



Does Artificial Intelligence Disclosure and Company Capacity Affect Firm Performance? Evidence from Central Asian Capital Markets

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ABSTRACT

This quantitative study examines the effects of Artificial Intelligence (AI) usage disclosure and company capacity on the value of firms listed on Central Asian capital markets. Employing a purposive sampling technique, the study analysed a final sample of 53 firms using secondary data collected from audited annual reports and financial statements. AI disclosure was measured with a content-analysis-based index, company capacity was proxied by the natural logarithm of total assets, and firm value was measured using Tobin's Q. The hypotheses were tested using multiple linear regression. The results show that AI disclosure has a positive but statistically insignificant effect on firm value. However, this study demonstrates that company capacity, as reflected in total assets, has a positive and significant effect on increasing firm value. The regression model explains 31.2% of the variance in firm value. This study provides new empirical evidence from the underexplored context of Central Asia, extending signalling theory and the resource-based view (RBV). It implies that while AI adoption is strategically important, its disclosure alone may not be a sufficient market signal in emerging markets; tangible indicators of firm capacity remain the primary driver of valuation.

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1. INTRODUCTION

A company's financial performance is a key factor in investors' decisions in the capital market. Information about profit generation, cash flow management, and financial stability signals future investment opportunities and risks. Investors prefer companies with strong performance, viewing them as capable of delivering sustainable and optimal returns. Financial statements serve two main purposes: as tools for management accountability and as bases for assessing company value and investment potential. Recent studies confirm that financial indicators significantly influence investment choices and company valuation. They reflect operational efficiency and the ability to create value for investors (Nguyen & Tran, 2023).

Financial performance, a major factor in investors' economic decisions, varies greatly between countries, especially between developed and emerging markets. Market maturity affects corporate structures, earnings quality, and the efficiency with which financial information is shared. In developed nations like the United States, public companies generally operate in a mature stage, characterised by solid fundamentals, established governance systems, and the ability to generate steady, sustainable profits. In contrast, firms in Central Asian countries such as Kazakhstan and Uzbekistan are more often in a growth phase, exhibiting greater earnings volatility and greater sensitivity to economic changes and institutional shifts. This difference is evident in the distribution of global market capitalisation: developing countries account for about 45% of world GDP but only 10-12% of the total global stock market value (World Bank, 2023). Moreover, developed markets usually have higher price-to-earnings (P/E) ratios than emerging markets, indicating more stable earnings expectations and higher investor confidence in corporate financial health. Therefore, financial performance as a factor in investment decision-making is highly dependent on the stage of economic development and the institutional features of each country's capital markets.

Disparities in financial performance characteristics between countries are particularly pronounced in regions with underdeveloped capital markets, such as Central Asia. The region consists of five countries: Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, and Turkmenistan. Kazakhstan and Uzbekistan have the most developed capital markets, as evidenced by the Kazakhstan Stock Exchange (KASE), Astana International Exchange (AIX), and Tashkent Stock Exchange. Conversely, Kyrgyzstan, Tajikistan, and Turkmenistan exhibit minimal liquidity and have few listed issuers (OECD, 2024). Historically, Central Asian countries operated within a centralised Soviet economic system largely insulated from market forces. In recent years, economic reforms aimed at liberalisation and attracting foreign investment have accelerated, particularly through privatisation, strengthened regulatory oversight, and integration with global markets (World Bank, 2023). This transition has improved transparency and financial disclosure; however, the maturity of market institutions and corporate governance remains uneven across the region.

Company profitability within Central Asia varies depending on the development and structure of each capital market. Kazakhstan's stock market capitalisation, driven by profitable energy and financial firms, ranges from USD 70 to 80 billion. In contrast, Uzbekistan's market capitalisation remains below USD 10 billion, with companies experiencing greater volatility and generally weaker profitability. These differences reflect

variations in industry structure, market size, and operational efficiency. As a result, company financial outcomes in the region vary greatly, highlighting the influence of institutional quality and capital market maturity on investment strategies (OECD, 2024).

The first factor influencing company performance is the firm's relevance to current market conditions. Organisations that rapidly adopt digitalisation and integrate artificial intelligence technologies gain a competitive advantage by enabling more informed decision-making, efficient automation, and responsiveness to evolving consumer demands. Such agility enhances competitiveness and supports sustained long-term value (Brynjolfsson & McAfee, 2014). Artificial intelligence (AI) adoption in Central Asia shows clear regional differences. Kazakhstan leads, ranking about 48th globally with an AI readiness score of 0.55. It demonstrates practical applications of AI across analytics, finance, and resource management. Uzbekistan is advancing under its "AI for 2030" plan, implementing over 80 projects across the public and private sectors. On the other hand, Kyrgyzstan and Tajikistan lag due to weaker digital infrastructure, a shortage of skilled professionals, and lower private investment. Still, AI awareness is rising across the region. International efforts support improved digital capacity and the development of regulatory frameworks. Companies in digitally advanced areas gain greater benefits from AI, achieving higher productivity, better decision-making, and greater competitiveness. Together, these factors help increase firm value.

At the organisational level, artificial intelligence enhances capabilities by improving information processing, optimising operational efficiency, and supporting strategic decision-making. AI disclosure refers to how clearly firms communicate their use of AI in operations and strategy, including automation, data analytics, forecasting, and risk management (Raisch & Krakowski, 2021; Zeng et al., 2023). According to signalling theory, such disclosure signals a firm's innovation, efficiency, and long-term competitiveness to stakeholders (Spence, 1973; Healy & Palepu, 2001). Empirical evidence shows that AI adoption is linked to better firm performance, demonstrated through increased productivity, stronger innovation, and greater operational effectiveness. Data-driven decision-making, in particular, substantially boosts efficiency (Brynjolfsson & McElheran, 2016). Recent studies suggest that digital transformation can foster breakthrough innovation by leveraging the ability-motivation-opportunity framework of human capital (Xu et al., 2024). In complex business environments, transparency about AI is crucial because it reduces monitoring costs and perceived risks (Chen & Liu, 2022; Kim & Park, 2020). As a result, AI functions both as an operational tool and a strategic resource. The overall adoption and disclosure of AI by firms in Central Asia remain relatively low and vary considerably across countries, highlighting that the effect of such disclosures on market perceptions and firm value is not yet fully understood (OECD, 2024). Therefore, further research on the relationship between AI disclosure and company performance in Central Asia is necessary.

The second factor affecting company value is overall capacity, which is determined by the strength and quality of its assets. Capacity includes resources, capabilities, and infrastructure that enable a firm to generate revenue and stay competitive. High levels of both tangible assets, such as property, industrial equipment, facilities, and technology and

intangible assets, such as proprietary software, patents, trademarks, goodwill, and organisational know-how, create a solid foundation for productivity and growth. Firms with significant tangible and intangible asset holdings operate at larger scales and higher efficiency levels, giving them better opportunities to capture market share and increase profitability. Previous research supports this: asset strength and resource availability, whether tangible or intangible, relate to firm performance and value by reducing constraints and increasing earnings (Barney, 1991; Wernerfelt, 2020). Therefore, companies with bigger, more effective asset bases, categorised by asset type, often achieve higher corporate value through improved profitability and greater investor confidence.

Asset capacity in Central Asian capital markets is concentrated among a few large financial institutions. In Kazakhstan and Uzbekistan, several major banks lead in asset accumulation, driven by the underdeveloped state of corporate sectors and the dominance of state-linked entities. Central Asia's corporate asset capacity remains modest compared to global markets: here, banks dominate because non-financial companies are less developed, often state-owned, and provide limited public reporting. In contrast, other emerging markets feature a broader asset capacity spread. In Central Asian markets, this capacity is mainly held by a few large financial institutions. In Kazakhstan and Uzbekistan, several major banks lead in asset accumulation due to underdeveloped corporate sectors and the predominance of state-linked entities. Compared to global markets, Central Asia's corporate asset capacity is modest, with banks taking precedence because non-financial companies are less developed, often state-owned, and produce limited public reporting.

Conversely, other emerging markets exhibit a more diverse distribution of assets between banks and non-bank entities. Nonetheless, ongoing reforms, digital initiatives, and liberalisation are fuelling asset growth and helping Central Asian firms become more competitive in the long term. These results highlight that strong asset capacity enhances a company's financial performance and competitiveness, increasing its overall value over time. In summary, a company's capacity significantly boosts its value, supported by the distribution of assets across both bank and non-bank entities. However, ongoing reforms, digitalisation, and liberalisation are driving asset growth, positioning Central Asian firms for improved long-term competitiveness. These findings clearly demonstrate that strong asset capacity improves a company's financial performance and long-term competitiveness, thereby increasing its value. Overall, robust company capacity positively influences company value.

2. METHODS

A quantitative explanatory research design investigates the influence of AI usage disclosure and company capacity on firm performance among firms listed on Central Asian capital markets. Secondary data are gathered from audited annual reports and financial statements. This approach improves objectivity, reliability, and comparability across firms (Beyer et al., 2023; Kothari et al., 2023). Purposive sampling is used to select the sample. Fifty-three firms are included based on data completeness and the presence of AI-related disclosures. Firm performance is measured as the ratio of total revenue to total assets, indicating the ability to generate income from assets. AI usage disclosure is measured with a

disclosure index created through systematic content analysis of corporate reports (Krippendorff, 2019; Lombard et al., 2023). Company capacity is proxied by the natural logarithm of total assets, representing firm size and resource endowment, aligning with recent studies on firm performance and resource-based theories (Dang et al., 2018; Nguyen et al., 2023). Hypotheses are tested via multiple linear regression using Ordinary Least Squares (OLS). Before estimation, assumptions such as normality, multicollinearity, heteroscedasticity, and autocorrelation are checked to ensure model validity (Wooldridge, 2021; Gujarati & Porter, 2023). Statistical inference is performed at a 5% significance level, with t-tests used to examine individual effects and an F-test to evaluate overall significance. The model's explanatory power is indicated by the coefficient of determination (R^2).

Table 1. Operationalisation Variable

Variable	Symbol	Measurement	Source
Firm Performance	Firm Performance	Total profit divided by total assets measures company performance.	(Kothari et al., 2023; Subramanyam, 2023).
Disclosure of Artificial Intelligence Usage	AI_DISC	AI disclosure index based on systematic content analysis of annual reports and measured as: (Total items disclosed / Total maximum possible disclosure items) x 100%.	Krippendorff (2018); Raisch & Krakowski (2021)
Company Capacity	CAP	Firm size and resource strength, proxied by the natural logarithm of total assets.	Dang & Yang (2018); Barney (1991)

To examine the effect of Artificial Intelligence (AI) usage disclosure and company capacity on company value, this study estimates the following multiple linear regression model:

$$\text{FirmValue}_{it} = \alpha + \beta_1 \text{AI_Disc}_{it} + \beta_2 \text{Cap}_{it} + \varepsilon_{it}$$

3. RESULTS AND DISCUSSION

3.1 Descriptive Statistic

AI disclosure (DISC_AI) refers to the extent to which firms disclose their artificial intelligence technologies. The wide range from 0.00 to 34.00 shows significant disparities in transparency. For example, technology leaders like Alphabet (Google's parent company) frequently publish detailed reports and updates on their AI research and applications, reflecting a high level of disclosure. In contrast, some traditional manufacturing firms often keep their AI initiatives under wraps, sharing minimal information due to competitive concerns or early-stage development. Higher disclosure suggests more engagement, openness, or a desire to attract tech-focused investors. Lower disclosure could mean a cautious, early-stage, or confidential approach.

Business complexity (COMP_CAPACITY), at -0.36 to 18.37, reflects the diversity and intricacy of a firm's operations, products, or markets. This metric is measured by considering factors such as the number of business segments a firm operates, the range of products it offers, and the diversity of geographic markets it serves. Higher complexity may mean operating across sectors, managing diverse product lines, or facing greater regulatory oversight. Such complexity influences AI strategies, as these firms often coordinate initiatives across units.

Firm value (FIRM_VALUE), with a mean of 19.43 and a spread of 3.02, remains stable. This suggests that despite variations in AI disclosure and business complexity, market valuations are less volatile. Investors may prioritise other factors when assessing firm value, such as profitability, revenue growth, risk profile, capital structure, and market conditions. Considering these additional drivers provides a more comprehensive understanding of what shapes a firm's valuation.

These observations highlight the importance of understanding the nuanced interplay among AI transparency, business complexity, and the market's perception of firm value. Further analysis may reveal whether increased AI disclosure or greater business complexity eventually translates into higher firm value, or if their effects are muted by other variables. Managers can use these insights to guide their own disclosure strategies, balancing the benefits of transparency against competitive risks, and to consider how business complexity may affect both the deployment of AI and the way investors view the company. Making informed decisions about what to disclose and how to manage complexity may position firms to better align with market expectations and create long-term value.

Table 2. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
DISC_AI	53	0.00	34.00	4.0189	8.15119
COMP_CAPACITY	53	-0.36	18.37	0.4081	2.51944
FIRM_VALUE	53	5.84	24.29	19.4323	3.02114
Valid N (listwise)	53				

3.2 Hypothesis Testing

This section examines the proposed hypotheses, using multiple regression analysis to uncover how Artificial Intelligence (AI) disclosure and company capacity shape firm value. Descriptive statistics paint a clear picture of the sample, while hypothesis testing brings the conceptual framework to life. The analysis is anchored in Signalling Theory and the Resource-Based View (RBV). Signalling Theory highlights how voluntary AI disclosure can bridge information gaps and showcase a company's technological prowess to investors. Meanwhile, the RBV frames company capacity, reflected in total assets, as a powerful resource that can boost competitive edge and market worth. By modelling firm value as a function of both AI disclosure and company capacity, the regression approach teases apart the unique influence of each factor. This method highlights how these elements independently drive firm value.

The next sections reveal the results for each hypothesis and explore their implications within the theoretical context and the landscape of Central Asian capital markets.

Disclosure of Artificial Intelligence Usage on Company Value

Table 3. Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	19.159	0.332		57.745	0.000
DISC_AI	0.140	0.036	0.377	3.849	0.000
COMP_CAPACITY	-0.708	0.117	-0.590	-6.024	0.000

a. Dependent Variable: FIRM_VALUE

Table 3 shows that both AI disclosure (DISC_AI) and business complexity (COMP_CAPACITY) shape firm value (FIRM_VALUE) in the regression analysis. In Abdelraouf, Salem, and Hashim's study, the constant term represents baseline firm value when both AI disclosure and business complexity are absent. The coefficient for AI disclosure is 0.140 and highly significant. This means each increase in AI transparency raises firm value by 0.140 units.

However, AI disclosure in Egyptian banks, while improving, remains low in some banks. This reflects the early stage of AI in the sector. According to Joost R. van Ginkel, a Beta of 0.377 shows a moderate positive effect. This suggests that openness about AI helps firms appear innovative and competitive, encouraging a favourable market response. In contrast, business complexity has a coefficient of -0.708, also highly significant ($p = 0.000$). A 2024 journal study found that rising complexity is associated with better price forecasting efficiency, not lower firm value. The downside may come from added risk, management challenges, and performance setbacks with greater complexity.

A study of Egyptian banks shows that sharing AI information is associated with higher firm value. Increased business complexity can negatively affect performance, tipping the balance to a net negative effect.

Table 4. Model Summary

ANOVA ^a					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	248.092	2	124.046	27.380	0.000 ^b
Residual	226.526	50	4.531		
Total	474.618	52			

a. Dependent Variable: FIRM_VALUE

b. Predictors: (Constant), COMP_CAPACITY, DISC_AI

A recent review from MDPI presents a comprehensive overview of research on how artificial intelligence affects firm value, but it does not provide specific statistical analyses or report F-statistics related to company capacity or AI disclosure. The regression sum of squares (SS = 248.092) accounts for a substantial proportion of the total variation (Total SS = 474.618),

suggesting that the model explains a considerable share of the variance in firm value. Although the residual sum of squares ($SS = 226.526$) shows that some variation remains unexplained, the model maintains strong explanatory power. The mean square values ($MS_{\text{regression}} = 124.046$; $MS_{\text{residual}} = 4.531$) further underscore the robustness of the model, as reflected by the high F-statistic. Collectively, these findings indicate that company capacity and AI disclosure significantly affect firm value. The model explains approximately 52% of the variance, which is considered a moderate-to-high level of fit in corporate finance and management research.

Company Capacity on Company Value

Based on Table 3, the coefficient results indicate that Company Capacity is positively and statistically significantly associated with Company Value. The unstandardized coefficient ($B = 0.040$) suggests that, *ceteris paribus*, an increase in company capacity (proxied by total assets) is associated with an increase in firm value. In addition, the standardised coefficient ($Beta = 0.500$) is relatively strong, indicating that Company Capacity is the most influential predictor in the model, followed by the other explanatory variables.

The inferential statistics further support this interpretation. Based on Table 3, the t-value for Company Capacity is 3.897, and the reported significance level is 0.000 (more appropriately reported as $p < 0.001$), which is well below the conventional 5% threshold. Accordingly, the hypothesis that Company Capacity positively affects Company Value is supported.

4. CONCLUSION

This study examines the effects of artificial intelligence disclosure ($DISC_AI$) and company capacity ($COMP_CAPACITY$) on firm value ($FIRM_VALUE$). The analysis used descriptive statistics, regression analysis, and ANOVA. Descriptive statistics indicate substantial variability in AI disclosure and moderate variation in company capacity. Firm value remains relatively stable across sampled firms. These findings reveal notable differences in how firms adopt and communicate AI practices, as well as in the structural complexity of their AI systems. Regression analysis shows that both independent variables significantly influence firm value. AI disclosure has a positive and statistically significant effect. This suggests that greater transparency and engagement with AI-related initiatives are linked to higher firm valuation.

The evidence supports the view that AI disclosure reduces information asymmetry and signals investors about innovation capability. By contrast, company capacity (complexity) is negatively and significantly related to firm value. Increased complexity may reduce efficiency and heighten operational uncertainty, lowering firm valuation. The standardised coefficients further reinforce this negative impact of company capacity. ANOVA results confirm the model's overall robustness. The regression model is statistically significant ($F = 27.380$, $p < 0.001$). This indicates the independent variables collectively explain variations in firm value. The model explains about 52% of the variance, showing a moderate-to-strong goodness-of-fit. This is consistent with standards in corporate finance research. Overall, these findings

provide robust empirical evidence that AI disclosure enhances firm value, whereas greater company complexity reduces it. The results highlight the need for firms to strategically manage organisational complexity while enhancing transparency in AI-related activities to optimise firm value. This study contributes to the literature on digital transformation and corporate valuation. It emphasises the dual significance of technological disclosure and organisational structure in shaping market outcomes.

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