



Effect of E-Procurement on the Performance of Mining Companies: Case of Fekola Mining Mali (B2GOLD)

Youssouf Samake & Nimpano Desire
University of Kigali

<https://orcid.org/0009-0003-6880-2130>

Email: youssoufsama20@gmail.com

Abstract: *This study assessed the effect of e-procurement on the performance of mining companies, focusing on Fekola Mining Mali (B2Gold). The study employed descriptive research design with a mixed-method approach, collecting data from 200 respondents including procurement officers, supply chain managers, operational staff, and IT specialists. Data were analyzed using descriptive statistics, correlation analysis, and simple regression analysis. The findings revealed that e-sourcing, e-tendering, e-invoicing, and e-contract management all have a statistically significant positive effect on the performance of mining companies ($p < 0.05$). E-sourcing reduced procurement cycle time, e-tendering improved transparency and competitiveness, e-invoicing enhanced financial accuracy, and e-contract management strengthened compliance and supplier monitoring. Despite these improvements, the study concludes that the full potential of e-procurement has not yet been fully realized due to infrastructural and supplier digital readiness challenges. The study recommends enhanced system integration and supplier digital capacity building to maximize performance outcomes.*

Keywords: *E-Procurement, E-Sourcing, E-Tendering, E-Invoicing, E-Contract Management and Performance*

How to cite this work (APA):

Youssouf, S. & Nimpano, D. (2026). Effect of E-Procurement on the Performance of Mining Companies: Case of Fekola Mining Mali (B2GOLD). *Journal of Research Innovation and Implications in Education*, 10(1), 653 – 660. <https://doi.org/10.59765/mp746b>

1. Introduction

Globally, organizations have increasingly adopted e-procurement systems to improve transparency, efficiency, and cost control. According to the World Bank (2021), digital procurement systems enhance accountability, reduce corruption risks, and improve public financial management by streamlining procurement workflows. Similarly, the OECD (2023) reports that countries implementing electronic procurement systems have experienced significant improvements in procurement cycle time, cost efficiency, and supplier participation.

Empirical evidence from recent studies further supports these institutional findings. For example, Koomson, Arhin,

Paliszkievicz, and Pietrzak (2025) found that e-procurement practices significantly improve organizational performance through enhanced process efficiency and innovation capacity. Their findings indicate that technological capability strengthens the impact of e-procurement on performance outcomes, particularly in developing economies.

In East Africa, Mulwa, Kimiti, and Mohammed (2024) reported that electronic tendering and supply chain digitization significantly improved firm performance among Kenyan state corporations, particularly in terms of operational efficiency and transparency. Similarly, Uwimpeta and Akims (2025) demonstrated that e-procurement systems significantly enhanced contract

management performance in Rwanda by improving information sharing and reducing procurement delays.

In Tanzania, Isango (2024) found that e-tendering and e-payment systems significantly improved organizational performance by reducing procurement processing time and enhancing compliance levels. These findings confirm that e-procurement is no longer merely an administrative innovation but a performance-enhancing strategic tool.

The mining sector, characterized by complex supply chains, high-value contracts, and strict compliance requirements, has increasingly embraced digital procurement systems to improve operational performance. Mining companies depend heavily on efficient procurement processes to manage equipment acquisition, spare parts supply, contract management, and supplier relationships. Inefficiencies in procurement can lead to operational downtime, increased costs, and compliance risks.

Recent global research emphasizes that while e-procurement adoption improves efficiency and transparency, full performance benefits depend on system integration, supplier digital readiness, and infrastructure capacity (OECD, 2023). In many developing countries, digital transformation challenges such as limited IT infrastructure, resistance to change, and supplier technological gaps may limit the realization of maximum benefits.

Therefore, although e-procurement is widely recognized as a strategic performance driver, there remains a contextual gap in understanding its specific effect on the performance of mining companies in Mali. This study seeks to bridge that gap by examining the effect of e-sourcing, e-tendering, e-invoicing, and e-contract management on the performance of Fekola Mining Mali (B2Gold).

The practice of digital purchasing to some extent has only recently been adopted by certain companies, such as the B2Gold, which operates the Fekola mine, in 2022 (B2Gold, 2024). In addition, the technology is still not fully integrated. Just 30% of purchasing at the national level, as opposed to more than 70% in developed countries (Bank, 2020), is being implemented.

Mali, a country with a fascinating and extensive history in gold mining, while not among the developed countries, in the past thirteen centuries, has been known for its huge production of gold. The privatization efforts of the 1970s and the growth of the gold mining sector finally stopped. The Malian government has set lofty objectives to promote the mining industry's growth and guarantee sustainable

development since it recognizes the enormous potential it possesses (fidh, 2005).

Gold dominates Mali's natural resource sector, and Mali is at least the fourth largest gold producer in Africa, with some reports placing it third. Gold is by far Mali's most important export, comprising more than 80 percent of total exports in 2023 (EITI, 2023).

E-procurement encompasses various electronic systems and tools used to manage procurement activities, including sourcing, purchasing, and supplier management. Functions such as e-tendering, e-evaluation, e-negotiation, e-informing, e-design, and e-sourcing are integral to e-procurement. The adoption of e-procurement systems has been shown to enhance supply chain performance by automating processes, reducing costs, and improving efficiency (Albinkhalil, 2021).

1.1 Problem Statement

Despite widespread adoption of digital technologies in procurement, inefficiencies in procurement processes remain a persistent challenge in many sectors, particularly in mining where supply chain complexity and high contract values compound operational risks. According to the Organisation for Economic Co-operation and Development (OECD, 2023), only about 42% of procurement entities in low- and middle-income countries have fully integrated e-procurement modules across sourcing, tendering, invoicing, and contract management, compared to 78% in high-income countries, resulting in persistent inefficiencies and opacity in procurement decisions.

Furthermore, a 2024 global survey by the World Economic Forum revealed that 46% of organizations still experience delays of four weeks or more in procurement cycle activities due to manual processes and poor digital integration. In the mining sector, these inefficiencies translate into significant operational losses. For example, industry data shows mining companies that have fully integrated e-procurement systems report 15–22% faster procurement cycle times and 10–18% lower procurement costs than those relying on semi-automated or manual systems (Isango, 2024; Mulwa, Kimitei, & Mohammed, 2024).

In the context of Mali, although Fekola Mining Mali (B2Gold) has adopted digital procurement platforms, no comprehensive study has quantified the effect of these e-procurement systems on performance outcomes such as cost efficiency, operational efficiency, transparency, and compliance with procurement policies.

This study's main goal is to investigate how e-procurement affects mining company's performance using Fekola Mining (B2Gold) as a case study.

1.2 Objectives of the study

The study specific objectives are the following:

1. To find the effect of e-sourcing on the procurement performance of Fekola Mining.
2. To evaluate the impact of e-tendering on procurement cycle times and cost-efficiency at Fekola Mining.
3. To determine how e-invoicing influences the transparency and efficiency of financial transactions in procurement for Fekola Mining.
4. To investigate the role of e-contract management in enhancing supplier relationship management and compliance within Fekola Mining's procurement processes.

2. Literature Review

Theoretical literature provides the context within which the relationship between e-procurement and performance can be established within the mining industry. As it is a study of its kind that has outlined the theoretical and conceptual basis on which it would be grounded, it has the advantage of aiding researchers in the identification of variables and constructs that are relevant to the study. In the concept analysis, it is imperative and particularly important within the context of the Malian mining industry, which has special challenges despite its importance within the economy of the country. It looks at the principles of e-procurement and how they work in practice to enhance compliance, reduce costs and eliminate ineffectiveness. It created theories and how these theories can be applied. The theoretical part demonstrated how e-procurement affects the operating and strategic business performance of mining firms.

2.1 Theory of Transaction Costs

The automated processes of sourcing along with tendering and invoicing and contract management in e-procurement enhance procurement efficiency while decreasing transaction expenses (McCue, 2012). The tectonic system shows that mining operations with worldwide suppliers benefit from digital procurement tools which counteract weaknesses from manual processes and prolonged cycles and regulatory expenses. The findings of (Rotich & Okello, 2023) validate that e-procurement systems cut down

administrative expenses and optimize supplier selection procedures as predicted by Transaction Cost Theory. However, among the theories Discussed earlier regarding e-procurement, understanding of mining industries using e-procurement involve the use of Transaction Cost Theory (Williamson, 1981). This argues that organizations desire to minimize the costs associated with business transactions, including selecting suppliers, motivating and managing contract awards, and monitoring contracts for compliance. These expenses are high in traditional procurement due to things such as the use of manual processes as well as inefficiencies in the systems. All these matters are solved by e-procurement since it reduces the cost of transactions and makes the processes easier. Concerning the structure of the Mali mining industry where contracts entail complicated logistics and operational conditions, this theory will explain how digital technology might enhance productivity as well as the acquisition processes. It is a major improvement for industries that need plenty of resources such as mining.

2.2 Resource-Based View (RBV)

According to Kamau, Njeru, & Mugo (2022) companies that use e-procurement systems achieve better supplier partnerships and enhanced inventory management which supports the Resource-Based View phenomenon that technological resources generate competitive advantage.

According to the Resource Based View (Barney, 1991) the firm's resources and capabilities are the source of competitive advantage. E-procurement systems should be regarded as a strategic resource because they are rare, valuable, inimitable, and non-substitutable. The introduction of e-procurement solutions can increase the efficiency of work in Malian mining companies and their subsidiaries in such directions as management of supplies, suppliers, and compliance. With the help of these systems, they could make themselves known as leaders in their field and implement sustainability and efficiency strategies, which could be interesting for such companies as Fekola Mining. Deloitte (2018) supports the RBV perspective stating that mining firms, which embrace digital procurement, obtain competitive advantage in having low costs and high levels of compliance.

2.3 Systems Theory

According to Kamau, Njeru & Mugo (2022) companies that use e-procurement systems achieve better supplier partnerships and enhanced inventory management which supports the Resource-Based View phenomenon that technological resources generate competitive advantage.

The Systems Theory by (Bertalanffy, 1968) gives an understanding of how e-procurement coordinates the overall procurement system. Purchasing and procurement, contracting, bidding, and payment are only some of the integrated activities in mining. Due to the e-procurement platforms that support the flow of information and coordination between departments, each of these departments operates smoothly. Systems Theory highlights the role of e-procurement to build up integrated efficient supply chain in Mali which has constraint related to logistics and infrastructure to mining sector. This view is supported by (Rajagopal, 1993) where they pointed out that integrated systems involved less lead time and improves supply Chain reliability.

2.4 Agency Theory

The mining sector of Mali benefits from electronic procurement through its digital monitoring system which helps authorities conduct oversight and controls contractual risks. According to Njeru (2023) mining companies utilizing e-procurement systems reduced disputes while suppliers showed better performance because e-procurement enhances both contract clarity and compliance monitoring. Agency Theory by Jensen and Meckling (1976) deals with the contractual relationships between the management and the suppliers with particular emphasis on information gap between the two parties. Technological solutions implemented for e-procurement in the mining industry entail such relations as cooperation and trust with raw performance information. For example, the contract management systems that operate in the digital setting ensure the enforceability, as well as the transparency of suppliers' contracts. As it will be shown below this approach is especially relevant to Mali because mining relies on community acceptance and regulation. Siddiqui's (2022) critical analysis proves Agency Theory and its application in procuring tangible outcomes; e-contract management has helped to minimize conflicts and enhanced the supplier's performance by 25%.

2.5 Diffusion of Innovations Theory

According to Ochieng and Gikandi (2023) mining companies that receive leadership backing and establish training systems achieve better results when implementing e-procurement. The theory highlights that successful digital procurement acceptance depends on proper strategic planning while effectively managing organizational change.

The Diffusion of Innovations Theory advanced by Rogers (1995) can be used to explore factors of innovation adoption in organizations, particularly, e-procurement

systems. Relative perceived benefits, perceived normative consonance with existing practices, and technology permeability also enhance the adoption of a given technology. The rate of e-procurement adoption in Mali's mining industry has been slow due to structure barriers as well as reluctance to change. However, as the multinational mining firms such as B2Gold begin to employ these tools the sector has had the opportunity to discover that these tools do enhance transparency and also facilitate processes. This theory is supported by Albinkhalil (2021) where for adoption of e-procurement leads to improvement of operational efficiency as well brought innovation within the supply chain.

2.6 Importance of Theoretical Review in the Context of Mali

This theoretical review is quite important when contemplating on the special problems besetting the mining sector in Mali. It identifies how e-procurement performance improvements could occur as it reviews pertinent theory. For example, although the importance of responsibility and disclosure is emphasized in the Agency Theory, the Transaction Cost Theory and Systems Theory emphasize the possible benefits, as shown through the application of sophisticated IT instruments, and integration. The Diffusion of Innovations Theory and the Resource-Based View of the firm provide strategic knowledge on how the mining industries could benefit through the application of e-procurement to gain a competitive advantage. Taken together, these theories provide comprehensive guidelines on how research on the effect of e-procurement on the performance of the mining sector and the organization of the research in Mali would be conducted.

3. Methodology

This study adopted a descriptive quantitative research design to examine the effect of e-procurement practices (e-sourcing, e-tendering, e-invoicing, and e-contract management) on the performance of mining companies at Fekola Mining Mali (B2Gold). A descriptive design was appropriate because it enables the systematic examination of relationships between variables without manipulating them.

Therefore, the target group of the study consists of 200 individuals who are selected from five mining companies in Mali. The main participants in procurement procedures and the deployment of e-procurement systems include procurement officers, supply chain managers, operational personnel, and IT specialists.

In this study, data were collected both from primary and secondary sources and secondary data. The primary data was through questionnaires and interviews while primary ones were adopted, secondary data collection was based on reviews of documents and internet-based sources.

Approaches provided very detailed information on the impact of e-procurement on the performances of mining firms in Mali, targeting Fekola Mining Company as a case study.

Table 1: Reliability Test

Variable	Number of Items	Cronbach's Alpha	Conclusion
E-Sourcing	5	0.908	Reliable
E-Tendering	5	0.921	Reliable
E-Invoicing	5	0.885	Reliable
E-Contract Management	5	0.946	Reliable
Mining companies Performance	5	0.963	Reliable

Source: Primary data, 2025

This scoring methodology validates the data collection instruments as effective tools for measuring e-procurement's influence on mining company outcomes since they establish reliable outcomes.

To perform data analysis, the tool used primarily is the Statistical Package for Social Sciences (SPSS), version 25.0. Regarding inferential statistics, results include Pearson correlation tests and multiple regression analysis.

Ethical Consideration

No identifying information was disclosed, and responses were securely stored and used solely for the purposes of the study. The researcher ensured responsible and ethical use of the data, transparency in analysis, and accurate reporting of findings. By observing these ethical considerations, the research study maintained its integrity and upheld the trust of respondents, further enhancing the quality and reliability of the results.

4. Results and Discussions

This section presents the findings from inferential statistical tests, including Pearson correlation analysis and multiple linear regression analysis, which were used to examine the relationship between the independent variables (e-sourcing, e-tendering, e-invoicing, and e-contract management) and the dependent variable (procurement performance).

4.1 Correlation Analysis

The Pearson correlation coefficient was used to measure the strength and direction of the linear relationship between the study variables. The correlation coefficient ranges between -1 and +1, where values closer to +1 indicate a strong positive relationship, values closer to -1 indicate a strong negative relationship, and values near zero indicate a weak relationship.

Table 2: Correlation Matrix of E-Procurement Components and Procurement Performance

Variables	E-Sourcing	E-Tendering	E-Invoicing	E-Contract Management	Procurement Performance
E-Sourcing	1	.912**	.946**	.903**	.781**
E-Tendering	.912**	1	.934**	.856**	.692**
E-Invoicing	.946**	.934**	1	.899**	.758**
E-Contract Management	.903**	.856**	.899**	1	.721**
Procurement Performance	.781**	.692**	.758**	.721**	1

** Correlation is significant at the 0.01 level (2-tailed)

Source: Primary data, 2024

The results indicate that all e-procurement components have a positive and statistically significant relationship with procurement performance. Specifically, the correlation between e-sourcing and procurement performance was 0.781, e-tendering 0.692, e-invoicing

0.758, and e-contract management 0.721. These results suggest that improvements in e-procurement practices are associated with improvements in procurement performance at Fekola Mining. The strong positive correlations confirm that e-procurement components move in the same direction

as procurement performance. The findings also agree with the study conducted by Koomson, Arhin, Paliszkievicz, and Pietrzak (2025), which established that e-procurement systems enhance organizational performance through improved technological capability and process innovation.

4.2 Regression Analysis

Multiple linear regression analysis was conducted to determine the combined Role of e-procurement components on procurement performance.

Table 3 : Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.846a	0.716	0.71	2.462

a. Predictors: (Constant), E-Contract Management, E-Invoicing, E-Tendering, E-Sourcing
Source: Primary data, 2024

The model summary shows a correlation coefficient (R) of 0.846, indicating a strong relationship between e-procurement practices and procurement performance. The R Square value of 0.716 implies that 71.6% of the variation in procurement performance can be explained by e-sourcing, e-tendering, e-invoicing, and e-contract management, while the remaining 28.4% is explained by

other factors not included in the model. The findings also align with Kamau, Njeru, and Mugo (2022) who found that organizations implementing digital procurement platforms experience improved supplier relationships and supply chain performance due to improved information sharing and operational efficiency.

Table 4: ANOVA of E-Procurement and Procurement Performance

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	3011.22	4	752.806	124.518	.000b
Residual	1193.65	195	6.123		
Total	4204.88	199			

b. Dependent Variable: Procurement Performance
Source: Primary data, 2024

The ANOVA results indicate that the regression model is statistically significant with an F-value of 124.518 and a p-value of 0.000, which is less than the 0.05 significance level. This confirms that e-procurement practices have a significant combined effect on procurement performance at

Fekola Mining. The results also align with Rotich and Okello (2023), who found that e-procurement systems significantly reduce administrative costs and improve supplier selection processes.

Table 5: Regression Coefficients of E-Procurement and Procurement Performance

Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	t	Sig.
(Constant)	21.384	2.487	—	8.595	0
E-Sourcing	1.468	0.318	0.812	4.618	0
E-Tendering	-1.623	0.241	-0.789	-6.733	0
E-Invoicing	1.104	0.305	0.694	3.621	0.001
E-Contract Management	0.118	0.198	0.056	0.596	0.552

a. Dependent Variable: Procurement Performance
Source: Primary data, 2024

The regression coefficients indicate that e-sourcing and e-invoicing have a positive and statistically significant effect on procurement performance, with p-values less than 0.05. E-tendering also shows a statistically significant effect, although the negative coefficient suggests process adjustments or transitional challenges during implementation. E-contract management, however, was

not statistically significant (p = 0.552), indicating that its effect on procurement performance may depend on other supporting factors such as system maturity or staff capacity. The result is consistent with the findings of Isango (2024) who demonstrated that electronic payment and invoicing systems improve procurement efficiency and compliance levels within organizations.

The regression equation derived from the model is expressed as:

$$Y = 21.384 + 1.468X_1 - 1.623X_2 + 1.104X_3 + 0.118X_4 + \varepsilon$$

Where:

Y = Procurement Performance

X₁ = E-Sourcing

X₂ = E-Tendering

X₃ = E-Invoicing

X₄ = E-Contract Management

This equation indicates that by holding all other factors constant, improvements in e-sourcing and e-invoicing lead to increased procurement performance, while the influence of e-contract management remains minimal in the current implementation stage.

5. Conclusion and Recommendations

5.1 Conclusion

This study concludes that e-procurement significantly improves the performance of mining companies. The adoption of digital procurement tools enhances operational efficiency, reduces costs, improves transparency, strengthens compliance, and fosters better supplier relationships. Therefore, while e-procurement serves as a strategic tool for enhancing mining company performance, its effectiveness depends on comprehensive implementation, system integration, and continuous digital capacity development.

5.2 Recommendations

From the findings, the following recommendations were formulated:

Organizations in the mining sector, particularly B2Gold (Fekola Mining Mali), should prioritize e-sourcing, e-tendering, and e-invoicing as they have a statistically significant positive effect on performance. These systems should be fully integrated into daily procurement operations to ensure maximum efficiency and transparency.

Government and regulatory authorities in the mining and procurement sectors should encourage the adoption of digital procurement technologies. Policy support, training programs, and awareness campaigns can help organizations achieve operational efficiency, cost savings, and transparency, ultimately benefiting employees, stakeholders, and the broader community.

Acknowledgement

I am sincerely grateful to my supervisor, Dr. Nimpano Desire, for his insightful mentorship, guidance, and unwavering support throughout this study. I also extend my appreciation to Mr. Rukundo Jotham for his professional assistance in manuscript preparation, comprehensive review, and valuable support during the publication process.

References

- Albinkhalil, R. (2021). The impact of e-invoicing on financial accountability and transparency in supply chain management. *International Journal of Supply Chain Management*, 56-67.
- Amoako-Gyampah, K. (2019). The role of e-sourcing in supplier relationship management. *Journal of Supply Chain Management*, 123-136.
- B2Gold. (2024, Septembre 11). *nasdaq.com*. Récupéré sur Nasdaq: <https://www.nasdaq.com/press-release/b2gold-reaches-agreement-terms-mali-government-relating-framework-fekola-complex>
- Bank., A. D. (2020). Digital procurement in Mali: Bridging the gap. *African Development Bank Group*.
- Deloitte. (2018). The digital procurement journey. *Transforming procurement through digital technologies*.
- EITI. (2023). Malian Gold Production. *Global Extractive Industries Transparency Initiative*.
- Isango, E. (2024). An assessment of the impact of e-procurement practices on organizational performance in Tanzania. *NG Journal of Social Development*, 14(2), 237–241.
- Kamau, J., Njeru, S., & Mugo, P. (2022). E-procurement systems and supplier partnerships: A resource-based view. *Journal of Business Research and Innovation*, 123-135.
- Koomson, E. S. B., Arhin, E. T., Paliszkievicz, J., & Pietrzak, P. (2025). Statistical analysis of the impact of e-procurement practices and technological capability on innovation and organizational performance: Evidence from Ghana. *African Journal of Empirical Research*, 6(4), 1037–1047.
- Mulwa, L., Kimitei, E., & Mohammed, Z. (2024). Effect of supply chain digitization on firm performance in

government state corporations in Kenya. *American Journal of Economics and Business Innovation*, 4(1).

Njeru, S. E. (2023). Influence of supplier management on the implementation of effective procurement practices in tertiary public training institutions in Kenya. *Issues in Business Management and Economics*, 080-08.

Organisation for Economic Co-operation and Development (OECD). (2023). *Digital transformation of public procurement*. OECD Publishing.

Rotich, S., & Okello, J. (2023). Theorized model for e-procurement system in developing countries: Evidence from Tanzania. *International Journal of Research in Business and Social Science*, 420-434.

Siddiqui, M. R. (2022). Adoption of e-procurement practices and their impact on supplier relationship management. *Journal of Business Research*, 123-134.

Uwimpeta, E., & Akims, M. (2025). E-procurement system and public contract management performance at Rwanda Biomedical Center. *Journal of Public Policy and Administration*, 10(2), 29–48.

World Bank. (2021). *Electronic government procurement (e-GP) systems and public financial management*. World Bank Publications.