve the country's economy. Given that the general public is not able to analyse the situation of banks and assess corporate governance, efficiency, and financial health of banks, one of the main concerns of investors and lenders is to invest in banks that reveal the loss of capital and expected profit due to poor performance, lack of sound financial situation, lack of proper corporate governance, bankruptcy. Therefore, examining corporate governance over the efficiency of banks, despite the role of their financial health, can provide the necessary information to stakeholders to analyse the performance of banks and choose the best option for investment. When it comes to better allocation of the financial resources, bank executives are among those interested in learning about the future state of the bank under their management and the risks that threaten them and eliminate them in competition with other banks. The present study's findings can provide the necessary knowledge of the inefficiencies in banks to the managers of banks and financial institutions to improve and increase their efficiency and eliminate the existing shortcomings in banks. High efficiency, corporate governance, and financial health attract more customers and increase their market share and profitability.

7. Practical Implications and Limitations:

Limitations derived from lack of access to all data and information of banks, limitations governing economic models and statistical analysis, sampling and generalisation of results, are one of the limitations of research; the financial and economic situation of banks is strongly influenced by the economic and political situation of the country, as a result of which investors react to these changes. Changes in economic conditions in the years under review may have affected the study

results, and the data are historical; as a result, the effect of the inflation rate has not been taken into account due to the country's economic conditions.

Future direction: It is suggested that corporate governance's role on banks' efficiency is examined when the financial soundness of banks is weak or strong. This means that the moderating role of financial health should be discussed. Parametric methods can be used to evaluate the efficiency of banks, structural equations method can be used for financial health, and special vector method can be used for weighting them. Qualitative components can also be used for corporate governance. These models can be re-evaluated and examined with the findings of this study to achieve more accurate analysis and judgment.

Given that the general public can not analyse the situation of banks and assess their financial health, one of the concerns of investors and creditors is to invest in banks that eventually went bankrupt due to poor performance. As a result, the capital and their expected profits are lost. Therefore, it is suggested that in addition to the Kamels model, other models are also used and analysed for financial health to providing users with more accurate information about banks.

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The Effects of Money Beliefs on Investment Addiction

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Abstract

As the impact of culture, especially money belief, is greater than the rational analysis of the capital market in developing countries, the expansion of Iran's capital market has led to an increased investment addiction. Since a few studies have been conducted in this area so far, this study investigates the impact of money beliefs on investment addiction. Thus, 415 questionnaires were distributed among investors; the data were analyzed using structural equations in AMOS software using the maximum likelihood estimation (MLE) method. The findings suggest that money worship and money status beliefs significantly affect investment addiction, whereas money avoidance belief does not affect investment addiction. In addition, the money vigilance belief has a significant negative impact on investment addiction. Given the effects of most money beliefs on investment addiction, policymakers and consultants of the capital market can readily safeguard traders from capital market dilemmas through effective money belief-building training.

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1. Introduction

Due to technological advancements, the capital markets have grown significantly worldwide, including in Iran, and people from all walks of life have been drawn to it (Griffiths, 2018; Cantwell, 2020). This is because the stock market has evolved from an insignificant market in the economy to an influential market that affects cultural developments and the economy. Society is experiencing the rise of new cultural dilemmas resulting from the capital market boom, including the speculation problem. People strive to meet their basic needs and suppress aspirations through the capital market. People may also become oblivious to their work and daily activities by spending most of their time reading the news and information about the capital market and analyzing various stocks (Markovic et al., 2012; García-Santillán, Mexicano-Fernández and Molchanova, 2021).

In this respect, social media is full of content providers attempting to portray the stock market as a quick way to reach huge wealth (Piñeiro-Chousa, Vizcaíno-González and Pérez-Pico, 2017; Li et al.,2019). The main issue occurs when investors lose a lot of money after making small but promising profits. At this point, they might fall into psychological traps and spend too much time on the stock market. To put it another way, investors try to reinvest to make up for losses and feel inner satisfaction, which can lead to more losses. Under such circumstances, investors become trapped in a vicious cycle of unplanned transactions, such that trading becomes an essential activity, and traders frequently disregard their financial resources and debt obligations and behave irrationally. In this case, the investor is addicted to buying and selling stocks (Guglielmo, Ioime, and Janiri, 2016). Some traders have not yet been adequately trained to enter the capital market and lack a thorough understanding of risk and investment time horizons.

Investors in underdeveloped or developing countries always seek to enhance their monetary status due to a lack of understanding of financial issues and economic volatility. Thus, as scientific debates, experience, and logical analysis fade away, some irrational thoughts will become more pronounced in investors' decisions. Although different factors contribute to a distorted view of the capital market, a more in-depth investigation reveals that the desire to make more money is the most significant factor contributing to the development of improper insights into the capital market. Evidence suggests that the way people think about money, or money belief, significantly impacts investors' behaviours (Nadeem et al., 2020). Money belief is formed due to the environment and circumstances that the individuals experience throughout their lives and financial values and norms established in them during financial socialization. Under these circumstances, some money beliefs set the stage for unrealistic expectations and disregard for realities of the capital market as investors chase the capital market to make a quick profit. Simply put, one of the most fundamental components of investment is to evaluate the take profit and stop loss, and those who engage in negative money beliefs do so (Tang et al., 2018).

A significant portion of the capital market events is beyond rational analysis due to Iran's economic conditions. Several factors, notably investor culture, influenced the Tehran Stock Exchange in 2020. In other words, some investors' money beliefs and their lack of knowledge and understanding of financial market issues, such as investment addiction, have resulted in a lack of dynamism in the capital market, which serves as the beating heart of the country's economy. Because of their ignorance of these factors, investors are more likely to exit the capital market with the bankruptcy risk. This can have grave economic and cultural implications for the country.

Furthermore, understanding how money beliefs affect investment addiction is critical to both investors and regulatory and executive bodies. Regrettably, no research has been conducted in Iran to add to this literature or eliminate its adverse effects. The current study aims to fill this research gap by looking into the impact of money beliefs on investment addiction.

2. Theoretical Foundations and Literature Review, Development of Research Hypotheses

Socialization is a process that educates a person on how to function in society, provides him/her with a mindset and a sense of culture, and helps him/her improve and develop his/her skills (Zhao and Zhang, 2020; Smith, 2021). Financial issues constitute one of the dimensions of socialization. In other words, it is a process by which people develop cultures and attitudes toward their ability to act well as market customers. Some researchers define it as the acquisition and growth of cultures, beliefs, and attitudes toward household money spending. However, financial socialization is more widespread than learning to spend household money (Nanda and Banerjee, 2021). Financial socialization causes a person's attention to be drawn to the money beliefs of those around him/her, and the financial education that follows can help him/her develop a money belief. When the process of financial socialization fails to instil the desired money belief in a person, it leaves him/her very vulnerable to financial issues, including in the capital market (Santos and Campos, 2019).

2.1. Money beliefs: Money plays an essential role in individuals' daily life and affects their purchasing decisions and incentives. People are typically viewed as rational decision-makers in financial science. Hence, they are constantly looking for new ways to increase their wealth and other financial benefits. On the other hand, people pursue other objectives, such as gaining power and enjoying their lives. These demands are in line with the standard financial needs. These factors affect how people think about money and how they behave in money-related issues (Klontz, Britt, and Mentzer, 2011; Klontz and Lawson, 2019; Pedersen, 2019; Atiri and Bello, 2021).

Put it differently; money beliefs are the ways people think about money that shape their behaviour in money-related issues. People develop their money belief due to the environment and circumstances. The four types of money belief are as follows: money avoidance, money worship, money status, and money vigilance (Pedersen, 2019; Atiri and Bello, 2021), each of which is described below.

2.1.1. Money avoidance belief: Money avoidance belief defines money as evil and corruptive. People with the money avoidance belief may avoid spending money on necessities or delegate their financial responsibilities to others and may generally refuse to deal with money. According to research, these people typically have low income and asset net worth, resulting in an improper financial pattern. For those who believe in money avoidance, money is usually viewed as a force resulting in fear, anxiety, or disgust. According to other studies, unmarried and young people are more likely to have a money avoidance belief, decreasing with age (Klontz, Britt, and Mentzer, 2011; Klontz and Lawson, 2019). Klontz and Klontz (2009) and Klontz and Britt (2012) concluded that financial denial/rejection, hoarding, compulsive buying, and workaholism are all positively predicted by the money avoidance belief. Furthermore, in another study conducted by Park and Sang(2018), the authors indicated that the money avoidance belief positively correlated with gambling addiction.

2.1.2. Money worship belief: People with a money worship belief claim that having more money makes everything better. Increased income is seen as a solution to problems by those who hold this belief. Money worshipers feel that they can never make enough money and will never pay for their desires. They believe that their needs will never be met, and consequently, they become trapped in a vicious circle in which more money makes them happier (Klontz, Britt, and Mentzer, 2011; Klontz and Lawson, 2019).

However, according to the findings of some studies, having more money has nothing to do with happiness. Furthermore, higher income is associated with higher levels of distrust and depression. According to Klontz and Klontz (2009) and Klontz and Britt (2012), a money worship belief can lead to financial disorders, such as excessive risk-taking and gambling behaviours. Furthermore, The studies conducted by Ong, Lau, and Zainudin (2021) and Park and Sang (2018) demonstrated

that money worship positively affected compulsive buying and workaholism.

2.1.3. Money status belief: People with a money status belief are more likely to buy the most expensive and latest items. They believe that each person is worth as much as the net worth of his/her assets. This belief may put the individuals in a more competitive position than their peers to earn more money. Those who believe that money determines a person's social status feel a clear distinction between socioeconomic classes. Excessive concerns about financial achievement and materialism have also been shown to cause a lot of tension and anxiety in individuals. The money status belief generates a strong incentive to improve one's socioeconomic status. Still, it also puts people at danger of engaging in irregular financial behaviours, such as investing in too risky ventures to get richer sooner (Klontz, Britt, and Mentzer, 2011; Klontz and Lawson, 2019). According to research on money status belief, people with this money belief have lower income and education levels. The money status belief also helps predict compulsive buying, financial dependence, and financial infidelity or lying to the partner/spouse about financial issues (Klontz and Klontz, 2009; Klontz and Britt, 2012). Furthermore, Ong, Lau, and Zainudin (2021) and Park and Sang (2018) reported in their studies that money status had a positive effect on compulsive buying and workaholism.

2.1.4. Money vigilance belief: People who have money vigilance belief firmly believe that saving is essential for the future and are more careful with their finances. Money vigilance belief appears to be protective against and minimize financial distresses. Those with such a belief are involved with more financial planning and enjoy a higher financial health level. People who are overly concerned about how to spend their money (Klontz, Britt, and Mentzer, 2011; Britt et al., 2015; Klontz and Lawson, 2019), on the other hand, may regard money as a sensitive issue in their family and refrain from sharing their financial information even with their family members. According to research on the money vigilance belief, people with the money vigilance belief have higher earnings and net assets. Also, according to Klontz and Klontz (2009) and Klontz and Britt (2012), money vigilance belief is adversely linked to compulsive buying, financial denial/rejection, and financial infidelity. In another study, Park and Sang (2018) revealed that money awareness impacted the variable of money-saving.

Investors have been more engaged in stock markets, and the availability of online trading platforms has led to their increased participation. However, since various incentives exist to present the capital market to make a lot of money, it has become quite difficult to identify their behavioural pattern. Money beliefs are among the above-cited incentives developed in people due to their social interactions, education, and experiences. Since studying the effect of money beliefs on the capital market is a relatively new concept, there has been little research in this area thus far. The following is a literature review on the effect of money beliefs on capital market traders.

Keller and Siegrist (2006) looked at the impact of attitudes toward financial risk, money beliefs, negative moral attitudes toward the stock market, income, and gender on willingness to invest in stocks. The findings suggested that money vigilance belief is negatively associated with the willingness to invest in stocks for men and women with no money savings. Ul Hassan, Mehmood, and Mushtaq (2017) investigated the effects of behavioural biases on the financial decisions of investors given their money attitudes. They first classified the investors into different groups based on their money attitudes and then explored the effect of behavioural biases on investors' decisions. Their findings indicated that money attitudes played a crucial role in how behavioural biases affected investors' decisions. Tang et al. (2018) also tried to figure out how investors used their love of money to forecast stock volatility and improve investment satisfaction. Their results revealed that people with money worship belief are less satisfied due to their inability to control their desire to become wealthy, and they constantly change their portfolios in response to fluctuations in the index

and stocks of their choice. Nadeem et al. (2020) looked at how money beliefs lead to investors' participation in the stock market in the presence of financial self-efficacy. The study found that investors' money beliefs play a significant role in their stock market participation decisions (Bilgin et al.,2020).

Furthermore, risk attitudes were discovered to mediate the relationship between money beliefs and stock market participation to some extent. Financial knowledge (literacy) and self-efficacy moderate the relationship between money beliefs and stock market participation. Another research project aimed to better understand individual investors' behaviours in the foreign exchange (Forex) market showed that money worship belief adversely affected investors' performance.

Money is an integral part of people's lives as it motivates their financial behaviours in various ways, resulting in different money beliefs among different groups of investors when investing in various financial assets. Despite the relevance of the effect of money beliefs on capital market traders, little research has been done on the subject.

2.2. Investment addiction: Trading is an exciting activity that triggers a sense of pleasure and reward in the brain. Therefore, some people trade regularly to alleviate destructive emotions momentarily. However, this could result in unexpected consequences, and thus, investment addiction in the long run. According to studies, in the wake of small early earnings, investment-addicted traders undertake larger and riskier investments, ending in irreparable losses. Investment addiction also leads to a gradual increase in time spent in the capital markets and eventually makes a person spend most of the day in the financial markets (Guglielmo, Ioime, and Janiri, 2016). As the rate of suicidal attempts among traders rises, investment addiction appears to be disregarded by financial market policymakers. Furthermore, this field has a minimal research background. The literature on investment addiction has been summarized in the following section.

Markovic et al. (2012) investigated the relationship between addictive behaviours and stock market investment in Croatia. The statistical population consisted of 111 people, most of whom were 35 to 45-year-old men with a high level of education who spent more than one hour a day monitoring the capital market. According to the findings, most online users, who invest in the stock market and buy and sell stocks, have met the DSM-IV criteria for addiction. Grall-Bronnec et al. (2017) also looked into whether investment addiction could be classified as a gambling disorder. The findings revealed that investment addiction is very similar to gambling disorders in terms of behavioural patterns. According to this study, investment addicts lack a financial plan like many gamblers. They also lost a lot of money before making a profit, much like gamblers do. To make up for previous losses, they eventually lost control of their expenditures.

In other words, investing is not a form of gambling, yet some people consider it gambling. Mosenhauer, Newall, and Walasek (2021) investigated the associations between stock market trading frequency and problem gambling in their study titled: "The stock market as a casino." They indicated that the investors frequently engaged in trading showed gambling behaviour. In other words, this study supports the hypothesis that there is a relationship between problem gambling and stock market trading frequency.

According to a standard diagnostic checklist developed by the American Psychiatric Association (APA), Cox, Kamolsareeratana, and Kouwenberg (2020) discovered that a group of individual investors of the financial market demonstrated signs of investment addiction. Investors with addiction symptoms followed a more active and more speculative trading style, implying the higher frequency of their daily trading. Besides, Sonkurt and Altinos (2021) carried out a study in 2021 to study the pathology of the behaviour that digital-currency investors exhibited, and the findings indicated that a significant portion of digital-currency traders, including those trading frequently or daily, was likely to show dysfunctional financial behaviour while investing. And some of them

might be addicted to investing in digital currency. Mathieu and Varescon (2021) also investigated stock buying addiction to better. This study influenced investment addiction by three factors: family, investment time, motives (incentives), and beliefs.

According to previous research and a brief examination of investors' behavioural patterns, some investors meet the criteria for addiction. Despite the significance of this phenomenon, little research has been conducted on the factors affecting investment addiction. On the other hand, it should be acknowledged that, based on the literature review, the impact of money beliefs on the capital market has not yet been adequately investigated. Moreover, even though money beliefs can act as the critical determinant of investors' behavioural patterns, including the phenomenon of investment addiction, this issue has received less attention. This study explores the effect of money beliefs on investment addiction to fill this gap. That is to say, as the problem of investment addiction is a new topic, this study is unique in that it aims to advance theoretical foundations and add to the body of knowledge on the subject. It can also be a fundamental solution to the capital market problems for investors and policymakers.

2.3. Theoretical foundations of research hypotheses

According to social learning theory, the norms and values of individuals are formed under the influence of their family and community context (Inseng Duh, Yu and Ni, 2021). People's belief in financial issues, especially money, is not separable from the social learning process, called money culture. Money avoidance belief is one of the money beliefs, and the people under the influence of this culture believe that money is inherently bad and a source of guilt and shame, so that they do not keep much money with them. People with the money avoidance belief are more likely to make wrong financial decisions, resulting in low income and asset net worth. This is because they ignore financial risks and have no financial planning due to their money avoidance (Klontz and Lawson, 2019). Additionally, investors with the same money belief do not keep much money and invest without prior planning. Due to this vicious cycle, people become obsessed with investing and exhibit signs of investment addiction (Cox, Kamolsareeratana and Kouwenberg, 2020).

H_1: Money avoidance belief positively and significantly impacts investment addiction.

Some people believe that more money makes everything better in today's world. This mindset leads to the belief that one can never have enough money or that one's demands will never be met. Hence, they are trapped in a vicious circle in which some money makes them happier all the time (Klontz and Lawson, 2019). In such circumstances, investors who are influenced by money worship beliefs and whose dream is to gain a huge wealth within a short time become involved in the investment process. They hold a high risk-taking and gambling perspective in their investments. Traders who assume this viewpoint spend more time in the stock market (Mosenhauer, Newall and Walasek, 2021); in other words, they become addicted to investment.

H_2: Money worship belief positively and significantly impacts investment addiction.

Money is not just about finances (financial issues); most importantly, money has had such a powerful impact on investors that its sudden rise or fall can significantly affect their personalities and attitudes. Some people believe that each person is worth as much as the net worth of his/her assets. In other words, they are influenced by the money status belief, according to which money enhances the social status of the investor (Klontz and Lawson, 2019). Investors pay too much attention to their financial success under such circumstances, and thus, they invest without financial planning and accept very high risks. As a result, traders incur financial losses that trap him/her emotionally so that the investor re-invests to feel comfortable (Mathieu and Varescon, 2021), and this vicious cycle continues, causing the trader to become an addicted investment.

H_3: Money status belief has a significant positive impact on investment addiction.

Another money belief is the money vigilance belief. Traders who hold this [money] belief are typically more cautious with their money and are risk-averse people. They also plan out their financial activities better (Klontz and Lawson, 2019). Accordingly, they are less likely to be affected by emotions and dreams of becoming wealthy because they follow a long-term investment horizon. Thus, they are less vulnerable to market volatility and short-term losses. This, in turn, protects them from the emotional pitfalls of financial losses and reduces their risk of investment addiction (Mathieu and Varescon, 2021).

H_4: Money vigilance belief has a significant negative impact on investment addiction.

3. Research Methodology

The current research is a descriptive survey study in terms of data collection. The statistical population comprises all Tehran Stock Exchange investors who monitor the capital market for more than two hours a day. 415 questionnaires (300 electronic questionnaires, 115 paper questionnaires) were distributed among stockholders to collect the samples. Three hundred ninety-six questionnaires were gathered, of which 346 were acceptable. The sample size was determined using the Tabachnick and Fidell formula, which is utilized to determine the sample size in structural equations. According to this formula, the sample size should be more than or equal to 50 plus 8 multiplied by the number of predictor variables. The sample size was increased to 200 participants for better generalizability of the study findings (Habibi and Adnour, 2017).

3.1. Research instrument and data analysis methods

The first section of the questionnaire was dedicated to demographic information, such as age, gender, education, and marital status. The second section is about the "money beliefs" variable. A 16-item localized questionnaire developed by Britt et al. (2015) was employed for this purpose. The investment addiction variable is discussed in the third section. The 4-item modified questionnaire, presented by Markovic et al. (2012), was utilized for this purpose.

3.2. Questionnaire reliability and validity

To assess the questionnaire's factorial structure, reliability, and validity, it was presented to experts in the first step to ensure that it corresponded to the concept being measured (Farasangi and Noghondari, 2017). A quantitative indicator of validity called convergent validity (AVE) was also used for measuring validity. This criterion uses factor loads related to each question to evaluate it. Convergent validity is established when the value of the criterion is greater than 0.5. Cronbach's alpha test and its more recent index, i.e., composite reliability index, were used in the second step to assess the internal consistency of the questionnaire. The tests mentioned above are accepted when their values are greater than 0.7. Confirmatory factor analysis (CFA) was employed in the third step to assess the model validity, the fitness of the factor load, and the fitness of the measurement model (Hayes, 2018).

3.3. Structural equation modelling

The data were analyzed using structural equation modelling (SEM) and Amos software Version 26. The number of unknown parameters was predicted using the maximum likelihood estimation (MLE) approach. In this method, first, the data must be distributed normally. For this purpose, the kurtosis coefficient of each variable should be less than 7, and its skewness coefficient should range between +2 and -2. Secondarily, the dependent variable must be continuous (Byrne, 2013). The data were analyzed in two steps. The stability and consistency of the tested choices were examined in the first step, and the degree of likelihood and fitness were reviewed for SEM and hypothetical path

tests in the second step. The structural equation modelling (SEM) technique allows a researcher to test some regression equations simultaneously. It is also a comprehensive method for testing observed and latent variables (Hayes, 2018).

4. Data Analysis

4.1. Descriptive statistics results

A total of 346 people responded to the questionnaire. Females and males made up 49.7% and 50.3% of the population, respectively, and their educational degrees ranged from degrees lower than high school diplomas to doctorates. Investors with a master's degree or higher account for 34.7% of the investors, which constitute the most frequent category in terms of education. In addition, 68.5% of the respondents are married with an average age of 40.

Table 1 shows the following descriptive statistics for the research variables: minimum, maximum, skewness, kurtosis, mean, and standard deviation. These variables were measured using a Likert scale (1–5). The averages for money vigilance belief, money avoidance belief, money status belief, money worship belief, and investment addiction are 1.89, 4.03, 3.96, 3.66, and 3.72, respectively. This indicates that the investors of the sampled community moderately/firmly represent the features of investment addiction. Furthermore, there is a moderate to firm belief in money status, money worship, and money avoidance beliefs. As stated in the Methodology section, since the kurtosis coefficient of variables is less than 7, and their skewness coefficient ranges between +2 and -2, the research variables are normal.

Table 1. Descriptive statistics

Variable	Mean	SD	Min	Max	Skewness	Kurtosis
Money vigilance belief	1.89	0.85	1	5	1.01	0.54
Money avoidance belief	4.03	0.72	1	5	-0.86	0.60
Money status belief	3.96	0.72	1	5	-0.95	1.09
Money worship belief	3.66	0.98	1	5	-0.47	-0.56
Investment addiction	3.72	0.92	1	5	-0.63	-0.24

4.2. Reliability and validity tests

As mentioned in the Methodology section, the measurement model's fitness and research constructs were determined using CFA. CFA must meet three criteria: (1) first, each construct must be correlated with its indicators, (2) all indicators must have a minimum factor load of 0.5, and (3) the model must feature a favourable fitness. The model fitness is favourable in the present study. When interpreting factor loads, it is important to remember that a factor load ranges between 0 and 1. Regardless of the signs of the factor loads, if the factor load is higher than 0.5, the factor load is desirable, and if it is less than the specified value, the item should be removed.

Furthermore, if Cronbach's alpha and construct reliability are greater than 0.7, the construct reliability is acceptable (Hayes, 2018). For all variables of this study, the composite reliability and Cronbach's alpha are greater than 0.7, indicating reliability. The constructs convergence is greater than 0.5, which is desirable based on the results presented in Table 2 (Hayes, 2018) .

Table 2. Criteria of AVE, validity, and reliability of the measurement model

Research variables	Cronbach's alpha	Composite reliability	Convergence (AVE)	Factor loading	Research variables	Cronbach's alpha	Composite reliability	Convergence (AVE)	Factor loading
IA[1]	0.89	0.88	0.66		MS[4]	0.88	0.89	0.67	
IA 1				0.88	MS1				0.76
IA2				0.89	MS2				0.85
IA3				0.73	MS3				0.91
IA4				0.74	MS4				0.74
MA[2]	0.82	0.83	0.56		MV[5]	0.88	0.88	0.65	
MA1				0.76	MV1				0.79
MA2				0.75	MV2				0.92
MA3				0.77	MV3				0.78
MA4				0.68	MV4				0.71
MW[3]	0.90	0.89	0.69						
MW1				0.93					
MW2				0.94					
MW3				0.73					
MW4				0.63					

4.3. Path analysis of structural equation model (SEM) variables

In the model illustrated in Fig. 1, the path analysis of the variables is examined using the SEM methodology (refer to the Methodology section). Path MA→IA (Fig. 1) analyzes the relationship between money avoidance belief and investment addiction. Path MW→IA analyzes the relationship between money worship belief and investment addiction. Path MS→IA analyzes the relationship between money status belief and investment addiction, and the path MV→IA analyzes the relationship between money vigilance belief and investment addiction. Table 3 demonstrates that the overall fitness of the model was suitable because the chi-square index (CMIN), normalized chi-square index (CMIN/df), root mean square error of approximation (RMSEA), goodness-of-fit index (GFI), comparative fit index (CFI), and relative fit index (RFI) had a good fitness level.

Table 3. Model fitness

Indicator type	Model fitness criteria	Acceptable limit	Model
Model indicators	CMIN		483.67
	P	<0.05	***
	CMIN/df	1-5	3.04
Relative indicators	RMSEA	<0.08	0.07
	GFI	>0.90	0.87
	CFI	>0.90	0.92
	RFI	>0.60	0.87

1. Investment addiction
2. Money avoidance
3. Money worship
4. Money status
5. Money vigilance

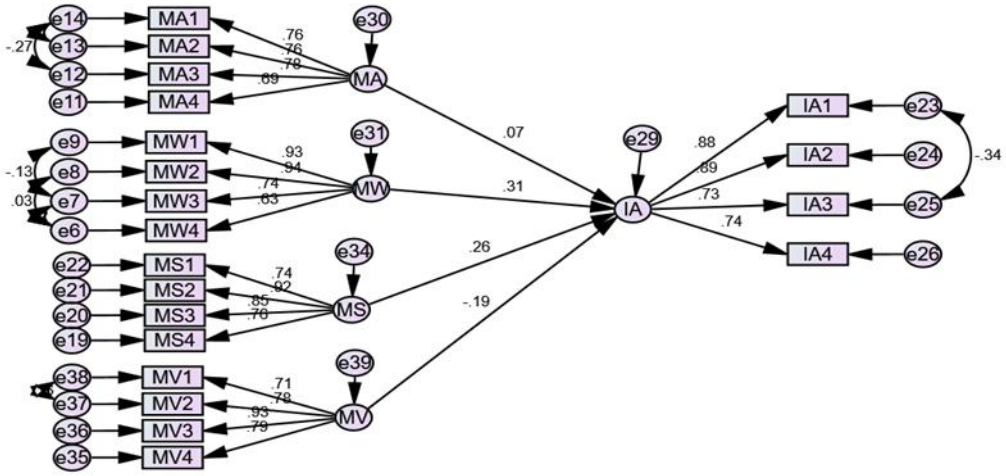

Figure 1. The results of the model

4.4. Testing research hypotheses

According to the analysis results, the "money avoidance belief" variable has an influence coefficient of 0.10 on the investment addiction variable. H1 was rejected because the significance level is 18% (>5%), and the critical value is 1.33, which is above the 1.96 range (Table 5). Moreover, at a significance level of 1%, the influence coefficient of the "money worship belief" variable on investment addiction is 0.27, indicating a significant positive effect. Furthermore, the critical value is 5.74, higher than the 1.96 range, indicating that H2 is confirmed (Table 5). H3 is also confirmed because the influence coefficient of 0.35 is significant and positive at a 1% significance level, and the critical value is 4.75, which is higher than the 1.96 range. In other words, as traders' financial status belief grows, so does their investment addiction (Table 5). H3 is also confirmed because the influence coefficient of -0.26 is negatively significant at the 1% significance level, and the critical value is -3.59, which is less than the range of -1.96. That is, as traders' money vigilance belief grows, their investment addiction declines (Table 5).

Table 4. Model path analysis results

Independent variable		Dependent variable	Influence coefficient	Standard error	Critical value	Significance level
Money avoidance belief	→	Investment addiction	0.10	0.07	1.33	0.18
Money worship belief	→	Investment addiction	0.27	0.04	5.74	0.00
Money status belief	→	Investment addiction	0.35	0.07	4.75	0.00
Money vigilance belief	→	Investment addiction	-0.26	0.07	-3.59	0.00

5. Conclusion and Discussion

This research aimed to figure out what causes the investment addiction phenomenon. This study examined the association between money beliefs and investment addiction. Even though the past literature has limited reference to money beliefs, their impacts on investors' behavioural patterns in the capital market have not been thoroughly examined. Moreover, with the introduction of social learning theory, culture became the most critical factor in shaping the behavioural patterns of individuals in societies. One of the issues that have always affected people in a community is the addiction phenomena, including investment addiction, which is often influenced by culture, including money beliefs. Despite the significance of the issue, little research has been conducted on the phenomenon of investment addiction, which is influenced by investors' money beliefs. This

research aimed to close this gap in the literature. Structural equations were used to test the research hypotheses within the research model context. The outcomes of each hypothesis will be discussed briefly in the following section. Due to the complexities of the capital market, investors are responsible for their own decisions and choices. In this regard, some money beliefs, such as money avoidance, can be extremely harmful to individuals. Those believing in money avoidance can justify financial irresponsibility by viewing money as an evil and sinful item for the investor.

Thus, people with the money avoidance belief make wrong financial decisions, often ignore financial risks due to their money avoidance, and make compulsive investments without planning. Therefore, the money avoidance belief can increase the risk of becoming addicted to investing. Nonetheless, the findings of this study revealed that money avoidance belief did not affect investment addiction in the statistical population of investors active at the Tehran Stock Exchange (H1). This result is contrary to the theoretical framework presented in the previous section.

Furthermore, the H2 result demonstrates that the money worship belief leads to monitoring financial market trading with a gambling perspective. Accordingly, they devote significant time following and studying financial news and capital market developments. Under such conditions, a gap is created between the individuals and their family and workplace, making investing their only daily activity. The H2 result is consistent with the theoretical framework.

Some money beliefs, such as money status, can put people in a competitive position to earn more money than their peers. Hence, financial success is critical for investors with this money belief. Accordingly, they strive to invest in the capital market under any circumstances and make speculative profits, even if the risk is high. These traders are more likely to fall into the emotional trap of financial loss as they invest without proper financial planning. Hence, they fall into a vicious, morbid investment addiction cycle. The present study, conducted for the statistical population of investors at the Tehran Stock Exchange, also affirmed that money status belief has a significant positive impact on investment addiction (H3). This result is consistent with what was discussed in the Theoretical Framework section.

Finally, the H4 results revealed that money vigilance belief has a significant negative impact on investment addiction. Since investors with money vigilance belief have control over their finances and invest with prior planning, this result is consistent with the theoretical framework. Thus, they are less likely to be affected by emotions and fantasies about becoming wealthy. Consequently, they are less likely to fall prey to the emotional trap of short-term losses, reducing the risk of becoming addicted to investment.

There was no similar study on the impact of money beliefs on investment addiction. However, a few studies have looked at the impact of money beliefs on detrimental financial behaviours. Confirming H2, H3, and H4, the findings of studies by Klontz and Klontz (2009) and Klontz and Britt (2012) and Park and Sang (2018) on the positive effect of money beliefs (money worship and money status) and the negative effect of money vigilance belief on financial behavioural disorders were in line with those of our investigation. In addition, the study of Ong, Lau, and Zainudin (2021) has attested the positive effects of money beliefs (money worship and money status) on dysfunctional financial behaviour. Although studies by Klontz and Klontz (2009), Klontz and Britt (2012), and Park and Sang (2018) indicated the positive impact of money avoidance belief on detrimental financial behaviour, the current study found no such a significant relationship (H1).

This research also faced some limitations. As the questionnaire was used to gather data, some investors refused to respond honestly. It is also difficult to draw causal conclusions from this study because it was conducted cross-sectionally. In addition, the respondents' unfamiliarity with financial concepts doubled the response time and the difficulty of the work for the researcher.

According to the findings of this study, recognizing investors' money beliefs can help market

policymakers drive the capital market toward a boom. The results may also assist capital market professionals in tailoring investors' behavioural patterns. By recognizing the roots of investment addiction, they can provide the investors with essential training, which is essential for traders' financial well-being. Furthermore, because there have been few studies on money beliefs in the capital market, evaluating the impact of investors' money beliefs on investment addiction can add to the literature. Since scholars have not explored the topic above yet, it can be a new area for research innovation. In this regard, it is advised that researchers investigate the factors influencing money beliefs and the impact of financial education and counselling on the investment addiction phenomena.

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RESEARCH ARTICLE

The Impact of Psychological Dimensions of Financial Managers on Financial Reporting Quality

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Abstract

One of the primary and most important sources of information for decision-makers, especially external users, is companies' reports and financial statements. Therefore, this study aims to determine the personality traits affecting managers' and companies' financial reporting on the Tehran Stock Exchange. For this purpose, a sample consisting of companies listed on the Tehran Stock Exchange from 2014 to the end of 2018 was selected. After studying the theoretical foundations of research topics and formulating research hypotheses, collect and prepare data sets used by researchers and eventually hypotheses using structural equation modelling approach tested and analysed. The results show that personality traits significantly affect the financial reporting of managers and companies listed on the Tehran Stock Exchange. Thus, investors and the board of directors of companies are advised to consider the personality traits and components of financial intelligence of the person or persons in question at an acceptable level in selecting financial managers.

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1. Introduction

The role of appropriate and timely decisions in the current competitive market is pronounced. Companies' financial reports are among the most significant sources of information for decision-makers, mainly external users.

Thus, it can be said that companies' financial reporting method plays a significant role in the quality of decisions made by actual and potential shareholders and other users, which, in turn, affect the amount of capital, creating earning opportunities and the survival of a company (Andreou, Ehrlich and Louca, 2013).

Particularly in the present era, known as the information era, and more diverse and extensive information methods and information dissemination have increased, those companies are more successful than using new information tools and information dissemination and maintaining and improving the quality of their financial reporting.

In this regard, considering the role of financial managers and their personality traits on financial reporting quality in behavioural financial knowledge can be of significance.

Behavioural finance studies have been raised by financial scholars during recent years and have quickly attracted the attention of scholars in this field across the world, so today, such studies have led to the creation of independent studies in financial knowledge (Darabi and Zarei, 2017). Behavioural finance aims to combine the financial sciences, psychology, and sometimes sociology to evaluate individuals' decision-making processes and reactions to different financial market conditions, emphasising individuals' personalities, cultures, and judgments. Behavioural finance helps better understand the capital market by formulating behavioural models (Badri and Goodarzi, 2015).

In behavioural finance, personality type is one of the components affecting managers' decisions. Managers with different personality types apply a variety of management methods. Considering the role of personality traits among financial managers as the intrinsic dimensions of their abilities and its impact on the performance of financial managers in this study, an attempt was made to study the relationship between the personality traits of financial managers and financial reporting quality.

Personality traits are the behavioural characteristics of humans that play a critical role in their lives so that such traits can be considered in individual judgments and decisions (Amer and Gerkez, 2019).

As perception is a significant factor in decision making, personality is involved in this matter, and since personality traits are undeniable in the expressed behaviours, managers' personality traits affect their performance.

In addition, differences in personality traits lead to different performances (Heydarpour and Rajabdorri, 2017). People have different moods and spirits, and psychologists classify them based on common behavioural characteristics in personality types. Such personality types affect the individual characteristics and the type of behaviour and performance of individuals. Personality traits determine the structure and behaviour of people in society, and the differences in personality traits make people behave differently in similar situations. All personality types are equally valuable, and no personality type is better or worse than the other one. However, psychologists understand what factors affect the person the most and what behaviour occurs in different situations, depending on the personality type.

Companies often provide some justifications for confirming the information they disclose. For instance, a company that publishes some forecasted information about an unexpected increase in earnings may justify the information by explaining that the company expects an increase in sales or a decrease in administrative costs. Such additional explanations should increase the validity of earnings forecasts for different reasons (Duellman, Hurwitz and Sun, 2015). By providing specific explanations on the components of the forecasted information, managers reduce their ability to use future situations to provide personal traits for the realisation of forecast or justify the unexpected

results. Such additional commitment considered by managers increases the validity of the disclosed information.

Today, one of the major concerns of managers in understanding the company's future horizon and the value creation process. Therefore, the success of large companies depends on the competence and merit of managers. As the economic unit is stronger in management, it will succeed in the unit's goals. As a result, the organisation will create the necessary conditions to implement new management systems. Meanwhile, managers' competence which refers to the characteristics and behaviours that lead to their effectiveness in the work environment, depends more on changing their behaviour, personality traits, and attitudes than on knowledge and skills and has stable effects on financial statements quality. The main objective of auditors is to protect shareholders' interests against significant distortions and errors in the financial statements. Auditors aim to increase the quality of audits to retain their professional credibility professional reputation and avoid lawsuits against them. Meanwhile, managers' incentives to apply their personal interests in the quality of earnings prevent auditors from achieving their goals. On the contrary, auditors can discover the quality of earnings management performed by managers and pressure managers to apply earnings quality by increasing audit quality (Chen, Lin and Zhou, 2005). Overall, the principle of disclosure is one of the principles of accounting which affects all aspects of financial reporting. The principle of disclosure requires that all significant facts related to the financial activities of the business unit are properly reported.

The basic financial statements should contain all related and timely information based on this principle. Such information should be presented to be understandable and complete to enable informed decisions for users.

On the other hand, the provided information should not confuse the users of financial statements in terms of quantity and quality. Full disclosure makes the financial statements prepared in such a way to give a more accurate image of the economic events which have affected the economic unit over a while and involve the information which is useful to an ordinary investor but does not mislead the reader. In other words, full disclosure means that no significant information that is of interest to an ordinary investor should be eliminated or concealed. The term disclosure means the dissemination of information, but accountants often tend to use this word in a limited way to disseminate merely financial information in the business unit in the annual reports. Determining the amount of information that can be provided depends on the financial reporting goals and the significance of the items. Financial reporting aims to provide information to potential investors, creditors, and other users, so that the information can be useful in rational decision-making of investment, accreditation, and similar decisions (Abdul Ghadir, 2016). One of the things which can affect the amount and type of information disseminated by companies is financial managers and their characteristics and personality types. Ashton, Willingham and Elliott (1987) realised that job performance is affected by managers' personality traits, and some inherent factors such as personality traits can be used to predict performance in accounting. According to Davidson and Neo, personality traits affect the performance of managers, auditors and accountants (Davidson and Neo, 1993). The five-factor model is one of the most valid and historical models of evaluating the personality of individuals, as proposed by McCrae and Costa (1996). According to many psychologists, the five-factor model involves many personality variables. Numerous studies have confirmed the validity of the five-factor model during recent years, such as Ashton and Wright (1989) and Eid and Larsen (2008). The five major personality factors are:

Neuroticism: It is an aspect based on the experience of undesirable and hypothetical emotions. Neurotic people have anxiety, anger and resentment, depression, self-awareness and vulnerability (McCrae and Costa, 1980).

This dimension refers to a person's ability in tolerating stress. The people with neuroticism have low emotional stability and may have a conscious influence in group decisions conducted by expressing the negative aspects of the decision (Andersen, 2000).

Extraversion: Being warm, sociable, expressing oneself, active, seeking excitement, and expressing positive emotions are among the characteristics of extroverts. They are happy, energetic, and optimistic. The scales of area E are strongly correlated with interest in large risks in jobs (Heidarpour and Rajebduri, 2017).

Openness to experience: The elements of flexibility such as active imagination, aesthetics, attention to inner feelings, diversity, mental curiosity, and independence in judgment have often played a role in the theories and assessments of personality.

Flexible people are curious about the inner and outer worlds, and their lives are rich inexperience. In addition, they tend to accept new ideas and unconventional values and experience positive and negative emotions more deeply than inflexible people (Heidarpour and Rajebduri, 2017).

Acceptability or adjustment: Trust, frankness, altruism, companionship, humility, and compassion are traits of people with high adjustment. An acceptable person is altruistic, sympathises with others, is eager to help others, and believes that others are helpful.

However, the readiness to fight against one's own interests is considered a privilege. Thus, being accepted on the battlefield or in court is not considered a virtue. Furthermore, critical thinking and pessimism in science help accurate scientific analysis.

Being conscientious: Being conscientious means adequacy, order, conscientiousness, efforts for success (pragmatism), and self-control (individual discipline). A conscientious person is purposeful, determined, and decided (Garossi Farshi et al., 2002).

Accordingly, this study aimed to investigate the question "Do the personality traits of financial managers affect financial reporting quality?".

Based on the research objective, the hypotheses of this study were formulated as follows:

H_1: The personality type of neuroticism in financial managers significantly affects financial reporting quality.

H_2: Financial managers' personality type of extroversion significantly affects financial reporting quality.

H_3: The personality type of openness to experience in financial managers significantly affects financial reporting quality.

H_4: Financial managers' personality type of adjustment significantly affects financial reporting quality.

H_5: Financial managers' personality type of conscientiousness has a significant effect on financial reporting quality.

2. Research Methodology

This study is a descriptive – correlational study that applied to the target sample based on the following criteria:

- The end of the year for the studied companies is the same as the end of March.
- The companies have not changed their fiscal year during the studied period.
- The companies have not changed their type of activity during the studied period.
- The companies should not be an investment and financial intermediation, banking, insurance, and leasing.

Requires data were collected in two parts:

1. The first part of required data was collected using "Rahavard Novin[1]" software and provided data in www.rdis.ir
2. The second part of the required data was collected using an electronic questionnaire

Data were analysed in two sections: 1-Descriptive statistics and 2- Inferential statistics.

A simple random sampling method was used for collecting data, and Cochran's formula was used for determining the sample size based on the following equation:

$$n = \frac{N Z_{\frac{\alpha}{2}}^2 p(1-p)}{(N-1)d^2 + Z_{\frac{\alpha}{2}}^2 p(1-p)}$$

3. Findings

According to the answers in the questionnaires, which included 104 respondents, the descriptive demographic statistics were extracted based on Table 1.

Table 1. Descriptive demographic statistics

Gender	Percentage	Number	Education	Percentage	Number
Female	5.8	6	Bachelor	5.8	6
			Master	46.2	48
Male	94.2	98	PhD	48.1	50
Age	**Percentage**	**Number**	**Work experience**	**Percentage**	**Number**
Less than 40 years	10.6	11	Less than 10 years	12.5	13
40-50 years	52.9	55	10-20 years	48.1	50
More than 50 years	36.5	38	Over 20 years	39.4	41

In order to evaluate the normality of the distribution of variables, the Kolmogorov-Smirnov test was used in SPSS software with the following sub-hypotheses.

The results of this test are shown in Table 2.

Table 2. Kolmogorov-Smirnov test output for research variables

Variable	Mean	Std. D	Z	Sig	Result
Neuroticisim	2.500	0.719	0.934	0.347	Normal
Extraversion	2.475	0.847	1.801	0.103	Normal
Openness to experience	2.702	0.694	0.972	0.301	Normal
Acceptability	2.506	0.811	1.310	0.064	Normal
Conscientiousness	3.386	0.545	0.889	0.408	Normal
financial reporting quality	-0.079	0.023	1.098	0.113	Normal

Suppose the significance level value obtained for the Kolmogorov-Smirnov test in each variable is higher than 0.05. In that case, the null hypothesis will be accepted, and the opposite hypothesis will be rejected, meaning that the distribution of the variable is normal.

Based on the output of the Kolmogorov-Smirnov test for variables (data in the table mentioned above), it can be observed that the significance levels obtained for all variables are more than 0.05. It can be concluded that the hypothesis of the normal hypothesis is confirmed. Thus, the distribution of all research variables is normal. This study used the Fornell and Larcker attitude to interpreting factor loading values (1981). The factor analysis results indicated that the factor loading related to a number of items is less than 0.3, and thus other items have good validity.

[1] An Iranian data base which listed companies in Tehran Stock Exchange data are provided in it.

On the other hand, factor analysis data indicate that the composite reliability obtained for all variables is more than 0.5, and Cronbach's alpha obtained for all variables is higher than 0.7, indicating a high degree of convergence validity. Give. In the final model, inappropriate items were eliminated, and the hypotheses were analysed based on the correction model.

In the partial least squares (PLS), the quality and fit of the model are measured through two indicators of CV-Redundancy and CV-Communality. Positive numbers represent the appropriate quality of the model. The values obtained for the indicators mentioned above are displayed in Table 3.

Table 3. CV-Red and CV-Com index values for research model variables

Variable	CV-Red	CV-Com
Neuroticisim	0.942	0.942
Extraversion	0.753	0.753
Openness to experience	0.222	0.222
Acceptability	0.325	0.325
Conscientiousness	0.167	0.167
Financial reporting quality	0.883	0.883

Based on the information in the above table, the values obtained for the CV-Red and CV-Com are all positive, indicating the appropriate quality of the tested model. Convergent validity is the second criterion used to fit the measurement models in the pls method. The AVE criterion shows the average variance shared between each structure and its indices. The AVE of more than 0.5 shows acceptable convergent validity. The results of calculating the AVE criterion are shown in Table 4.

Table 4. AVE values for research model variables

Variable	AVE
Neuroticisim	1.000
Extraversion	0.819
Openness to experience	0.745
Acceptability	0.773
Conscientiousness	0.711
Financial reporting quality	0.952

The results of the AVE indicated that all research variables have good convergent validity.

The results of testing the model in the form of path coefficients with t-statistics of the hypotheses related to the model paths are indicated in Table 5.

Table 5. Path coefficient values and t-statistic of hypotheses related to research model paths

Path	Relationship			Path coefficient	T statistics	Result
1	Neuroticisim	→	Financial reporting quality	0.851	6.714	Confirmed
2	Extraversion	→	Financial reporting quality	0.056	2.168	Confirmed
3	Openness to experience	→	Financial reporting quality	0.037	2.322	Confirmed
4	Acceptability	→	Financial reporting quality	0.022	2.333	Confirmed
5	Conscientiousness	→	Financial reporting quality	0.127	2.068	Confirmed

Based on the interpretive model in structural equation modelling, if the value of t-statistic related to a path is more than 1.96, it can be stated that the related path is significant at the 95% level, and the hypothesis related to that path is confirmed. Based on the information obtained from the model test (Table 5), each of the research hypotheses is evaluated separately.

First hypothesis: The t-statistic value related to the first path of the model is 6.714, which is more than 1.96; thus, the relevant path is significant at the 95% confidence level. In other words, the hypothesis related to this path (the first hypothesis) is confirmed. Regarding the path coefficient obtained for this path, it can be stated that the effect of neuroticism in financial managers on financial reporting quality is 0.851.

Second hypothesis: The t-statistic value for the second path of the model is 2.168, which is more than 1.96; thus, the relevant path is significant at the 95% confidence level. In other words, the hypothesis related to this path (the second hypothesis) is confirmed. Based on the path coefficient obtained for this path, it can be stated that the effect of extroversion in financial managers on financial reporting quality is 0.056.

Third hypothesis: The t-statistic value for the third path of the model is 2.322, which is more than 1.96; thus, the corresponding path is significant at the 95% confidence level. In other words, the hypothesis related to this path (the third hypothesis) is confirmed. According to the path coefficient obtained for this path, it can be stated that the effect of openness to experience in financial managers on financial reporting quality is 0.037.

Fourth hypothesis: The t-statistic value for the fourth path of the model is 2.333, which is more than 1.96; thus, the corresponding path is significant at the 95% confidence level. In other words, the hypothesis related to this path (the fourth hypothesis) is confirmed. Based on the path coefficient obtained for this path, it can be stated the effect of financial managers' adjustment on financial reporting quality is 0.022.

Fifth hypothesis: The t-statistic value for the fifth path of the model is 2.068, which is more than 1.96; thus, the relevant path is significant at the 95% confidence level. In other words, the hypothesis related to this path (the fifth hypothesis) is confirmed. Considering the path coefficient obtained for this path, it can be stated that the effect of conscientiousness in financial managers on financial reporting quality is 0.127.

4. Discussion

In the present study, based on the presented theoretical foundations, the effect of personality traits of financial managers on the quality of financial reporting has been investigated. To measure managers' personality traits, the Neo questionnaire was used based on the five-factor personality model, one of the most comprehensive tools for assessing personality based on factor analysis. These five factors are neuroticism, extroversion, receptivity, adaptability, and conscientiousness. Also, The Tanchi self-control questionnaire was used to measure the level of religious commitment. The accuracy of financial information has also been considered a measure of its quality. The remnants of the cash flow forecasting regression model were used to measure the accuracy of financial information using the components of operating profit accounting for a previous period.

The results showed that managers' personality traits, in general, have a significant effect on the quality of financial reporting of listed companies on the Tehran Stock Exchange. The present study is innovative, and due to the lack of previous similar research, it is not directly comparable with

previous research; however, conceptually, the findings of this study with the results of Ashton, Willingham and Elliott (1987); Davidson and Neo (1993); De Bortoli et al. (2019) and Tambingon, Yadiati and Kewo (2018) are compatible.

The results of this study would be useful to Investors on the board of Managers of the Tehran Stock Exchange.

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RESEARCH ARTICLE

The Effect of Size, Value and Idiosyncratic Risk Anomalies on the Relationship between Tail Risk and Stock Excess Returns

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Abstract

Capital asset pricing models have not considered factors that cause capital market anomalies. The theories of extreme value are one of the arguments for explaining anomalies. Based on the extreme value theory, a tail risk is an adverse event that negatively impacts excess stock returns. Therefore, this study aimed to investigate combining the anomalies of size, value and idiosyncratic risk with tail on stock excess returns. In this study, we have used two criteria of Aggregate Tail Risk and Hybrid Tail Covariance Risk to measure the tail risk. For this purpose, using the systematic removal method, a sample of 136 firms listed on the Tehran Stock Exchange in the period from 2008 to 2019 was selected. The research hypotheses were tested using the Five-Factor Fama and French model (2015). The results suggested that the combination of size and tail risk portfolio and the combination of value and tail risk portfolio have a negative effect on excess return on risk. The results also showed that the combination of idiosyncratic and tail risk portfolios positively and significantly affect stock excess returns. Therefore, by combining these portfolios, investors can gain excess returns in the Iranian capital market. The results generally indicated that tail risk could be added to asset pricing models in addition to the variables of the five-factor Fama and French model.

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1. Introduction

Risk measurement is critical to minimise portfolio risk and assess stability in financial markets. In some cases, such as market collapse, the returns are distributed with a broader tail. Therefore, the criteria used to calculate risk in market stability can not provide helpful information in times of crisis and market collapse. The collapse in the financial markets causes heavy losses in investors' portfolios. Therefore, it is essential to estimate the probability of these events occurring, which cannot be explained and measured by the normal distribution. As a result, understanding the concept of tail risk is a necessity (Massacci, 2017). Technically, tail risk is the portfolio value shifting risk at least three standard deviations from the average, and its occurrence is possible that what is predicted in the normal distribution (Akoundi and Haugh, 2010). Given investors' risk aversion and asymmetric returns distribution, the tail risk becomes important in asset pricing (Long, Jiang and Zhu, 2018). Additionally, after the financial crisis, it has become clear that market returns have a much wider tail than the normal distribution, and tail events occur much more than the normal curve predicts. Tail risk has an asymmetric distribution in the form of a Pareto Distribution (Aboura and Arisoy, 2019). Tail risk can have significant consequences in asset pricing for a number of reasons. For example, Bloom (2009), based on the principles of tail risk, considers uncertainty at the company level due to economic uncertainty, which negatively impacts the company's investment decisions. In asset pricing theory models, it is also specified that non-variable risk from an investor's perspective leads to risk premium demand. Research on asset pricing has suggested several alternative methods for identifying risk factors, a small number of which are now as widespread among academics as market returns (Fama and French, 1993; Carhart, 1997). In addition, recent research has shown that total volatilities, idiosyncratic risk volatilities and market liquidity are also pricing factors (Ang et al., 2009). In research, Gao, Lu and Song (2019) indicated a negative relationship between tail risk and stock returns, similar to the puzzle of idiosyncratic risk volatility in Ang et al. (2009) research. To investigate whether the puzzle of idiosyncratic risk volatility can be explained by tail risk, Long et al. (2019) added idiosyncratic risk volatility to their research model. Their findings show that idiosyncratic risk volatility can explain the negative impact of tail risk pricing in international markets. Bhansali and Davis (2010) found that securing a portfolio against tail risk can increase stock portfolio profitability because a secured portfolio against tail risk will better asset allocation. Finally, Kelly and Jiang (2014) showed that tail risk has a positive and significant relationship with expected returns. Given the above, the primary purpose of this study is to investigate the effect of combining the anomalies of size, value, and idiosyncratic risk with tail risk on the stock excess returns. In addition to expanding the literature on tail risk, this study's results can help form investment portfolios taking into account tail risk. In the following, the theoretical foundations and background of the research are presented, and the research hypotheses are expressed accordingly. Then, after presenting the research findings, the research conclusions and suggestions are expressed.

2. Related Literature and Hypothesis Development

Tail risk, defined as the risk of severe events in asset markets, is an essential aspect that investors should consider when making an investment decision; the literature on tail risk and its measurement date back to the early 1960s. Mandelbrot (1963) challenged the common assumption of gaussian return distributions using the power law to describe the unconditional tail distribution of financial returns. Another name for normal distribution is “Gaussian Distribution”, and the Power Law is used in Pareto Distributions. The power law of Pareto distribution is essentially a model that indicates the probability of a variable occurring above a certain threshold value (for example, 5% or 10%). The Pareto Distribution is also known as the tail (sequence) function (Tanabe, 2018). Fama

(1963) argues inconsistency with Mandelbrot (1963) that prices in specific markets show sudden and large movements that cannot be explained under the Gaussian Return Distribution model. Sortino and Price (1994) supported downside deviation as a risk criterion, rather than traditional (Gaussian distribution-based) risk criteria such as standard deviation and beta. Sortino Risk criterion never reached the level of acceptance of other criteria such as value at risk, perhaps because it did not consider the full distribution of returns. Agarwal and Naik (2004) found that the left tail was not considered in the context of variance and mean, and therefore, introduced the use of conditional value at risk. Kelly and Jiang (2014) presented the market tail risk criterion based on the common components of individual stocks tail risk and showed considerable predictive power for market returns.

The anomalies indicate market inefficiency or the inadequacy of traditional asset pricing models (Cutler, Poterba and Summers, 1989; Shiller, 2000). In the 1990s, research on anomalies was considered as a research stream. For example, research has been done on size anomalies (Banz, 1981) and value anomalies (Basu, 1983; Lakonishok, Shleifer and Vishny, 1994). Banz (1981) and Reinganum (1981) found that small firms tended to have higher returns than large firms, and this phenomenon could not be explained by the capital assets pricing model (CAPM). There are several possible explanations for the occurrence of this phenomenon. These arguments include the possibility of specific risk factors in small firms compared to large firms (Fama and French, 1993, 1996), Amihud and Mendelson stock liquidity (1986), and the behavioural argument of persistent error in stock valuation (Porta et al., 1997; Lakonishok, Shleifer and Vishny, 1994) can be mentioned. The results Kelly and Jiang (2014) indicate that there is a deep relationship between size and tail risk because smaller firms are more prone to exposure to tail risk shocks, and the most important reason is that their distribution has more kurtosis and skewness (Chen, Hong and Stein, 2001). In addition, Conrad, Dittmar and Ghysels (2013) found a significant negative and stable relationship between risk skewness and future returns. Also, there is a significant positive and stable relationship between risk kurtosis and future returns. Hence, in small firms whose distribution has kurtosis and skewness, it is more likely that higher returns will be provided for the systematic risk of the tail (Aboura and Arisoy, 2019).

Better performance of the stock portfolio of value firms versus the stock portfolio of growth firms is recognised as a value anomaly (Lakonishok, Shleifer and Vishny, 1994). Research results suggest that value portfolios usually have higher returns than growth portfolios (Sharma and Jain, 2020). Fama and French (1996) argue that Risk Premium represents the financial distress risk. In addition, value stocks tend to be less profitable, and investment is less, while growth stocks tend to be more profitable, and investment is more aggressive (Fama and French, 2015). Chen, Hong and Stein (2001) found that the ratio of book value to the market value of a smaller (larger) stock is associated with a negative (positive) kurtosis. The asymmetric differences between the distribution of the stock returns of growth and value firms indicate that their returns are at risk of aggregate tail risk. Economic theories also suggest that value premium can be associated with tail risk. The results of previous research suggest that value premium is related to the economic conditions of recession and prosperity (Aboura and Arisoy, 2019). Considering that crashes occur in times of market stress (Daniel and Moskowitz, 2016), and also, considering that value premium is a function of economic conditions, it can be said that value firms are more exposed to the negative effects of tail risk compared the growth firms.

Merton (1987) indicates that if there is an anomaly in a market where investors have limited access to information, stocks with high idiosyncratic volatility provide high expected returns because Levy (1978) theoretically shows that if investors do not have a lot of assets in their portfolio, idiosyncratic risk affects the equilibrium price of assets. Malkiel and Xu (1997) prove that

stocks with higher idiosyncratic risk volatility have higher average returns. However, they do not provide a specific level for their idiosyncratic risk volatility premium. Also, the results of Malkiel and Xu (2002) suggest that there is a positive and significant relationship between idiosyncratic risk and cross-sectional expected returns at the company level. Spiegel and Wang (2005) focused on predicting outside the sample of idiosyncratic risk volatility and liquidity and found that expected stock returns increased with idiosyncratic risk levels and decreased stock liquidity. Their findings show that liquidity and idiosyncratic risk play a major role in determining stock returns, but the effect of idiosyncratic risk is much stronger. Some behavioural models, such as Barberis and Huang (2001), also predict higher systematic risk volatility stocks with higher expected returns. Various arguments about the negative relationship between idiosyncratic risk volatility and returns include short term return reversal (Huang et al., 2009), earnings surprises (Jiang, Xu and Yao, 2009), non-systematic skewness (Boyer, Mitton, and Vorkink 2010), Average Variance Beta (Chen and Petkova, 2012), incomplete information (Berrada and Hugonnier, 2013), and prospect theory (Bhootra and Hur, 2015). The tail risk may be associated with idiosyncratic risk through uncertainty. This relationship is due to higher volatilities in stock returns. Also, if the expected investment opportunities are stable, companies will delay their investment by increasing uncertainty and market volatility (Kim and Kung, 2017). Baltussen, van Bekkum and van der Grient (2018) used unstable volatilities as stock uncertainty. Their results showed that the uncertainty caused by volatilities could lead to the explanation of cross-sectional stock returns. On the other hand, volatilities are closely related to the fourth-order moment of the return distribution. Therefore, distribution tails affect idiosyncratic risk volatility with increasing uncertainty and unstable volatilities. Hence, idiosyncratic risk volatility of the stock is associated with tail risk. Kelly and Jiang (2014) found that tail risk and idiosyncratic risk are different components of stock returns. But they did not examine the relationship between tail risk and idiosyncratic risk. The Aboura and Arisoy (2019) results showed that the combination of idiosyncratic risk anomalies and tail risk affects the stock excess returns. Some foreign research related to the research topic is examined in the following.

Ogbonna and Olubusoye (2021) showed that the specific risk of each country has the most positive effect on returns. Also, tail risk on bad days increases the short-term negative return, and on good days its effects disappear completely.

Sun, Wang and Zhu (2021) showed that if stocks with small capital are removed from the Chinese market, there is a significant negative relationship between tail risk and expected returns. Also, their results showed that psychological and behavioural biases, investors' lack of reaction to bad news, relative preference for tail risk and high emotions are the reasons for the negative relationship between tail risks and expected stock returns.

Aboura and Arisoy (2019) investigate the effect of tail risk on portfolios arranged based on anomalies of size, value and idiosyncratic risk volatility. The study was conducted in the United States from 1963 to 2013. The results indicate that portfolios that include small and value stocks have a negative and significant beta for their tail risk. Also, portfolios that include stocks with high systematic risk volatility have a negative and significant beta for their tail risk. Further, their cross-sectional analysis of individual stocks shows that tail risk helps explain pricing anomalies, especially idiosyncratic risk volatility.

Long, Jiang and Zhu (2018) showed a significant negative relationship between idiosyncratic tail risk and expected returns in the Chinese stock market after controlling for other risk criteria such as size, momentum and liquidity.

Aboura and Chevallier (2018) conducted a study entitled “tail risk and the relationships of returns”; they brought a new perspective on time-varying leverage and feedback effects in US stock

markets. Their experimental findings showed that the lever effect is symmetric while the feedback is asymmetric. Dynamic leverage also has the greatest impact on the advancement of stock markets, and both the leverage effect and the feedback effect increase with increasing unstable volatilities.

Bollerslev, Todorov and Xu (2015) showed that the explanatory power of the regressions used to predict returns increases with the addition of tail risk components as an independent predictor variable.

2.1. Research hypotheses

Based on the theoretical foundations and research background, the research hypotheses are formulated as follows:

H_1: Using the combination of size portfolio and tail risk, excess return on risk can be obtained.

H_2: Using the combination of value portfolio and tail risk, excess return on risk can be obtained.

H_3: By combining a portfolio of idiosyncratic and tail risks, excess returns on risk can be obtained.

3. Research Methodology

In order to test the research hypotheses, data were collected every month, and multivariate regression models were used to analyse the data. The sample of this research is the companies listed on the Tehran Stock Exchange. The period is from 2008 to 2019. The systematic elimination method was used for sampling. Therefore, companies with the following conditions have been selected as samples:

1. In terms of increasing comparability, their financial period should end in March.
2. The company is a stock exchange member from beginning to end of the research.
3. The required information is available about such companies.
4. Companies should not be part of banks and financial institutions.
5. The company's financial year or activity should not be changed during the research period.
6. The stock symbol of the companies listed on the stock exchange should not stop for more than 3 months.

By applying the above, 136 companies were selected as a research sample. The required data were extracted from financial statements and information software and analysed using Eviews software.

3.1. Research model and research variables

In order to analyse and test the research hypotheses, the models presented in the research of Aboura and Arisoy (2019) have been used. In their research, the five-factor Fama and French model (2015) and two alternative criteria of tail risk, Aggregate Tail Risk Index of Kelly and Jiang (2014) and Hybrid Tail Covariance Risk of Bali, Cakici and Whitelaw (2014), were used. The assets tested in this study include portfolios classified according to the combination of tail risk and anomalies of size, value, profitability and investment. GRS (Gibbons, Ross, and Shanken, 1989) test is used to evaluate the validity of models and their ability to explain the excess returns of portfolios. The adjusted coefficient of determination of GRS reports how much of the excess returns of portfolios is explained by the intercept of the model. In other words, the lower the coefficient for the model under test, the better the model's fit. That is, independent variables better explain the effects of the dependent variable. In order to test the research hypotheses, the time regression series specified in Equation (1) is used:

$$R_{Pt} - R_{Ft} = \beta_1 + \beta_2 MKT_t + \beta_3 SMB_t + \beta_4 HML_t + \beta_5 RMW_t + \beta_6 CMA_t + \varepsilon_t \quad (1)$$

In model number (1), $R_{Pt} - R_{Ft}$, represents the excess return on the portfolio risk of "P" in a month "t", R_{Pt} represents the average return of portfolio "P" in a month "t", R_{Ft} represents the risk-free rate of return in a month "t". MKT_t represents the market factor, SMB_t the size factor, HML_trepresents the value factor, RMW_t represents the profitability factor, and CMA_t represents the investment factor.

Excess return on risk ($R_{Pt} - R_{Ft}$): the test of the five-factor model performed at the portfolio level. In other words, excess returns on portfolios are the research's dependent variable. In order to form a portfolio of size and tail risk, at the end of each research year, after sorting the entire sample stock based on the company's stock market value from small to large firms, it is classified into two groups, small and large, using the median. Then, regardless of this classification, the total sample stock of the research is divided into three categories each year based on the tail risk variable, so that the beginning 30% is called a small portfolio, the middle 40% is called a medium portfolio, and the final 30% is called a large portfolio. In the end, a portfolio of size and tail risk is formed, which is used to test the first hypothesis. In order to form a value portfolio and tail risk, at the end of each year, after sorting the total sample stocks based on the ratio of book value to market value into three groups of 30% at the beginning, 40% at the middle and 30% final, in the continuation and independent of this classification, the sample is classified based on the tail risk variable in each year into o three groups: 30% beginning, 40% middle, and 30% final. Combining them will form a value portfolio and tail risk, which is used to test the second hypothesis. In order to form an idiosyncratic risk portfolio and tail risk, at the end of each research year, after sorting the total sample stocks according to the idiosyncratic risk, they are divided into three groups, including 30% beginning, 40% middle, and 30% final. In the continuation and independent from this classification, the total sample is classified into three groups at each year and based on the tail risk variable. So that the first 30% is called a small portfolio, the middle 40% is called a medium portfolio and the last 30% is called a large portfolio. Combining them will form an idiosyncratic risk portfolio and tail risk used to test the third hypothesis. It can also be explained that the way the portfolios are formed is similar for both variables used to calculate the tail risk. In the following, we will describe how to calculate the tail risk. Long et al. (2019) and Kelly and Jiang (2014) research were used to measure the first criterion of Aggregate Tail Risk. First, the monthly tail risk for each research sample stock is estimated in time series. For moth "t", all daily stock returns on the days traded during that month are collected as a sample, and its tail index is estimated using the Hill (1975) developed method as follows:

$$\lambda_t^{Hill} = \frac{1}{K_t}\sum_{K=1}^{K_t} ln\frac{R_{k,t}}{u_t} \quad (2)$$

So that $R_{k,t}$ is the k[th] daily return, which is below the threshold of the limit value u_t during month "t" and K_t is the total number of these cases during the month "t". Following Kelly and Jiang (2014), u_t is defined at a significance level of 10% and 5% for each period. In the following, the tail risk of the company "i" (determined by TR) in month "t" is estimated based on the following model for each share and based on time series data:

$$R_{i,t} = \mu_i + TR_{i,t}\lambda_t^{Hill} + \varepsilon_{i,t} \quad (3)$$

Where, $R_{i,t}$, is the monthly return of the company "i" in the month "t" and λ_t^{Hill} is the tail index that is obtained from Equation (2). In order to estimate $TR_{i,t}$ for share "i" in a month "t", the rolling regression with a period of 60 months has been used. This method was used to estimate each of the research companies. Stock with high-value aggregate tail risk (TR) is more sensitive to tail risk.

In their study, Aboura and Arisoy (2019) have measured the second criterion of tail risk, i.e. hybrid tail covariance risk (HTCR). They have used the method of Bali, Cakici and Whitelaw

(2014). Hybrid tail covariance risk (HTCR) measures stock returns and market returns subject to negative stock returns at the stock level. Using a significance level of 10% or 5% for "k" in the "i" stock distribution, the hybrid tail covariance risk (HTCR) is defined as follows:

$$HTCR = \sum_{R_i<k_i}(R_i - k_i)(R_m - k_m) \quad (4)$$

Where the R_M represents the market portfolio and R_i is the return portfolio. Following the research of Bali, Cakici and Whitelaw (2014), the daily returns of the last six months have been used to calculate the tail risk of each stock.

MKT_t represents the market factor that is obtained from the difference between market returns and risk-free monthly returns ($R_M - R_F$). In this study, the risk-free monthly return is obtained based on the data of the Iranian Central Bank and by dividing the interest rate of one-year bank deposits by 12.

SMB represents the size factor obtained from the difference between the average return on small firms' stock portfolios and the stock portfolio of large firms. Smaller components, namely calculate the calculation of the total SMB $SMB_{B/M}$, SMB_{OP}, and SMB_{INV} that is obtained through the following equations:

$$SMB_{B/M} = {(SH + SN + SL)}/{3} - {(BH + BN + BL)}/{3} \quad (5)$$

$$SMB_{OP} = {(SR + SN + SW)}/{3} - {(BR + BN + BW)}/{3} \quad (6)$$

$$SMB_{INV} = {(SA + SN + SC)}/{3} - {(BA + BN + BC)}/{3} \quad (7)$$

$$SMB = {(SMB_{B/M} + SMB_{OP} + SMB_{INV})}/{3} \quad (8)$$

HML represents the book value factor to market value, which is obtained from the difference between the return of the stock portfolio with the ratio of book value to high market value and the portfolio with the ratio of book value to low market value in a month "t". The following relation performs value factor (HML) calculations:

$$HML = {(SH + BH)}/{2} - {(SL + BL)}/{2} \quad (9)$$

RMW is the profitability factor obtained from the difference between the average return of a portfolio with high operating profitability and a portfolio with low operating profitability and the combination of the size factor. Profitability factor (RMW) calculations are performed through the following relation:

$$RMW = {(SR + BR)}/{2} - {(SW + BW)}/{2} \quad (10)$$

CMA represents the investment factor derived from the difference between the average return on a high-investment portfolio and a low investment portfolio and a combination of the size factor. Investment factor (CMA) calculations are performed using the following equation:

$$CMA = {(SC + BC)}/{2} - {(SA + BA)}/{2} \quad (11)$$

Idiosyncratic risk (IVOL): The market model calculates idiosyncratic risk in this study. For this purpose, first, the width of the origin and the coefficient of the market model in each month are calculated separately for each stock.

$$R_j = \propto + \beta_t R_{mt} + \varepsilon_t \quad (12)$$

R_j represents the daily return of each company and R_{mt} represents the daily return of the market. Then, the market model residues are calculated for the same trading days. Finally, the idiosyncratic risk is multiplied by the standard deviation of the daily residues squared by the number of monthly trading days.

$$IVOL = STE * \sqrt{TD} \quad (13)$$

In the above relation, STE indicates the standard deviation of the market model residues per month, and TD indicates the number of monthly trading days. Finally, the research hypotheses were tested using the five-factor Fama and French (2015) model.

4. Research Findings

Table 1 shows the results of descriptive statistics of research variables.

Table1. Descriptive statistics

Variables	Mean	Median	Standard deviation	Maximum	Minimum
Rm – Rf	0.015	0.003	0.067	0.248	-0.101
SMB	0.002	-0.002	0.033	0.092	-0.071
HML	-0.039	-0.037	0.054	0.166	-0.222
RMW	0.001	0.002	0.046	0.118	-0.108
CMA	0.006	0.004	0.046	0.161	-0.104

The table above shows that the mean and standard deviation are 0.015 and 0.067 for the market factor, 0.002 and 0.033 for the size factor, and -0.040 and 0.054 for the growth factor, respectively. It is 0.001 and 0.046 for the profitability factor and 0.006 and 0.046 for the investment factor. These cases show that due to the negative mean of the growth factor, its monthly return is on average 0.040% lower than the risk-free return. On the other hand, the size factor has the lowest standard deviation due to higher diversification, and the market factor, which has the highest standard deviation, has higher volatilities.

4.1. Testing research hypotheses

Examination of the significance of research variables shows that the research variables are at the level of durable, and since the results of the autocorrelation test indicate the existence of autocorrelation, to solve this problem, first-ordered autoregressive has been added to the research models.

The first hypothesis of the research stated that the combination of size portfolio and tail risk affects excess return on risk. The results of testing the first hypothesis are reported in Table 2.

The intercept coefficient of the five-factor Fama and French (2015) model for tail risk (TR (5)), (TR (10)), and (HTCR (5)) is -0.005 and is -0.006 for tail risk (HTCR (10)) that is negative and significant in the domain under study. Therefore, considering the significance of the coefficients, it can be concluded that the combination of size portfolio and tail risk leads to an excess return on risk. As a result, the first hypothesis of the research is accepted.

The second hypothesis of the research stated that the combination of value portfolio and tail risk affects excess return on risk. The results of testing the second hypothesis are reported in Table 3.

Table 2. Test results of the first hypothesis

$$R_{Pt} - R_{f,t} = \beta_0 + \beta_1(R_{m,t} - R_{f,t}) + \beta_2(SMB_t) + \beta_3(HML_t) + \beta_4(RMW_t) + \beta_4(CMA_t) + \varepsilon_t$$

	Tail Risk (TR(5))		Tail Risk (TR(10))		Tail Risk (HTCR(5))		Tail Risk (HTCR(10))	
Variable	**Coefficients**	**t-statistic**	**Coefficients**	**t-statistic**	**Coefficients**	**t-statistic**	**Coefficients**	**t-statistic**
C	-0.005	-2.486*	-0.005	-2.517*	-0.005	-2.603*	-0.006	-2.606*
$R_m - R_f$	1.022	24.103*	1.014	25.833*	1.021	22.968*	1.017	20.901*
SMB	0.764	5.778*	0.759	5.961*	0.750	5.587*	0.782	5.531*
HML	-0.183	-2.472*	-0.194	-2.681*	-0.184	-2.366*	-0.166	-1.910*
RMW	-0.056	-0.869	-0.055	-0.850	-0.046	-0.702	-0.051	-0.771
CMA	0.501	6.604*	0.501	7.041*	0.497	6.405*	0.495	6.216*
AR(1)	-0.040	-0.605	-0.039	-0.601	-0.082	-1.335	-0.054	-0.890
F-Statistic		167.378*		167.981*		158.357*		150.659*
Adjusted R^2	0.607		0.608		0.594		0.582	
Durbin Watson	1.996		1.998		1.994		1.993	

*= significance is at the level of 5%.

Table 3. Test results of the second hypothesis

$$R_{Pt} - R_{f,t} = \beta_0 + \beta_1(R_{m,t} - R_{f,t}) + \beta_2(SMB_t) + \beta_3(HML_t) + \beta_4(RMW_t) + \beta_4(CMA_t) + \varepsilon_t$$

	Tail Risk (TR(5))		Tail Risk (TR(10))		Tail Risk (HTCR(5))		Tail Risk (HTCR(10))	
Variable	**Coefficients**	**t-statistic**	**Coefficients**	**t-statistic**	**Coefficients**	**t-statistic**	**Coefficients**	**t-statistic**
C	-0.007	-2.070*	-0.008	-1.993*	-0.007	-1.962*	-0.007	-2.628*
$R_m - R_f$	0.999	23.455*	0.992	21.955*	1.010	20.704*	1.011	19.298*
SMB	0.785	6.858*	0.820	6.870*	0.793	6.441*	0.811	6.276*
HML	-0.155	-1.953*	-0.144	-1.623	-0.154	-1.604	-0.147	-1.427
RMW	-0.076	-1.292	-0.089	-1.499	-0.065	-1.099	-0.062	-1.025
CMA	0.482	7.698*	0.485	7.323*	0.478	7.118*	0.486	7.149*
AR(1)	0.044	0.932	0.066	1.114	-0.012	-0.225	-0.006	-0.120
F-Statistic		195.460*		176.483*		171.819*		162.658*
Adjusted R^2	0.546		0.520		0.514		0.500	
Durbin Watson	2.003		2.006		1.998		1.998	

*= significance is at the level of 5%.

The intercept coefficient of the origin of the five-factor Fama and French (2015) model for tail risk (TR(5)), (HTCR(10)), and (HTCR(5)) is equal to -0.007 and for tail risk (TR(10)) is equal to -0.008 that is negative and significant in the domain under study.

Therefore, considering the significance of the coefficients, it can be concluded that the combination of value portfolio and tail risk leads to an excess return on risk. As a result, the second hypothesis of the research is not rejected.

The third hypothesis of the research is that the combination of idiosyncratic risk portfolio and tail risk affects excess return on risk. The test results of the third hypothesis are presented in Table 4.

The findings in Table 4 show the intercept coefficient of the origin of the five-factor Fama and French (2015) model for tail risk (TR (5)), (TR (10)), and is 0.009 and for tail risk (HTCR(10)) is 0.010, which is positive and significant in the domain under study. Therefore, due to the significance of the coefficients, it is possible to obtain an excess return on risk through the combination of idiosyncratic risk portfolio and tail risk. The findings indicate the acceptance of the third hypothesis. On the other hand, the F statistic shows that the model is significant and is not a

false regression. In addition, the value of the coefficient of determination indicates the optimal description of the dependent variable by independent variables.

The GRS test is used to assess the validity of models and their ability to explain the excess returns of portfolios. The results of the GRS test of research hypotheses are reported in Table 5.

Table 4. Test results of the third hypothesis

$$R_{Pt} - R_{f,t} = \beta_0 + \beta_1(R_{m,t} - R_{f,t}) + \beta_2(SMB_t) + \beta_3(HML_t) + \beta_4(RMW_t) + \beta_4(CMA_t) + \varepsilon_t$$

	Tail Risk (TR(5))		Tail Risk (TR(10))		Tail Risk (HTCR(5))		Tail Risk (HTCR(10))	
Variable	**Coefficients**	**t-statistic**	**Coefficients**	**t-statistic**	**Coefficients**	**t-statistic**	**Coefficients**	**t-statistic**
C	0.009	2.250*	0.009	2.103*	0.009	2.388*	0.010	2.342*
$R_{m-}R_f$	0.949	20.574*	0.965	21.256*	0.961	20.650*	0.950	19.165*
SMB	0.848	6.995*	0.828	6.685*	0.809	6.487*	0.843	6.467*
HML	-0.126	-1.602	-0.134	-1.699	-0.135	-1.871	-0.121	-1.510
RMW	-0.104	-1.659	-0.085	-1.395	-0.080	-1.250	-0.077	-1.218
CMA	0.495	6.885*	0.501	7.230*	0.499	6.735*	0.493	6.640*
AR(1)	0.173	3.158*	0.160	2.887*	0.144	2.743*	0.164	3.042*
F-Statistic		171.948*		174.302*		162.842*		156.455*
Adjusted R^2	0.514		0.517		0.500		0.490	
Durbin Watson	2.037		2.038		2.040		2.050	

*= significance is at the level of 5%.

Table 5. GRS test results

	The First Hypothesis		The Second Hypothesis		The Third Hypothesis	
	GRS Coefficient	**Adjusted R^2**	**GRS Coefficient**	**Adjusted R^2**	**GRS Coefficient**	**Adjusted R^2**
Tail Risk Model (TR(5))	0.006*	0.637	0.006*	0.600	0.007*	0.564
Tail Risk Model (TR(10))	0.006*	0.632	0.007*	0.584	0.006*	0.571
Tail Risk Model (HTCR(5))	0.006*	0.629	0.021*	0.528	0.007*	0.562
Tail Risk Model (HTCR(10))	0.007*	0.620	0.021*	0.555	0.008*	0.557

*= significance is at the level of 5%.

The results of the GRS test of the first hypothesis show that the intercept in the portfolios formed with the combination of size and tail risk is significant. Hence, it can be expected that the combination of size variable and tail risk will affect the excess return on risk. Adjusted coefficients of determination for different models in Table 5 varies from 0.620 to 0.637. This indicates that despite the closeness of the explanatory power of the models, the validity of the tail risk model (HTCR (10)) is slightly higher than the others.

The results of the GRS test of the second hypothesis show that the intercept in the portfolios formed with the combination of value and tail risk is significant. Adjusted coefficients of determination for different models of tail risk is between 0.528 and 0.600. These results indicate that the tail risk model (HTCR (5)) has more explanatory power than other models.

The results of the GRS test of the third hypothesis show that the intercept is significant in portfolios that consist of a combination of idiosyncratic risk and tail risk. Therefore, it shows that the combination of idiosyncratic risk variable and tail risk affects excess returns on risk. Table 5 adjusted coefficients of determination for different models vary from 0.557 to 0.571. This indicates that although the explanatory power of the models is close to each other, the validity of the tail risk model (HTCR (10)) is slightly higher than other models.

5. Conclusion and Discussion

Accurate identification and risk assessment in financial markets can lead to favourable capital allocation and efficiency. On the other hand, increasing volatilities in financial markets and economic crises lead to adverse events and, consequently, wider tails than the normal distribution occur. Among the anomalies affecting the effects of tail risk on the asset, return is size, value and idiosyncratic risk. Therefore, in market collapse and crash situations, tail risk assessment is critical considering the anomalies of size, value and idiosyncratic risk to obtain excess returns. Hence, in this study, the effect of size abnormality, value abnormality, and idiosyncratic risk on the relationship between tail risk and stock excess returns was investigated, and for this purpose, three hypotheses were formulated. The first hypothesis stated whether or not an excess return on risk can be obtained by combining the size portfolio and tail risk in the Tehran Stock Exchange. Accordingly, the first hypothesis of the research is not rejected. The results of the first hypothesis test are consistent with the research of Aboura and Arisoy (2019). Findings from testing the second hypothesis of the research showed that the combination of value portfolio and tail risk leads to an excess return on risk. Accordingly, the second hypothesis of the research is not rejected. The results of the second hypothesis test are consistent with the research of Aboura and Arisoy (2019). The results of testing the third hypothesis of the research showed that the combination of idiosyncratic risk portfolio and tail risk in the Tehran Stock Exchange could provide an excess return on risk. Accordingly, the third hypothesis of the research is confirmed. The results of the third hypothesis test are consistent with the research of Aboura and Arisoy (2019).

Based on the results of this study, considering that the combination of size and tail risk portfolio and the combination of value and tail risk portfolio and the combination of idiosyncratic risk and tail risk portfolio lead to stock excess returns, investors are advised to combine portfolios in their investments. In other words, investors can achieve higher returns by choosing small and value firms that have high tail risk and a combination of firms with high idiosyncratic volatility and tail risk. Also, market analysts and managers of investment companies are advised to consider the effects of Pareto Distribution in their investment decisions that form tail risk.

Researchers are advised to use other criteria for measuring tail risk in future research. Researchers are also advised to examine the combination of tail risk and other abnormalities.

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