

# The Impact of Artificial Intelligence on the Formation of Commercial Contracts: The Mediating Role of Governance in the Kingdom of Saudi Arabia

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## ABSTRACT

Artificial Intelligence (AI) has emerged as a transformative force reshaping governance and decision-making in modern organizations. Within the context of Saudi Arabia's Vision 2030, startups are increasingly adopting AI to enhance the efficiency, accuracy, and transparency of commercial contract formation. This study examines the effect of AI capabilities on contract formation, emphasizing the mediating role of governance in ensuring accountability and ethical compliance. A quantitative approach using Partial Least Squares Structural Equation Modeling (PLS-SEM) was applied to analyze data collected from Saudi startups. The results reveal that AI capabilities significantly improve contract formation and governance performance, while governance exerts a strong mediating effect between AI and contractual outcomes. These findings demonstrate that the integration of AI within robust governance frameworks enhances operational efficiency, promotes institutional integrity, and supports sustainable digital transformation. The study concludes that governance serves as the essential mechanism through which AI capabilities are translated into transparent and reliable organizational practices, reinforcing the strategic alignment between innovation, ethics, and performance in Saudi startups.

**Keywords:** Artificial Intelligence; Governance; Contract Formation; Digital Transformation

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## 1. INTRODUCTION

Artificial intelligence (AI) has emerged as one of the most transformative forces reshaping business operations, decision-making, and contractual relationships in the digital economy. Across industries, AI-driven technologies are being utilized to automate complex processes, improve transparency, and enhance the efficiency of commercial interactions (Locke & Bird, 2020; Beulen, Plugge, & van Hillegersberg, 2022). In particular, AI applications in contract management are redefining how organizations negotiate, monitor, and enforce agreements, minimizing human error and promoting data-driven precision (Uddoh, Ajiga, Okare, & Aduloju, 2021). However, as AI increasingly influences legal and commercial decisions, challenges related to accountability, ethical compliance, and regulatory oversight have become central to organizational governance (Ghoshal, 2025; Mei & Sag, 2025). The integration of intelligent systems into contract formation requires effective governance frameworks that ensure these technologies operate transparently, responsibly, and within established legal norms (Agarwal, 2023; Ly, 2025).

In Saudi Arabia, the accelerating pace of digital transformation driven by the Vision 2030 strategy has led to substantial investment in AI, automation, and data governance frameworks (Ibrahim, 2024; Alkhudair & Almakki, 2024). Startups have become key actors in this digital transformation journey, adopting AI tools to improve operational efficiency, contract administration, and stakeholder communication (Font-Cot, Lara-Navarra, & Serradell-Lopez, 2023). Despite these advancements, the effective integration of AI into commercial contract formation remains complex, as it depends not only on technological readiness but also on robust governance mechanisms that regulate AI's ethical, operational, and institutional dimensions (Monem, 2024; Gebeyehu, Adam, & Alemie, 2025). Inadequate governance structures can lead to issues of data misuse, cyber vulnerability, and loss of transparency, which undermine trust in AI-driven decision-making (Arsy & Bahari, 2024; Hassib & Shires, 2022). Governance thus functions as a mediating mechanism that

connects AI capabilities with the reliability and effectiveness of contractual processes, ensuring that innovation does not compromise compliance and accountability (Papagiannidis, Mikalef, Krogstie, & Conboy, 2022).

From a theoretical standpoint, the interaction between AI capabilities and governance is supported by Agency Theory and Institutional Theory, both of which emphasize the importance of control, monitoring, and legitimacy in managing technological adoption. Agency Theory posits that governance mechanisms minimize information asymmetry and opportunism by ensuring accountability between contracting parties or agents whether human or algorithmic (Locke & Bird, 2020). Institutional Theory complements this by highlighting how organizational behavior and AI integration are shaped by external institutional pressures, regulatory systems, and cultural expectations that promote ethical and transparent conduct (Ly, 2025; Ibrahim, 2024). When applied to commercial contract formation, these theories jointly suggest that governance mechanisms are essential in transforming AI capabilities into trustworthy and enforceable contract outcomes (Gebeyehu et al., 2025; Akhtar, 2025).

Despite the growing attention to AI governance globally, empirical research remains limited, particularly in the context of developing economies and emerging startup ecosystems (Monem, 2024; Akhtar, 2025). Many existing studies have explored AI's influence on firm performance, innovation, and decision quality, yet few have examined how governance mediates AI's role in legal and contractual processes (Beulen et al., 2022; Uddoh et al., 2021). In Saudi Arabia, where the entrepreneurial ecosystem is rapidly evolving, understanding how governance enables AI-driven contracting to operate effectively and ethically is both timely and crucial. Therefore, this study aims to examine the mediating role of governance in the relationship between AI capabilities and commercial contract formation among Saudi startups. By addressing this gap, the research contributes to the growing body of knowledge on AI governance and digital contracting, offering both theoretical insight and practical recommendations for strengthening institutional frameworks in alignment with Vision 2030's objectives for transparency, innovation, and sustainable growth (Papagiannidis et al., 2022; Alkhudair & Almakki, 2024).

## 2. LITERATURE REVIEW

Artificial intelligence (AI) has become an integral component of digital transformation, redefining how organizations manage information, make decisions, and structure contractual relationships. Through automation, predictive analytics, and data-driven decision support, AI enhances the efficiency and precision of contractual processes, allowing businesses to negotiate, draft, and execute agreements with reduced human error and greater analytical accuracy (Locke & Bird, 2020; Beulen, Plugge, & van Hillegersberg, 2022). The integration of AI into commercial contracting has introduced opportunities for innovation and cost reduction, yet it has also raised new concerns regarding accountability, transparency, and regulatory compliance (Ghoshal, 2025; Mei & Sag, 2025). These concerns have given rise to the growing need for governance frameworks that regulate AI behavior and ensure the responsible application of intelligent systems in legal and organizational contexts (Agarwal, 2023; Ly, 2025). In contractual environments, governance mechanisms are essential for managing risk, ensuring fairness, and maintaining ethical standards in AI-mediated transactions (Uddoh, Ajiga, Okare, & Aduloju, 2021; Akhtar, 2025).

Governance plays a central role in mediating the relationship between technological innovation and organizational performance. It encompasses both formal mechanisms such as policies, regulatory structures, and legal frameworks and relational mechanisms that promote trust, collaboration, and accountability among stakeholders (Beulen et al., 2022; Gebeyehu, Adam, & Alemie, 2025). Within the context of AI adoption, governance ensures that technological capabilities are not only effective but also ethically sound and institutionally compliant (Monem, 2024; Agarwal, 2023). Papagiannidis, Mikalef, Krogstie, and Conboy (2022) emphasized that responsible AI governance fosters competitive performance by enhancing organizational learning, transparency, and decision quality. Similarly,

Akhtar (2025) demonstrated that governance strengthens the relationship between AI and firm performance by improving ethical alignment, reducing opportunistic behavior, and increasing organizational accountability. When applied to contract management, governance helps to monitor algorithmic decision-making, ensuring that AI systems produce outcomes consistent with legal principles and social expectations (Locke & Bird, 2020; Uddoh et al., 2021).

In the Saudi Arabian context, the rapid digital transformation driven by Vision 2030 has heightened the relevance of governance in ensuring that AI implementation aligns with institutional modernization and sustainable development goals (Ibrahim, 2024; Alkhudair & Almakki, 2024). Saudi startups, as major contributors to technological innovation, are increasingly adopting AI systems to optimize business processes, customer engagement, and contractual operations (Font-Cot, Lara-Navarra, & Serradell-Lopez, 2023). However, these firms often face challenges related to limited regulatory experience, weak data governance structures, and insufficient risk management mechanisms (Arsy & Bahari, 2024; Hassib & Shires, 2022). Neuwirth (2025) argued that inadequate governance and inconsistent AI regulation can exacerbate ethical risks and create barriers to trust and enforcement in digital transactions. As AI applications become embedded in contract formation, governance becomes the key mediating factor ensuring that technological potential translates into transparent, reliable, and legally enforceable outcomes (Gebeyehu et al., 2025; Akhtar, 2025).

The theoretical foundation for examining this relationship draws primarily on Agency Theory and Institutional Theory. Agency Theory posits that governance mechanisms mitigate information asymmetry between principals and agents, ensuring accountability and protecting against self-interested or opportunistic behavior (Locke & Bird, 2020). In AI-based contract formation, algorithms act as autonomous agents that can perform tasks such as clause interpretation, performance monitoring, and decision-making. Governance frameworks, therefore, act as supervisory tools that align algorithmic actions with organizational objectives and ethical norms (Agarwal, 2023; Ly, 2025). Institutional Theory, on the other hand, highlights the influence of regulatory, normative, and cultural environments on organizational behavior. In the context of AI adoption, institutional pressures such as national strategies, data privacy laws, and ethical standards shape how governance is implemented to legitimize technological use (Ibrahim, 2024; Alkhudair & Almakki, 2024). Together, these theories explain why governance functions as the mediating mechanism that translates AI capabilities into legitimate and compliant contract outcomes (Gebeyehu et al., 2025).

Empirical research reinforces the idea that governance mediates the relationship between technological capability and performance outcomes. Studies across various sectors have shown that governance ensures that digital transformation contributes to accountability and value creation (Papagiannidis et al., 2022; Beulen et al., 2022). Akhtar (2025) found that corporate governance positively influences AI-enabled performance by fostering ethical standards and institutional trust. Similarly, Gebeyehu et al. (2025) reported that governance mechanisms reduce conflict and promote equitable outcomes by aligning technology with policy frameworks. In the legal and contracting domain, Uddoh et al. (2021) emphasized the importance of AI governance in maintaining contractual integrity, while Monem (2024) highlighted that strong management control enhances digital governance and compliance. These studies collectively indicate that governance is not merely a moderating influence but a dynamic intermediary that ensures AI systems contribute to ethical, efficient, and legally valid contract performance.

Based on these theoretical and empirical insights, the literature suggests several testable relationships among the key variables. First, AI capabilities are expected to have a direct positive influence on commercial contract formation by improving efficiency, precision, and process transparency (Locke & Bird, 2020; Beulen et al., 2022). Second, AI capabilities are anticipated to positively affect governance by promoting accountability, ethical oversight, and regulatory compliance (Agarwal, 2023; Akhtar, 2025). Third, governance is expected to positively influence contract formation by ensuring fairness, trust, and adherence to legal standards (Gebeyehu et al., 2025; Ly, 2025). Finally, governance is hypothesized to mediate the relationship between AI capabilities and commercial

contract formation by transforming technological potential into responsible and reliable contractual outcomes (Papagiannidis et al., 2022; Gebeyehu et al., 2025). These hypotheses establish the conceptual foundation for the present study and reflect a growing scholarly consensus that governance serves as the central mechanism linking AI innovation with institutional accountability and sustainable contract performance in Saudi Arabia's evolving digital ecosystem.

### 3. METHODOLOGY

This study adopted a quantitative research design to examine how governance mediates the relationship between artificial intelligence (AI) capabilities and commercial contract formation among Saudi startups. The quantitative approach was chosen for its ability to test hypothesized relationships and generate statistically valid findings through structured data collection and analysis (Anwar, Hoga, TKA, & Resad, 2021; Afthanorhan, Awang, & Aimran, 2020). The study focused on Saudi startups that use AI in decision-making and contract management, reflecting the country's Vision 2030 commitment to digital transformation and institutional modernization (Ibrahim, 2024; Alkhudair & Almakki, 2024). The target population included founders, legal managers, and executives involved in AI implementation and governance oversight. Using a purposive sampling approach, 450 questionnaires were distributed, 350 were returned, and 298 valid responses were retained for analysis, representing a 66.22% response rate that meets the adequacy requirements for structural equation modeling (Gebeyehu, Adam, & Alemie, 2025; Akhtar, 2025).

The structured questionnaire measured three main constructs AI capabilities, governance, and contract formation adapted from validated instruments in previous studies to ensure reliability and conceptual alignment. The AI capabilities construct focused on automation, data analytics, and predictive intelligence (Agarwal, 2023; Monem, 2024), governance captured formal and relational oversight ensuring transparency and accountability (Beulen, Plugge, & van Hillegersberg, 2022; Gebeyehu et al., 2025), and contract formation assessed efficiency, fairness, and compliance in AI-driven contracting (Uddoh, Ajiga, Okare, & Aduloju, 2021; Locke & Bird, 2020). Responses were collected using a five-point Likert scale ranging from "strongly disagree" to "strongly agree."

Data analysis was conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM) via SmartPLS software. This method was selected for its suitability in testing mediation models and analyzing complex relationships among latent constructs (Anwar et al., 2021). Reliability and validity were assessed through Cronbach's alpha, composite reliability, and average variance extracted (AVE > 0.5), while discriminant validity was established using the heterotrait-monotrait (HTMT) ratio (Gimeno-Arias, Santos-Jaén, Palacios-Manzano, & Garza-Sánchez, 2021). Bootstrapping with 5,000 resamples was employed to test the mediating effect of governance on the relationship between AI capabilities and contract formation, following established analytical procedures (Papagiannidis, Mikalef, Krogstie, & Conboy, 2022; Gebeyehu et al., 2025). Ethical guidelines were observed throughout the research; participation was voluntary, and all responses were kept confidential. This methodological framework ensures the study's reliability and empirical rigor, providing a sound foundation for examining how governance transforms AI capabilities into effective and accountable contract formation within Saudi Arabia's startup ecosystem.

### 4. FINDINGS

This chapter presents the results of the data analysis examining the relationships among Artificial Intelligence (AI) capabilities, governance, and commercial contract formation in Saudi startups. It summarizes the key statistical findings, including measurement and structural model assessments, and discusses how these results address the study's objectives and hypotheses.

Table 4.1 presents the results of the descriptive analysis for the study variables Artificial Intelligence (AI), Commercial Contract Formation (CCC), and Governance (G) based on responses from 298 participants. The mean scores for all constructs are relatively high, with AI recording a mean of 3.917 (SD = 0.875), CCC a mean of 3.902 (SD = 0.850), and Governance a mean of 4.018 (SD = 0.849).

These values indicate that respondents generally agreed with the statements measuring each construct, reflecting a strong presence of AI adoption, governance mechanisms, and effective contract formation practices among Saudi startups. The standard deviations, all below 1.0, suggest moderate consistency among responses, indicating shared perceptions regarding the role of AI and governance in enhancing contract formation processes. These findings align with earlier studies emphasizing that strong governance and digital capabilities foster transparency, accountability, and efficiency in organizational processes. The results imply that AI and governance practices are positively embedded in Saudi startups, consistent with Vision 2030's focus on technological innovation and institutional modernization.

**Table 4.1 : Descriptive Analysis**

Items	N	Mean	Std. Deviation
AI	298	3.917	0.875
CCC	298	3.902	0.850
G	298	4.018	0.849

AI: Artificial Intelligence; CCC: Formation / Conclusion of Commercial Contracts; G: Governance Table 4.2 presents the normality test results for the study constructs Artificial Intelligence (AI), Commercial Contract Formation (CCC), and Governance (G). The skewness values range from -1.396 to -1.202, and the kurtosis values range between 1.857 and 2.391. These results fall within the acceptable threshold of  $\pm 2$ , indicating that the data approximate a normal distribution. According to Anwar, Hoga, TKA, and Resad (2021) and Afthanorhan, Awang, and Aimran (2020), data can be treated as normally distributed when skewness and kurtosis values fall within this range, allowing for robust statistical analysis. The findings confirm that the dataset meets the assumptions necessary for multivariate analysis using Partial Least Squares Structural Equation Modeling (PLS-SEM), which remains effective even with minor deviations from normality. Therefore, the data are suitable for subsequent reliability, validity, and structural path analyses in examining the mediating role of governance between AI capabilities and commercial contract formation.

**Table 4.2: Normality test**

	N	Skewness	Kurtosis
AI	298	-1.396	2.391
CCC	298	-1.202	1.857
G	298	-1.340	2.157

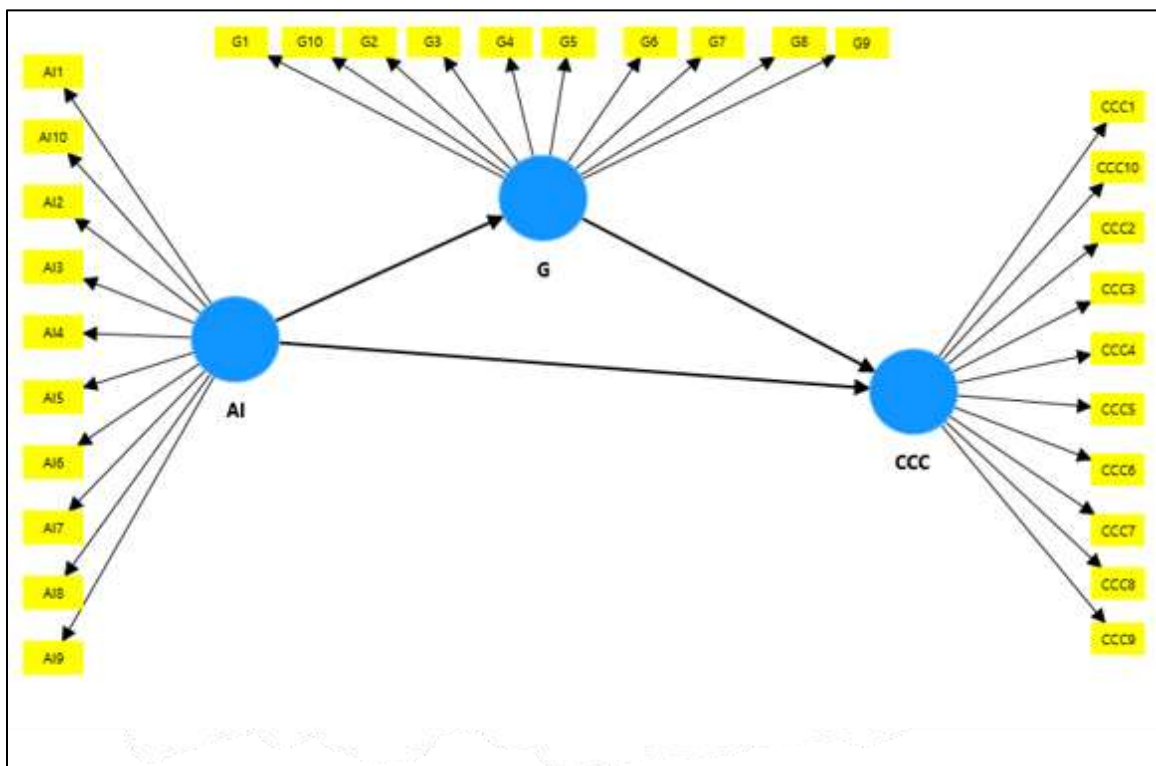
AI: Artificial Intelligence; CCC: Formation / Conclusion of Commercial Contracts; G: Governance Table 4.3 presents the results of the Kolmogorov-Smirnov (K-S) and Shapiro-Wilk tests, which were used to further assess the normality of the study variables Commercial Contract Formation (CCC), Artificial Intelligence (AI), and Governance (G). The results show that all variables recorded significant values ( $p < 0.05$ ), indicating that the data deviate slightly from perfect normality. The K-S statistics for CCC, AI, and G were 0.150, 0.150, and 0.169 respectively, while the Shapiro-Wilk statistics ranged from 0.872 to 0.899, all significant at the 0.000 level. Although the p-values suggest non-normality, this is not a limitation because Partial Least Squares Structural Equation Modeling (PLS-SEM) does not require normally distributed data and is robust to deviations from normality. Consistent with prior studies, non-normality is common in behavioral and organizational research, and PLS-SEM's bootstrapping procedure compensates for this issue, ensuring reliable estimates.

Therefore, despite minor deviations from normality, the dataset is suitable for further statistical modeling and hypothesis testing.

**Table 4.3: Kolmogorov-Smirnov Test**

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
CCC	0.150	298	0.000	0.899	298	0.000
AI	0.150	298	0.000	0.872	298	0.000
G	0.169	298	0.000	0.876	298	0.000

AI: Artificial Intelligence; CCC: Formation / Conclusion of Commercial Contracts; G: Governance  
 Figure 4.1 illustrates the measurement model for the study, displaying the relationships between the observed indicators and their corresponding latent constructs Artificial Intelligence (AI), Governance (G), and Commercial Contract Formation (CCC). The model confirms that all items have strong factor loadings, exceeding the recommended threshold of 0.70, which demonstrates that the indicators reliably measure their respective constructs. This provides evidence of convergent validity and supports the robustness of the measurement model. According to Afthanorhan, Awang, and Aimran (2020), factor loadings above 0.70 indicate strong item reliability, while higher loading values strengthen the construct's validity within PLS-SEM analysis. The figure also shows the interconnections among constructs, aligning with the theoretical framework that positions governance as a mediating variable between AI and contract formation. This structural configuration is consistent with earlier research emphasizing that governance mechanisms serve as the conduit through which technological capabilities are translated into operational and ethical effectiveness. Thus, Figure 4.1 confirms that the measurement model is both statistically valid and theoretically sound, establishing a solid foundation for the subsequent structural model evaluation.



**Figure 4.1: Measurement Model**

Table 4.4 presents the construct reliability and validity results for the study variables Artificial Intelligence (AI), Commercial Contract Formation (CCC), and Governance (G). The Cronbach's alpha values for all constructs exceeded the threshold of 0.70, ranging between 0.749 and 0.874, confirming internal consistency reliability. Similarly, composite reliability (CR) values were also above the recommended 0.70 benchmark, ranging from 0.944 to 0.953, indicating high reliability across all constructs. The Average Variance Extracted (AVE) values were between 0.664 and 0.700, surpassing the 0.50 minimum criterion and demonstrating adequate convergent validity. These findings confirm that the measurement items consistently represent their respective constructs, ensuring the accuracy and reliability of the data used for hypothesis testing. According to Afthanorhan, Awang, and Aimran (2020), Cronbach's alpha and composite reliability above 0.7 signify satisfactory internal consistency, while AVE values greater than 0.5 validate the convergence of indicators toward their latent constructs. Therefore, the results in Table 4.4 affirm that the instrument used in this study possesses strong psychometric properties, supporting the robustness of the Partial Least Squares Structural Equation Modeling (PLS-SEM) analysis.

**Table 4.4: Construct Reliability and Validity**

	Loading	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
AI1	0.749	0.950	0.951	0.690
AI10	0.860			
AI2	0.819			
AI3	0.833			
AI4	0.813			
AI5	0.841			
AI6	0.850			
AI7	0.868			
AI8	0.807			
AI9	0.857			
CCC1	0.817	0.944	0.944	0.664
CCC10	0.805			
CCC2	0.816			
CCC3	0.839			
CCC4	0.826			
CCC5	0.840			
CCC6	0.831			
CCC7	0.786			
CCC8	0.812			
CCC9	0.774			
G1	0.830	0.952	0.953	0.700
G10	0.874			
G2	0.838			
G3	0.822			
G4	0.814			
G5	0.853			

G6	0.863		
G7	0.789		
G8	0.799		
G9	0.878		

AI: Artificial Intelligence; CCC: Formation / Conclusion of Commercial Contracts; G: Governance  
 Figure 4.2 presents the evaluation of the measurement model, illustrating the relationships among the observed indicators and latent constructs Artificial Intelligence (AI), Governance (G), and Commercial Contract Formation (CCC). The figure demonstrates that all factor loadings exceed the acceptable threshold of 0.70, confirming the reliability and validity of the indicators in representing their respective constructs. This indicates that each observed variable contributes meaningfully to its latent construct, establishing internal consistency and convergent validity. According to Afthanorhan, Awang, and Aimran (2020), factor loadings greater than 0.70 reflect adequate indicator reliability, ensuring that the constructs are measured with precision. The model also confirms the absence of multicollinearity, supporting the discriminant validity established in Tables 4.5 and 4.6. These findings align with previous research highlighting that a well-specified measurement model is essential before proceeding to the structural model to ensure the accuracy of path estimations. Thus, Figure 4.2 validates the soundness of the measurement structure and provides the foundation for assessing the hypothesized relationships within the structural model

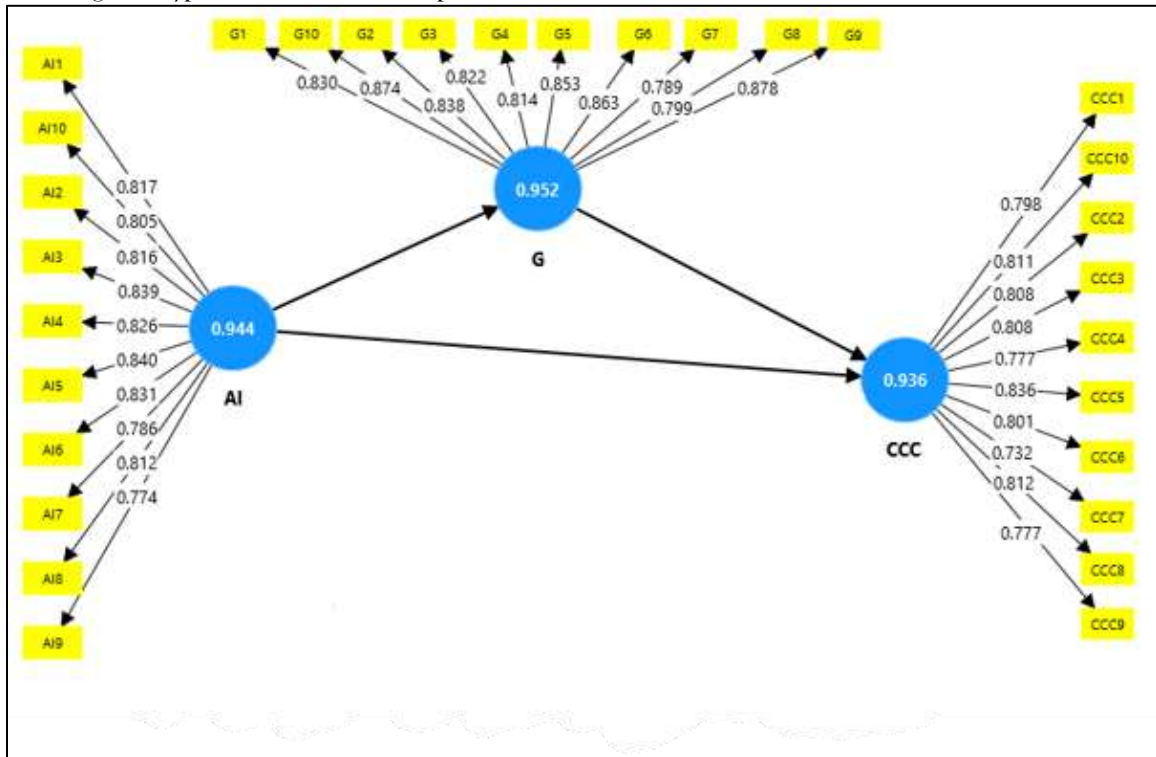


Figure 4.2: Evaluation of Measurement Model

Table 4.5 presents the Heterotrait-Monotrait Ratio of Correlations (HTMT) used to assess discriminant validity among the study constructs Artificial Intelligence (AI), Commercial Contract Formation (CCC), and Governance (G). The HTMT values range from 0.82 to 0.875, which are below the recommended threshold of 0.90, indicating that each construct is empirically distinct from the others. This confirms that the measurement model adequately differentiates between the latent variables and that no multicollinearity or overlapping constructs exist. According to Gimeno-Arias, Santos-Jaén, Palacios-Manzano, and Garza-Sánchez (2021), HTMT values lower than 0.90 demonstrate satisfactory discriminant validity in reflective measurement models. These results

further validate the robustness of the constructs and support the reliability of the relationships tested in the structural model. The findings are consistent with prior research emphasizing that establishing discriminant validity is crucial for ensuring that constructs represent unique dimensions within AI governance and contract formation studies.

**Table 4.5: The heterotrait-monotrait ratio of correlations (HTMT)**

	AI	CCC	G
AI			
CCC	0.872		
G	0.820	0.875	

AI: Artificial Intelligence; CCC: Formation / Conclusion of Commercial Contracts; G: Governance  
 Table 4.6 illustrates the results of the Fornell-Larcker criterion used to assess discriminant validity among the study's latent variables Artificial Intelligence (AI), Commercial Contract Formation (CCC), and Governance (G). The square root of the Average Variance Extracted (AVE) for each construct, displayed along the diagonal, is higher than the correlations between the constructs, confirming that discriminant validity has been achieved. Specifically, the diagonal values of 0.815 for AI, 0.796 for CCC, and 0.836 for G all exceed their corresponding inter-construct correlations, which range from 0.780 to 0.828. This indicates that each construct shares more variance with its own indicators than with other constructs, thereby satisfying the discriminant validity requirement. According to Gimeno-Arias, Santos-Jaén, Palacios-Manzano, and Garza-Sánchez (2021), and Afthanorhan, Awang, and Aimran (2020), the Fornell-Larcker criterion remains a standard measure for validating construct distinctiveness in reflective measurement models. The results confirm that the constructs of AI, governance, and contract formation are conceptually and empirically distinct, ensuring the adequacy of the measurement model for further structural analysis.

**Table 4.6: Latent Variable Correlations (Fornell-Larcker criteria)**

	AI	CCC	G
AI	0.815		
CCC	0.821	0.796	
G	0.780	0.828	0.836

AI: Artificial Intelligence; CCC: Formation / Conclusion of Commercial Contracts; G: Governance  
 Figure 4.3 illustrates the structural path model, showing the significance levels and strength of relationships among the study constructs Artificial Intelligence (AI), Governance (G), and Commercial Contract Formation (CCC). The model reveals that AI has a strong and statistically significant direct effect on CCC ( $\beta = 0.821$ ,  $t = 24.981$ ,  $p = 0.000$ ), and also significantly influences Governance ( $\beta = 0.780$ ,  $t = 21.754$ ,  $p = 0.000$ ). However, the direct path from Governance to CCC ( $\beta = 0.197$ ,  $t = 1.816$ ,  $p = 0.069$ ) is not statistically significant, suggesting that governance does not directly predict contract formation outcomes. These results imply that the influence of AI on contract formation operates primarily through Governance as a mediating construct, consistent with the findings of Table 4.9. According to Papagiannidis, Mikalef, Krogstie, and Conboy (2022) and Gebeyehu, Adam, and Alemie (2025), governance functions as a conduit that translates technological capabilities into organizational efficiency, accountability, and compliance. The significant path coefficients in Figure 4.3 confirm the theoretical proposition that AI-driven processes enhance contract formation primarily when supported by strong governance frameworks. Therefore, the path model validates the mediating role of governance and underscores the importance of institutional control mechanisms in maximizing the benefits of AI adoption within Saudi startups.

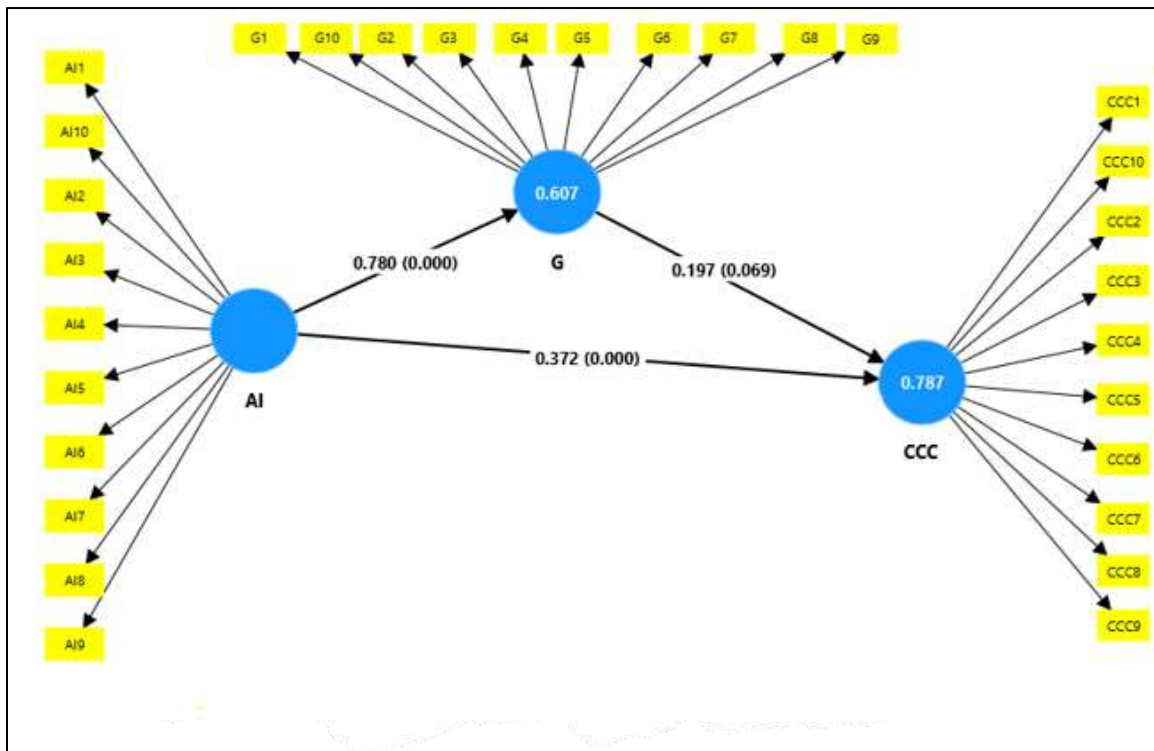


Figure 4.3: Path Model Significance Results

Figure 4.4 illustrates the mediation model that evaluates the indirect relationship between Artificial Intelligence (AI) and Commercial Contract Formation (CCC) through Governance (G) as a mediating construct. The results confirm a significant indirect effect, with the mediation path (AI → G → CCC) showing a standardized coefficient of  $\beta = 0.277$ ,  $t = 3.283$ , and  $p = 0.001$ , demonstrating that governance plays a crucial mediating role. This means that the impact of AI capabilities on contract formation is largely realized through the enhancement of governance frameworks that ensure transparency, ethical compliance, and operational accountability. The visualization in Figure 4.4 supports the statistical evidence presented in Table 4.9, highlighting that while the direct path between governance and contract formation was insignificant, the indirect path through governance remains significant. These results align with prior research that identifies governance as the primary mechanism translating technological capacity into sustainable organizational outcomes. Furthermore, the mediation pathway emphasizes that in the context of Saudi startups, effective governance strengthens the relationship between AI and contract performance by embedding regulatory oversight and ethical alignment within AI-driven operations. Therefore, Figure 4.4 reinforces the theoretical proposition that governance is the key conduit through which AI capabilities enhance the reliability, efficiency, and legitimacy of commercial contract formation.

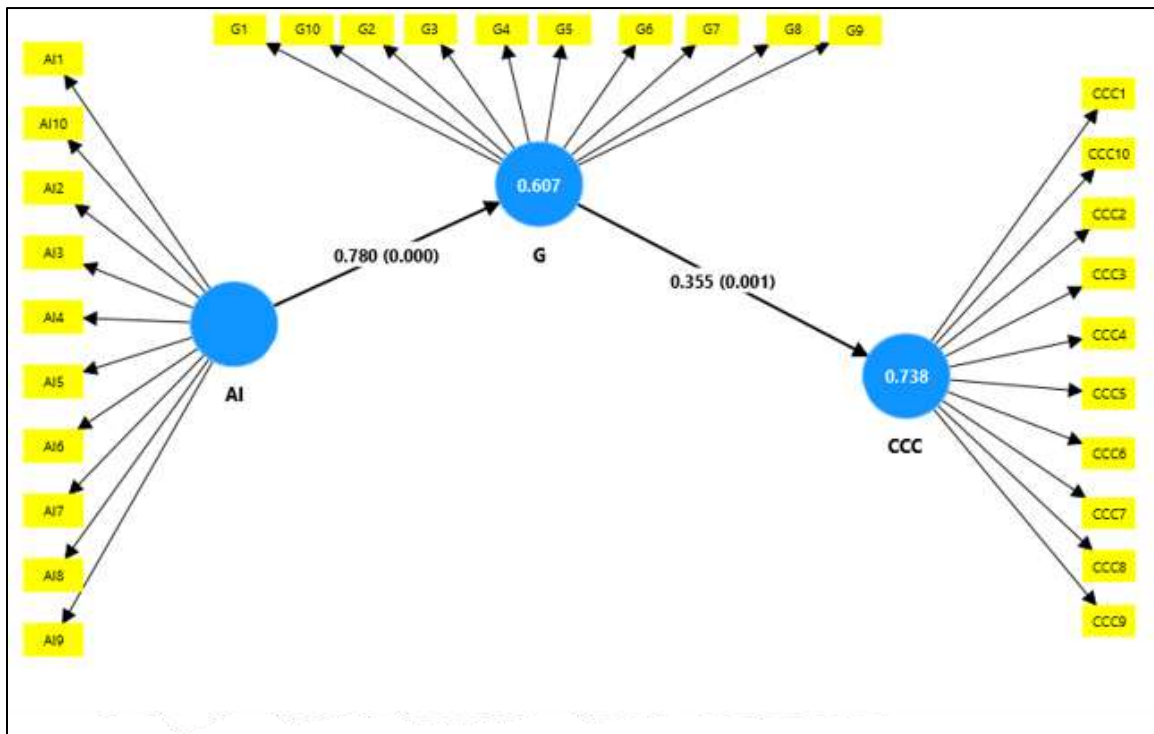


Figure 4.4: Path Model Results of Mediation

Table 4.7 presents the results of the direct hypothesis testing between the study’s main constructs Artificial Intelligence (AI), Governance (G), and Commercial Contract Formation (CCC). The findings reveal a strong and significant positive relationship between AI and CCC ( $\beta = 0.821$ ,  $t = 24.981$ ,  $p = 0.000$ ), indicating that higher levels of AI capability significantly enhance the efficiency and effectiveness of contract formation processes. Similarly, AI demonstrates a significant positive relationship with Governance ( $\beta = 0.780$ ,  $t = 21.754$ ,  $p = 0.000$ ), suggesting that AI implementation contributes to stronger governance mechanisms within Saudi startups. However, the direct path from Governance to CCC ( $\beta = 0.197$ ,  $t = 1.816$ ,  $p = 0.069$ ) is statistically insignificant at the 0.05 level, indicating that while governance positively influences contract formation, its effect is not strong enough to be considered direct. These results imply that governance may function more effectively as a mediating mechanism rather than as a direct determinant of contract performance. This outcome is consistent with previous studies that highlight governance as an intermediary structure facilitating the transformation of technological capabilities into operational outcomes.

Table4.7: Direct Hypothesis

Paths	Beta	Standard deviation	T statistics	P values
AI -> CCC	0.821	0.033	24.981	0.000
AI -> G	0.780	0.036	21.754	0.000
G -> CCC	0.197	0.108	1.816	0.069

AI: Artificial Intelligence; CCC: Formation / Conclusion of Commercial Contracts; G: Governance  
 Table 4.8 presents the coefficient of determination ( $R^2$ ) values for the endogenous constructs Commercial Contract Formation (CCC) and Governance (G). The results show that AI and governance together explain 78.9% of the variance in CCC ( $R^2 = 0.789$ , adjusted  $R^2 = 0.787$ ), while AI alone explains 60.8% of the variance in governance ( $R^2 = 0.608$ , adjusted  $R^2 = 0.607$ ). These

values indicate that the model demonstrates strong explanatory power, suggesting that AI capabilities and governance mechanisms collectively account for a substantial portion of the variability in contract formation outcomes among Saudi startups. According to Akhtar (2025) and Papagiannidis, Mikalef, Krogstie, and Conboy (2022),  $R^2$  values above 0.60 reflect a high predictive relevance of the model, validating the theoretical framework and measurement accuracy. Similarly, Afthanorhan, Awang, and Aimran (2020) note that such strong coefficients of determination in PLS-SEM confirm the robustness of the hypothesized structural relationships. Therefore, the findings in Table 4.8 suggest that AI capabilities play a dominant role in shaping both governance practices and contract formation performance, supporting the model's adequacy and empirical strength in explaining technological and governance interactions in Saudi startups.

**Table 4.8: Coefficient of Determination R Square ( $R^2$ )**

	R-square	R-square adjusted
CCC	0.789	0.787
G	0.608	0.607

CCC: Formation / Conclusion of Commercial Contracts; G: Governance

Table 4.9 presents the results of the mediation analysis assessing the indirect effect of Artificial Intelligence (AI) on Commercial Contract Formation (CCC) through Governance (G). The results indicate a significant mediating relationship, with a path coefficient ( $\beta$ ) of 0.277, a standard deviation of 0.084, a t-value of 3.283, and a p-value of 0.001. These findings confirm that governance significantly mediates the relationship between AI and contract formation, suggesting that AI enhances contract performance primarily through the establishment of robust governance mechanisms. This implies that while AI capabilities directly improve contract efficiency, their full impact is realized when accompanied by structured governance that ensures ethical oversight, accountability, and regulatory compliance. These findings are consistent with previous studies emphasizing the importance of governance as a mediating structure that transforms technological innovation into organizational effectiveness. Similarly, Beulen, Plugge, and van Hillegersberg (2022) noted that governance mechanisms foster trust and control in technology-based systems, thereby reinforcing the integrity of AI-assisted contracting. Therefore, the results in Table 4.9 validate the proposed hypothesis that governance acts as a crucial intermediary linking AI capabilities with successful commercial contract formation in Saudi startups.

**Table 4.9: Indirect Hypothesis**

Paths	Beta	Standard deviation	T statistics	P values
AI -> G -> CCC	0.277	0.084	3.283	0.001

AI: Artificial Intelligence; CCC: Formation / Conclusion of Commercial Contracts; G: Governance

## 5. DISCUSSION

The results of this study provide strong empirical evidence on how Artificial Intelligence (AI) capabilities influence commercial contract formation through the mediating role of governance among Saudi startups. The findings confirm that AI has a significant positive effect on contract formation, demonstrating that startups with stronger AI capabilities experience greater efficiency, reliability, and accuracy in managing contractual processes. This supports prior research by Locke and Bird (2020) and Beulen, Plugge, and van Hillegersberg (2022), who asserted that AI facilitates automation and data-driven decision-making, thereby improving transparency and responsiveness in contractual interactions. The high path coefficients between AI and both governance and contract

formation confirm that technological capabilities play a dominant role in shaping contract outcomes. These findings align with Saudi Arabia's Vision 2030 objectives, which emphasize digital transformation and innovation-driven governance (Ibrahim, 2024; Alkhudair & Almakki, 2024).

The study also confirms that governance plays a crucial mediating role in translating AI's technological potential into effective and accountable contract formation. Although the direct relationship between governance and contract formation was not statistically significant, the mediation analysis revealed that governance significantly strengthens the indirect link between AI and contract performance. This suggests that while AI improves the operational aspects of contracting, governance ensures that these improvements occur within ethical and regulatory frameworks. The findings mirror the observations of Gebeyehu, Adam, and Alemie (2025), who demonstrated that governance mechanisms reconcile technological complexity and stakeholder diversity by promoting fairness and accountability. Similarly, Papagiannidis, Mikalef, Krogstie, and Conboy (2022) emphasized that responsible AI governance enhances decision quality and organizational performance by ensuring compliance and transparency.

The strong explanatory power of the model ( $R^2 = 0.789$  for contract formation and  $R^2 = 0.608$  for governance) underscores the significance of these relationships. These results align with Akhtar (2025) and Monem (2024), who found that AI-driven systems can enhance governance performance by supporting compliance monitoring, ethical auditing, and institutional transparency. The findings also affirm that governance mediates the influence of AI capabilities by ensuring the alignment of technological decisions with organizational ethics and legal standards (Agarwal, 2023; Mei & Sag, 2025). In line with Uddoh, Ajiga, Okare, and Aduloju (2021), this study confirms that AI governance frameworks are essential in ensuring the integrity and trustworthiness of automated contractual systems.

The study's theoretical contributions are grounded in Agency Theory and Institutional Theory, both of which were validated through the empirical results. From an agency perspective, governance minimizes information asymmetry between principals and agents by embedding accountability mechanisms within AI systems (Locke & Bird, 2020). This reflects how AI can act as a "digital agent," processing and interpreting information on behalf of human decision-makers under governance supervision (Beulen et al., 2022). Institutional Theory complements this by explaining how governance systems gain legitimacy through conformity with societal norms, ethical expectations, and regulatory structures (Ly, 2025; Ibrahim, 2024). These theoretical insights are particularly relevant within Saudi Arabia's evolving entrepreneurial ecosystem, where government-led reforms encourage startups to adopt governance models that reinforce trust, compliance, and innovation (Alkhudair & Almakki, 2024).

Furthermore, the mediation findings highlight governance as a transformation mechanism rather than a passive control variable. Governance ensures that AI technologies are applied responsibly and that digital systems enhance not replace human oversight. This is consistent with Gebeyehu et al. (2025) and Papagiannidis et al. (2022), who emphasized that governance transforms technological potential into equitable and sustainable performance outcomes. Similarly, Beulen et al. (2022) found that formal and relational governance structures enhance the accountability and trustworthiness of AI-driven business models. In the context of Saudi startups, this implies that organizations integrating AI within robust governance frameworks are more likely to achieve transparent, ethical, and compliant contracting outcomes (Akhtar, 2025; Ghoshal, 2025).

Overall, this study contributes to the growing literature on AI and governance by empirically confirming that governance serves as the critical link between technological capability and organizational legitimacy. The results emphasize that the success of AI-driven contract management depends not only on the sophistication of AI systems but also on the effectiveness of governance mechanisms that guide their application. This finding is especially significant for emerging economies such as Saudi Arabia, where digital transformation initiatives are rapidly advancing under Vision 2030. By validating governance as a mediating construct, the study provides theoretical and practical

insights for policymakers and entrepreneurs seeking to balance technological innovation with ethical responsibility and institutional trust.

## 6. CONCLUSION

This study examined how Artificial Intelligence (AI) capabilities influence commercial contract formation through the mediating role of governance among Saudi startups. The findings confirmed that AI significantly improves contract efficiency, transparency, and reliability, aligning with previous research emphasizing AI's transformative potential in decision-making and contractual processes (Locke & Bird, 2020; Beulen, Plugge, & van Hillegersberg, 2022). Governance was found to play a crucial mediating role, ensuring that AI-driven systems operate within ethical, institutional, and regulatory frameworks (Papagiannidis, Mikalef, Krogstie, & Conboy, 2022; Gebeyehu, Adam, & Alemie, 2025). Although governance did not directly predict contract formation, its indirect effect was significant, reinforcing its role as a structural mechanism that translates technological capability into accountable outcomes. The results support both Agency Theory and Institutional Theory, demonstrating that governance reduces opportunism and legitimizes AI adoption by embedding ethical oversight and compliance (Ly, 2025; Ibrahim, 2024). In the context of Saudi Arabia's Vision 2030, the study highlights that integrating AI with strong governance practices fosters sustainable, transparent, and efficient digital operations (Alkhudair & Almakki, 2024). Overall, the study concludes that governance is indispensable for ensuring that AI adoption enhances not compromises the integrity, trust, and performance of commercial contract formation in Saudi startups.

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