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Investigating the Role of Governance, Risk, and Compliance (GRC) in Investment Outcomes through Digital Transformation in Saudi Context

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ABSTRACT
This study examines the impact of GRC on investments outcomes considering the role of digital transformation in Saudi context, given the research goals of exploring how this transformation affect this relation. The current research utilized a self-administrated questionnaire survey to collect the primary data. Using data drown from of 103 respondents, the research model was verified empirically in the context of Saudi Arabia. The findings revealed that GRC and digital transformation have exerted a significant influence on investment outcomes in Saudi context, suggesting that embedding GRC and digital transformation enhance investment outcomes and create a shareholders value. Policy wise, promoting an integrated GRC and digital transformation model is observed to be critical levers for institutional competitiveness in Saudi Arabia and beyond. This research furnishes timely evidence regarding GRC in the Saudi context and the ability of digital transformation to enhance investment outcomes across this region. Our study also contributes to the sustainable development discourse by exploring how digital transformation enhances GRC frameworks, thus improving investment outcomes in emerging markets such as Saudi Arabia, in alignment with global sustainability goals.

Keywords: GRC, Digital Transformation, Investment outcomes, Saudi context

1. Introduction

The integration of GRC frameworks with digitization initiatives provides a critical fusion point of regulatory, operational, and technological development. Against this background, alignment of GRC practices to support digital transformation has emerged as one of the most important strategic imperatives for organizations through complex regulatory landscapes and dynamic market conditions. The GRC framework, containing the principles of governance, management of risk, and compliance, has provided a basis on which accountability will be enhanced in the mitigation of risks and developing resilience. More recent literature on the subject has expressed the potential role of GRC as a transformer, enhancing transparency and operational effectiveness to give investors' confidence (Malik, 2024; Siahaan et al., 2023). Meanwhile, digital transformation has disrupted business processes through the use of emerging technologies like AI, blockchain, and big data, whereby organizations achieve operational efficiency, market agility, and competitive advantage (Berman, 2012; Bharadwaj et al., 2013).

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While the individual dimensions of GRC and digital transformation have been widely researched, the interplay between these domains remains underexplored. While most of the literature is focused either on the implementation of GRC frameworks (O'Neill, 2014; Rubino & Vitolla, 2014) or on strategic and operational benefits from digital transformation (Li et al., 2021; Verhoef et al., 2021), limited attention has been devoted to understanding their interaction in influencing organizational performance and investment outcomes, especially in emerging markets. This becomes particularly prominent within the financial sector, with the latter being highly dependent on regulatory compliance, risk management, and digital transformation practices so that it can ensure a wide radius of financial stability and competitiveness. The need to bridge this gap addresses how organizations could make use of GRC practices in order to address the various complexities stemming from digital transformation and, subsequently, reach superior investment outcomes.

This intersection becomes even more important in the Saudi Arabian financial sector. Saudi Arabia is undergoing very rapid economic transformation—the result of Vision 2030, which attaches great importance to technology in diversifying the economy and enhancing its competitiveness. The financial sector is leading this transformation process, with institutions rapidly adopting digital technologies that improve customer experience, optimize operations, and improve decision-making processes. However, all these initiatives have been possible only when robust GRC frameworks paved the way for ensuring regulatory compliance, mitigating risks, and building investor confidence. This study explores the facilitation role of GRC in digital transformation to impact investment outcomes within Saudi financial companies and hence addresses a critical gap in the literature.

The contribution of the study is great and significant in extending existing knowledge and practice on two important dimensions. First, it extends theoretical understanding by investigating the dynamic relationship between GRC practices and digital transformation. Conceptually, the study draws on a number of established theories, such as Agency Theory (Jensen & Meckling, 1976), Resource-Based View (Barney, 1991), and Institutional Theory (Khalil, 2021), to think through how robust GRC frameworks could mediate the challenges of digital transformation and align them with organizational goals. Agency Theory has underlined governance structures as an instrument of mitigating conflicts of interest between managers and shareholders, while GRC will be playing a crucial role in guaranteeing transparency and accountability in digital transformation initiatives. The Resource-Based View underlines the strategic relevance of integrating GRC and digital transformation, since GRC frameworks represent one of the most relevant organizational resources that will contribute to operational efficiency and financial performance. Institutional Theory goes further in pressing the role of regulatory and normative pressures as drivers for the adoption of GRC practice, emphasizing how these are crucial elements for compliance and legitimacy in fast-moving markets. This study now provides practical implications for financial institutions on how to improve investment performance through the strategic embedding of GRC frameworks and digital transformation initiatives. Through a focus on investor confidence, operational efficiency, and regulatory compliance, this study makes recommendations for the maximization of performance in today's ever digital and competitive environment. To the practitioner and

policymaker, the importance of the proper linkage of technological developments with changes in governance, risk management, and compliance assurances is underlined toward resilience, innovation, and financial success in the long run.

Quantitative research design with survey-based primary data collections coupled with secondary analysis of financial performance metrics is used in the study to realize these objectives. The target population consists of Saudi financial companies listed on the Saudi Stock Exchange (Tadawul), selected through purposive techniques to ensure representative firms actively engaged in digital transformation with an established GRC framework. The questionnaire, based on three broad sections: GRC framework implementation, digital transformation, and investment decisions. It focuses on perceptions of governance, risk management, compliance practices, technological adoption, and financial outcomes. The variables of the study were measured on a 5-point Likert scale for the purpose of quantification and data analysis. Descriptive statistics include to summarize company profiles and inferential statistics for hypothesis testing. Correlation matrix was used to find out the direct link effects of GRC practices on digital transformation and investment outcomes. While moderation analysis examines digital transformation's role as a moderator between GRC practices and financial performance. This approach allows the research study to analyze multifaceted interactions among GRC structures, technological adoption, and investment decisions, providing a complete understanding of their interdependencies.

This research study addresses a critical gap in literature through presenting how GRC interacts with digital transformation and its effects of these interactions on investment outcomes. It highlights the strategic significance of integrating governance, risk management, and compliance with technological developments to enhance organizational performance. It provides a roadmap for financial institutions to evaluate digital transformation challenges while also considering regulatory compliance and investor confidence. The findings present significant suggestions for practitioners, policymakers, and academics, presenting best practices for leveraging GRC frameworks to enhance digital transformation performance and drive enhanced financial outcomes. In the context of Saudi Arabia, the research contributes to broader debates on economic diversification and technological advancement, highlighting the financial sector's role as a catalyst for economic transformation. Through exploring the relationship between GRC and digital transformation, it considers the importance of a robust regulatory and governance environment to support technological innovation and investment growth. Aligning with Vision 2030, it provides timely evidence-based suggestions to improve the competitiveness and resilience of Saudi financial companies in a highly digital, interconnected global economy.

Incorporating GRC frameworks with digital transformation represents an important nexus of governance, technology, and financial outcome. This study analyzes this intersection within Saudi financial companies, highlighting a significant literature gap and presents actionable insights for enhancing investment outcomes. Theoretically and practically, it highlights the importance of integrating governance, risk management, and compliance with digital transformation, offering a roadmap for financial institutions to enhanced financial outcomes. With its focus on Saudi Arabia, this research presents timely

and relevant perspectives on the transformative potential of GRC and digital transformation to drive investment outcomes.

2. Theoretical Background

2.1 Theoretical Framework

The foundation of the study presents the interconnectedness of Governance, Risk and Compliance (GRC) framework with digital transformation while enhancing the investment outcomes in Saudi financial companies. Understanding the complex relationship of understudy's variables, it is important to consider well-established theoretical perspective from the literature. This section introduces key theories, such as Agency Theory, Resource-Based View (RBV), and Institutional Theory, and discusses their relevance to the research context.

Agency Theory (Jensen & Meckling, 1976) plays an important role in understanding the governance structures that support digital transformation within financial organizations. This theory emphases on the principal-agent problem, where agents (managers) may act contrary to the interests of principals (shareholders). Within financial institutions, GRC frameworks function as tools to address this issue by applying governance processes that align managerial actions with shareholder interests. Through enhancing transparency and reducing agency costs, effective GRC practices support ensure that digital transformation initiatives align with organizational objectives, eventually increasing investor confidence and financial results (Cu et al., 2023). Recent research (Goh et al., 2022) highlights that investor highly value robust GRC frameworks during digital transformation, viewing them as assurances of transparency and effective risk management, which significantly outcome investment decisions (Dewi & Aryati, 2024). This presents the connection between governance structures and financial performance.

The Resource-Based View (Barney, 1991) explains that a company's competitive advantage arises from its resources, including technological, human, and organizational assets. In the context of digital transformation, financial firms use IT systems, data analytics, and digital tools to strengthen their GRC capabilities (Abdurrahman et al., 2024). This interaction allows firms in better managing risks, ensure compliance with regulations, and refine governance structures, enhancing the efficiency of their valuable resources and capabilities (Kirchmer, 2021). Through integrating robust GRC frameworks into digital transformation policies, financial institutions can improve their resources to achieve operational excellence, follow to regulatory requirements, and bring improved financial outcomes (Abdurrahman et al., 2024). As the financial industry continues its digital development, GRC practices arise as a strategic resource that not only increases operational efficiency but also enhances financial performance, supporting the idea that strong GRC practices have a positive influence on digital transformation.

Institutional Theory (Khalil, 2021) offers valuable insights into how external pressures, such as regulatory requirements, shape organizational behavior and drive the adoption of best practices. Saudi Arabia's financial institutions face considerable institutional pressures due to changing regulatory landscapes, both locally and globally. In this environment, GRC frameworks act as crucial mechanisms for aligning organizational practices with external regulatory expectations. As Saudi Arabia's financial sector

undergoes digital transformation, integrating GRC practices that meet both domestic and international standards is imperative for maintaining credibility, minimizing risk, and attracting investment (Zammit et al., 2021). Institutional theory also reinforces the notion that strong GRC practices enhance a firm's legitimacy and reduce regulatory scrutiny, making it more appealing to investors (Selimoglu & Saldi, 2023). Therefore, institutional pressures can encourage financial organizations to adopt GRC frameworks that not only support their digital transformation initiatives but also improve financial outcomes.

2.2 Governance, Risk and Compliance (GRC) Framework

Governance, Risk, and Compliance (GRC) frameworks have emerged as the significant framework for organizations to capture the complex challenges of regulatory compliance, risk management, and corporate governance. The alignment of these domains provides an inclusive structure for organizations to confirm accountability, enhance risk qualification strategies, and excel overall governance practices. Recent literature emphasizes the importance of GRC frameworks for organizations to deal with complex regulatory environments, improve operational resilience, and achieve strategic objectives. Malik (2024) highlights the importance of risk governance in financial institutions, especially in public commercial banks within the OECD region. The study presents a significant negative relationship between risk governance characteristics and regulatory adjustments, indicating that strong governance practices reduce the frequency and extent of regulatory interventions. These findings emphasize the value of embedding governance principles at the core of organizational operations to promote stability and public trust, especially in the banking sector.

The development and implementation of effective compliance frameworks are further elaborated by Neill (2014), who proposes a compliance action framework aimed at addressing data privacy challenges within healthcare organizations. The study highlights the limitations of existing systems in managing compliance and demonstrates how integrating knowledge from multiple domains can enhance governance outcomes. This study investigates the compliance management approach within specific industries requiring sensitive information handling. Siahaan et al. (2023) discuss further GRC frameworks in the fight against organizational corruption. With the help of a systematic literature review, this paper demonstrates how integrated GRC systems can be applied to support anti-corruption efforts, enhancing both transparency and accountability. While there are hardly any empirical studies on this subject, the findings of available literature indicate that cohesively applied in governance, risk management, and compliance, such systems have significant potential to address corruption risks.

The integration of IT governance into GRC practices is highlighted by Rubino and Vitolla (2014), who analyze the interplay between COBIT and COSO ERM frameworks. Their findings demonstrate that the combined application of these frameworks strengthens internal controls and enhances enterprise risk management, aligning IT governance objectives with broader corporate strategies. This integration is particularly relevant in the digital age, where IT systems play a central role in organizational governance.

The development of technological innovations, such as blockchain, has further expanded the scope of application of GRC practices. Selimoglu and Saldi (2023) examine

the prospects of blockchain technology in cybersecurity governance in Turkey's banking sector. This study explores blockchain as a transformative tool for auditing and risk management by reducing human error and improving the efficiency of cyber risk controls. These findings focus on the roles of technologies in the development of GRC frameworks that target a set of newly developed digital risks. Zammit et al. (2021) discuss the public sector applications of GRC and evaluate the maturity of GRC frameworks within the Maltese public sector. Though there is a high level of governance and compliance practices, shortcomings in risk management and internal auditing are revealed in the study. In turn, these research findings suggest the need for sustained improvement in GRC practices among public sectors of large, integrated systems to make them more agile and responsive toward the complexities that characterize governance today.

Ramalingam et al. (2018) addresses the optimization of GRC practices by proposing a novel approach to measuring the efficiency and effectiveness of IT-GRC controls. This study uses the DEMATEL methodology to introduce a quantitative framework for GRC practices that can provide actionable insights for organizations adopting IT standards such as ISO 27001 and COBIT. This approach has been a very useful tool for organizations seeking to enhance the performance of their governance and compliance frameworks. The synthesis of these studies underlines the evolution of the GRC framework and how such a framework may help address some organizational challenges in a complex environment. From enhancing risk governance in financial institutions to leveraging blockchain for cybersecurity and optimizing IT-GRC practices, the literature demonstrates the versatility and importance of GRC in fostering organizational resilience and achieving strategic goals. Table 1 represents the literature reviewed in understanding the governance, risk and compliances. The above literature suggests the following hypothesis:

H1: Strong GRC practices have significant effect on digital transformation.

Table 1: GRC Literature

Authors	Variables of the Study	Findings	Significance
Malik (2024)	Risk governance, regulatory adjustments	Negative relationship	Statistically significant
O'Neill (2014)	Compliance frameworks, governance	Positive relationship	Conceptual significance
Siahaan et al. (2023)	Integrated GRC, anti-corruption	Positive relationship	Conceptual significance
Rubino & Vitolla (2014)	IT governance, ERM frameworks	Positive relationship	Theoretical and applied significance
Selimoglu & Saldi (2023)	Blockchain, cybersecurity governance	Positive relationship	Applied significance
Zammit et al. (2021)	GRC maturity, public sector practices	Mixed findings (high standards with gaps)	Sectoral significance

Authors	Variables of the Study	Findings	Significance
Ramalingam et al. (2018)	IT-GRC controls, efficiency metrics	Positive relationship	Quantitative significance

2.3 Digital Transformation

It is now becoming one of the important strategic initiatives of digital transformation for reshaping industries by incorporating digital technologies in improving business processes, developing new business models, and fostering organizational agility. Literature focuses on the implications of digital transformation on operational capabilities, customer value creation, and market responsiveness in mapping out a path for firms navigating this dynamic digital landscape. According to Berman (2012), digital transformation has the dual focus of reshaping customer value propositions and transforming operations through digital technologies. An organization should engage customers at each touch point and provide an environment for innovation and collaboration on digital platforms. Bharadwaj et al. (2013) also support the paradigm shift of IT strategy by combining IT and business strategies into one, which they call a digital business strategy, as one in which significant value will be created and captured. Their framework identifies critical themes, such as scale, speed, and the sources of business value, as essential for leveraging digital technologies in crafting competitive advantages. The role of digital transformation in altering organizational structures and processes is further explored by Bhimani and Willcocks (2014). Their analysis highlights how advancements in digitization and big data reshape cost structures and strategy formulation, with implications for outsourcing, cloud computing, and business analytics. They indicate that digital transformation necessitates changes in organizations regarding non-linear relationships between strategy and information systems, therefore offering opportunities of unlocking their new technological value by means of developing digital literacy. Similarly, entrepreneurial small and medium-sized enterprises also have space for digital transformation, but it has its own type of challenges. Cenamor et al. (2019) prove that capabilities of digital platforms combined with the network capabilities also enhance the performance of SMEs. The study highlights the ambidexterity of balancing exploration and exploitation in optimizing the benefits of digital platforms. Chan et al. (2019) develop this further by proposing a framework for organizational agility in response to disruptive digital innovation, with mechanisms such as boundary openness and adaptability as critical enablers for SMEs. Broekhuizen et al. (2018) focus on the strategic dilemmas of business model innovators in implementing digital transformation. Their research identifies critical trade-offs, such as balancing discovery with planned execution and challenging versus maintaining the status quo. These insights illustrate the complexity of embedding digital transformation into traditional business paradigms.

In the financial sector, Dorfleitner et al. (2022) investigate the digital transformation of microfinance institutions, showing that digital adoption is coherent with social performance goals and fosters financial inclusion. However, the findings also underscore challenges, including the need for supportive digital infrastructure and systems that balance profitability with mission-driven goals. Similarly, Li et al. (2021) investigate

how organizational mindfulness toward digital transformation fosters market agility through improved information processing capabilities, which enables firms to respond proactively to environmental turbulence. The transformative power of digital technologies extends to reshaping inter-firm relationships and service ecosystems. Pagani and Pardo (2017) identify how digitalization modifies activity links, resource ties, and actor bonds in business networks, while Sklyar et al. (2019) emphasize the dual role of technology in increasing complexity and coordinating resource integration. These studies underline the role of digital transformation in redefining collaboration and value exchange across industries. The COVID-19 pandemic has further accelerated digital transformation, as highlighted by Acosta (2020). Organizations have had to adapt at a breakneck pace to the disruptions, utilizing digital tools in order to ensure continuity and take advantage of new opportunities. This sense of urgency makes the strategic importance of digital transformation more relevant in terms of building resilience against unforeseen challenges. Taken together, the literature illustrates that digital transformation is not just an upgrade in technology but a strategic reimagining of business processes, models, and relationships. It requires organizations to cultivate digital capabilities, foster agility, and embrace innovation to thrive in an increasingly digital economy. Table 2 presents the literature of digital transformation.

Table 2: Digital Transformation Literature

Authors	Variables of the Study	Findings	Significance
Berman (2012)	Customer interaction, operational transformation	Positive relationship	Conceptual significance
Bharadwaj et al. (2013)	Digital business strategy, IT integration	Positive relationship	Theoretical and applied significance
Bhimani & Willcocks (2014)	Big data, organizational cost structures	Positive relationship	Applied significance
Broekhuizen et al. (2018)	Business model innovation, strategic trade-offs	Mixed findings (complex trade-offs)	Practical significance
Cenamor et al. (2019)	Digital platforms, network capabilities	Positive relationship	Statistically significant
Chan et al. (2019)	Organizational agility, digital innovation	Positive relationship	Applied significance
Dorfleitner et al. (2022)	Digital adoption, financial inclusion	Positive relationship	Quantitative significance
Li et al. (2021)	Organizational mindfulness, market agility	Positive relationship	Theoretical significance
Pagani & Pardo (2017)	Digitalization, business relationships	Positive relationship	Conceptual significance
Soto-Acosta (2020)	COVID-19 impact, digital acceleration	Positive relationship	Contextual significance

2.4 GRC, Digital Transformation and investment

Yet, the cross-section of Governance, Risk, and Compliance (GRC), digital transformation (DT), and investment outcomes is a poignant issue, especially for the financial sector. The scope of risks in financial companies increases with the embrace of digital transformation to create greater performance and competitiveness, hence the importance of GRC frameworks to mitigate risk, ensure regulatory compliance, and improve investor confidence. Thus, as the Saudi Arabian financial sector continues to undergo digital transformation, it's crucial to embed and implement strong GRC practices for improved investment returns. It is said that we as a nation have to have a culture change and shift focus of our economy to a system that is conducive to our nation through GRC frameworks that promote financial strength, advancement, and return on investment.

Abdurrahman et al. (2024) show that the impact of GRC factors as dynamic capabilities on banking performance is very significant in the context of digital transformation. In this sense, the research study on Indonesian banks indicates that organizational outcomes of financial institutions who integrated secure GRC frameworks in their digital transformation programs are enhanced. In particular, they identified that the linkage between dynamic capabilities and banking performance is mediated by digital transformation. This highlights the potential of GRC in delivering better financial performance via enhanced digital transformation efforts. This understanding directly lays the groundwork for the following hypothesis:

H2: Financial companies in GCC that implement strong GRC frameworks during digital transformation will experience better investment outcomes.

This possibility is supported by the work of Goh et al. (2022), related to investor perspectives on GRC's auspiciousness in digital transformation. They show that investors are sensitive to the management of GRC aspects in digital transformation efforts, suggesting that strong GRC can facilitate favorable investor decisions. Incentivizing and deepening investor confidence leads to a virtuous cycle, where companies with extensive and effective GRC attract not just more investment, but more informed investment as well. This is consistent with the growing emphasis on Environmental, Social, and Governance (ESG) factors, which some studies suggest may affect investment behavior (Berman, 2012; Bharadwaj et al., 2013). Alex et al. (2024) also discuss the role of GRC as a deliverer of better financial performance in emerging markets, who develop a conceptual framework to improve regulatory compliance and risk management with digital innovation. They point out that new digital technologies like AI and blockchain could help catch compliance early, leading to better bonds between businesses and regulators. Such proactive risk and compliance management is crucial for financial stability and better investment outcomes, especially in markets with changing regulations.

Dewi and Aryati (2024) study the same but with an emphasis on IT investments and digitalization as drivers of GRC. They find that GRC per se did not have a systematic impact on financial performance, whereas IT investments moderated the effect of leverage on financial performance. This implies that even if GRC frameworks are significant but are not being integrated into technology investments and digital strategic transformation, they will not affect financial stability and investment returns. These results add to the wider literature relating effective risk management and compliance to improved financial performance (Kirchmer, 2021; Victor et al., 2024), underpinning the proposition of the below hypothesis:

H3: Companies that effectively manage digital transformation risks and regulatory compliance will outperform their peers in terms of investment decision.

Furthermore, Kirchmer (2021) and Apeh et al. (2023) assert that digital transformation necessitates evolving corporate governance frameworks, but also modernizing business process governance to achieve operational excellence. Companies that successfully integrate IT GRC strategies with broader digital transformation efforts are likely to see better operational performance and, in turn, better financial outcomes. Chergui and Chakir (2020) provided a generic risk management framework and highlight the criticality of implementing a business-aligned IT GRC strategy for maximizing value and minimizing risks. These studies imply that companies embracing a unified approach to digital change (integrating GRC frameworks) can better manage regulatory complexities and seize emerging digital opportunities. This improves their long-term financial performance and investment potential, especially in dynamic markets like Saudi Arabia.

Table 3: GRC, Digital Transformation and Investment Literature

Authors	Variables of the Study	Findings	Significance
Abdurrahman et al. (2024)	GRC, digital transformation, banking performance	Positive relationship	Statistically significant
Goh et al. (2022)	GRC, investor confidence, investment attractiveness	Positive relationship	Conceptual significance
Dewi & Aryati (2024)	GRC, IT investment, financial performance	Mixed findings	Applied significance
Alex et al. (2024)	Digital tools, compliance, financial stability	Positive relationship	Conceptual and applied significance
Kirchmer (2021)	Digital business governance, transformation outcomes	Positive relationship	Practical significance
Apeh et al. (2023)	GRC in cloud infrastructures, compliance	Positive relationship	Theoretical and applied significance
Victor et al. (2024)	IT GRC, operational efficiency, risk mitigation	Positive relationship	Quantitative significance
Chergui & Chakir (2020)	IT GRC frameworks, governance alignment	Positive relationship	Conceptual significance

3. Methods

3.1 Research Design and Data Collection

The study adopts a quantitative research design to evaluate the influence of GRC on digital transformation and its impact on investment outcomes in Saudi financial companies. This design facilitates the identification of causal relationships between

variables and tests the hypotheses through statistical methods. Insights from literature inform the research framework and measurement scales, enabling systematic data collection and analysis. The questionnaire was sent to three faculty members who holds a Professor position, confirming the suitability of items to capture the main goal of this study and to ensure the content validity. Then, we distributed an online questionnaire to collect the requited data via Google Forms that was posted on social media in such academic and professional channel. A five-point Likert scale ranging from 1 = "strongly disagree" to 5 = strongly agree" was applied in the present research to gain the right instruments items since our scale has been used in GRC study. Online survey method was used for the primary data collection. Structured questionnaires are distributed to key personnel, including senior managers, risk officers, compliance officers, and IT leaders in financial companies. The survey captures perceptions of GRC practices, digital transformation initiatives, and financial performance outcomes. We distribute our sample to various group to capture the uniqueness of this relation as shown in Table 4.

3.3 Sampling Technique

The study employs a purposive sampling technique to ensure the inclusion of relevant financial companies. A sample size of 103 responses was targeted to ensure adequate representation and statistical robustness. While this approach applied for targeted insights from relevant, it limits the broader representatives of the findings. Moreover, the absence of triangulated qualitative data such as interview with GRC mangers constrains the interpretive depth of the results. However, since the GRC is emerged across MENA countries, and Saudi context, we are inclined to believe that this approach is applicable to address our research objective.

3.4 Data Collection Instruments

Structure questionnaire was used to collect the data for measurement of the study variables. The questionnaire comprises of three sections: GRC framework implementation, digital transformation and investment decision. The GRC implementation measures the governance, risk management and compliances practices. The digital transformation captures the technology adoption, process integration and operational efficiency of the firms. While the investment questions measured the investors' confidence in investment decision. Each item is measured on a 5-point Likert scale to capture variations effectively. The quantification of the study variables is presented in research questionnaire and our selection of variables are based on literature review supporting this argument. (Please refer to Appendix, Appendix A1).

4. Results

Demographic Information of the Respondents

The current study is comprised of 88.35% male employees and 11.65%. 77.67% of the participant were 31-45 years old, 22.33 were above 45. As for academic and professional qualification, 61.17% of participants had a PhD's degrees, 34.95% has a master's degrees and 3.88% had bachelor's degree. Regarding the professional qualification, 16.84% holds a SOCPA, 12.63% holds a CPA, 8.42% had a GRC and CMA.

While the rest of participant have a diverse qualification such as CFA, CIA, and Six Sigma, 36.84% were without specific professional qualifications.

Table 4: Demographic information of Participants

Demographic Variable	Category	Frequency	Percentage (%)
Gender	Male	91	88.35
	Female	12	11.65
Age	31-45	80	77.67
	>45	23	22.33
Country	Saudi Arabia	103	100.0
Academic Qualification	PhD's Degree	63	61.17
	Master's Degree	36	34.95
	Bachelor's Degree	4	3.88
Professional Qualifications	Local Certificates (SCOPA)	20	21.05
	International Certificates (CPA, GRC, CIA, CFA, Six Sigma, CMA).	40	42.11
	Other/ Not Specified	35	36.84
Major	Accounting in Arabic	80	69.9
	Accounting in English	8	7.77
	Business Administration	4	3.88
	Finance And Investment	4	3.88
	Public Administration	4	3.88
	Business Administration	4	3.88
	Management Information Systems	4	3.88
	Finance And Investment in English studies	3	2.91
Company Size	>500	51	49.51
	0-200	28	27.18
	201-500	24	23.3

The data analysis employs statistical techniques to explore relationships between GRC practices, digital transformation, and financial outcomes. The descriptive statistics summarized the questionnaire and data distributions. The regression analysis assessed the direct effect of GRC on digital transformation and financial performance. While the

moderation analysis examined the moderating role of digital transformation between GRC and investment outcomes.

Table 5: Descriptive Statistics

	Item Code	count	Mean	Std. Dev	Min	Q1	Median	Q3	Max	Skewness	Kurtosis
Investment outcomes	IO1	03.0	.728	.717	.0	.0	.0	.0	.0	2.803	.157
	IO2	03.0	.806	.397	.0	.0	.0	.0	.0	1.569	.471
	IO3	03.0	.883	.322	.0	.0	.0	.0	.0	2.426	.963
	IO4	03.0	.573	.571	.0	.0	.0	.0	.0	0.938	0.102
	IO5	03.0	.767	.509	.0	.0	.0	.0	.0	2.143	.856
	IO6	03.0	.883	.322	.0	.0	.0	.0	.0	2.426	.963
	IO7	03.0	.806	.486	.0	.0	.0	.0	.0	2.539	.786
	IO8	03.0	.961	.194	.0	.0	.0	.0	.0	4.845	1.897
Governance, Risk and Compliance	GRC 1	03.0	.689	.543	.0	.0	.0	.0	.0	1.556	.543
	GRC 2	03.0	.767	.581	.0	.0	.0	.0	.0	2.38	.312
	GRC 3	03.0	.689	.728	.0	.0	.0	.0	.0	2.553	.99
	GRC 4	03.0	.806	.486	.0	.0	.0	.0	.0	2.539	.786
	GRC 5	03.0	.767	.509	.0	.0	.0	.0	.0	2.143	.856
	GRC 6	03.0	.728	.597	.0	.0	.0	.0	.0	2.077	.052
	GRC 7	03.0	.728	.597	.0	.0	.0	.0	.0	2.077	.052
	GRC 8	03.0	.845	.459	.0	.0	.0	.0	.0	3.054	.698
	GRC 9	03.0	.845	.364	.0	.0	.0	.0	.0	1.931	.764
Digital Transformation	DT1	03.0	.806	.486	.0	.0	.0	.0	.0	2.539	.786
	DT2	03.0	.65	.682	.0	.0	.0	.0	.0	1.7	.354
	DT3	03.0	.689	.672	.0	.0	.0	.0	.0	1.911	.025
	DT4	03.0	.883	.322	.0	.0	.0	.0	.0	2.426	.963
	DT5	03.0	.883	.427	.0	.0	.0	.0	.0	3.766	3.415
	DT6	03.0	.961	.194	.0	.0	.0	.0	.0	4.845	1.897
	DT7	03.0	.845	.459	.0	.0	.0	.0	.0	3.054	.698
	DT8	03.0	.806	.486	.0	.0	.0	.0	.0	2.539	.786
	DT9	03.0	.838	.37	.0	.0	.0	.0	.0	1.867	.516

Table 6: Correlation Matrix

	GRC	DT	IO
GRC	1.0		
DT	0.55	1.0	
IO	0.721	0.834	1.0

The following Table 7 demonstrate that the loads and values of all three key variables fall within the permitted range. Thus, it can be concluded that all constructs are appropriate for further analysis.

Table 7: Cronbach's Alpha Summary

Construct	Cronbach's Alpha
GRC (Governance, Risk, and Compliance)	0.89
DT (Digital Transformation)	0.87
IO (Investment Outcomes)	0.91

5. Discussion

Table 6 and 7 report the empirical support for our theoretical linkages among GRS, DT and IO. The correlation matrix reveals statistically strong and positive relationship among these constructs with highest correlation observed between DT and IO (r=0.834) followed by GRC-IO (r=0721), and GRC-DT (r=0.55). Furthermore, the Cronbach's Alpha coefficients (all>0.87), confirming that the internal consistency and reliability of the measurement instruments used in this investigation.

This strong association between DT and IO reflects growing evidence regarding the digitalization that plays a vital role in boosting financial performance. This was observed by Nguyen-Thi-Huong et al. (2023) and Do et al. (2022) argue that digital transformation initiatives significantly improve performance matrix in terms of cost efficiency and profitability. Likewise, Alqararah et al. (2025) point out not only digital transformation correlates with process automation but also predictors of firm performance in banking sector. Our results are consistent with recent empirical evidence conducted across GCC region by Amanda et al. (2020), who document that the awaernance of web features could play critical role in enhancing adoption of digital banking.

Regarding the interlinks between GRC and DT (r = 0.55), this reflects a more nuanced association. While GRC frameworks furnishes structure, this also boost the mitigation of risk necessary for sustainable digital initiatives. Ponick & Wieczorek, (2022) affirms that in order to enhance the adaptability and security of digital transformation, the inclusion between AI and data governance within GRI is required. They argue that this association is relevant, particularly in the strong governance environmental such as the GCC financial institutions. Furthermore, Afrin et al. (2023) affirm that embedding GRC systems within digital transformation significantly enhance investment outcomes and shareholders value. It is important to recognize that flexible systems that adopted by other countries such as Singapore's risk-based could foster the application of governance and therefore, lead to better investment outcomes. Appendix A2 displays various AI-driven tools and application used by GCC countries that offer controlled environment to enhance innovation activities and manage systematic risks. As shown Singapore's risk-based supervision model demonstrates how flexibility in regulatory enforcements can accelerate the adoption of GRC without undermining investors' confidence. This integration if adopted may offer institutional agility and promote innovation within Saudi context.

Eventually, our investigation underscores the need of an integrated approach to governance and digital transformation to achieve sustainable performance improvement and that in accordance with one of sustainable development goals. Digital Transformation and GRC frameworks appear to have a significant impact in enhancing the investment outcomes in Saudi context. The questionnaire was administrated to faculty members and professional staff, and though it may be the case that GRC professionals would have arrived at the various view, this was influenced by academic staff who their research and studies regarding on this subject was emerged. The association between GRC and IO considering digital transformation DT is imperative as the later need of obvious strategy of board to be effective when establish an integrated governance structure.

6. Conclusion, Implications and further research

The findings revealed that GRC and digital transformation have exerted a significant influence on investment outcomes in Saudi context, suggesting that embedding GRC and digital transformation enhance investment outcomes and create a shareholders value. Our investigation policy implications are twofold. Initially, the findings of this study highlight the need for Saudi firms, either listed or non-listed to prioritize GRC maturity and align leadership evaluation with digital and compliance goals. Secondly, the regulators and policy makers should promote an integrated GRC-DT model, making them essential levers for institutional competitiveness in the GCC and beyond. We encourage financial institutions in Saudi context to align leadership incentives with measurable GRC indicators. In other words, executive key performance indicators (KPIs) would be vital as a means of advancing competitiveness and sustainable investment performance.

Future studies should explore cross-country comparisons within GCC (e.g., contrasting Qatar's strict enforcement with Oman's flexible regimes) and emerging markets to evaluate whether integrated GRC-DT frameworks yield similar investment outcomes. A longitudinal design tracking ROI post-digital transformation could reveal whether GRC mitigates market volatility. This broader scope would provide stronger recommendations for policymakers and practitioners. Future studies are encouraged to integrate interview with the same questionnaire to GRC mangers to determine the need of successful implementation. This would bridge the gap exists in practice and provide a thorough overview regarding this integrated framework. The future researchers are encouraged to consider additional factors led to the intention of several executives to postpone the full adoption of integrated GRC frameworks and these culture could be extracted from the Hofstede Models (2001).

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Appendix A

GRC Framework Implementation (Malik, 2024; Neill, 2014; Victor et al., 2024; Siahaan et al., 2023; Selimoglu & Saldi, 2023; Rubino & Vitolla, 2014)

1. Our organization has a clear governance structure to oversee digital transformation initiatives.
2. Roles and responsibilities for digital transformation are explicitly assigned to specific individuals or teams.
3. The internal control system in our organization is effective in monitoring digital transformation projects.
4. A formal risk management process is in place for digital transformation projects.
5. Risks related to digital transformation are assessed frequently in our organization.
6. Our organization effectively mitigates cybersecurity risks during digital transformation initiatives.
7. Our organization complies with regulatory requirements during digital transformation projects.
8. Compliance audits are regularly conducted to evaluate adherence to governance, risk, and compliance frameworks.
9. Compliance measures are effectively integrated into our organization's digital transformation strategies.

Digital Transformation (Abdurrahman et al., 2024; Goh et al., 2022; Li et al., 2021; Kirchmer, 2021)

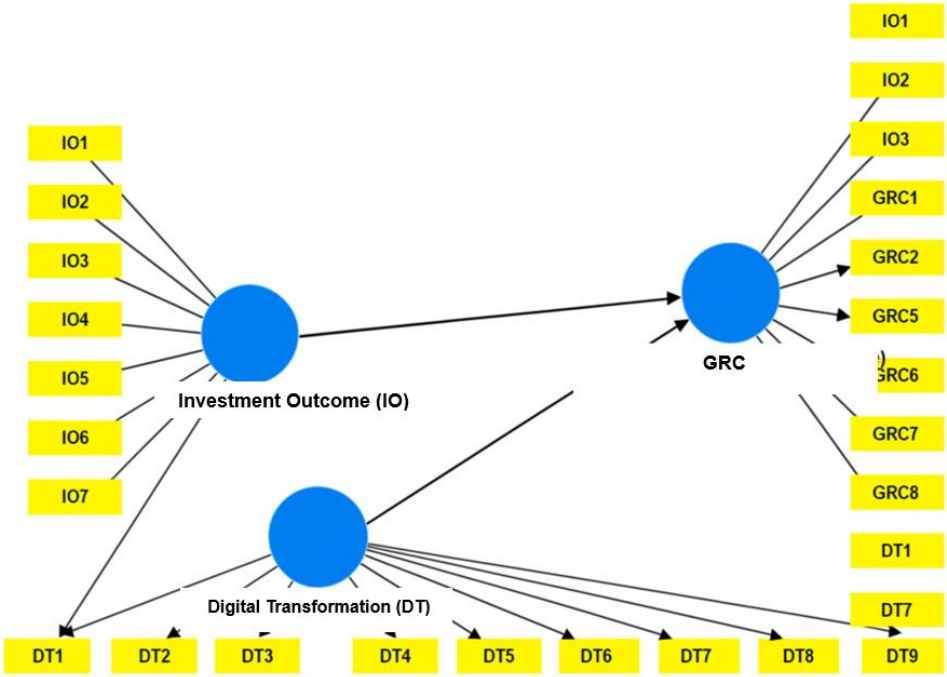
1. Our organization extensively adopts new technologies for digital transformation.
2. Investments are made in cutting-edge technologies such as AI, blockchain, or big data analytics.
3. We are satisfied with the overall technological infrastructure supporting digital transformation in our organization.
4. Digital transformation has significantly improved the integration of processes across departments.
5. Workflows within our organization are more streamlined due to digital transformation.
6. Digital transformation enables seamless collaboration between different teams or units.
7. Digital transformation has significantly improved operational efficiency in our organization.
8. Costs related to operational inefficiencies have been reduced as a result of digital transformation.
9. Digital transformation has accelerated decision-making processes in our organization.

Investment Decision (Goh et al., 2022; Abdurrahman et al., 2024; Malik, 2024)

1. Investors are confident in our organization's ability to manage digital transformation projects effectively.
2. Investors perceive our organization's GRC practices as a positive factor in making investment decisions.
3. Our organization is transparent in reporting the progress and outcomes of digital transformation initiatives to investors.
4. Digital transformation has positively impacted the ROI in our organization.

5. Investment returns consistently meet or exceed the expectations set during digital transformation planning.
6. Digital transformation has improved the market performance of our organization's shares.
7. Digital transformation contributes to enhancing the financial stability of our organization.
8. Our organization uses digital transformation effectively to reduce financial risks.
9. Digital transformation increases our organization's ability to attract new investments.

Appendix A1: Smart-PLS output.



Appendix A2: Comparative GRC-DT Strategies with several GCC nations

Country	GRC Tools Adopted	Digital Transformation Features	Regulatory Model	Reported Investment Impact*
Saudi Arabia	ISO 31000, NCA Cyber Standards	Compliance automation	Centralized, prescriptive	Positive trend in financial sector digitalization
UAE	AI-based RegTech, COBIT	AI-led compliance	Sandbox-enabled, risk-based	Strong FDI inflows, tech startups growth
Oman	Hybrid GRC–Compliance models	Gradual digital onboarding	Moderate oversight	Early-stage impact, growing uptake
Bahrain	FinTech Regulatory Sandbox	Blockchain integration in compliance	Open sandbox model	Significant traction in SME digitization

Source: secondary sources from the regional reports of the main strategy (e.g., Vision 2030 in case of Saudi Arabia and Bahrain).