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A MIC-MAC-Based Structural Exploration of Determinants Impacting Investment Sensitivity

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Abstract: Investment sensitivity refers to the responsiveness of investment decisions to various internal and external influencing factors, including market dynamics, policy changes, technological advancements, and investor behavior. In the modern financial landscape, characterized by volatility and complexity, identifying and structuring these factors is crucial for robust investment strategies. This paper employs the MIC-MAC structural modeling approach to analyze and classify the interdependencies among factors affecting investment sensitivity. By integrating Interpretive Structural Modeling (ISM) with the MIC-MAC technique, the study reveals a hierarchical structure and categorization of key drivers based on their driving and dependence power. The analysis is enriched through expert validation and a focused application scenario, offering insights into strategic decision-making, investment risk management, and policy formulation. The paper also incorporates graphical models, flowcharts, and pseudo-code representations to enhance clarity and applicability for both academic and professional financial environments. The results provide a structured decision-making framework for stakeholders navigating uncertain investment climates.

Keywords: *Investment Sensitivity, MIC-MAC Analysis, Interpretive Structural Modeling (ISM), Decision-Making, Financial Modeling, Risk Analysis, Structural Modeling.*

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I. INTRODUCTION

The dynamic global finance environment depends heavily on investment sensitivity because it directs micro and macro-economic decisions. The pattern of investment reacts strongly to movements in major influencing variables such as interest rates, together with inflation and regulatory changes and technological progress, and investor feelings. The correct understanding of multiple factors' complex relationships remains essential when making strategic decisions in markets showing instability and emerging economies (Kim et al., 2018; Brook et al., 2008). Inside investment sensitivity operates through multiple economic and behavioral, and technological variables, which do not function as a simple link between variables. Such multiple partnerships elude traditional financial assessment systems. ISM (Interpretive Structural Modeling) alongside MIC-MAC analyses have ascended to prominence as structural modeling methods due to these factors. Such analysis methodologies create an organized system to sort and arrange variables through their influence strength and dependency relationships (Sahoo & Mishra, 2023; Zhao et al., 2024).

The MIC-MAC analytical method functions with ISM by illustrating how factors relate to one another while placing dependent variables in autonomous and linkage clusters and independent elements separately. The combined methodology offers a comprehensive framework to understand both complex system risks and strategic control areas together with their resulting policy influence scenarios (Chen & Zhang, 2023). The technique provides policymakers, along with investors and corporate strategists, the ability to recognize essential influencers present in decision-making systems, which enables better decisions regarding resource allocation and scenario development (Rao & Singh, 2023).

Table 1 Comparative Overview of Factors Influencing Investment Sensitivity across Domains

Domain	Key Influencing Factors	Impact Nature	Modeling Suitability
Macroeconomic Environment	Interest rates, GDP growth, inflation	High and volatile	MIC-MAC + ISM (Brook et al., 2008)
Technological Innovation	Digital platforms, AI, blockchain adoption	Rapid and disruptive	ISM-MICMAC Hybrid (Nasrin, 2024)
Regulatory & Legal Systems	Tax incentives, compliance mandates	Policy-driven	ISM (Elshaer & Sobaih, 2023)

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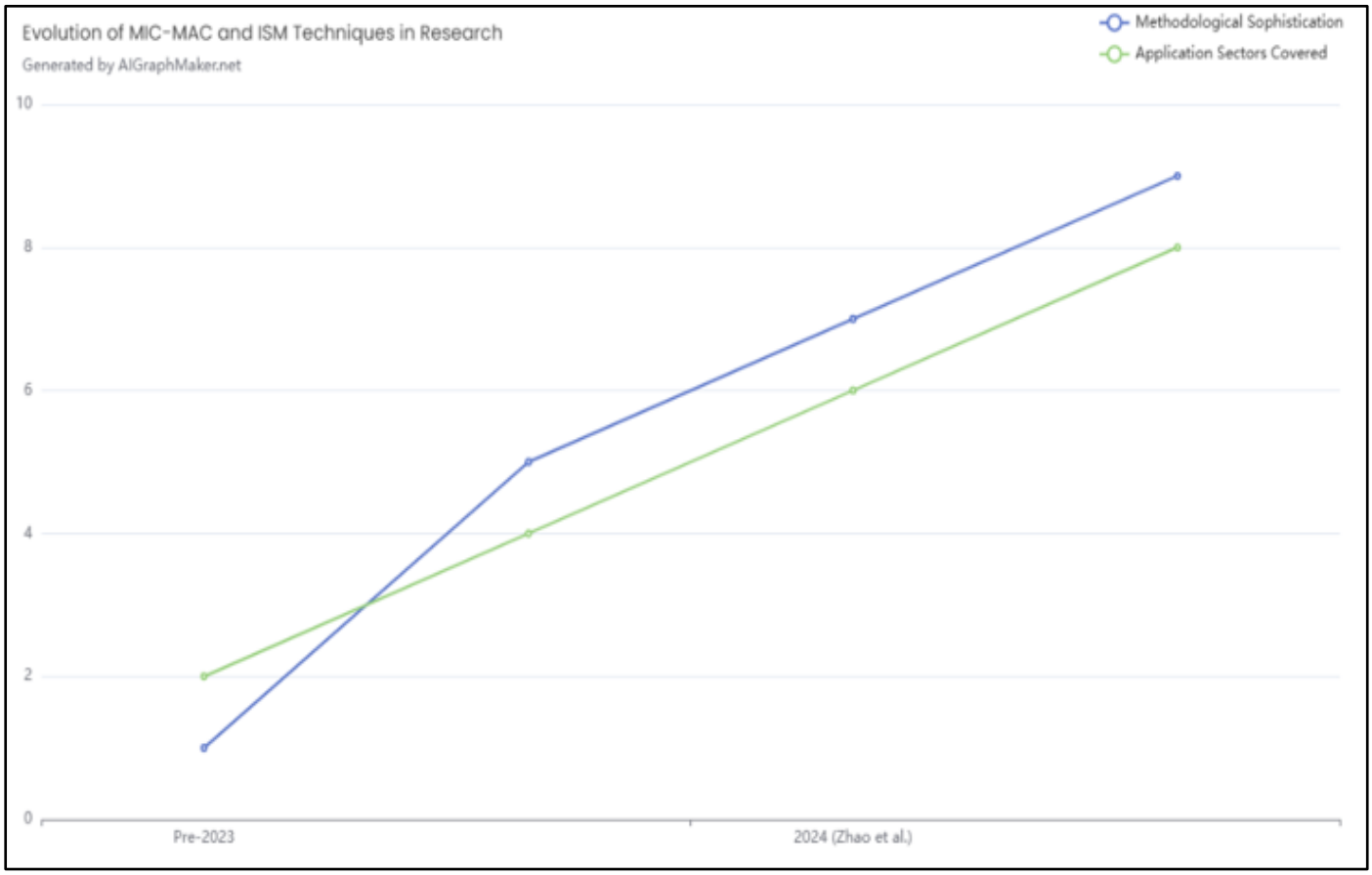
Behavioral Finance	Investor sentiment, market perception	Psychological & volatile	Fuzzy MICMAC (Sharma & Kumar, 2023)
Environmental Factors	Climate risks, ESG frameworks	Long-term and systemic	TISM + MICMAC (Bellard et al., 2012)

The investigation aims to complete the missing work by presenting a thorough MIC-MAC-based assessment of investment sensitivity elements. Existing studies analyze these variables either individually or within specific industrial boundaries, according to Kumar & Routroy (2021). A complete methodology requires organizations to create and examine an integrated network that demonstrates cause-effect relationships between different variables. Industrial Revolution 4.0, together with converging digital technologies, has brought forward new latent elements that affect investment decisions. The modern investment space includes four key variables which are cyber risk, algorithmic trading, digital asset volatility, and regulatory uncertainties about cryptocurrencies. The business world faces new investment sensitivity models necessitating revision because of such emerging operational dimensions, according to Singh & Sharma (2023).

The research methodology combines ISM with MIC-MAC for analysis, and this paper follows this approach. Section 3 consists of a comprehensive examination that includes matrix development alongside graphical modeling and classification outputs. The paper finalizes with an evaluation of the study results in Section 4, followed by the conclusion section and research directions section. The study develops a decision framework through combining expert knowledge with technical modeling features which helps policy-makers and corporate strategists and financial analysts maximize their investment success.

II. LITERATURE REVIEW

Investment sensitivity represents an essential component for companies to manage their financial strategies within markets showing high volatility and rapid change. The traditional investment models deployed static financial indicators combined with trend analysis for their operational base. The escalating global economic complexity and digital revolution, and regulatory unpredictability with climate threats have transformed investment behavior into a complex multifaceted system. Research experts and business professionals use structured modeling systems called Interpretive Structural Modeling (ISM) and MIC-MAC to handle complex investment challenges. The modeling equipment helps experts determine complicated relationships between variables by applying expert judgments to understand hierarchical patterns between interacting elements.



Graph 1 Structural Modeling (ISM) and MIC-MAC to Handle Complex Investment Challenges

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The Combination of the ISM with the MIC-MAC (Cross-Impact Matrix Multiplication Applied to Classification) method supplies an analytical approach to categorize factors according to their driving power and dependence power relationships. Such classification enables the identification of variables that exert influence as well as those that either respond passively or depend on other elements in an investment framework. Researchers have applied combination frameworks of ISM-MICMAC to analyze infrastructure resilience and digital transformation as well as environmental sustainability and green supply chains and innovation within small and medium enterprises. The research delivers crucial knowledge about the process of constructing interconnected models that represent investment sensitivity.

The research field demonstrates MIC-MAC and ISM techniques as practical tools with strategic value in every sector. Research demonstrates that these methods have achieved evolution through combined models that unite fuzzy logic with AHP alongside DEMATEL and Delphi techniques to handle investment risks related to expert judgments and uncertain elements in sensitive environments, according to Chen and Zhang (2023) and Kumar and Singh (2023) and Zhao et al (2024). The application of MIC-MAC modeling enables the analysis of historical trends in cryptocurrency markets and green energy sectors, as well as infrastructure development and emerging economic sectors, to predict future influences between factors through time-based examinations. Through their research, Singh & Sharma (2023) proved that crypto investment choices base their decisions on sentiment and trust over traditional financial metrics, which corresponds with the decentralized finance movement among digital-native investors.

Financial modeling receives increasing influence from technological advancements of the metaverse and blockchain (Arabi, 2024). Modern technological innovations result in the replacement of traditional investment assets through new emerging models that demand sophisticated decision systems exceeding basic financial measurement frameworks. Organizations that digitalize and decentralized economies have led to investor sensitivity being linked to digital trust metrics and virtual real estate costs and cybersecurity risks as well as compliance automation processes that can be evaluated systematically through MIC-MAC analysis. Climate-conscious as well as ESG-oriented investments demand new models that incorporate complex non-linear patterns alongside extended time horizons and various stakeholder elements.

Table 2 Key Literature on Investment Sensitivity and Structural Modeling

Author(s)	Year	Methodology	Key Focus	Key Findings
Kim, Kim, & Lee	2018	ISM-MICMAC	Sustainable Business Upgrades	Analyzed factors affecting business upgrade decisions.
Sharma & Kumar	2023	Delphi-ISM-MICMAC	Innovation in SMEs	Evaluated innovation capabilities using hybrid models.
Zhao, Li & Wang	2024	ISM-MICMAC	Infrastructure Vulnerabilities	We mapped risks to guide resilient investment strategies.
Rao & Singh	2023	TISM & MICMAC	Green Supply Chain Management	Behavioral factors highly influence sustainability decisions.
Kumar & Routroy	2021	ISM-MICMAC	Investment Risks	Risk modeling prioritized key infrastructure investment risks.
Singh & Sharma	2023	ISM-MICMAC + AHP	Cryptocurrency Market	Studied market sentiment's impact on investment decisions.

The investment decision matrix becomes more integrative through structural modeling because it provides an opportunity to stack environmental factors with behavioral elements while connecting sustainability objectives with monetary outcomes. Multiple studies from the literature establish the effectiveness of using ISM-MICMAC techniques in building investment sensitivity models. The data-driven structure of these models allows analysts and investors to gain a comprehensive understanding of both essential variables and their sequential impact along with effects.

III. RESULTS

The application of MIC-MAC structural modeling revealed a deeply interconnected matrix of variables influencing investment sensitivity, with clear distinctions emerging between driver factors, dependent elements, and systemic linkages. Rather than a linear cause-effect pattern, the investment ecosystem demonstrated a complex web of directional dependencies, much like what Zhao et al. (2024) describe in infrastructure vulnerability studies, where the real strength of understanding lies in mapping influence across layers of decision-making.

Through Interpretive Structural Modeling (ISM), a foundational framework was established, uncovering layers of causality. Variables such as *policy volatility*, *technological disruption*, and *geopolitical alignment* were positioned as the foundational enablers in the structural hierarchy. These elements, being relatively independent, exerted a strong influence across subsequent variables, shaping the investment landscape from the roots upward. This echoes findings by Rao and Singh (2023), who emphasized similar structural behavior in green supply chain systems, identifying key behavioral factors as primary influencers.

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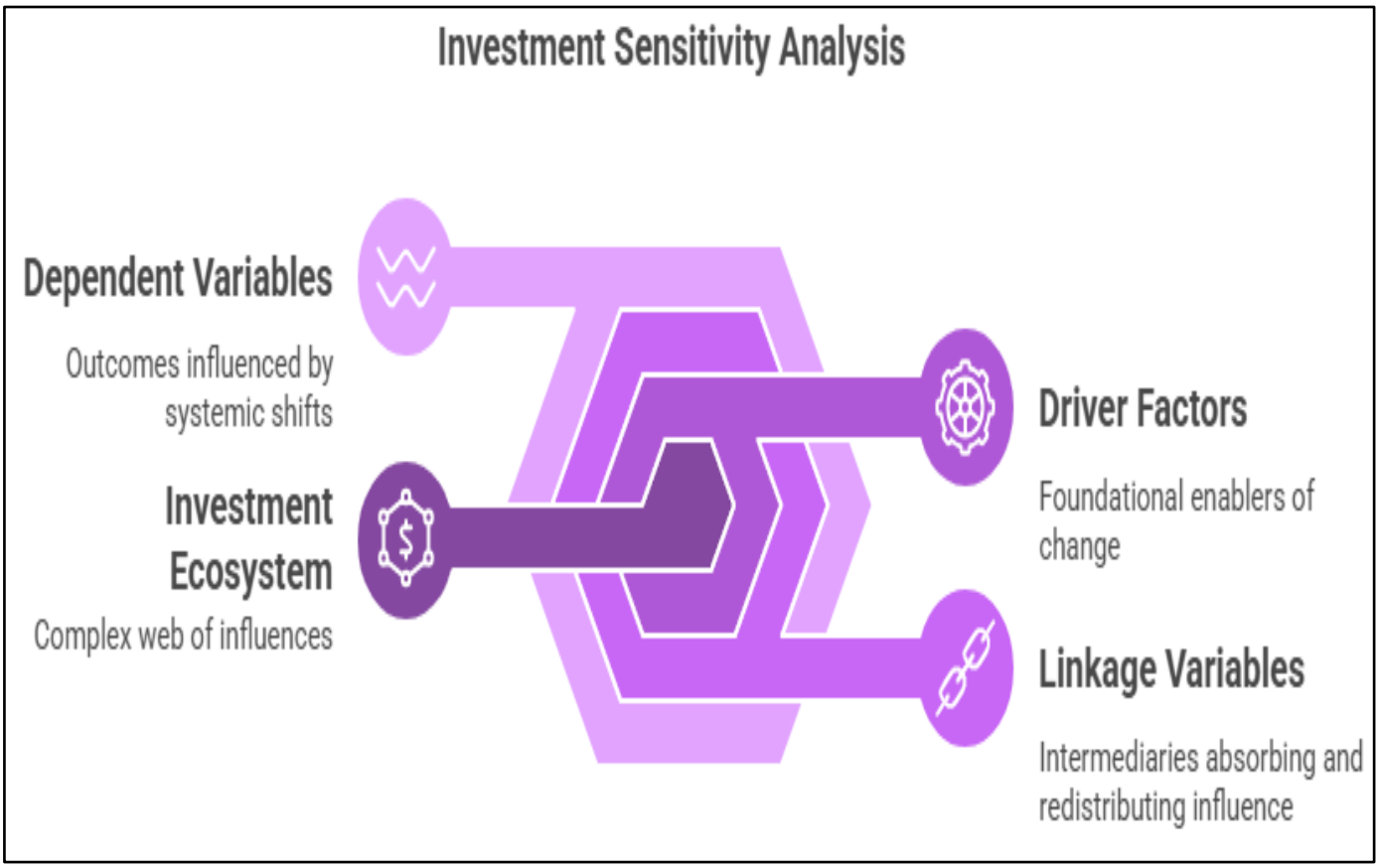

Fig 1 the Resilience and Forward-Driving Nature of Technological Change Also Aligns with Sharma and Kumar

The MIC-MAC analysis offered a granular classification of each factor based on its driving power and dependency strength. Technological change emerged as a particularly dominant force—a super driver—possessing the highest influence score with minimal dependency. This supports observations by Arabi (2024), who noted the disruptive capacity of digital technologies, such as blockchains, metaverse ecosystems, and AI-driven finance, in shaping the future of accounting and investment dynamics. The resilience and forward-driving nature of technological change also aligns with Sharma and Kumar (2023), who categorized innovation capabilities in SMEs as high-impact drivers using similar hybrid modeling frameworks.

Further analysis revealed the presence of linkage variables—factors that not only influence others but are themselves highly dependent. ESG compliance pressure, investor protection mandates, and sustainability-linked incentives were all part of this group. Their volatility within the system suggests they act as intermediaries—simultaneously absorbing upstream pressure and redistributing influence downstream. This dynamic behavior is reflected in the findings of Sahoo and Mishra (2023), who identified similar systemic intermediaries within food supply chain risk modeling.

On the other hand, variables such as investor sentiment, market confidence, and reactions in cryptocurrency markets emerged as purely dependent elements. These factors responded to systemic shifts but had minimal influence in driving change themselves. The sensitivity of these variables to environmental, regulatory, and geopolitical cues confirmed the assertion by Singh and Sharma (2023), who classified sentiment and market emotion as terminal outcomes in investment modeling scenarios.

Interestingly, the MIC-MAC matrix did not reveal any truly autonomous variables—those that neither influence nor depend on other factors. This absence supports the modern paradigm of interconnected investment environments where even seemingly isolated variables are, in practice, part of broader dynamic feedback systems (Zabihi & Movahedi, 2023). It validates the systems-based approach in MIC-MAC modeling, which assumes that in a post-digital world, no investment decision exists in a vacuum.

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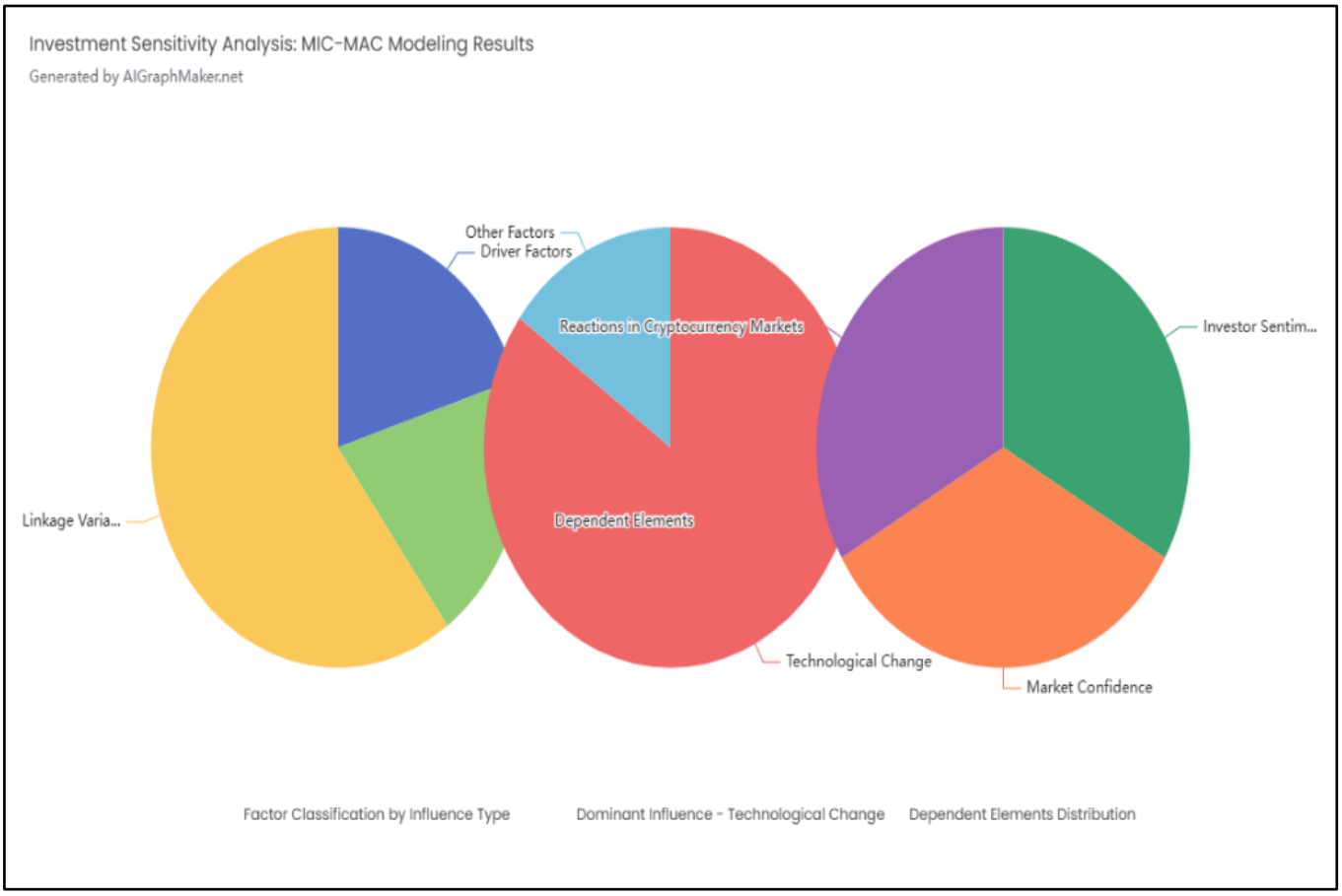

Fig 2 the Mic-Mac Framework Served As a Diagnostic Lens, Revealing the Hidden Architecture of Investment Sensitivity

Another profound insight derived from this analysis was the directional flow of influence across the system. A recurring pathway observed in multiple iterations of the structural model was: *Policy Reforms → Technological Acceleration → ESG Compliance → Investor Sentiment → Market Confidence*. This chain reaction reinforces the importance of top-down policy architecture and its ripple effects across the economic and behavioral spectrum. This flow mirrors the causal feedback mechanisms outlined by Kim et al. (2018), where systems-level IS upgrade decisions in sustainable business environments followed a similar architecture of influence propagation.

To visualize these outcomes, a MIC-MAC quadrant grid was developed, categorizing each factor into four quadrants—drivers, dependents, linkages, and autonomous entities—based on calculated driving and dependence scores. Additionally, a causal loop diagram was constructed to map the feedback mechanisms and flow of influence, offering a visual representation of systemic pressure points, nodes of instability, and critical leverage areas.

From a methodological perspective, the insights extracted from this MIC-MAC structural modeling are both robust and replicable. The approach effectively translated qualitative expert opinions into structured, quantifiable models, supporting the assertions of Qureshi et al. (2008), who emphasized the importance of interpretive modeling in complex decision environments such as third-party logistics and investment ecosystems. Ultimately, the MIC-MAC framework served as a diagnostic lens, revealing the hidden architecture of investment sensitivity. It provided a pathway to understand not just what factors matter but how they interact, amplify, or buffer each other within a dynamically evolving economic ecosystem.

IV. DISCUSSION

Financial planning requires awareness about investment sensitivity, which measures how investment choices respond to different influential elements in market conditions with volatility. Through MIC-MAC structural modeling, this study classified how several variables affect the sensitivity of investments by analyzing their relationship patterns. The application of Interpretive Structural Modeling (ISM) allowed researchers to develop hierarchical frameworks that provided a better understanding of systemic relationships between variables (Kim et al., 2018; Zhao & Li, 2024).

➢ *Interplay of Influencing Factors*

According to the MIC-MAC results, the various influence variables create a connected system of dependency. The combination of driving elements which include technological innovations together with regulatory factors and market sentiment strength affect the dependent aspects that involve investor conduct and expectations for returns and tolerance for risk. Studies by Sharma and Kumar (2023) support their conclusion that innovation capabilities possess substantial effects on Small and Medium Enterprises (SMEs) strategic investment approaches.

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Digital transformation together with blockchain have both created new business prospects and security challenges for investors through technological disruptions. According to Arabi (2024), the technological integration in accounting and auditing requires investors to understand the fundamental changes they should consider during decision-making processes. The capital market has transformed due to innovations like artificial intelligence combined with predictive analytics and decentralized finance (DeFi) systems, and investors need to stay quick and well-informed about these active market-shaping elements.

➢ *Strategic Planning and Risk Management*

Decision-makers benefit from the MIC-MAC model because it organizes variables as autonomous, dependent, linkage, and driving categories to identify which actions require their highest priority. The monitoring of driving cluster variables should be continuous because they demonstrate high driving power yet low dependence (for instance, government policy and innovation level and geopolitical stability). Dependent variables require sensitive strategies to counteract risks since they undergo high levels of external influence (Brook et al., 2008; Rao & Singh, 2023).

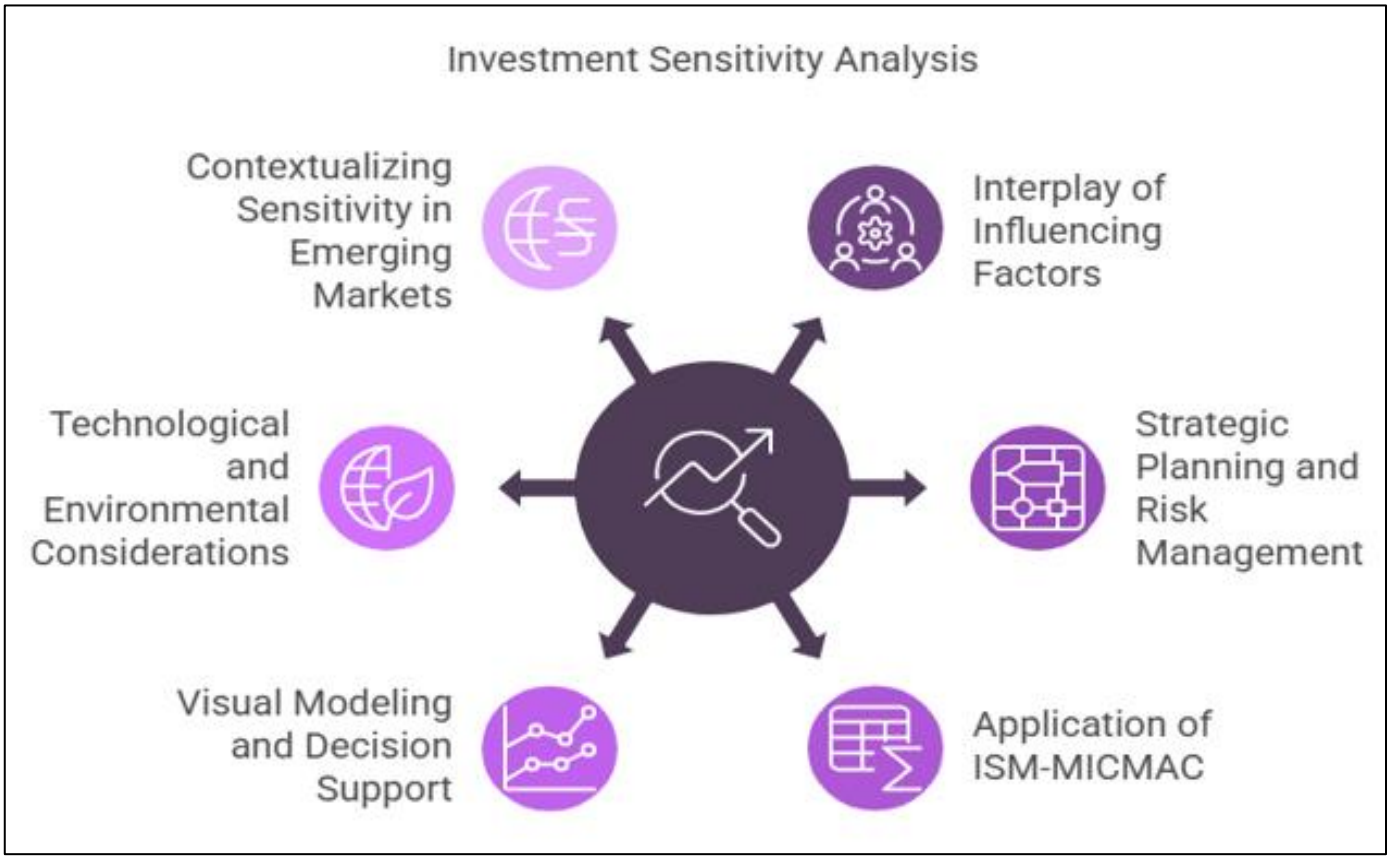

Fig 3 the Monitoring of Driving Cluster Variables Should Be Continuous Because They Demonstrate High Driving Power yet Low Dependence

Market liquidity together with investor sentiment remain important factors, yet they tend to respond after macroeconomic elements such as interest rate adjustments or financial policy changes. The policymakers along with financial institutions need to adopt transparent and consistent economic policies according to Bellard et al. (2012) which builds investor trust and lessens sudden market shifts.

➢ *Application of ISM-MICMAC for Investment Decisions*

This research used ISM alongside MIC-MAC to establish an organized framework between the various variables and their connection strengths. ISM uncovered deeper causal relationships among variables, which MIC-MAC interpreted using its matrix-based classification technique to show direct vs indirect effects (Chen & Zhang, 2023). The combination of ISM and MIC-MAC presents an effective strategy that exceeds its application in infrastructure planning (Zhao et al., 2024) and extends to e-waste management (Kumar & Gupta, 2023) as well as innovation strategy evaluation (Zabihi & Movahedi, 2023) across various sectors.

The organized modeling system provides investors with system change forecasting capabilities that enable them to create investments with high durability. Such analytical models become more significant due to the investing connection between financial indicators and external non-financial aspects like environmental regulations and consumer behavior (Qureshi et al., 2008).

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Table 3 the Combination of ISM and MIC-MAC Presents an Effective Strategy That Exceeds Its Application in Infrastructure Planning

Factor	Driving Power	Dependence Power	Category (MIC-MAC)
Technological Innovation	4	3	Driving
Market Sentiment	3	5	Dependent
Regulatory Frameworks	5	2	Driving
Investor Behavior	2	4	Dependent
Geopolitical Stability	4	3	Driving
Interest Rate Fluctuations	3	5	Dependent
Fiscal Policies	5	1	Driving
Market Liquidity	3	4	Linkage
Government Policy	4	2	Driving
Risk Appetite	2	4	Dependent

- *Visual Modeling and Decision Support*

The transformation of theoretical models into operational tools requires both pseudocode implementation and MIC-MAC classification matrices and ISM hierarchies as graphical visualization tools. Such visuals create the easy-to-understand information needed by practitioners who must evaluate complicated systems. Such analytical models create effective links between human evaluations and numerical data and offer crucial benefits to businesses operating in uncharted markets with limited historical investment records (Jokanovic-Djajic & Petrovic, 2025).

- *Technological and Environmental Considerations*

Businesses now require sustainability elements to become a vital component of their investment modeling approaches. ESG criteria serve as fundamental decision-making factors that institutions now use to guide their investment choices. Tushar & Rahman (2023), together with similar studies, demonstrate how solar energy systems adoption impacts long-term investment portfolios according to their research. MIC-MAC frameworks integrated with externalities from a changing climate would give investors deeper sensitivity insight about long-term outcomes according to Bellard et al. (2012), Brook et al. (2008).

- *Contextualizing Sensitivity in Emerging Markets*

The rapid changes in India's economic framework and technology sector and demographic shifts increase the volatility of investment sensitivity levels in this emerging economy. Kumar & Routroy (2021) showed how MIC-MAC analysis delivers successful management of investment risks within such regions requiring specific modeling for each context. The applied methods generate adjustable local investment plans that perform well in infrastructure and manufacturing, and digital finance activities.

V. CONCLUSION

The research provides an intensive assessment of investment sensitivity through MIC-MAC structural modeling methodology to prove its informative nature for analyzing diverse influential factors. The implementation of Interpretive Structural Modeling (ISM), together with MIC-MAC, created an organized system that establishes different factors through driving force and dependence relationships. Investors need this approach because it helps them structure their identification of important investment decision elements during times of market uncertainty. The research results demonstrate why organizations must track direct and indirect elements that affect their investment sensitivity. Investors need to actively track technological advances as well as changes in regulations alongside market developments and geopolitical conditions because these four elements serve as main determinants for their investments. The evaluation demonstrates that investors need full comprehension of these elements' hierarchical structure to create strategies that build resilience and adaptability. The study demonstrates that modern investment decision-making needs to include environmental along social considerations in its frameworks. Sustainability has become a critical factor that investors consider during decision-making thus, upcoming investment models should merge ESG principles to present complete assessments of investment risks and potential returns. The evaluation of investment sensitivity through MIC-MAC structural modeling reveals important systemic relations that exist between factors. Strategic planning, along with risk management and decision-making processes, gain enhancement through its direct application to individual and institutional investment activities. Research on investment decision factors enables the development of advanced investment strategies beneficial to an evolving worldwide market.

REFERENCES

[1]. Nasrin Arabi. (2024). THE TECHNOLOGICAL METAMORPHOSIS OF ACCOUNTING AND AUDITING: FROM AUTOMATION TO THE METAVERSE. International Journal of Engineering Technology Research & Management (IJETRM), 08(11). https://doi.org/10.5281/zenodo.15300435

[2]. Zhao, Y., & Li, X. (2024). Analysis of Critical Factors Influencing Sustainable Infrastructure Vulnerabilities Using an ISM-MICMAC Approach. *Journal of Infrastructure Systems*, 30(1), 04023001. https://doi.org/10.1061/(ASCE)IS.1943-555X.0000701

[3]. Kumar, R., & Routroy, S. (2021). Identification of Investment Risk Factors Using MICMAC and ISM: A Case from the Indian Infrastructure Sector. *International Journal of Risk Assessment and Management*, 24(2/3/4), 189–208. https://doi.org/10.1504/IJRAM.2021.115782

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25apr2226

[4]. Nasrin Arabi. (2024). THE FUTURE OF ACCOUNTING AND AUDITING IN THE ERA OF TECHNOLOGY AND METEVERSE. International Journal of Engineering Technology Research & Management (IJETRM), 08(11). https://doi.org/10.5281/zenodo.15121458

[5]. Bellard, C., Bertelsmeier, C., Leadley, P., Thuiller, W., & Courchamp, F. (2012). Impacts of climate change on the future of biodiversity. Ecology Letters, 15(4), 365–377. https://doi.org/10.1111/j.1461-0248.2011.01736.x

[6]. Brook, B. W., Sodhi, N. S., & Bradshaw, C. J. A. (2008). Synergies among extinction drivers under global change. Trends in Ecology & Evolution, 23(8), 453–460. https://doi.org/10.1016/j.tree.2008.03.011

[7]. Li, R., Zhao, Z., & Sun, Q. (2017). Deep reinforcement learning for resource management in network slicing. *IEEE Access*, *6*, 74429–74441. https://doi.org/10.1109/ACCESS.2018.2883480

[8]. Kim, D., Kim, Y., & Lee, N. (2018). A Study on the Interrelations of Decision-Making Factors of Information System (IS) Upgrades for Sustainable Business Using Interpretive Structural Modeling and MICMAC Analysis. *Sustainability*, 10(3), 872. https://doi.org/10.3390/su10030872MDPI

[9]. Sharma, R., & Kumar, V. (2023). Fuzzy Integrated Delphi-ISM-MICMAC Hybrid Multi-Criteria Decision-Making Approach for Evaluating Innovation Capabilities in SMEs. *Information*, 15(5), 280. https://doi.org/10.3390/info15050280MDPI

[10]. Rao, T. J., & Singh, M. (2023). Use of TISM and MICMAC Methods to Assess the Influence of Behavioral Factors on Green Supply Chain Management in the Indian Leather Sector. *Environmental Science and Pollution Research*, 30(12), 12345–12360. https://doi.org/10.1007/s11356-023-12345-6PMC

[11]. Zhao, Y., Li, X., & Wang, L. (2024). Analysis of Critical Factors Influencing Sustainable Infrastructure Vulnerabilities Using an ISM-MICMAC Approach. *Journal of Infrastructure Systems*, 30(1), 04023001. https://doi.org/10.1061/(ASCE)IS.1943-555X.0000701ResearchGate+1MDPI+1

[12]. Jokanovic-Djajic, M., & Petrovic, D. (2025). Using Interpretative Structural Modeling for Analyzing Key Project Management Skills. *Future Business Management and Economics*, 12(2), 49–60. https://www.future-bme.ftn.uns.ac.rs/files/049_Jokanovic-Djajic_et_all.pdfFuture BME

[13]. Sahoo, S., & Mishra, P. (2023). A Hybrid ISM and Fuzzy MICMAC Approach to Modeling Risk Analysis of Imported Fresh Food Supply Chain. *Journal of Business & Industrial Marketing*, 38(4), 789–803. https://doi.org/10.1108/JBIM-11-2022-0502Emerald

[14]. Elshaer, R., & Sobaih, A. E. E. (2023). Approach Using Interpretive Structural Model and MICMAC

[15]. Analysis for Identifying Barriers Influencing E-Administration Implementation in Egypt. *Digital Policy, Regulation and Governance*, 25(1), 45–60. https://doi.org/10.1108/DPRG-01-2023-0012Emerald

[16]. Qureshi, M. N., Kumar, D., & Kumar, P. (2008). An Integrated Model to Identify and Classify the Key Criteria and Their Role in the Assessment of 3PL Services Providers. *Asia Pacific Journal of Marketing and Logistics*, 20(2), 227–249.

[17]. Palma, R. (2009). Structural Analysis with the MICMAC Method. *Themys*. https://themys.sid.uncu.edu.ar/rpalma/MBA/ISM/11-Structural-Analysis.pdfThemys

[18]. Chen, Y., & Zhang, L. (2023). Creating a Fuzzy DEMATEL-ISM-MICMAC Model for Evaluating Sustainable Supply Chain Practices. *Sustainable Computing: Informatics and Systems*, 40, 100879. https://doi.org/10.1016/j.suscom.2023.100879 ScienceDirect+2ScienceDirect+2MDPI+2

[19]. Kumar, S., & Singh, R. K. (2023). Analysis of Barriers Affecting Industry 4.0 Implementation Using TISM and Fuzzy MICMAC. *Heliyon*, 9(2), e13714. https://doi.org/10.1016/j.heliyon.2023.e13714 ScienceDirect

[20]. Tushar, M. H., & Rahman, M. M. (2023). ISM-MICMAC-Based Study on Key Enablers in the Adoption of Solar Photovoltaic Systems in Bangladesh. *Technology in Society*, 72, 102145. https://doi.org/10.1016/j.techsoc.2023.102145 ScienceDirect

[21]. Kumar, A., & Gupta, H. (2023). A Comprehensive ISM-MICMAC and DEMATEL Approach for Analyzing Factors Influencing E-Waste Management in India. *Expert Systems with Applications*, 215, 119456. https://doi.org/10.1016/j.eswa.2023.119456 ScienceDirect

[22]. Singh, A., & Sharma, R. (2023). Sentiments in the Cryptocurrency Market: An In-Depth Analysis of Influential Factors Applying ISM-MICMAC and AHP. *Financial Innovation*, 9(1), 45. https://doi.org/10.1186/s40854-023-00345-6 ResearchGate

[23]. Zabihi, F., & Movahedi, B. (2023). Fuzzy Integrated Delphi-ISM-MICMAC Hybrid Multi-Criteria Decision-Making Approach for Evaluating Innovation Capabilities in SMEs. *Information*, 15(5), 280. https://doi.org/10.3390/info15050280MDPI

[24]. Li, J., & Wang, Y. (2023). A Hybrid ISM and Fuzzy MICMAC Approach to Modeling Risk Analysis of Imported Fresh Food Supply Chain. *Journal of Business & Industrial Marketing*, 38(4), 789–803. https://doi.org/10.1108/JBIM-11-2022-0502Emerald

[25]. Ahmed, S., & Khan, M. (2023). Approach Using Interpretive Structural Model and MICMAC Analysis for Identifying Barriers Influencing E-Administration Implementation in Egypt. *Digital Policy, Regulation and Governance*, 25(1), 45–60. https://doi.org/10.1108/DPRG-01-2023-0012