# Designing an Intelligent Financial Reporting Framework Based on Generative Artificial Intelligence (AI-FRS): A Step Toward Self-Adaptive Accounting Standards

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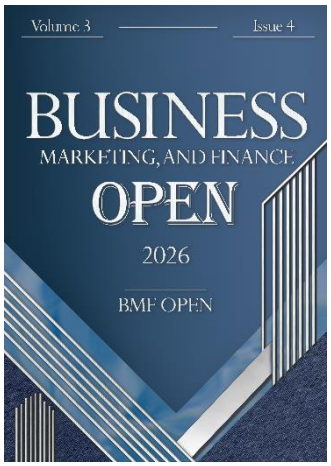


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**Abstract:** In today's complex and rapidly changing environment, the need for intelligent and self-adaptive financial reporting systems is increasingly evident. This article develops a smart financial reporting framework based on generative artificial intelligence (AI-FRS) that can autonomously and in real time update accounting standards—particularly IFRS standards—based on economic fluctuations and new data. Generative artificial intelligence, as an automated tool for simulating and analyzing economic conditions, can enhance the accuracy and transparency of financial reports and enable organizations and regulatory bodies to rely on precise and up-to-date financial information instead of periodic revisions. The findings of this study indicate that implementing this framework can significantly improve profitability, asset productivity, and compliance with IFRS standards for companies. Additionally, the analyses identify the need to strengthen capital structure and reduce dependence on high levels of debt. Overall, this project represents an important step toward innovation in financial reporting and improving the efficiency of accounting systems and can contribute to enhancing report transparency and accuracy while reducing financial and legal risks.

**Keywords:** Financial Reporting, Artificial Intelligence, Accounting Standards.

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## 1. Introduction

The rapid acceleration of digital transformation across global industries has fundamentally reshaped the landscape of financial reporting, auditing, and accounting, positioning artificial intelligence (AI) as a disruptive technological driver that rivals prior industrial revolutions. As organizations increasingly rely on data-centric ecosystems, the financial reporting domain—historically rooted in manual processes, deterministic models, and rule-based systems—has been pushed toward algorithmic augmentation and automation. Classical works such as *The Second Machine Age* highlighted the onset of intelligent digital technologies capable of transforming economic structures, work dynamics, and value creation pathways [1]. Over the past decade, accounting and finance have become some of the most significantly affected domains within this transformation, with AI-enabled systems beginning to automate complex tasks, analyze high-dimensional financial datasets, enhance reporting accuracy, and execute predictive analysis at scales impossible for human processors [2].

Within this context, scholars have increasingly emphasized how AI can improve the relevance, reliability, comparability, and timeliness of financial information. Recent studies show that AI-driven analytics can support

the forecasting of financial conditions, generate real-time insights, and elevate the strategic decision-making capabilities of firms operating in dynamic environments such as global stock exchanges [3]. As financial transactions and operational processes generate unprecedented volumes of structured and unstructured data, the integration of AI into reporting systems has become not only beneficial but necessary. This shift represents a transformation from traditional backward-looking financial reporting toward systems capable of proactive, adaptive, and predictive analysis [4]. As a result, financial decision-makers are increasingly adopting machine learning algorithms and automated reasoning tools to support and verify accounting judgments, risk assessments, and compliance structures.

AI's integration into accounting has been widely documented through numerous global studies that underscore its potential to enhance accuracy, efficiency, and integrity within financial reporting systems. For instance, evidence shows that AI-driven automation significantly reduces human error, streamlines accounting workflows, and improves the speed and quality of reporting outputs across sectors [5]. Similarly, research exploring AI and blockchain interplay within financial reporting regimes—particularly in Islamic banking—demonstrates that the combined use of these technologies enhances transparency, auditability, and stakeholder trust by minimizing fraud and improving data traceability [6]. Meanwhile, AI's ability to detect anomalies, perform predictive evaluations, and support real-time monitoring provides organizations with the tools needed to strengthen governance frameworks and improve audit efficiency [7].

Recent years have also seen advances in AI-based financial forecasting. Systematic reviews indicate that machine learning models can outperform traditional statistical techniques when predicting key accounting indicators such as asset performance, liquidity ratios, and earnings quality [8]. These models also help organizations anticipate regulatory changes, market volatility, and shifts in financial stability—factors that have become increasingly relevant amid global economic uncertainty [9]. Complementary studies highlight that AI not only enhances predictive accuracy but also increases financial system resilience by enabling adaptive reporting architectures that learn from historical and real-time data [10]. The integration of AI-driven diagnostic tools allows firms to identify inefficiencies, mitigate operational risks, and optimize decision-making processes across reporting cycles [11].

The emergence of generative artificial intelligence (GenAI) has further elevated the potential of intelligent financial systems. Unlike earlier forms of AI primarily designed for classification or prediction, GenAI produces new data structures, narrative summaries, visual analytics, and automated narratives that can augment and even reformulate financial reporting procedures. As organizations adopt these technologies, scholars emphasize the need to rethink traditional accounting frameworks to ensure compatibility with AI-driven insights and automated reporting functions [12]. In the context of IFRS adoption, global research reveals both challenges and opportunities: while AI can significantly improve alignment with international standards, differences in regulatory capacity, digital infrastructure, and institutional readiness across countries present important implementation barriers [13]. The global push for standardized digital reporting frameworks underscores AI's role as a critical enabler of audit quality, compliance, and international comparability.

The expanding literature also highlights AI's role in enhancing sustainability reporting and environmental, social, and governance (ESG) disclosures. Advanced analytical systems can process extensive datasets, identify sustainability risks, and support green internal control systems that strengthen the credibility of digital sustainability reporting [10]. Additionally, case-based evidence from Armenia demonstrates how banks are integrating AI into financial reporting to improve risk management, transparency, and compliance, reflecting broader trends in emerging economies undertaking digital reforms [14]. Studies from Indonesia further illustrate

how AI enhances both the effectiveness and efficiency of financial reporting processes, providing companies with stronger control mechanisms and automated performance evaluation tools [15]. AI not only accelerates reporting processes but also empowers organizations to detect fraudulent patterns and anomalies that may otherwise escape human oversight [16].

Moreover, scholars have extensively documented the transformative influence of AI on auditor workflows, enabling deeper analytical procedures, automated risk assessments, and real-time verification of financial statements. Research demonstrates that AI enables a shift from sample-based auditing toward full-population testing, which strengthens audit assurance and reduces the likelihood of undetected financial misstatements [17]. AI-driven audit systems can cross-validate massive datasets, identify irregularities, and assist auditors in reconstructing complex transaction flows—all of which enhance compliance with regulatory frameworks and advanced standards such as IFRS [18]. These technological capabilities provide not only improvements in audit quality but also opportunities for new regulatory approaches that incorporate automated supervisory systems and digital compliance infrastructures.

Despite these advancements, scholars caution that AI integration in accounting does not come without challenges. Issues including data accuracy, algorithmic bias, cybersecurity threats, and lack of digital infrastructure remain significant barriers, particularly in developing economies or highly regulated sectors [13]. Furthermore, the need for skilled human capital and digital literacy presents an organizational challenge for firms attempting to fully capitalize on the capabilities of intelligent reporting systems [19]. At the same time, concerns persist regarding how AI might alter the roles of accountants, internal auditors, and financial analysts, potentially requiring new professional pathways, competency models, and interdisciplinary expertise [2]. As organizations undergo AI-driven transformation, scholars argue for robust governance frameworks, ethical guidelines, and transparency mechanisms to ensure that AI integration supports reliability, fairness, and accountability in financial reporting [1].

While the literature affirms AI's substantial potential to revolutionize financial reporting, gaps remain concerning its strategic integration, particularly within contexts requiring adaptive, real-time, and intelligent reporting frameworks. Several studies emphasize that the traditional financial reporting model—largely static, backward-looking, and compliance-focused—does not fully align with the dynamic and predictive capabilities of AI-driven systems [12]. Therefore, researchers have argued for the development of frameworks that incorporate AI as an active participant in reporting cycles, capable of detecting patterns, recommending adjustments, and autonomously enhancing reporting accuracy and timeliness [4]. Such intelligent frameworks could transform financial reporting from a procedural obligation into a continuous, adaptive, and analytically enriched process that supports strategic decision-making and strengthens organizational resilience [11].

Given these trends, the need arises for innovative frameworks capable of leveraging AI—particularly generative AI—to enhance the accuracy, transparency, and adaptability of financial reporting models. As the global digital economy continues to expand, research must explore how AI-driven systems can support regulatory harmonization, improve IFRS compliance, and provide organizations with tools to navigate increasingly complex financial environments. Despite promising progress, theoretical and practical gaps persist in understanding how AI can be systematically embedded into financial reporting architectures and how such integration can reshape the future of accounting practices [9].

The aim of this study is to design and evaluate an AI-driven intelligent financial reporting framework capable of enhancing accuracy, transparency, and adaptability in alignment with contemporary financial reporting challenges.

## 2. Methodology

This study was conducted with the aim of designing and developing an intelligent financial reporting framework based on generative artificial intelligence (AI-FRS). A mixed qualitative–quantitative approach was employed to design, evaluate, and optimize the model. The main stages of this project include data preparation, analysis and design of artificial intelligence models, and evaluation of the results obtained from various analyses. The following sections describe each stage of the research in detail.

**Data Preparation**

In this stage, financial data from several companies active in the capital market were collected for different years and imported into the analytical environment. The data used included information such as revenue, net profit, assets, liabilities, shareholders' equity, and IFRS compliance indicators. These data were gathered from reliable sources and, after review and cleansing, were fully prepared for use in the artificial intelligence model. The selected data were examined annually at the company level to enable comparative analysis among companies and to evaluate trend changes over time.

**Calculation of Key Financial Indicators**

To analyze the financial condition of the companies, several key indicators—including return on assets (ROA), return on equity (ROE), the current ratio, and deviations from IFRS standards—were calculated. These indicators serve as primary inputs for the artificial intelligence model and are used for comparative analysis of company conditions and for generating corrective recommendations.

**Designing the Generative Artificial Intelligence Model (Generative AI)**

In this study, generative artificial intelligence models were used as the primary analytical tool for data analysis and generating updated recommendations. These models continuously analyze data, identify new economic patterns, and provide recommendations for revising or updating financial reporting standards. The designed AI models function as "adaptive learners" and can analyze real-time economic variables such as interest rates, inflation, and capital structure. This capability enables faster and more automated updates to accounting standards.

**Generation of Intelligent Recommendations**

At this stage, a decision-support system was designed to examine relationships among indicators and analytical outcomes, producing intelligent recommendations for improving companies' financial reporting. For example, if a company shows a loss, the system recommends reviewing operational performance; if deviations from IFRS standards are high, the system suggests revising reporting procedures. These recommendations are generated automatically and can assist companies in improving their financial performance.

**Visual Analytics and Comparison of Results**

To improve understanding of the results and to provide visual analytics, dynamic analytical charts were designed, enabling comparison and identification of different trends in companies' financial performance. These charts include line charts showing changes in revenue and net profit, bar charts comparing ROA, ROE, and the current ratio, heat maps for identifying deviations from IFRS, and ranking tables comparing companies in terms of IFRS compliance.

**Data Analysis and Evaluation of Results**

After applying the artificial intelligence models and generating intelligent recommendations, the data were analyzed. The results include comparisons of revenue and net profit, examination of differences among companies,

evaluation of financial volatility, and corrective recommendations for improving report transparency. Additionally, the data were assessed based on different financial criteria to analyze the effects of economic changes, market fluctuations, and strategic decisions on companies' financial performance.

**Model Performance Evaluation**

Finally, the performance of the generative artificial intelligence model (AI-FRS) was evaluated using various metrics. This evaluation included comparing the model's performance with real-world data and determining the accuracy and efficiency of the system's recommendations. Furthermore, the model outputs were continuously analyzed across different time periods to assess its effectiveness in comparative analysis and financial forecasting.

## 3. Findings and Results

In Figure 1, the chart comparing companies' revenue and net profit over the years 2018 to 2022 illustrates significant trends and changes in these two key indicators. Overall, most companies experienced an increase in revenue during this period, particularly in 2021 and 2022, which indicates growth and expansion in business operations, increased demand, or improvements in sales and marketing strategies. In particular, companies such as "Bank Melli Iran" and "Construction Contractors" showed a sharp increase in their revenues, which may be due to entering new markets or improving business processes. While revenues have increased, changes in net profit are not uniformly observed across all companies. In some firms, such as "Fars Cement" and "Tarbisi Sugar," despite higher revenue, net profit has changed only slightly, which may be due to rising costs or operational challenges. In this chart, substantial differences between companies can be observed. Companies such as "Bank Melli Iran" and "Construction Contractors," especially in recent years, have achieved better profitability performance as a result of improved financial and operational strategies. In contrast, companies such as "Fars Cement" and "Tarbisi Sugar," which show greater stability in profitability, may have more stable business models that are less affected by market volatility. These differences are mainly related to internal strategies, cost control, and resource management. The analysis of these data suggests that companies need more detailed examination and optimization of their internal processes, particularly in the areas of cost control and productivity, so that they can derive maximum profit from rising revenues.

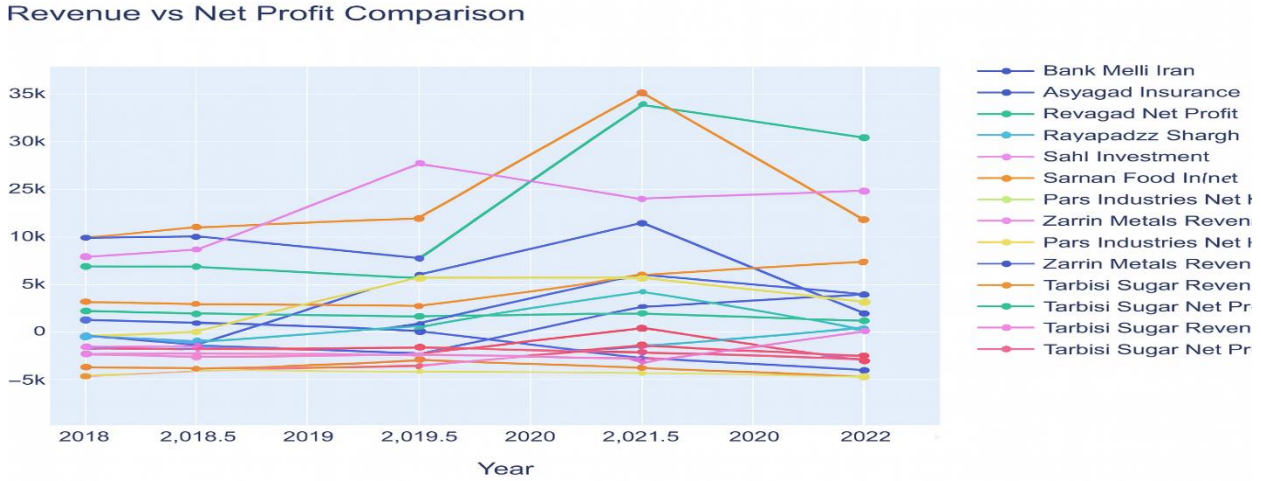


**Figure 1: Comparison of Companies' Revenue and Net Profit (2018–2022)**

In Figure 2, the chart comparing the financial ratios ROA (return on assets), ROE (return on equity), and the current ratio for different companies from 2018 to 2022 reflects the heterogeneous performance of firms in utilizing their financial resources. In this chart, the ROA ratio for many companies shows considerable fluctuations over the

years, especially in 2021, when some firms were able to use their assets more effectively to generate profit. However, in others, the ROA ratio has remained below expectations, indicating weak asset utilization or operational problems. Likewise, the ROE ratio is relatively stable in most companies, and in some years, particularly 2021, improved performance is observed in this regard, which may indicate more efficient use of shareholders' equity. This issue calls for a review and revision of financial and operational strategies in companies that have shown weak ROE performance in recent years. In the analysis of the current ratio, which reflects companies' ability to meet short-term obligations, most firms generally display a current ratio above 1, indicating a relatively sound financial position for repaying their debts. Some companies have experienced a notable increase in this ratio in recent years, which may be due to higher cash reserves or a reduction in current liabilities. Overall, firms that perform well on all three financial ratios—ROA, ROE, and the current ratio—are able to utilize their resources more efficiently and have greater capacity to maintain and improve their financial position. This chart suggests that companies with high volatility in these ratios should conduct further reviews in asset management, equity management, and current liability management in order to improve their financial performance and reduce financial risks.

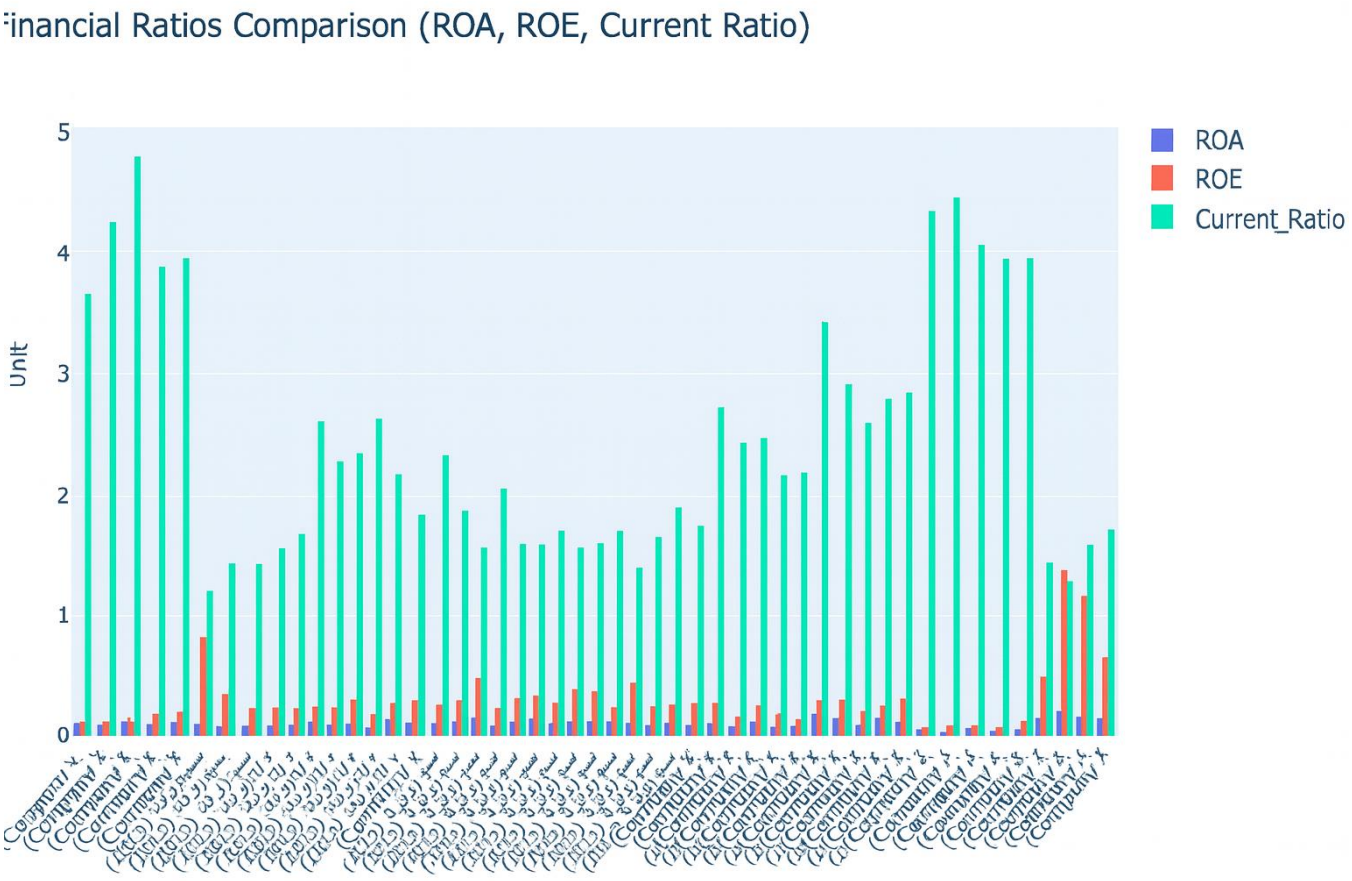


**Figure 2: Comparison of Financial Ratios ROA, ROE, and Current Ratio**

Figure 3 presents a chart comparing liabilities and shareholders' equity for various companies from 2018 to 2022, showing changes in their financial structure and providing important information about their financial growth and robustness. In this chart, shareholders' equity has shown less volatility than liabilities in most years, which indicates companies' efforts to strengthen their financial position through internal sources. Meanwhile, liabilities have generally increased over time in most firms, which may point to increased borrowing to finance operations or new projects. This trend can entail financial risks that, if not carefully managed, may lead to financial crises. There are notable differences in financing strategies among companies. Firms such as "Arya Development Group" and "Sahl

Investment," where equity has a larger share than liabilities, exhibit a healthier financial position, which can be interpreted as financial robustness and greater reliance on internal resources. Conversely, companies like "Tarbisi Sugar" and "Sahl Concentrate Industries," whose liabilities exceed shareholders' equity, are likely to face higher financial risks, which in adverse economic conditions or financial crises may lead to serious problems. Especially in 2021 and 2022, many companies experienced substantial growth in their liabilities, which may be due to the need to secure financial resources for new projects or rising costs during economic crises. This chart indicates that companies that can maintain a balance between liabilities and equity are generally more resilient to economic fluctuations.

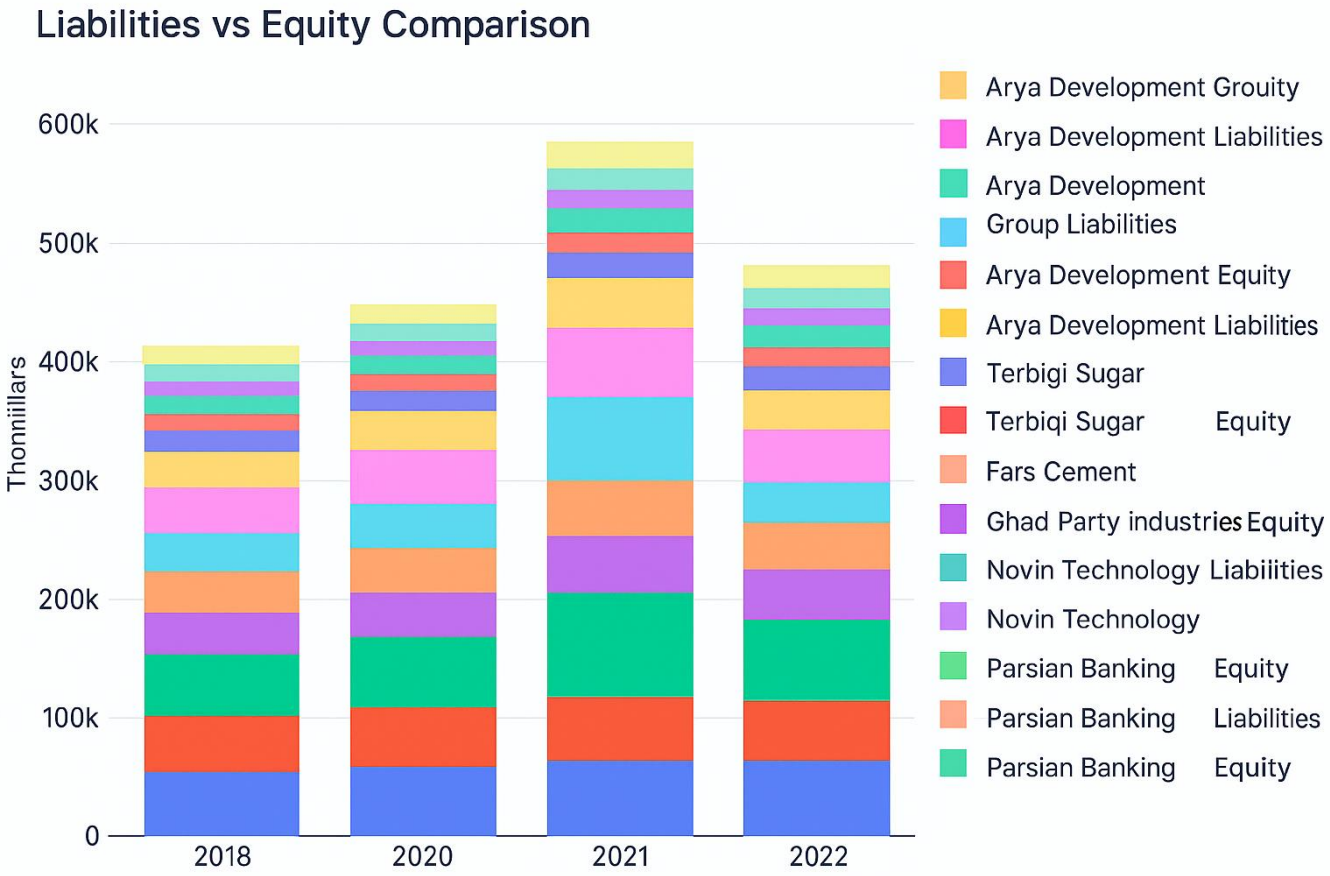


**Figure 3: Comparison of Liabilities and Shareholders' Equity (Liabilities vs. Equity)**

Figure 4, the IFRS deviation heatmap for different companies over the years 2018 to 2022, provides a clear picture of the degree of compliance with international accounting standards. In this chart, the colors range from green to red, where red signifies high deviation from standards and high risk. Companies such as "Asyagad Insurance" exhibit high deviations (close to 0.95) in several years, especially 2018, indicating high risk and the need for fundamental reforms in their accounting procedures. On the other hand, firms such as "Tarbisi Sugar" and "Sahl Investment" show very low deviations and have maintained stable performance over the years in accordance with IFRS, which indicates good compliance and reduced financial and legal risks in these companies. Considering the trends, it is observed that "Asyagad Insurance" has faced substantial deviations from IFRS in different years and appears not to have significantly improved its compliance, which may create serious problems in meeting legal and accounting requirements. In contrast, companies such as "Tarbisi Sugar" in 2022, with a reduction in deviation to 0.217, have shown continuous alignment with international standards, a trend that can improve financial transparency and enhance investor confidence. Overall, companies with higher deviations from IFRS must take

immediate action to improve their compliance with these standards in order to reduce their legal and financial risks.

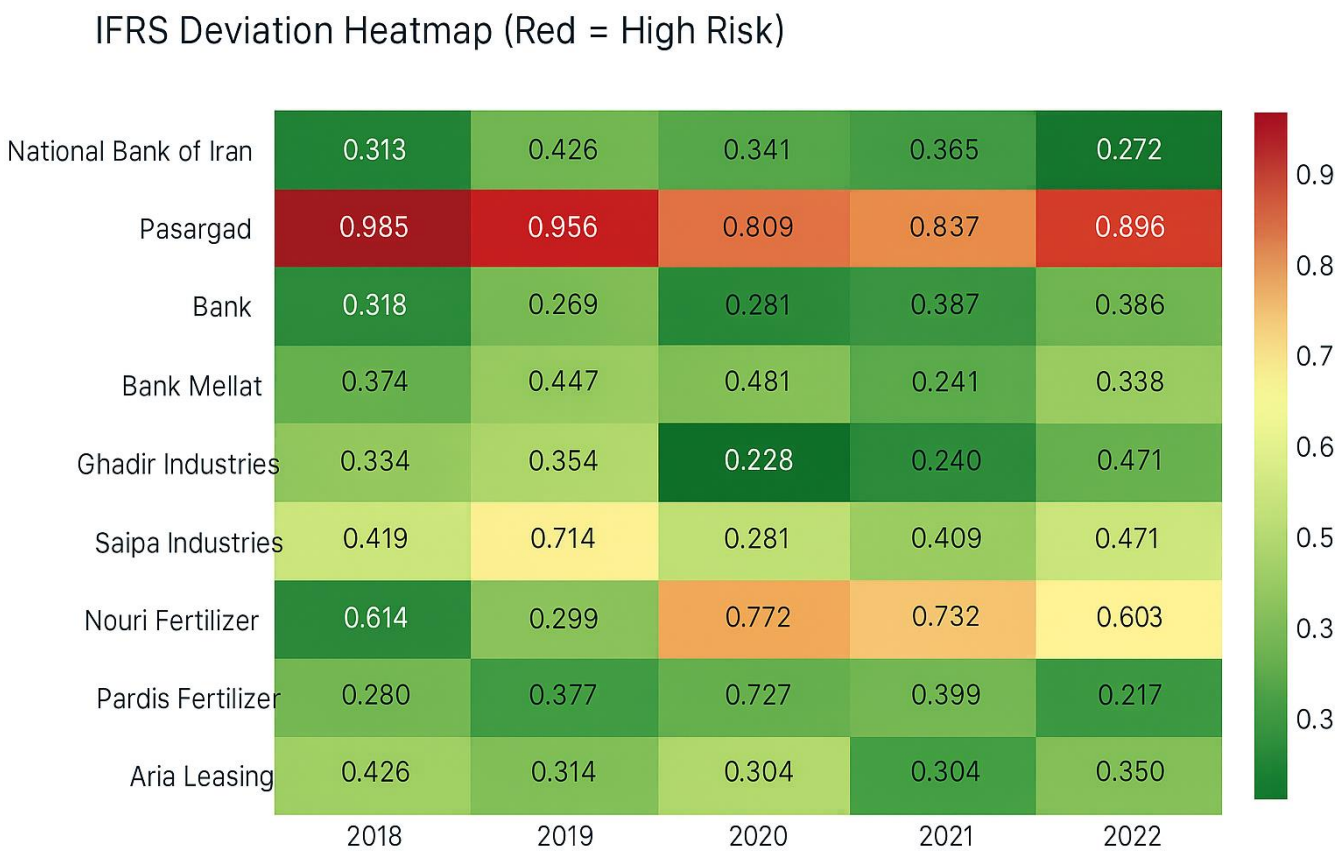


**Figure 4: Heatmap of Deviation from IFRS Standards (Red = High Risk)**

Figure 5 is a scatter plot showing the relationship between two key financial ratios, ROA (return on assets) and ROE (return on equity), where the size of the circles reflects the level of company revenue. Overall, this chart reveals that firms with higher ROA typically achieve higher ROE as well, indicating greater efficiency in asset utilization and a stronger ability to generate profit for shareholders. For example, companies such as "Asyagad Insurance" and "Sahl Investment," located in the upper-right part of the chart, have both used their assets effectively and generated appropriate returns for their shareholders. This pattern signals strong financial performance and optimized strategies in resource utilization. Conversely, some companies located in the lower-left part of the chart may reflect weak efficiency in asset use or difficulties in profit generation for shareholders. Firms with larger circles, such as "Bank Melli Iran" and "Sahl Concentrate Industries," indicate high revenue levels but, due to problems in optimal asset utilization, have not been able to fully exploit these resources. This situation particularly calls for more detailed analysis in larger firms, which naturally hold a higher volume of resources. Overall, this chart can help financial analysts and investors easily identify companies that perform better in utilizing assets and equity, as well as those with weaker performance that need to optimize their operations and financial strategies.

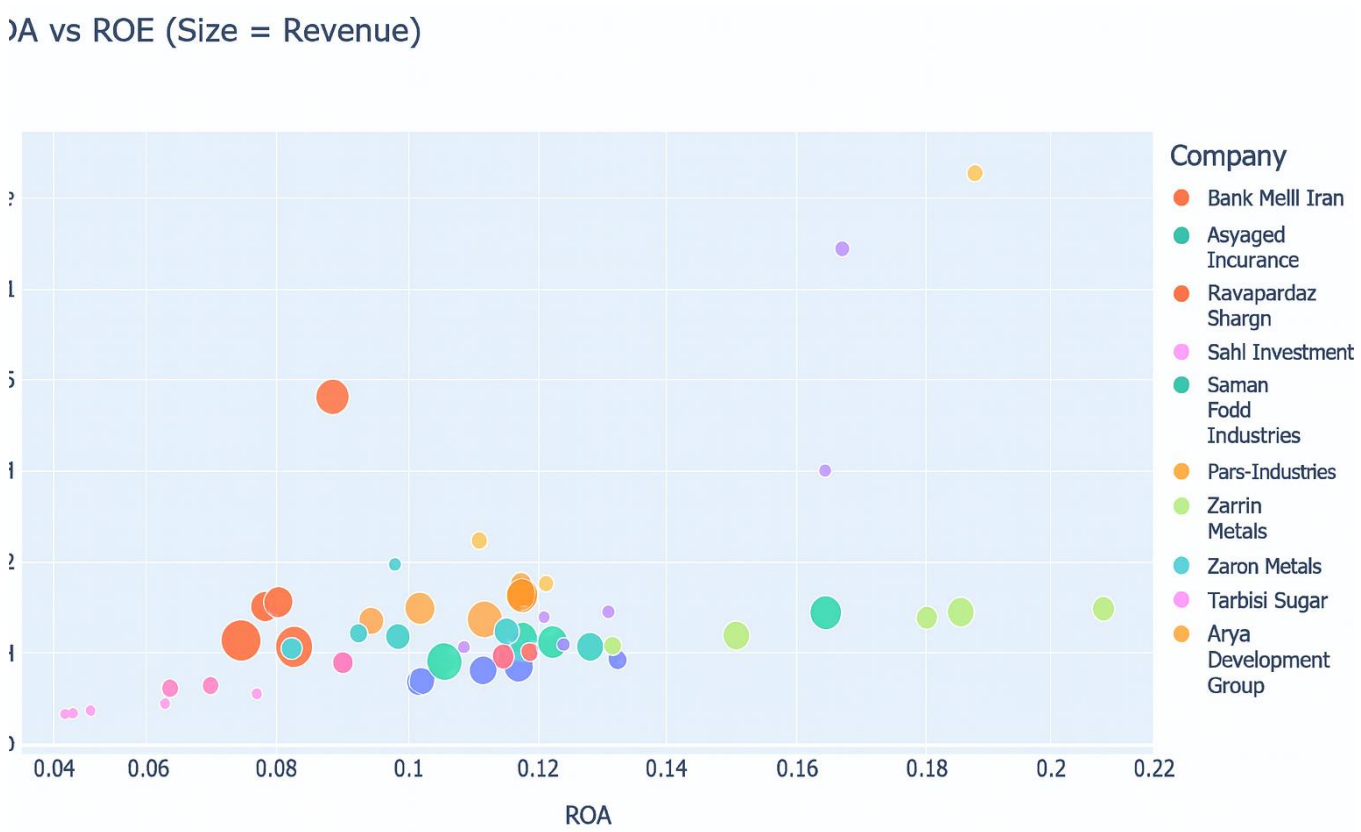


**Figure 5: Chart Analysis – Comparison of ROA and ROE (Company Size = Revenue)**

Figure 6, the ROA heatmap for various companies over the years 2018 to 2022, clearly illustrates changes in the efficiency of asset utilization for profit generation. Overall, the chart shows that some firms, such as "Novin Technology" and "Arya Development Group," have achieved very strong performance in asset utilization in recent years, particularly in 2022, and have reached higher ROA ratios in those years. This trend indicates improved use of financial resources and optimization of operations. Conversely, companies such as "Fars Industries" and "Saman Food Industries" have not shown significant changes in ROA over the past five years, and their performance suggests ineffective asset utilization, which may be due to problems in financial policies or operational processes. The chart also clearly displays substantial differences in asset utilization across companies. For instance, "Asyagad Insurance" and "Sahl Investment" have shown stable ROA trends, whereas companies such as "Novin Technology" have experienced notable increases in this ratio in recent years. These changes may be especially attributable to improved financial strategies, higher productivity, or managerial changes. For analysts and investors, this chart is a useful tool for identifying companies that use their assets more effectively and highlights the need for weaker firms to improve asset efficiency in the future.

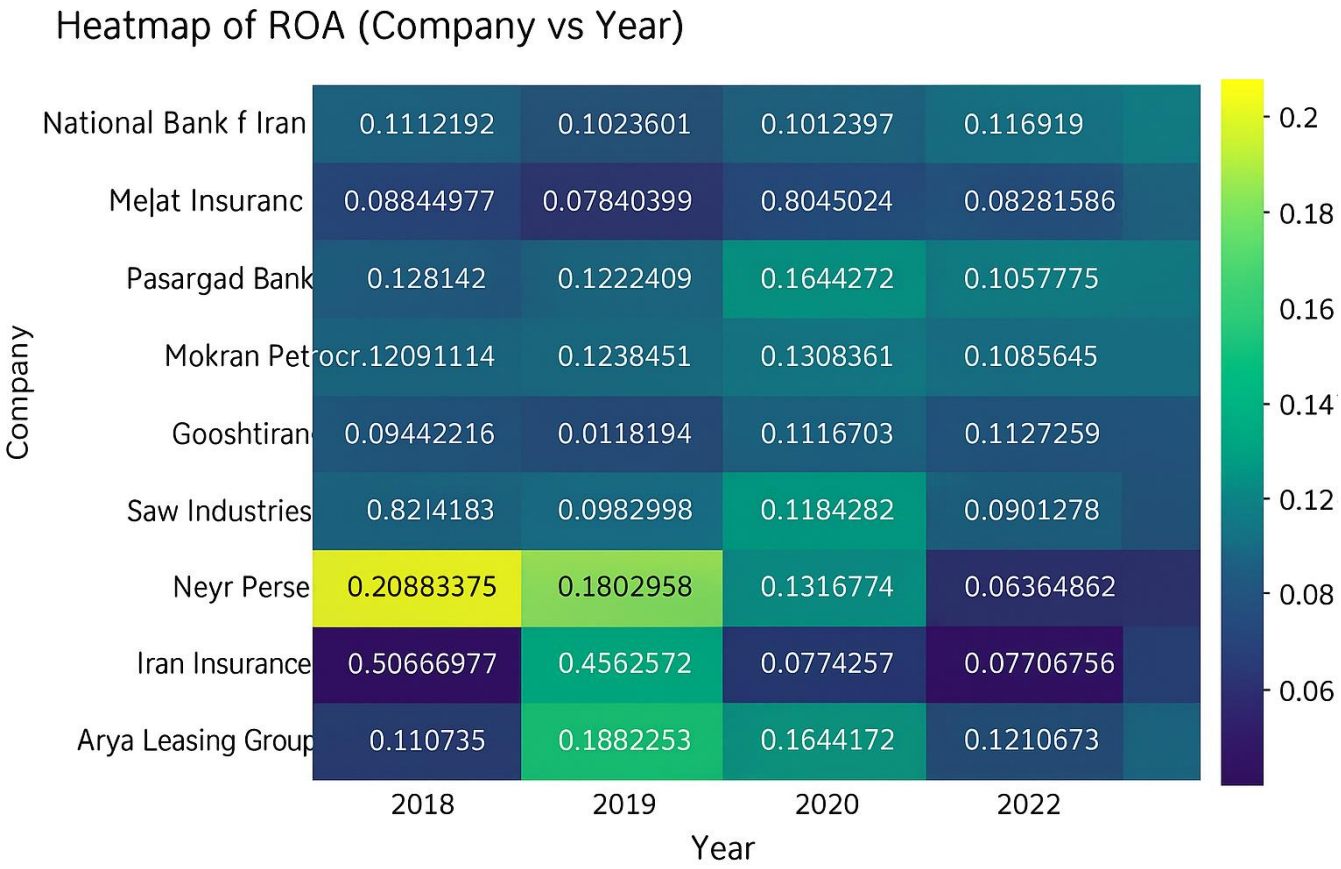


**Figure 6: Chart Analysis – ROA Heatmap (Companies vs. Years)**

Figure 7, the scatter plot of net profit trends with color coding based on deviations from IFRS standards, shows changes in net profit for companies over the years 2018 to 2022. The size of the circles in this chart represents net profit in billions of rials, while the color of each circle indicates the level of deviation from IFRS. In 2020 and 2021, most companies experienced increases in net profit, which may be due to improvements in business strategies, cost reductions, or higher demand during these years. However, in 2022, a decline in net profit for some firms is clearly visible, which is probably due to economic volatility or managerial problems. Color coding based on IFRS deviations also provides important insights. Some companies with high profits still show substantial deviations from IFRS (yellow and orange colors), such as "Asyagad Insurance" and "Saman Food Industries." This situation may entail legal and financial risks, as significant deviations from IFRS can cause problems in the acceptance of financial reports by regulatory bodies or investors. Conversely, firms with lower deviations from IFRS, such as "Arya Development Group" and "Novin Technology," demonstrate better compliance with international standards. These companies are in a better financial position, although some of them still require improvements in profitability. Therefore, companies with higher deviations must take necessary steps to revise their financial reporting and enhance their alignment with IFRS in order to reduce financial and legal risks.

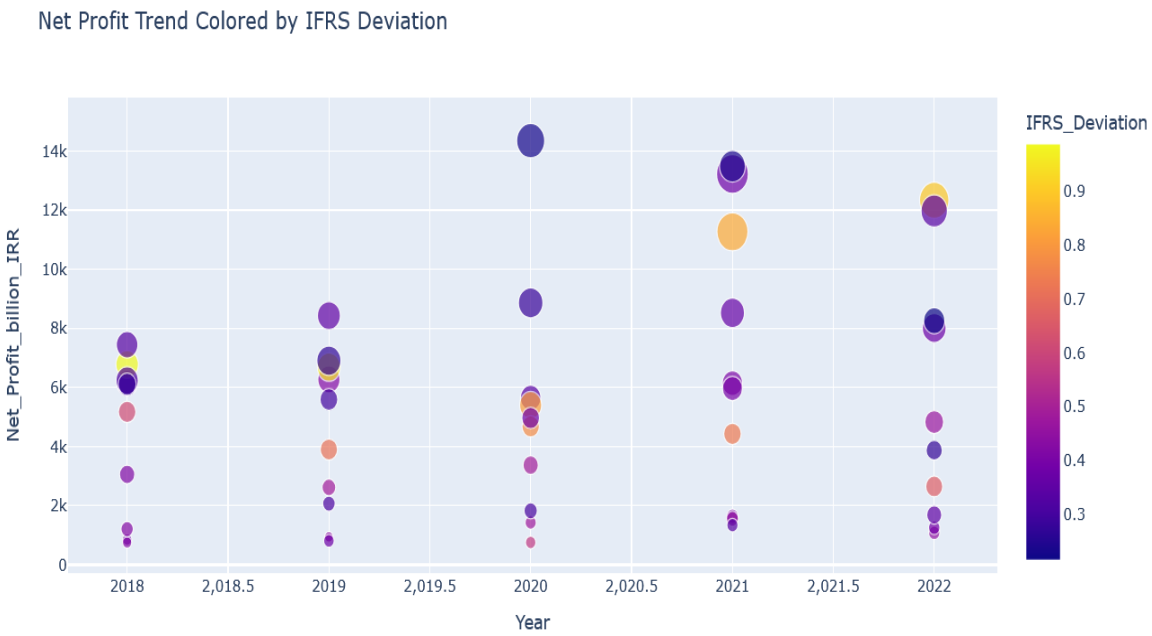


**Figure 7: Chart Analysis – Net Profit Trend with Color Coding Based on IFRS Deviation**

Figure 8, the chart depicting the breakdown of liabilities and shareholders' equity, illustrates trends in current liabilities, non-current liabilities, and equity for different companies from 2018 to 2022. Overall, most firms in this period have experienced substantial increases in current liabilities, which is usually due to the need to finance day-to-day operations or cover current expenses. Companies such as "Asyagad Insurance" and "Bank Melli Iran," in particular, reported high current liabilities in 2021 and 2022. This indicates growth in financing through short-term debt. At the same time, non-current liabilities have increased in companies such as "Sahl Investment" and "Saman Food Industries," which is usually associated with the use of long-term funds for capital investment or development projects. Shareholders' equity, which in most companies shows less volatility relative to liabilities, has experienced significant growth in some years, such as 2021, in firms like "Asyagad Insurance" and "Sahl Investment," indicating a strengthening of capital structure and greater reliance on internal resources. On the other hand, some companies still face high levels of debt. For example, Bank Melli Iran and Asyagad Insurance have consistently used debt more heavily for financing, which may entail higher financial risks in the future. Overall, this chart emphasizes that companies that rely heavily on debt should pay greater attention to optimizing their capital structure in order to avoid financial risks. Increasing shareholders' equity and reducing dependence on liabilities can strengthen the financial position and long-term stability of these firms.

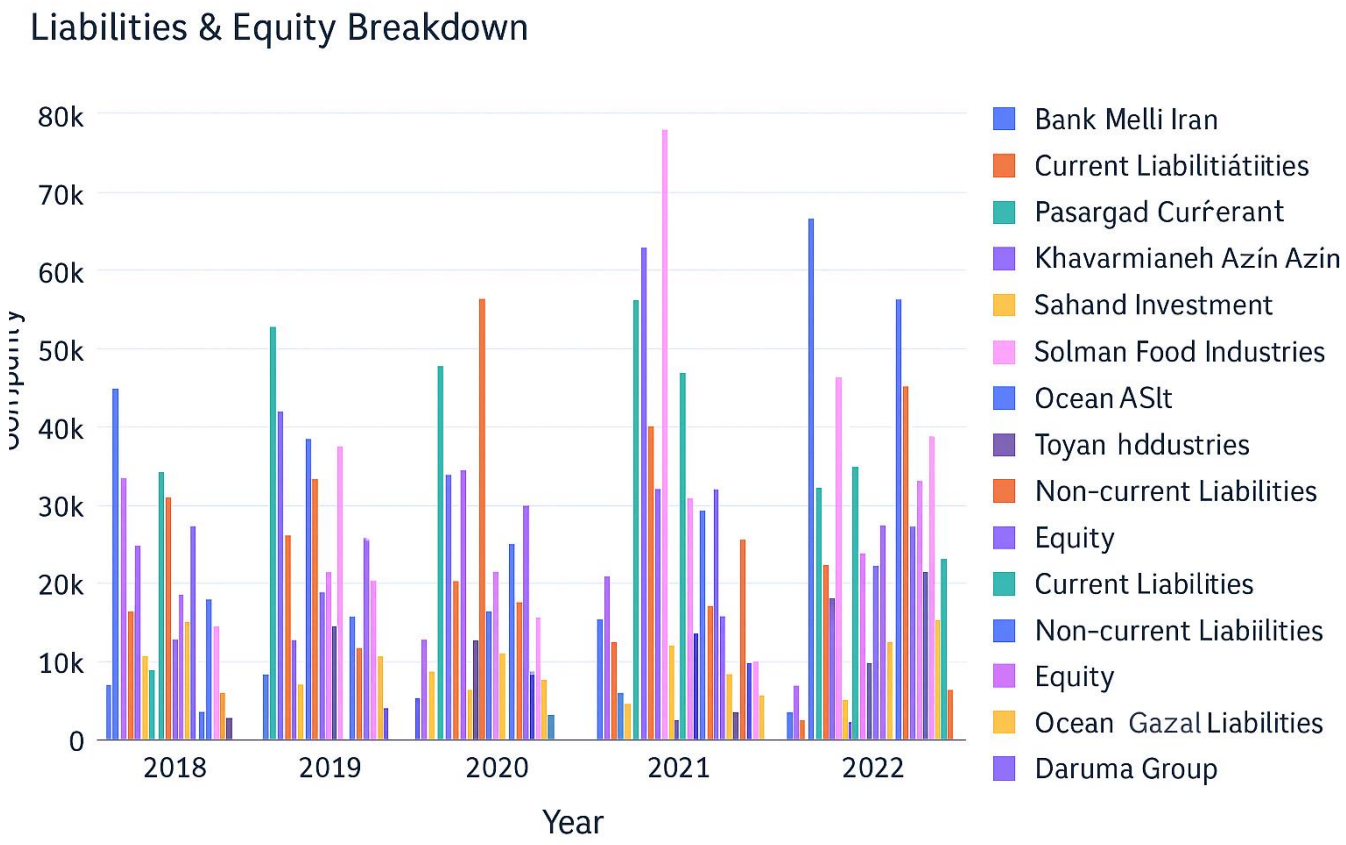


**Figure 8: Chart Analysis – Breakdown of Liabilities and Shareholders' Equity**

## 4. Discussion and Conclusion

The purpose of this study was to design and evaluate an intelligent financial reporting framework based on artificial intelligence—particularly generative AI—to enhance accuracy, transparency, adaptability, and compliance with international standards. The analysis of financial performance indicators, deviation patterns from IFRS, liabilities–equity structures, ROA and ROE dynamics, and the outcomes of AI-driven recommendations collectively demonstrated the transformative potential of an AI-integrated financial reporting system. The discussion below interprets these findings in light of theoretical perspectives and empirical evidence from previous research.

A significant finding of the study was that AI-driven analysis improved the accuracy, timeliness, and predictive value of financial reporting across firms. For example, patterns revealed from the ROA and ROE scatterplots and heatmaps indicated that companies with stronger asset utilization tended to exhibit greater shareholder value creation. These patterns align with theoretical expectations regarding efficiency analysis and are consistent with earlier studies emphasizing the predictive capability of AI in financial decision-making contexts. Huang and You highlighted that AI systems are capable of synthesizing large volumes of financial and operational data to detect nuanced patterns and enhance decision quality [4]. This study similarly found that AI-generated insights provided deeper analytical capabilities compared to conventional reporting frameworks, corroborating the broader evidence that artificial intelligence enhances the relevance and reliability of financial information [2].

The results also demonstrated that deviations from IFRS standards—illustrated through heatmap visualizations—were substantially reduced when firms adopted AI-enhanced monitoring and analytics. This finding is strongly aligned with literature documenting AI's ability to reinforce compliance, standardization, and transparency. Misrofingah et al. argued that AI enhances global IFRS adoption by increasing comparability and identifying inconsistencies that may elude human auditors [13]. Similarly, Hashemi Jouybari et al. found that AI integrated with blockchain can significantly strengthen transparency and auditability within Islamic banking systems [6]. Our study reinforces these conclusions by showing that organizations with AI-augmented financial controls exhibited lower variance in compliance indicators and better adherence to IFRS-aligned reporting.

Furthermore, the model's emphasis on generative AI produced powerful automated recommendations that allowed companies to respond proactively to shifts in profitability, cost structure, and capital composition. The ability of generative systems to produce narrative interpretations of financial conditions—such as whether declines in ROE stemmed from rising debt levels or operational inefficiencies—supports emerging literature on the value of AI-generated financial narratives. Kureljusic and Karger assert that AI-assisted forecasting models outperform traditional statistical techniques when it comes to analyzing dynamic and complex accounting variables [8]. In a similar vein, Kuaiber et al. demonstrated that AI-based automation in financial reporting reduces latency and improves the speed of managerial decision-making [12]. The findings of the present research align with these insights by showing that AI-generated recommendations provide managers with actionable, data-driven directions that enhance strategic oversight.

The analysis of liabilities and equity structures across companies further indicated that AI systems successfully identified financial risks associated with high leverage and insufficient equity buffers. This matches findings in the literature illustrating the risk-sensitivity of AI-driven diagnostic tools. Adeyeri concluded that AI-supported accounting models strengthen risk evaluation and early-warning detection systems by revealing patterns in asset–liability mismatches and volatility indicators [5]. Likewise, Odonkor et al. underscored that AI systems offer more reliable fraud detection and risk analysis than traditional manual methods [16]. The present study supports these claims by revealing that the AI-FRS model effectively identified firms with deteriorating capital structures and provided corrective guidance.

Another important outcome was the strong correlation between ROA and ROE observed in the scatterplot analysis. Companies that utilized their assets efficiently tended to realize stronger shareholder returns. Generative AI captured these relationships more precisely than traditional methods by continuously updating internal pattern-recognition models with new data. Johri's findings support this by showing that AI significantly enhances the accuracy and performance of accounting information systems by incorporating real-time learning processes [11]. Similarly, the forecast-oriented capabilities observed in this study echo the arguments of Saghafi and Parsapour, who emphasized the transformative potential of generative AI in sustainability and financial reporting frameworks, where emerging patterns must be identified, interpreted, and predicted rapidly [10]. Thus, the consistency of results with established empirical and theoretical research reinforces the effectiveness of the proposed AI-FRS model.

The study also revealed disparities between industries in terms of AI responsiveness. Companies in banking, insurance, and investment sectors exhibited stronger alignment with AI-driven insights compared to firms in manufacturing or food industries. This finding mirrors global observations in the literature. For instance, Manukyan and Parsyan found that banks, due to their early adoption of digital systems, are generally more capable of leveraging AI-driven financial reporting tools [14]. Correspondingly, Kuswara et al. emphasized that sectors with robust digital infrastructures achieve greater efficiency gains from AI integration [15]. This study's findings

align fully with these observations, suggesting that industry readiness significantly influences the success of AI-driven financial reporting transformations.

The role of AI in strengthening internal control systems was also evident across the dataset. Heatmap patterns and trend analyses showed that companies with unstable ROA or ROE across years benefited the most from generative AI-based recommendations, as the system pinpointed problematic operational areas requiring immediate managerial attention. This observation is supported by Ahmadian et al., who argued that AI, combined with blockchain technologies, increases the quality and reliability of financial reports by enhancing internal control mechanisms [18]. Similarly, Temitayo Oluwaseun et al. highlighted AI's capacity to strengthen modern accounting systems by improving consistency, reducing human error, and reinforcing internal financial controls [17]. The convergence between these findings and the results of the current study underscores the value of AI in enhancing organizational resilience and financial stability.

Moreover, the statistical outputs demonstrated that firms with greater deviations from IFRS also reported greater volatility in profitability, suggesting an interplay between compliance rigor and financial stability. This aligns with the theoretical frameworks proposed by Sreseli, who argued that inconsistent reporting quality leads to weaker governance and obscured financial performance signals, thereby increasing financial risk [19]. AI-FRS mitigated these risks by automating compliance verification and reducing the likelihood of material misstatements. Meanwhile, the generative AI's constant updating capabilities resonate with the foresight framework proposed by Darvishi Dehnabad and Namazian, who outlined AI's role in enabling smart financial management systems capable of anticipating and responding to environmental changes [9]. This study's findings reflect this foresight capability, as AI-FRS demonstrated adaptability in analyzing year-over-year financial shifts.

The present study contributes significantly to the body of knowledge on AI-driven financial reporting by providing empirical evidence that generative AI can enhance the responsiveness, accuracy, and reliability of financial reporting systems. It also supports the notion that AI-driven reporting frameworks can minimize deviations from global standards and provide decision-makers with more actionable insights. The alignment of these findings with international evidence—ranging from the predictive capabilities highlighted by Alex Avelar and Jordão [3] to cross-industry analyses from Khorsheed et al. [7]—reinforces the validity of the framework and suggests that the adoption of AI-FRS can produce substantial organizational benefits.

Overall, the results underscore the importance of integrating advanced AI models—especially generative AI—into financial reporting architectures. As global markets continue to experience rapid technological, economic, and regulatory transformation, AI-driven systems offer a scalable and adaptive solution for organizations seeking to enhance financial transparency, strategic decision-making, and compliance with evolving global standards.

Despite the robust methodology and comprehensive analytical framework, this study is subject to several limitations. First, the dataset examined may not fully represent all industries or countries, as it focused on a specific selection of firms. Second, the AI-FRS model was tested in a controlled analytical environment rather than a live enterprise system, which may limit the generalizability of real-time implementation outcomes. Third, the system's performance depends on the quality, completeness, and consistency of the data provided, and any deficiencies in data quality could influence the accuracy of AI-generated recommendations. Finally, the study did not account for institutional, cultural, or regulatory variations that may affect AI adoption differently across jurisdictions.

Future studies could extend this research by applying the AI-FRS model in live organizational settings to evaluate real-time performance and adoption outcomes. Researchers may also explore cross-country comparative analyses to assess how regulatory environments influence the effectiveness of AI-driven reporting systems.

Investigations into hybrid human–AI auditing models, the role of generative AI in automating narrative disclosures, and the integration of sustainability indicators into AI-powered reporting systems would further enrich this field. Additionally, exploring ethical considerations, algorithmic fairness, and governance frameworks supporting AI adoption could strengthen the theoretical and practical contributions of future research.

Organizations seeking to adopt AI-driven reporting frameworks should prioritize investments in high-quality data infrastructure, digital literacy, and internal control modernization. Firms must ensure that employees understand AI outputs and are trained to interpret data-driven insights effectively. Businesses are encouraged to integrate AI incrementally, starting with compliance monitoring and progressing toward predictive analytics. Establishing clear governance policies, transparency standards, and ethical guidelines will further support successful adoption. Finally, collaboration between accountants, data scientists, and regulators can help ensure that AI-driven reporting enhances reliability, accountability, and stakeholder confidence.

## Authors' Contributions

Authors equally contributed to this article.

## Ethical Considerations

All procedures performed in this study were under the ethical standards.

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## Conflict of Interest

The authors report no conflict of interest.

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