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Using Intelligent Systems to Manage Risks and Reduce Financial Risks Using Artificial Intelligence in Large Companies

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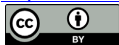
Abstract

This study was an attempt to examine the using intelligent systems to manage risks and reduce financial risks using artificial intelligence in large companies. The data collected from the data is collected from the stock organization and the stock Securities of Iran. Moreover, the data is collected from 17 companies for ten years and the data was collected through the variance formula and then the results were examined using the SSPS method. Variance formula is $\sigma^2 = (\sum(x\_i - \mu^2))/n$. The data is completely obtained from a reliable and correct source, which is related to the Department of Statistics of Iran's Stocks and Securities. After categorizing and classifying the collected information and data, it is processed and analyzed, and the results and findings of this study are stated. In order to examine the research questions, appropriate tests (Shefe tests) were used to analyze the data. The analysis of data revealed that The findings of this study reveal that Shatran, Arya, Shebandar, Famili are profitable among other stocks. Other stocks are loss because of high cost of raw materials and sanction of Iran. Moreover, companies could not export their products. Plus, the purchase power of the people in the country decreases because of the inflation of the country, so the companies could not buy anything. On the one hand, liquidity power of people, on the other hand, less export lead to the decrease of cash flow, liquidity power of companies and firms and could not sell their products. It can be concluded that those stocks are loss and have high risk.

Keywords

Artificial Intelligence, Risk, Financial

1. Introduction

This study examines and reports on using intelligent systems to manage risks and reduce financial risks using artificial intelligence in large companies.

Taking advantage of all internal and environmental data and analyzing a huge amount of data on the web in real-time shows the growth or decline of the organization in terms of access to the target indicators in the program or budget. Every moment of the situation has the influence of the management on the indicators, but the traditional monitoring is only yearly through limited indicators that provide a non-analytical report. In terms of power, intelligent systems analysis analyzes more than several million terabytes of data per hundredth of a second. We don't even have an analysis of 100 megabytes of data, and the accuracy and quality of the data analysis are poor, while in traditional monitoring, no intelligent systems and manual systems are comparable. (Ghasemi, A., 2022)

Different types of risks threaten financial and credit institutions. Therefore, managers of organizations should identify and manage existing risks. Financial risk is a risk that directly affects the profitability of financial and credit institutions. Financial risks include balance sheet structure risks, income and profitability structure, capital adequacy, credit risk, liquidity risk, interest rate risk, market risk, and exchange rate risks. This research has evaluated and presented a suitable model for identifying, measuring, and controlling financial risks in financial and credit institutions. The current research is divided according to the execution method, with the correlation method, and based on post-event data. The research data was selected by non-probability and purposeful sampling methods and its volume was selected based on the judgment of the researcher. These data were extracted from the management of 39 regions of Mellat Bank daily during the years 2005 to 2007. Investigations using the structural equation model have shown that the effect of facilities and investment on liquidity risk, the effect of variable currency assets and liabilities on currency risk, and the effect of the variable effect of interest-sensitive assets and liabilities on interest risk are significant. (Khodaei, M. & Taghavei, M., 2010)

Risk management using artificial intelligence means using algorithms, models, and techniques of artificial intelligence to identify, evaluate, and reduce financial risks. This method, using data analysis and intelligent algorithms, helps organizations to prevent financial risks in a preventive manner and react quickly in case of risk. In addition, by using artificial intelligence in risk management, suspicious transactions can be automatically identified and blocked in real-time. This method reduces financial risks, improves the performance of the organization, and increases the trust of customers and shareholders in the organization.

Drawing on the definition coined by the Financial Stability Board (FSB), 2 artificial intelligence is the set of theories and algorithms that allow computer systems to perform tasks that typically require human intelligence (e.g. visual perception, voice recognition, or interpretation of a text taking into account its context) and that in some cases augment these skills. Most current artificial in-

telligence applications belong to the field of machine learning. This consists of a computer concluding a statistical analysis of data, in a process that improves automatically as more and more information is fed into the algorithm. Artificial intelligence is not a new development; indeed the first academic studies date back to the 1950s. However, it has gained popularity recently, owing mainly to three factors: the growing volume of digital data available; increased data storage and computational processing capacity and its lower cost; and the progress made in the algorithms used. Thanks to these changes, better use can now be made of the capacities of artificial intelligence, and in consequence, its use is growing significantly, not only in the financial sector but also in the economy overall. However, this level of development differs between regions. According to figures published by the European Commission in December 2018, 3, private investment in artificial intelligence amounts to more than €6.5 billion in Asia and more than €12 billion in North America, whereas in Europe it is less than €3.5 billion. This is partly due to the privileged position enjoyed by the Asian and US technology giants for developing artificial intelligence tools, as they have both the infrastructure and the necessary data at their disposal. Accordingly, these corporations make intensive internal use of this technology and have also become leading global suppliers of artificial intelligence applications. (Fernandez, A., 2019)

According to Fernandez the use of artificial intelligence tools has escalated recently in all sectors of the economy owing, among other factors, to the growing volume of digital data and higher computational capacity. Major benefits may be reaped from applying these tools to the provision of financial services, not only for financial institutions but also for society as a whole. This article described some of those benefits, and also some of the main uses being made of these tools, both by financial institutions and central banks. It also indicated the main limitations of the technology and its possible implications for the corrected functioning of the financial system. (Fernandez, A., 2019)

Melnychenko noted this study contributed to the literature on financial security by highlighting the relevance of the perceptions and resulting professional judgment of stakeholders. Assessing a company's financial security using only economic indicators—as suggested in the existing literature—would be inaccurate when undertaking a comprehensive study of financial security. Specifically, indices and indicators based on financial or managerial reporting calculated at any particular point in time, provide only a superficial understanding—and may even distort the overall picture. It has also been suggested that expert assessment is the most objective method, although it has disadvantages related to individual cognitive limitations. These limitations are not particular to artificial intelligence, which could assess an enterprise's financial security in a less biased way. However, by only imitating human behavior, it is not able to perceive and evaluate with intuition the dynamics of the company's development and holistically assess the financial condition—despite the possibility of learning and forecasting—because artificial intelligence is not able to think and predict, which, in an

enterprise, is the most important skill of a manager. Therefore, the risk of developing artificial intelligence to assess a firm's financial security lies in a biased assessment of the enterprise's activities in general—and its financial security in particular. (Melnychenko, O., 2020)

Mashur and the authors examine that financial risk management avoids losses and maximizes profits, which is vital to most businesses. As the task relies heavily on information-driven decision-making, machine learning is a promising source for new methods and technologies. In recent years, we have seen increasing adoption of machine learning methods for various risk management tasks. Machine-learning researchers, however, often struggle to navigate the vast and complex domain knowledge and the fast-evolving literature. This paper fills this gap, by providing a systematic survey of the rapidly growing literature on machine learning research for financial risk management. The contributions of the paper are four-fold: First, we present taxonomy of financial-risk-management tasks and connect them with relevant machine learning methods. Secondly, we highlight significant publications in the past decade. Thirdly, we identify major challenges being faced by researchers in this area. And finally, we point out emerging trends and promising research directions. (Luo, W., Mashur, A., Nayyar, A., & Robles-Kelly, A., 2020)

Siddiqui analyzed that today's dynamic financial landscape, effective risk management is crucial for ensuring the stability and success of financial institutions. With the rapid advancement of technology, Artificial Intelligence (AI) has emerged as a powerful tool that can revolutionize financial risk management practices. This article explores the opportunities and challenges associated with leveraging AI in financial risk management. By focusing on finance professionals and risk managers, the researchers delved into the practical applications of AI, its potential benefits, and the key considerations to bear in mind when adopting AI-driven solutions for risk management. (Siddiqui, W., 2023)

Mahalakshmi and the author investigated Artificial intelligence (AI) and Machine learning (ML) have provided the financial industry as a whole a method to address customer expectations for more innovative, more convenient, and safer ways to access, expand, employ, save, and invest their funds. In addition, AI assists the financial industry in streamlining and improving procedures from investing decisions to quantifiable trading and financial risk management.

As a result, Automated-based solutions are expected to emerge as a game-changer with significant implications for increasing financial access to the people. AI and ML help managers emphasize the business's key and strategic aspects and spend less time on repetitive tasks. Most essential operations in finance, such as risk assessment, stock trading, and credit lending to loan applicants, are being taken over by AI. Further, AI is a robust technology that is widely used in the financial services industry. ML and AI have a lot of potential to make a positive difference in the financial services industry. They revolutionize financial services and the way they are delivered to clientele. It could lead to better-informed and tailored products and services and enhanced internal procedure productivity, cyberse-

curity, and risk lessening. The faster response aided by AI delivers higher customer satisfaction. Moreover, AI and ML transform the means financial institutions generate and use data insights, resulting in new kinds of business model innovation, reforming competitive ecosystems and personnel, presenting new risk dynamics, and posing new challenges to businesses and policymakers.

This research paper focuses on qualitative research, primarily exploring how AI and machine learning have been deployed in various financial service industries and their impact on employees, finance professionals, and corporate organizations to create competitive intelligence. (Mahalakshmi, V., Kulkarni, N., Pradeep Kumar, K. V., Suresh Kumar, K., Nidhi Sree, D., & Durga, S., 2022)

According to Ehtesham Rasi and the authors wanted to investigate the rating of the actual customers of banks based on credit risk using multiple criteria decision-making and artificial intelligence hyperbolic regression. This is an applied research. The statistical population of the study includes the credit customers of Agriculture Bank in the western branches of Mazandaran province, Iran from 2012 to 2016. A total of 100 cases have been evaluated. The AHP method has been used in the case of elites' comments on the prioritized seven key factors using the corresponding weighting matrix. Artificial intelligence hyperbolic regression has been employed to model the classes of creditworthy and non-creditworthy customers and to predict the appropriate model based on the evidence in the customer's credit file. Using the AHP method, the rating includes customer revenue, credit in the market, customers' jobs, the duration of the relationship with the bank, the type of collateral, the value of collateral, and the average account balance to facilitate the credit risk of the actual customers, respectively. Using artificial intelligence hyperbolic regression, prioritization is based on the amount of credit in the market, customer revenue, the value of collateral, the duration of the relationship with the bank, the type of collateral, and the customers' jobs. (Arad, M., Ehtesham Rasi, R., & Karamipour, M., 2020)

The book was written by Metawa and Kabir Hassan presents a collection of high-quality contributions to state-of-the-art Artificial Intelligence and Big Data analysis related to financial risk management applications. In one place, it brings together the latest thinking on an emerging topic and includes principles, reviews, examples, and research directions. The book presents numerous specific use cases throughout, showing practical applications of the concepts discussed. It looks at technologies such as eye movement analysis, data mining, or mobile apps and examines how these technologies are applied by financial institutions, and how this affects both the institutions and the market. This work introduces students and aspiring practitioners to the subject of risk management in a structured manner. It is primarily aimed at researchers and students in finance and intelligent big data applications, such as intelligent information systems, smart economics and finance applications, and the Internet of Things in a marketing environment. (Kabir Hassan, M., Metawa, N., & Metawa, S., 2022)

Based on Božić AI has the potential to revolutionize risk management across various industries, including finance, healthcare, cyber security, and others. By

enabling faster and more accurate risk assessments, identifying emerging risks, and supporting predictive modeling, AI can help organizations better manage risks and make more informed decisions.

However, it is important to note that AI is not a silver bullet solution and comes with its own set of risks and challenges, including bias, lack of transparency, and security concerns. To ensure the safe and effective use of AI in risk management, it is crucial to address these issues by implementing best practices such as ethical AI development, rigorous data management, and ongoing monitoring and evaluation. The use of AI in risk management is a promising area with the potential to transform how organizations approach risk management and make critical decisions. As technology continues to evolve, it will be important for organizations to stay up-to-date on the latest developments and best practices in AI to ensure the safe and effective use of this technology in risk management. (Božić, V., 2023)

Kumar and the authors studied looks at how various forms of AI can manage financial risk management. The impetus for this change is the revolutionary impact that financial technology has had on business operations, necessitating a complete overhaul of the financial sector. Financial risk management must be reorganized because conventional approaches have become inefficient. Artificial intelligence methods are primarily practical and have aided in the quick, cheap, and effective management of financial risks in businesses and financial institutions. This paper aims to provide an overview of the current state of artificial intelligence (AI) techniques applied to the field of financial risk management and to indicate potential future directions for research and development in this area. The data for the study was gathered by reading an assortment of articles, books, and reports regarding the implementation of AI in financial risk management. Methods: The question is whether artificial intelligence (AI) techniques (particularly machine learning) might help manage financial risks by systematically reviewing the relevant literature. Conclusions: Model validation, risk modeling, stress testing, and data preparation are all areas where AI has significantly benefited market risk and credit risk management. Data quality control, fraud detection, and text mining for data augmentation are all areas in which (AI) artificial intelligence techniques have proven useful. The financial sector will continue to be influenced by financial technology as incumbents are compelled to adopt new operational methods and strategies. Consequently, it is realistic to anticipate that AI will become a mainstream component of financial risk management systems. The paper's contribution is a survey of AI's uses in three fields: financial (market and credit), risk management, and operational (business continuity and disaster recovery). The paper went over the most promising AI methods that should impede better managing risks in the changing financial sector. (Kumar, A., Kumar, A., Kumari, S., Kumari, N., Kumari, S., Mishra, P., & Kumar Behura, A., 2023)

Rostami and Khalili Tirtashi posed the point of view of Islam and the Islamic economy; it is accepted to use knowledge and what is known today as technology and artificial intelligence in financial systems. The use of artificial intelligence

in financial systems has various functions. Reducing risk, making more realistic decisions, and creating a platform to combat money laundering and phishing are among the most important applications of artificial intelligence in financial systems, which are considered from the perspective of Islam. The Islamic economy aims for greater predictability and reducing risk in financial systems, and on the other hand, money laundering is not compatible with the foundations of the Islamic economy. Conclusion: According to the approach of the Islamic economy in using knowledge information and communication technology, it is necessary to provide platforms for the use of artificial intelligence in the Islamic financial system. (Khalili Tirtashi, N., & Rostami, A., 2023)

2. Methodology

The data is collected from the stock organization and the stock Securities of Iran. Moreover, the data is collected from 17 companies for ten years and the data was collected through the variance formula and then the results were examined using the SSPS method. Variance formula is $\sigma^2 = (\sum(x\_i - \mu^2))/n$. The data is completely obtained from a reliable and correct source, which is related to the Department of Statistics of Iran's Stocks and Securities.

2.1. Data Analysis

In order to answer the question to what are the effects of artificial intelligence (AI) on the financial performance of 17 Iranian companies and strategies for improving risk and capital management using artificial intelligence? The results of this study shows as follows:

First, the variance of each of the submitted data was calculated and then the obtained data was considered as profit risk in different years. After categorizing and classifying the collected information and data, it is processed and analyzed, and the results and findings of this study are stated. In order to examine the research questions, appropriate tests were used to analyze the data.

2.2. The Test Performed Is Shefe Test

Findings of Inferential Tables

Hypothesis 1: profit risk in four consecutive years (2020-2023) in Shabandar shares is loss.

H_0: $\rho \neq 0$

Opposite hypothesis: profit risk in four consecutive years (2020-2023) in Shabandar shares is profitable.

H_0: $\rho = 0$

According to the Table 1 and Table 2, as can be seen, the calculated test value is profitable. That is, the value of sig is less than .05, therefore, the opposite hypothesis is accepted and the statistical assumption is accepted with 95% confidence, and the result can be generalized to the society, that is, the profit risk in four consecutive years (2020-2023) in Darsham Shabandar is profitable.

Table 1. Darsham shabandar shefe test.

	Mount of mandate	Mount of F	Sig test benefit
Shefe Test	3	3.21	.037

Table 2. Variance or risk of Darsham Shabandar.

Interpret	Number	Average	
Variance 2020	6	.043	A
Variance 2021	9	.011	AB
Variance 2022	11	.002	B
Variance 2023	9	.003	AB

Non-identical letters indicate significant differences between the tested years

Hypothesis 2: Profit risk in four consecutive years (2020-2023) is not significant in Vmelat stocks.

H_0: $\rho \neq 0$

Opposite hypothesis: profit risk in four consecutive years (2020-2023) in Vmelat shares is profitable.

H_0: $\rho = 0$

According to the Table 3 and Table 4, as can be seen, the calculated test value is not significant. That is, the value of sig is greater than .05, so the hypothesis is accepted and the statistical hypothesis is rejected with 95% certainty, and the result can be generalized to society, that is, the profit risk in four consecutive years (2020-2023) in stocks and Vmelat is harmful.

The same letters indicate that there is no significant difference between the tested years.

Hypothesis 3: profit risk in four consecutive years (2020-2023) in Famli stocks is loss.

H_0: $\rho \neq 0$

Opposite hypothesis: profit risk in four consecutive years (2020-2023) is significant in Famli stocks.

H_0: $\rho = 0$

According to the Table 5 and Table 6, as can be seen, the calculated test value is profitable. That is, the value of sig is smaller than .05, so the opposite hypothesis is accepted and the statistical assumption is accepted with 95% confidence, and the result can be generalized to the society, that is, profit risk is profitable in four consecutive years (2020-2023) in Famli shares.

Non-identical letters indicate significant differences between the tested years.

Hypothesis 4: profit risk in four consecutive years (2020-2023) in Fakhooz shares is disadvantageous.

H_0: $\rho \neq 0$

Opposite hypothesis: profit risk in four consecutive years (2020-2023) in Fakhooz shares is profitable.

Table 3. Vmelat stocks Shefe test.

	Mount of mandate	Mount of F	Sig test benefit
Shefe Test	3	.53	.66

Table 4. Variance or risk of Vmelat stocks.

Interpret	Number	Average	
Variance 2020	6	.003	A
Variance 2021	9	.001	A
Variance 2022	11	.002	A
Variance 2023	9	.002	A

Table 5. Famli stocks Shefe test.

	Mount of mandate	Mount of F	Sig test benefit
Shefe Test	3	3.15	.04

Table 6. Variance or risk of Famli stocks.

Interpret	Number	Average	
Variance 2020	6	.028	A
Variance 2021	9	.002	AB
Variance 2022	11	.001	B
Variance 2023	9	.008	AB

$H_0: \rho = 0$

According to the Table 7 and Table 8, as can be seen, the calculated test value is not profitable. That is, the value of sig is greater than .05, so the hypothesis is accepted and the statistical hypothesis is rejected with 95% confidence, and the result can be generalized to society, that is, the profit risk in four consecutive years (2020-2023) in Fakhooz shares is harmful.

Different letters indicate the difference in profit between the years under test.

Hypothesis 5: Profit risk in four consecutive years (2020-2023) in Arya shares is not profitable.

$H_0: \rho \neq 0$

Opposite hypothesis: profit risk in four consecutive years (2020-2023) in Arya shares is over profit.

$H_0: \rho = 0$

According to the Table 9 and Table 10, as can be seen, the calculated test value is not significant. That is, the value of sig is greater than .05, so the hypothesis is accepted and the statistical assumption is rejected with 95% confidence, and the result can be generalized to the society, that is, the profit risk in four consecutive years (2020-2023) in Arya shares is not profitable.

Table 7. Fakhooz shares Shefe test.

	Mount of mandate	Mount of F	Sig test benefit
Shefe Test	3	.66	.58

Table 8. Variance and risk of Fakhooz shares.

Interpret	Number	Average	
Variance 2020	6	.012	A
Variance 2021	9	.005	A
Variance 2022	11	.002	A
Variance 2023	9	.011	A

Table 9. Arya shares Shefe test.

	Mount of mandate	Mount of F	Sig test benefit
Shefe Test	3	1.49	.24

Table 10. Variance and risk Arya shares.

Interpret	Number	Average	
Variance 2020	6	.013	A
Variance 2021	9	.009	A
Variance 2022	11	.001	A
Variance 2023	9	.002	A

Different letters indicate the difference in profit between the years under test.

Hypothesis 6: Profit risk in four consecutive years (2020-2023) in stocks and Vamaaden is loss.

H_0: $\rho \neq 0$

Opposite hypothesis: profit risk in four consecutive years (2020-2023) in stocks and Vamaaden is profitable.

H_0: $\rho = 0$

According to the Table 11 and Table 12, as can be seen, the calculated test value is not significant. That is, the value of sig is greater than .05, so the hypothesis is accepted and the statistical assumption is rejected with 95% confidence, and the result can be generalized to society, that is, the risk of profits in four consecutive years (2020-2023) in stocks and Vamaaden is loss.

Non-similar letters indicate profitable differences between the years tested.

Hypothesis 7: Profit risk in four consecutive years (2020-2023) in Shapdis shares is disadvantageous.

H_0: $\rho \neq 0$

Opposite hypothesis: profit risk in four consecutive years (2020-2023) in Shapdis shares is profitable.

H_0: $\rho = 0$

Table 11. Vamaaden shares Shefe test.

	Mount of mandate	Mount of F	Sig test benefit
Shefe Test	3	.85	.48

Table 12. Variance and risk Vamaaden shares.

Interpret	Number	Average	
Variance 2020	6	.018	A
Variance 2021	9	.025	A
Variance 2022	11	.001	A
Variance 2023	9	.004	A

According to the Table 13 and Table 14, as can be seen, the calculated test value is not significant. That is, the value of sig is greater than .05, so the hypothesis is accepted and the statistical assumption is rejected with 95% confidence, and the result can be generalized to society, that is, the profit risk in four consecutive years (2020-2023) in Shapdis shares is disadvantageous.

Non-similar letters indicate profitable differences between the years tested.

Hypothesis 8: Profit risk in four consecutive years (2020-2023) in Tapiko shares is disadvantageous.

H_0: $\rho \neq 0$

Opposite hypothesis: profit risk is profitable in four consecutive years (2020-2023) in Tapiko shares.

H_0: $\rho = 0$

According to the Table 15 and Table 16, as can be seen, the calculated test value is harmful. That is, the value of sig is greater than .05, so the hypothesis is accepted and the statistical hypothesis is rejected with 95% confidence, and the result can be generalized to society, that is, the profit risk in four consecutive years (2020-2023) in Tapiko shares is disadvantageous.

Non-similar letters indicate the difference in profitability between the years under test.

Hypothesis 9: The profit risk in four consecutive years (2020-2023) in Tipico shares is disadvantageous.

H_0: $\rho \neq 0$

Opposite hypothesis: profit risk in four consecutive years (2020-2023) in typical profitable stocks.

H_0: $\rho = 0$

According to the Table 17 and Table 18, as can be seen, the calculated test value is not significant. That is, the value of sig is greater than .05, so the hypothesis is accepted and the statistical hypothesis is rejected with 95% certainty, and the result can be generalized to society, that is, the profit risk in four consecutive years (2020-2023) in Tipico shares is disadvantageous.

Table 13. Shapdis shares Shefe test.

	Mount of mandate	Mount of F	Sig test benefit
Shefe Test	3	.97	.42

Table 14. Variance and risk of Shapdis shares.

Interpret	Number	Average	
Variance 2020	6	.020	A
Variance 2021	9	.022	A
Variance 2022	11	.001	A
Variance 2023	9	.002	A

Table 15. Tapiko shares Shefe test.

	Mount of mandate	Mount of F	Sig test benefit
Shefe Test	3	.75	.53

Table 16. Variance and risk of Tapiko shares.

Interpret	Number	Average	
Variance 2020	6	.027	A
Variance 2021	9	.024	A
Variance 2022	11	.003	A
Variance 2023	9	.006	A

Table 17. Tipico shares Shefe test.

	Mount of mandate	Mount of F	Sig test benefit
Shefe Test	3	.84	.49

Table 18. Variance and risk Tipicio.

Interpret	Number	Average	
Variance 2020	6	.006	A
Variance 2021	9	.036	A
Variance 2022	11	.003	A
Variance 2023	9	.001	A

Non-similar letters indicate profitable differences between the years tested.

Hypothesis 10: profit risk in four consecutive years (2020-2023) in Khodro stocks is loss.

H_0: $\rho \neq 0$

Opposite hypothesis: profit risk is profitable in four consecutive years (2020-2023) in Khodro stocks.

$H_0: \rho = 0$

According to the Table 19 and Table 20, as can be seen, the calculated test value is harmful. That is, the value of sig is greater than .05, so the hypothesis is accepted and the statistical assumption is rejected with 95% confidence, and the result can be generalized to the society, that is, the risk of profit in four consecutive years (2020-2023) in Khodro stocks is harmful.

Non-similar letters indicate profitable differences between the years tested.

Similar letters indicate no profitable difference.

Hypothesis 11: Profit risk in four consecutive years (2020-2023) in Fars shares is unprofitable.

$H_0: \rho \neq 0$

Opposite hypothesis: profit risk in four consecutive years (2020-2023) in Fars shares is profitable.

$H_0: \rho = 0$

According to the Table 21 and Table 22, as can be seen, the calculated test value is harmful. That is, the value of sig is greater than .05, so the hypothesis is accepted and the statistical assumption is rejected with 95% confidence, and the result can be generalized to society, that is, the profit risk in four consecutive years (2020-2023) in Fars share is harmful

Table 19. Khodro stocks Shefe test.

	Mount of mandate	Mount of F	Sig test benefit
Shefe Test	3	2.86	.053

Table 20. Variance and risk of Khodro stocks.

Interpret	Number	Average	
Variance 2020	6	.046	A
Variance 2021	9	.003	A
Variance 2022	11	.001	A
Variance 2023	9	.002	A

Table 21. Fars shares Shefe test.

	Mount of mandate	Mount of F	Sig test benefit
Shefe Test	3	1.59	.21

Table 22. Variance and risk of Fars shares.

Interpret	Number	Average	
Variance 2020	6	.021	A
Variance 2021	9	.012	A
Variance 2022	11	.002	A
Variance 2023	9	.002	A

Different letters indicate the difference in profit between the years under test.

Similar letters indicate no profitable difference.

Hypothesis 12: profit risk in four consecutive years (2020-2023) in Kachad stocks is disadvantageous.

H_0: $\rho \neq 0$

Opposite hypothesis: profit risk in four consecutive years (2020-2023) in Kachad stocks is profitable.

H_0: $\rho = 0$

According to the Table 23 and Table 24, as can be seen, the calculated test value is harmful. That is, the value of sig is greater than .05, so the hypothesis is accepted and the statistical assumption is rejected with 95% confidence, and the result can be generalized to the society, that is, the profit risk in four consecutive years (2020-2023) in Kachad stocks is harmful.

Non-similar letters indicate the difference in profitability between the years under test.

Similar letters indicate no profitable difference.

Hypothesis 13: Profit in four consecutive years (2020-2023) in Parsan shares is unprofitable.

H_0: $\rho \neq 0$

Opposite hypothesis: profit in four consecutive years (2020-2023) in Parsan shares is profitable.

H_0: $\rho = 0$

According to the Table 25 and Table 26, as can be seen, the calculated test value is harmful. That is, the value of sig is greater than .05, so the hypothesis is accepted and the statistical assumption is rejected with 95% confidence, and the result can be generalized to society, that is, the profit risk in four consecutive years (2020-2023) in Parsan shares is harmful.

Non-similar letters indicate profitable differences between the years tested.

Similar letters indicate no profitable difference.

Table 23. Kachad stocks Shefe test.

	Mount of mandate	Mount of F	Sig test benefit
Shefe Test	3	.72	.55

Table 24. Variance and risk of Kachad stocks.

Interpret	Number	Average	
Variance 2020	6	.008	A
Variance 2021	9	.021	A
Variance 2022	11	.002	A
Variance 2023	9	.003	A

Table 25. Parsan shares Shefe test.

	Mount of mandate	Mount of F	Sig test benefit
Shefe Test	3	2.04	.13

Table 26. Variance and risk of Parsan shares.

Interpret	Number	Average	
Variance 2020	6	.030	A
Variance 2021	9	.012	A
Variance 2022	11	.001	A
Variance 2023	9	.001	A

Hypothesis 14: Profit risk in four consecutive years (2020-2023) in V0mid shares is disadvantageous.

H_0: $\rho \neq 0$

Opposite hypothesis: profit risk in four consecutive years (2020-2023) in v0mid shares is disadvantageous.

H_0: $\rho = 0$

According to the Table 27 and Table 28, as can be seen, the calculated test value is harmful. That is, the value of sig is greater than .05, so the hypothesis is accepted and the statistical assumption is rejected with 95% certainty, and the result can be generalized to the society, that is, the risk of profit in four consecutive years (2020-2023) in V0mid shares is harmful.

Non-similar letters indicate profitable differences between the years tested.

Similar letters indicate no profitable difference.

Hypothesis 15: profit risk in four consecutive years (2020-2023) in Shotoran stocks is disadvantageous.

H_0: $\rho \neq 0$

Opposite hypothesis: profit risk is profitable in four consecutive years (2020-2023) in Shotoran stocks.

H_0: $\rho = 0$

According to the Table 29 and Table 30, as can be seen, the amount of the calculated test is profitable. That is, the value of sig is less than .05, so the opposite hypothesis is accepted and the statistical assumption is accepted with 95% confidence, and the result can be generalized to society, that is, the profit risk in four consecutive years (2020-2023) in Shotoran stocks is profitable.

Non-similar letters indicate profitable differences between the years tested.

Hypothesis 16: The profit risk in four consecutive years (2020-2023) in the shares of Vaparsan is disadvantageous.

H_0: $\rho \neq 0$

Opposite hypothesis: profit risk in four consecutive years (2020-2023) in Vaparsan stocks is profitable.

H_0: $\rho = 0$

Table 27. V0mid shares Shefe test.

	Mount of mandate	Mount of F	Sig test benefit
Shefe Test	3	0.89	.45

Table 28. Variance and risk of V0mid shares.

Interpret	Number	Average	
Variance 2020	6	.024	A
Variance 2021	9	.041	A
Variance 2022	11	.001	A
Variance 2023	9	.003	A

Table 29. Shotoran shares Shefe test.

	Mount of mandate	Mount of F	Sig test benefit
Shefe Test	3	4.88	.008

Table 30. Variance and risk of Shotoran shares.

Interpret	Number	Average	
Variance 2020	6	.026	A
Variance 2021	9	.002	A
Variance 2022	11	.001	A
Variance 2023	9	.001	A

According to the Table 31 and Table 32, as can be seen, the calculated test value is harmful. That is, the value of sig is greater than .05, so the hypothesis is accepted and the statistical assumption is rejected with 95% confidence, and the result can be generalized to society, that is, the risk of profits in four consecutive years (2020-2023) in Vaparsan stocks is harmful.

Non-similar letters indicate profitable differences between the years tested.

Similar letters indicate no profitable difference.

2.3. Comparison of Variance Index of Tested Stocks (Duncan)

Hypothesis 17: Profit risk is not different in different stocks during 2020-2023

$H_0: \rho \neq 0$

Counter hypothesis: Profits in different stocks are not different during 2020-2023

$H_0: \rho = 0$

According to the Table 33 and Table 34, as can be seen, the calculated test value is profitable. That is, the value of sig is less than .05, therefore, the opposite hypothesis is accepted and the statistical assumption is accepted with 95% confidence, and the result can be generalized to society, that is, the profit risk in different stocks during the years 2020-2023 is different.

Non-similar letters indicate profitable differences between stocks. (Table 35)

Table 31. Vaparsan shares Shefe test.

	Mount of mandate	Mount of F	Sig test benefit
Shefe Test	3	1.21	.32

Table 32. Variance and risk of Vaparsan shares.

Interpret	Number	Average	
Variance 2020	6	.035	A
Variance 2021	9	.015	A
Variance 2022	11	.001	A
Variance 2023	9	.003	A

Table 33. ANOVA test comparison of variance of tested stocks.

	Mount of mandate	Mount of F	Sig test benefit
One-way ANOVA test	16	3.20	.00

Table 34. The variance of stocks.

	interpretation	Number	average	
1	shabandar	36	.012	A
2	vmelat	36	.002	ABCD
3	famli	36	.007	ABC
4	fakhooz	36	.007	A
5	arya	36	.005	ABC
6	vamaaden	36	.011	AB
7	shapdis	36	.010	AB
8	tapiko	36	.014	AB
9	tipiko	36	.011	CD
10	khodro	36	.010	A
11	fars	36	.008	ABC
12	kachad	36	.008	BCD
13	parsan	36	.009	ABC
14	v0mid	36	.016	ABC
15	shotoran	36	.005	D
16	vaparsan	36	.011	AB
17	Valid N (listwise)	36	.002	D

Table 35. Descriptive statistics.

	N Statistic	Range Statistic	Minimum Statistic	Maximum Statistic	Sum Statistic	Mean Statistic	Std. Error	Std. Deviation Statistic	VAryance Statistic
shabandar	35	.1447242	.0002373	.1449615	.4055647	.011587563	.0052178875	.0308694390	.001
vmelat	35	.0171187	.0000076	.0171263	.0700641	.002001831	.0005578601	.0033003450	.000
famli	35	.1025881	.0000390	.1026272	.2641484	.007547096	.0034857553	.0206220063	.000
fakhooz	35	.0864239	.0000446	.0864685	.2519932	.007199805	.0028205120	.0166863738	.000
arya	35	.0696418	.0000126	.0696544	.1849684	.005284813	.0022735861	.0134507165	.000
vamaaden	35	.2163631	.0000950	.2164581	.3805961	.010874174	.0064181237	.0379701317	.001
shapdis	35	.1926559	.0000929	.1927488	.3607872	.010308206	.0057271750	.0338824243	.001
tipiko	35	.2106529	.0000303	.2106832	.4759196	.013597703	.0069192062	.0409345761	.002
tipiko	35	.3175779	.0000025	.3175805	.3945800	.011273714	.0090586249	.0535915474	.003
khodro	35	.2134125	.0002085	.2136211	.3433977	.009811361	.0061373165	.0363088539	.001
fars	35	.0918052	.0000165	.0918217	.2710557	.007744449	.0035887314	.0212312213	.000
Kachad	35	.1823077	.0000087	.1823165	.2876152	.008217577	.0052579707	.0311065741	.001
parsan	35	.1265742	.0000243	.1265986	.3053473	.008724208	.0044796319	.0265018599	.001
v0mid	35	.3571239	.0000276	.3571515	.5501998	.015719994	.0103224347	.0610683470	.004
shotoran	35	.0716178	.0000016	.0716194	.1919304	.005483726	.0028242802	.0167086669	.000
vaparsan	35	.1977188	.0000088	.1977275	.3764265	.010755044	.0064546415	.0381861738	.001
Valid N (listwise)	35								

3. Discussion

After categorizing and classifying the information and data collected from different dividends, it has been processed and analyzed and the results and findings of this study have been stated.

Appropriate tests were used to analyze the research questions.

3.1. The Test Performed Is Shefe Test

Findings of Inferential Tables

Hypothesis 18: Dividends in four consecutive years (2020-2023) in Shabandar shares are unprofitable.

$H_0: \rho \neq 0$

Opposite hypothesis: dividends in four consecutive years (2020-2023) in Shabandar shares are profitable.

$H_0: \rho = 0$

According to the Table 36 and Table 37, as can be seen, the calculated test value is profitable. That is, the value of sig is greater than .05, so the hypothesis is accepted and the statistical assumption is rejected with 95% confidence, and the result can be generalized to the society, that is, the profit risk in four consecutive years (2020-2023) in Shabandar shares is harmful.

Table 36. Shabandar shares Shefe test.

	Mount of mandate	Mount of F	Sig test benefit
Shefe Test	3	.63	.59

Table 37. Variance and risk of Shabandar shares.

Interpret	Number	Average	
Variance 2020	45	.021	A
Variance 2021	98	.004	A
Variance 2022	115	.006	A
Variance 2023	90	.005	A

Similar letters indicate profitable differences between the years under test.

Hypothesis 19: Dividends in four consecutive years (2020-2023) are unprofitable in the shares of the Vemlet.

H_0: $\rho \neq 0$

Opposite hypothesis: dividends in four consecutive years (2020-2023) in Vemlat stocks are profitable.

H_0: $\rho = 0$

According to the Table 38 and Table 39, as can be seen, the calculated test value is harmful. That is, the value of sig is greater than .05, so the hypothesis is accepted and the statistical assumption is rejected with 95% confidence, and the result can be generalized to the society, that is, the profit risk in four consecutive years (2020-2023) in the shares of the Vemlet is harmful.

Non-similar letters indicate the difference in profitability between the years under test.

Hypothesis 20: The dividend in four consecutive years (2020-2023) in the famli stocks is loss.

H_0: $\rho \neq 0$

Opposite hypothesis: dividends are profitable in four consecutive years (2020-2023) in Famli stocks.

H_0: $\rho = 0$

According to the Table 40 and Table 41, as can be seen, the calculated test value is profitable. That is, the value of sig is less than .05, so the hypothesis is accepted and the statistical assumption is rejected with 95% confidence, and the result can be generalized to the society, that is, the profit risk in four consecutive years (2020-2023) in family stocks is loss.

Non-similar letters indicate profitable differences between the years tested.

Hypothesis 21: Dividends in four consecutive years (2020-2023) in Fakhooz shares are unprofitable.

H_0: $\rho \neq 0$

Opposite hypothesis: dividends are profitable in four consecutive years (2020-2023) in Fakhooz shares.

Table 38. Vemlat shares Shefe test.

	Mount of mandate	Mount of F	Sig test benefit
Shefe Test	3	1.46	.22

Table 39. Variance and risk of Vemlat shares.

Interpret	Number	Average	
Variance 2020	45	.009	A
Variance 2021	98	−.005	A
Variance 2022	115	.003	A
Variance 2023	90	.002	A

Table 40. Famili shares Shefe test.

	Mount of mandate	Mount of F	Sig test benefit
Shefe Test	3	.11	.98

Table 41. Variance and risk of Famili shares.

Interpret	Number	Average	
Variance 2020	45	.024	A
Variance 2021	98	.000	A
Variance 2022	115	.002	A
Variance 2023	90	.006	A

H_0: $\rho = 0$

According to the Table 42 and Table 43, as can be seen, the calculated test value is profitable. That is, the value of sig is greater than .05, so the hypothesis is accepted and the statistical hypothesis is rejected with 95% confidence, and the result can be generalized to society, that is, the profit risk in four consecutive years (2020-2023) in Fakhooz stocks is unprofitable.

Non-similar letters indicate profitable differences between the years tested.

Hypothesis 22: Dividends in four consecutive years (2020-2023) in Arya shares are unprofitable.

H_0: $\rho \neq 0$

Opposite hypothesis: dividends in four consecutive years (2020-2023) in Arya shares are profitable.

H_0: $\rho = 0$

According to the Table 44 and Table 45, as can be seen, the calculated test value is profitable. That is, the value of sig is less than .05, therefore, the opposite hypothesis is accepted and the statistical assumption is accepted with 95% confidence, and the result can be generalized to society, that is, the profit risk in four consecutive years (2020-2023) in Arya shares is profitable.

Table 42. Fakhooz shares Shefe test.

	Mount of mandate	Mount of F	Sig test benefit
Shefe Test	3	1.37	.25

Table 43. Variance and risk of Fakhooz shares.

Interpret	Number	Average	
Variance 2020	45	.018	A
Variance 2021	98	.002	A
Variance 2022	115	−.002	A
Variance 2023	90	.004	A

Table 44. Arya shares Shefe test.

	Mount of mandate	Mount of F	Sig test benefit
Shefe Test	3	4.07	.007

Table 45. Variance and risk of Arya shares.

Interpret	Number	Average	
Variance 2020	45	.028	A
Variance 2021	98	.004	A
Variance 2022	115	.001	A
Variance 2023	90	.002	A

Non-similar letters indicate profitable differences between the years tested.

Hypothesis 23: Dividends in four consecutive years (2020-2023) are unprofitable in stocks and Vamaaden.

H_0: $\rho \neq 0$

Opposite hypothesis: dividends are profitable in four consecutive years (2020-2023) in stocks and Vamaaden.

H_0: $\rho = 0$

According to the Table 46 and Table 47, as can be seen, the calculated test value is not significant. That is, the value of sig is greater than .05, so the hypothesis is accepted and the statistical hypothesis is rejected with 95% confidence, and the result can be generalized to society, that is, the risk of profit in four consecutive years (2020-2023) in stocks and Vamaaden is harmful.

Non-similar letters indicate profitable differences between the years tested.

Hypothesis 24: Dividends in four consecutive years (2020-2023) in Shapdis shares are unprofitable.

H_0: $\rho \neq 0$

Opposite hypothesis: Shapdis shares are profitable in four consecutive years (2020-2023).

H_0: $\rho = 0$

Table 46. Vamaaden shares Shefe test.

	Mount of mandate	Mount of F	Sig test benefit
Shefe Test	3	.28	.84

Table 47. Variance and risk of Vamaaden shares.

Interpret	Number	Average	
Variance 2020	45	.010	A
Variance 2021	98	.003	A
Variance 2022	115	.002	A
Variance 2023	90	.000	A

According to the Table 48 and Table 49, as can be seen, the calculated test value is harmful. That is, the value of sig is greater than .05, so the hypothesis is accepted and the statistical assumption is rejected with 95% confidence, and the result can be generalized to society, that is, the profit risk in four consecutive years (2020-2023) in Shapdis shares is harmful.

Non-similar letters indicate the difference in profitability between the years under test.

Hypothesis 25: Dividends in four consecutive years (2020-2023) in Tapiko shares are unprofitable.

H_0: $\rho \neq 0$

Opposite hypothesis: dividend in four consecutive years (2020-2023) in Tapiko shares is loss.

H_0: $\rho = 0$

According to the Table 50 and Table 51, as can be seen, the calculated test value is harmful. That is, the value of sig is greater than .05, so the hypothesis is accepted and the statistical hypothesis is rejected with 95% confidence, and the result can be generalized to society, that is, the profit risk in four consecutive years (2020-2023) in Tapiko shares are unprofitable.

Non-similar letters indicate profitable differences between the years tested.

Hypothesis 26: Dividends in four consecutive years (2020-2023) in Tipiko shares are unprofitable.

H_0: $\rho \neq 0$

Opposite hypothesis: dividends in four consecutive years (2020-2023) in Tipiko shares are profitable.

H_0: $\rho = 0$

According to the Table 52 and Table 53, as can be seen, the calculated test value is harmful. That is, the value of sig is greater than .05, so the hypothesis is accepted and the statistical assumption is rejected with 95% confidence, and the result can be generalized to society, that is, the profit risk in four consecutive years (2020-2023) in Tipiko shares is harmful.

Non-similar letters indicate profitable differences between the years tested.

Table 48. Shapdis shares Shefe test.

	Mount of mandate	Mount of F	Sig test benefit
Shefe Test	3	1.18	.31

Table 49. Variance and risk of Shapdis shares.

Interpret	Number	Average	
Variance 2020	45	.018	A
Variance 2021	98	.009	A
Variance 2022	115	.001	A
Variance 2023	90	.000	A

Table 50. Tapiko shares Shefe test.

	Mount of mandate	Mount of F	Sig test benefit
Shefe Test	3	.67	.57

Table 51. Variance and risk of Tapiko shares.

Interpret	Number	Average	
Variance 2020	45	.019	A
Variance 2021	98	.004	A
Variance 2022	115	.002	A
Variance 2023	90	.006	A

Table 52. Tipiko shares Shefe test.

	Mount of mandate	Mount of F	Sig test benefit
Shefe Test	3	.98	.96

Table 53. Variance and risk of Tipiko shares.

Interpret	Number	Average	
Variance 2020	45	.003	A
Variance 2021	98	.001	A
Variance 2022	115	.003	A
Variance 2023	90	.005	A

Hypothesis 27: Dividends in four consecutive years (2020-2023) in Khodro stocks are unprofitable.

$H_0: \rho \neq 0$

Opposite hypothesis: dividends in four consecutive years (2020-2023) in Khodro stocks are profitable.

$H_0: \rho = 0$

According to the Table 54 and Table 55, as can be seen, the calculated test value is harmful. That is, the value of sig is greater than .05, so the hypothesis is accepted and the statistical assumption is rejected with 95% certainty, and the result can be generalized to the society, that is, the profit risk in four consecutive years (2020-2023) in Khodro stocks are unprofitable.

Non-similar letters indicate profitable differences between the years tested.

Similar letters indicate no profitable difference.

Hypothesis 28: Dividends in Pars shares are unprofitable in four consecutive years (2020-2023).

$H_0: \rho \neq 0$

Opposite hypothesis: dividends are profitable in Pars shares for four consecutive years (2020-2023).

$H_0: \rho = 0$

According to the Table 56 and Table 57, as can be seen, the calculated test value is harmful. That is, the value of sig is greater than .05, so the hypothesis is accepted and the statistical assumption is rejected with 95% confidence, and the result can be generalized to society, that is, the profit risk in four consecutive years (2020-2023) in Pars shares is harmful.

Non-similar letters indicate profitable differences between the years tested.

Similar letters indicate no profitable difference.

Table 54. Khodro shares Shefe test.

	Mount of mandate	Mount of F	Sig test benefit
Shefe Test	3	2.16	.09

Table 55. Variance and risk of Khodro shares.

Interpret	Number	Average	
Variance 2020	45	.030	A
Variance 2021	98	−.004	A
Variance 2022	115	.004	A
Variance 2023	90	.001	A

Table 56. Pars shares Shefe test.

	Mount of mandate	Mount of F	Sig test benefit
Shefe Test	3	1.11	.34

Table 57. Variance and risk of Pars shares.

Interpret	Number	Average	
Variance 2020	45	.019	A
Variance 2021	98	.000	A
Variance 2022	115	.005	A
Variance 2023	90	.003	A

Hypothesis 29: Dividends in four consecutive years (2020-2023) are unprofitable in Kachad stocks.

$H_0: \rho \neq 0$

Opposite hypothesis: dividend in four consecutive years (2020-2023) in Kechad shares is profitable.

$H_0: \rho = 0$

According to the Table 58 and Table 59, as can be seen, the calculated test value is harmful. That is, the value of sig is greater than .05, so the hypothesis is accepted and the statistical assumption is rejected with 95% confidence, and the result can be generalized to the society, that is, the profit risk in four consecutive years (2020-2023) in Kachad stocks is harmful.

Non-similar letters indicate profitable differences between the years tested.

Similar letters indicate no profitable difference.

Hypothesis 30: Dividends in Parsan shares in four consecutive years (2020-2023) are unprofitable.

$H_0: \rho \neq 0$

Opposite hypothesis: dividends are profitable in Parsan shares for four consecutive years (2020-2023).

$H_0: \rho = 0$

According to the Table 60 and Table 61, as can be seen, the calculated test value is harmful. That is, the value of sig is greater than .05, so the hypothesis is accepted and the statistical assumption is rejected with 95% confidence, and the result can be generalized to society, that is, the profit risk in four consecutive years (2020-2023) in Parsan shares is harmful.

Non-similar letters indicate profitable differences between the years tested.

Similar letters indicate no profitable difference.

Table 58. Kechad shares Shefe test.

	Mount of mandate	Mount of F	Sig test benefit
Shefe Test	3	.22	.88

Table 59. Variance and risk of Kechad shares.

Interpret	Number	Average	
Variance 2020	45	.009	A
Variance 2021	98	.004	A
Variance 2022	115	.009	A
Variance 2023	90	.002	A

Table 60. Parsan shares Shefe test.

	Mount of mandate	Mount of F	Sig test benefit
Shefe Test	3	1.02	.39

Table 61. Variance and risk of Parsan shares.

Interpret	Number	Average	
Variance 2020	45	.017	A
Variance 2021	98	.005	A
Variance 2022	115	.000	A
Variance 2023	90	.002	A

Hypothesis 31: Dividends in four consecutive years (2020-2023) in V0mid shares are unprofitable.

$H_0: \rho \neq 0$

Opposite hypothesis: dividend is profitable in four consecutive years (2020-2023) in V0mid shares.

$H_0: \rho = 0$

According to the Table 62 and Table 63, as can be seen, the calculated test value is harmful. That is, the value of sig is greater than .05, so the hypothesis is accepted and the statistical assumption is rejected with 95% confidence, and the result can be generalized to the society, that is, the risk of profit in four consecutive years (2020-2023) in V0mid shares is harmful.

Non-similar letters indicate profitable differences between the years tested.

Similar letters indicate no profitable difference.

Hypothesis 32: Dividends in four consecutive years (2020-2023) in Shotoran stocks are unprofitable.

$H_0: \rho \neq 0$

Opposite hypothesis: dividend in four consecutive years (2020-2023) in Shotoran shares is profitable.

$H_0: \rho = 0$

According to the Table 64 and Table 65, as can be seen, the calculated test value is profitable. That is, the value of sig is smaller than .05, so the opposite hypothesis is accepted and the statistical assumption is accepted with 95% confidence, and the result can be generalized to the society, that is, the profit risk in four consecutive years (2020-2023) in Shotoran shares is profitable.

Non-similar letters indicate profitable differences between the years tested.

Hypothesis 33: Dividends in four consecutive years (2020-2023) are unprofitable in Vaparsan stocks.

$H_0: \rho \neq 0$

Opposite hypothesis: dividends in four consecutive years (2020-2023) in Vaparsan shares are profitable.

$H_0: \rho = 0$

According to the Table 66 and Table 67, as can be seen, the calculated test value becomes harmful. That is, the value of sig is greater than .05, so the hypothesis is accepted and the statistical assumption is rejected with 95% confidence, and the result can be generalized to society, that is, the risk of profits in four consecutive years (2020-2023) in Vaparsan stocks. It is harmful.

Table 62. V0mid shares Shefe test.

	Mount of mandate	Mount of F	Sig test benefit
Shefe Test	3	.39	.76

Table 63. Variance and risk of V0mid shares.

Interpret	Number	Average	
Variance 2020	45	.014	A
Variance 2021	98	.007	A
Variance 2022	115	.003	A
Variance 2023	90	.002	A

Table 64. Shotoran shares Shefe test.

	Mount of mandate	Mount of F	Sig test benefit
Shefe Test	3	1.79	.15

Table 65. Variance and risk of Shotoran shares.

Interpret	Number	Average	
Variance 2020	45	.017	A
Variance 2021	98	.001	A
Variance 2022	115	.000	A
Variance 2023	90	.002	A

Table 66. Vaparsan shares Shefe test.

	Mount of mandate	Mount of F	Sig test benefit
Shefe Test	3	.77	.5

Table 67. Variance and risk of Vaparsan shares.

Interpret	Number	Average	
Variance 2020	45	.020	A
Variance 2021	98	.000	A
Variance 2022	115	.004	A
Variance 2023	90	.004	A

Non-similar letters indicate profitable differences between the years tested. Similar letters indicate no profitable difference.

3.2. Comparison of Dividends of Tested Stocks (Duncan)

Hypothesis 34: Dividends in different stocks are not different during the years

2020-2023

H_0: $\rho \neq 0$

Counter hypothesis: Dividends in different stocks are not different during the years 2020-2023

H_0: $\rho = 0$

According to the Table 68 and Table 69, as can be seen, the calculated test value is harmful. That is, the value of sig is greater than .05, so the hypothesis is accepted and the statistical assumption is rejected with 95% confidence, and the result can be generalized to the society, that is, the profit in different stocks is not different during the years 2020-2023.

Non-similar letters indicate profitable differences between stocks (Table 70).

Table 68. ANOVA test comparison of variance of tested stocks.

	Mount of mandate	Mount of F	Sig test benefit
One-way ANOVA test	16	.71	.77

Table 69. The variance of stocks.

	interpretation	Number	average	
1	shabandar	348	.007	A
2	vmelat	348	.001	A
3	famli	348	.005	A
4	fakhooz	348	.003	A
5	arya	348	.006	A
6	vamaaden	348	.003	A
7	shapdis	348	.005	A
8	tapiko	348	.006	A
9	tipiko	348	.003	A
10	khodro	348	.004	A
11	fars	348	.005	A
12	kachad	348	.004	A
13	parsan	348	.004	A
14	v0mid	348	.005	A
15	shotoran	348	.003	A
16	vaparsan	348	.005	A
17	Valid N (listwise)	348	.003	A

Table 70. Descriptive statistics.

	N Statistic	Range Statistic	Minimum Statistic	Maximum Statistic	Sum Statistic	Mean		Std. Deviation Statistic	Variance Statistic
						Statistic	Std. Error		
shabandar	348	1.1522868	−.3944511	.7578357	2.4848804	.007140461	.0038395960	.0716267346	.005
vmelat	348	.4370083	−.1423587	.2946496	.3610506	.001037502	.0022282098	.0415667149	.002
famli	348	.8736544	−.2496860	.6239684	1.9273844	.005538461	.0031327390	.0584404889	.003
fakhooz	348	.5842428	−.1703163	.4139265	1.1524069	.003311514	.0030418048	.0567441336	.003
arya	348	.5555236	−.1568882	.3986354	2.0787766	.005973496	.0025395076	.0473738999	.002
vamaaden	348	.8511852	−.2316099	.6195753	1.0183253	.002926222	.0031534300	.0588264739	.003
shapdis	348	.8045874	−.1991444	.6054431	1.8059133	.005189406	.0032126867	.0599318936	.004
tapiko	348	1.0262908	−.3105664	.7157244	2.0996094	.006033360	.0036990552	.0690049793	.005
tipiko	348	.9178687	−.1360077	.7818610	1.0740788	.003086433	.0029112932	.0543094709	.003
khodro	348	1.0972092	−.1953224	.9018868	1.4751753	.004239010	.0040763285	.0760429221	.006
fars	348	.8342757	−.2330326	.6012431	1.6636079	.004780483	.0030404467	.0567187983	.003
kachad	348	.7557903	−.1653491	.5904412	1.2473142	.003584236	.0027019220	.0504037005	.003
parsan	348	.8235838	−.1970015	.6265823	1.4777243	.004246334	.0030882950	.0576113967	.003
v0mid	348	1.0769609	−.2702015	.8067595	1.8900702	.005431236	.0035890616	.0669530766	.004
shotoran	348	.6777829	−.1602434	.5175395	1.1187164	.003214702	.0023172467	.0432276759	.002
vaparsan	348	.9577747	−.1979094	.7598653	1.8404038	.005288517	.0039936580	.0745007234	.006
Valid N (listwise)	348								

4. Conclusion

This study attempts to investigate of what are the effects of artificial intelligence (AI) on the financial performance of 17 Iranian companies and strategies for improving risk and capital management using artificial intelligence? The companies can be divided into Metals, Petrochemical, investment, Automotive, Oil products, and Banking. Kechad, Famili, Fakhor are metals companies. Vamaaden, Ariya, Pars, Shapdis are Petrochemical companies. Tapico, Vomid, Tipiko are investment companies. Khodro is Khodro Company. Parsan and Shatran, Shebandar Oil Products of Company. Vamelat and Vapars are banking companies. The findings of this study reveal that Shatran, Arya, Shebandar, Famili are profitable among other stocks. Other stocks are loss because of high cost of raw materials and sanction of Iran. Moreover, companies could not export their products. Plus, the purchase power of the people in the country decreases because of the inflation of the country, so the companies could not buy anything. On the one hand, liquidity power of people, on the other hand, less export lead to the decrease of cash flow, liquidity power of companies and firms and could not sell their products. It can be concluded that those stocks are loss and have high risk.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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