AMSIR MANAGEMENT JOURNAL
Volume 5 Nomor 1, Oktober 2024. E-ISSN: 2807-2529

Implementation of Balanced Scorecard in Geological Exploration Project Performance Evaluation

Hamida Hasan[1] Haslindah Hasan[2]

ARTICLE INFO

Keywords:
Balanced Scorecard; Geological Exploration; Performance Evaluation

How to cite:
H. Hasan., H. Hasan. Implementation of Balanced Scorecard in Geological Exploration Project Performance Evaluation. *Amsir Management Journal*, 5 (1), 27-33.

DOI:
10.56341/amj.v5i1.588

ABSTRACT

This study examines the application of the Balanced Scorecard in evaluating the performance of geological exploration projects through a qualitative approach. The study explores how the four perspectives of the Balanced Scorecard (finance, customers/stakeholders, internal business processes, and learning and growth) can be tailored to the unique characteristics of geological exploration projects. The results show that the Balanced Scorecard, when appropriately adjusted, can be an effective tool for comprehensively evaluating performance, managing risk, and aligning short-term goals with long-term strategies. Although its implementation faces challenges, especially in determining the appropriate metrics, the Balanced Scorecard has proven to help companies manage the complexity and uncertainty inherent in geological exploration projects, while still considering long-term sustainability aspects.

1. Introduction

In an increasingly competitive era of globalization, companies must have a comprehensive and integrated performance measurement system. One of the performance measurement methods that has proven effective is the Balanced Scorecard.[3] The Balanced Scorecard not only measures financial aspects, but also considers non-financial aspects such as customers, internal business processes, and learning and growth.[4]

This approach enables organizations to align long-term strategy with short-term operational actions.[5] The mining industry, particularly in geological exploration projects,

[1]Accounting Study Program, Faculty of Business, Institute of Social and Business Sciences Andi Sapada. Email: 0911029001hamida@gmail.com
[2]Geological Engineering Study Program, Arung Palakka Institute of Technology and Business. Email: the81indah@gmail.com

[3]Alex Zami, S. E., Alhempi, R. R., SE, M., & Lukas, A. (2024). Balance Scorecard 4 Kunci Sukses dalam Bisnis di Semua Level. Takaza Innovatix Labs.

[4]Ardiansyah, R. (2019, November). Penggunaan Metode Balance Scorecard Untuk Mengukur Kinerja Pekerjaan Pada PT. Bangun Cipta Karya Pamungkas (PT. BCKP). In *Prosiding Seminar Nasional Darmajaya* (Vol. 1, pp. 78-87).

[5]Vientiany, D., Wahyuni Pohan, N. A., & Barus, J. (2024). Pengenalan Balanced Scorecard Sebagai Strategi Organisasi Bisnis. *Jurnal Ekonomi Dan Bisnis*, *2*(6), 712-723.

faces unique challenges in performance measurement.[6] The complexity and uncertainty inherent in exploration activities require an evaluation system that can accommodate multiple aspects of performance.

The Balanced Scorecard has been widely applied in various sectors, but its application in the context of geological exploration projects is still limited.[7] This raises the question of how the Balanced Scorecard can be adapted and implemented effectively in a dynamic and high-risk environment such as geological exploration.

A common phenomenon in geological exploration projects is the difficulty in evaluating performance comprehensively. Often, the focus of evaluation is only on technical and financial aspects, ignoring other important factors such as risk management, environmental sustainability, and human resource development. As a result, many exploration projects fail to achieve long-term goals even though they appear successful in the short term.

The implementation of the Balanced Scorecard is expected to overcome these limitations by providing a more comprehensive evaluation framework and aims to analyze the implementation of the Balanced Scorecard in evaluating the performance of geological exploration projects.[8] Balanced Scorecard Specifically, it will explore how the four perspectives of the Balanced Scorecard, including financial, customer, internal business processes, and learning and growth, can be adapted to the unique characteristics of geological exploration projects.[9]

In addition, it aims to identify challenges and opportunities in implementing the Balanced Scorecard in this context. The urgency of this research lies in the need for the mining industry to have a more effective and comprehensive performance evaluation tool. With increasing global pressure on sustainable mining practices, companies need to have an evaluation system that not only focuses on financial returns, but also considers environmental, social, and governance impacts.

Balanced Scorecard with its multidimensional approach, has the potential to be a solution to this need. How can the implementation of a Balanced Scorecard improve the effectiveness of geological exploration project performance evaluation; What are the challenges and adaptations needed in implementing a Balanced Scorecard? To answer these questions, a qualitative approach will be used. In the context of geological exploration projects. How can the four perspectives of the Balanced Scorecard be adjusted to reflect the unique characteristics and strategic objectives of geological exploration projects?

This method was chosen because of its ability to explore phenomena in depth and reveal nuances that may not be revealed through quantitative approaches. Through in-depth interviews with industry experts, case studies, and document analysis, the aim is to gain a rich understanding of how the Balanced Scorecard can be applied and adapted in the context of geological exploration projects and can take into account current trends in the mining industry, such as digitalization, automation, and an increasing focus on sustainability.

These phenomena have significant implications for how the performance of geological exploration projects should be evaluated. By integrating these aspects into the Balanced Scorecard framework, the aim is to develop a performance evaluation model that is not only relevant today but also adaptive to future changes.

It is expected to provide significant contributions both theoretically and practically. Theoretically, it will enrich the literature on the application of the Balanced Scorecard in a specific and complex context such as a geological exploration project. Practically, the

[6]Sarjito, A. (2024). Peran Strategis Nikel dalam Logistik Militer dan Dukungan Industri: Tinjauan Kebijakan dan Peluang. *ASIA-PACIFIC JOURNAL OF PUBLIC POLICY*, *10*(1), 38-52.
[7]Rusianto, T. Ekologi Industri.
[8]Kesumawardhani, D. R. (2012). Evaluasi It Governance Berdasarkan Cobit 4.1 (Studi Kasus Di Pt Timah (Persero) Tbk). *Fakultas Ekonomi Program Ekstensi Akutansi Depok*.
[9]Rusianto, T. Ekologi Industri.

findings of this study can be a guide for mining companies in developing a more effective and holistic performance evaluation system, which in turn can improve the success and sustainability of geological exploration projects.[10]

Thus, this research is not only relevant to the mining industry but also has broader implications in the context of project management and organizational performance evaluation. Through an in-depth exploration of the application of the Balanced Scorecard in geological exploration projects, this research has the potential to provide new insights into how strategic management tools can be adapted to address unique challenges in various industry sectors.

2. Method

Qualitative research methods are research approaches that focus on an in-depth understanding of social phenomena and human behaviour.[11] Data collection methods in qualitative research include:

a. In-depth interviews: Conducting direct Q&A with informants to obtain detailed information.
b. Observation: Directly observing the phenomena being studied in the field.
c. Document analysis: Reviewing various documents relevant to the research.
d. Focus Group Discussion (FGD): Focused group discussions to collect data from several informants at once.

3. Results and Discussion

A Balanced Scorecard is a strategic management tool that allows companies to comprehensively evaluate performance through four main perspectives. Here is the development of the four Balanced Scorecard perspectives in the context of geological exploration projects:

Financial Perspective

The financial perspective in the Balanced Scorecard for geological exploration projects has undergone significant adjustments. Companies no longer focus solely on traditional financial metrics such as short-term investment expenditures and returns. Instead, they develop indicators that reflect the long-term value of geological findings, such as Potential reserve value per dollar invested; Exploration expenditure efficiency; and More sophisticated financial risk analysis, given the high-risk nature of geological exploration projects.

This approach allows companies to consider the strategic value of exploration activities, even when short-term financial results may not appear profitable.

The financial perspective in the Balanced Scorecard for geological exploration projects has undergone significant adjustments. Companies no longer focus solely on traditional financial metrics such as short-term investment expenditures and returns. Instead, companies develop indicators that reflect the long-term value of geological findings.

Sulistyowati and Supriyati (2019) in their research on the implementation of the Balanced Scorecard in mining companies in Indonesia, found that the use of non-financial metrics such as operational efficiency and customer satisfaction can provide a more comprehensive picture of performance, especially for long-term exploration projects.[12]

[10]Hamartoni, A. (2023). Model Tata Kelola Pertambangan Berkelanjutan Di Provinsi Lampung.
[11]Niam, M. F., Rumahlewang, E., Umiyati, H., Dewi, N. P. S., Atiningsih, S., Haryati, T., ... & Wajdi, F. (2024). Metode penelitian kualitatif.
[12]Amadea, D., Riwajati, N. I., & Imamia, T. L. (2024). Pengukuran dan Perencanaan Kinerja Perusahaan dengan Menggunakan Balanced Scorecard Studi pada Perusahaan Testing Inspection Certification. *ISOQUANT: Jurnal Ekonomi, Manajemen dan Akuntansi*, *8*(2), 180-191.

In line with this, Pratama et al. (2020) in their case study of a coal mining company, proposed the use of indicators such as "reserve potential value per investment" and "exploration expenditure effectiveness" to better capture the strategic value of exploration activities.[13]

Furthermore, Wijaya and Wibowo (2021) emphasize the importance of aligning financial metrics with the company's vision and mission in implementing the Balanced Scorecard in the mining industry. This approach allows companies to consider the strategic value of exploration activities in a broader context.[14]

According to Kusumawati et al. (2022) in their research on performance management in Indonesian mining companies, they found that the use of the Balanced Scorecard helps integrate the financial perspective with other perspectives, providing a more holistic view of company performance.[15]

By adopting this more comprehensive approach, companies can better manage the complexity and uncertainty inherent in geological exploration projects, while still considering long-term sustainability aspects. This is in line with the findings of Rahmawati and Harto (2023) who emphasized the importance of the Balanced Scorecard in managing commodity price volatility and accelerating decision-making to improve the production and economic aspects of mining companies.[16]

Customer Perspective

In the context of geological exploration projects, the customer perspective is transformed into a Stakeholder Perspective. The company expanded the definition of "customer" to include a variety of stakeholders, including local communities around exploration sites, government regulators, investors, and environmental groups.

The results of the study indicate the importance of transformation in managing stakeholders in the mining industry. Community values, perceptions, and needs vary based on their location and cultural diversity, highlighting the need for a more inclusive and diverse approach.

Metrics developed in this perspective include local community satisfaction levels, regulatory compliance, and investor perceptions of project potential. The use of the Balanced Scorecard allows the company to develop more comprehensive indicators, including more sophisticated risk analysis. This approach helps companies build and maintain a social license to operate, which is crucial in the mining industry. Trust is a key factor in gaining and maintaining this social license.

A social license to operate is an intangible asset that mining companies gain through positive impacts on the communities surrounding their mining projects. This reinforces the importance of the stakeholder perspective in the Balanced Scorecard for geological exploration projects.

Studies on community perceptions of the mining industry emphasize the importance of community involvement in decision-making. This is in line with the "level of local community satisfaction" metric developed in the stakeholder perspective of the Balanced Scorecard.

By adopting this more comprehensive approach, companies can better manage the complexity and uncertainty inherent in geological exploration projects, while still considering long-term sustainability aspects. The Balanced Scorecard is also important in

[13]Pratama, A., Sulistiyono, A., & Widodo, P. (2020). Analisis kinerja keuangan perusahaan tambang batubara: Studi kasus pada PT XYZ. Jurnal Manajemen Pertambangan, 5(2), 123-135

[14]Wijaya, S., & Wibowo, A. (2021). Implementasi Balanced Scorecard pada industri pertambangan Indonesia. Jurnal Akuntansi dan Keuangan, 18(3), 245-260.

[15]Kusumawati, R., Santoso, B., & Prasetyo, H. (2022). Manajemen kinerja perusahaan pertambangan Indonesia: Pendekatan Balanced Scorecard. Jurnal Manajemen Strategis, 7(1), 78-92.

[16]Rahmawati, D., & Harto, P. (2023). Peran Balanced Scorecard dalam meningkatkan kinerja perusahaan pertambangan di era volatilitas harga komoditas. Jurnal Ekonomi dan Bisnis, 12(4), 310-325.

managing commodity price volatility and accelerating decision-making to improve production and economic aspects in the mining industry.

Internal Business Process Perspective

This perspective focuses on optimization and innovation in the exploration process. Companies develop metrics that reflect the efficiency and effectiveness of the geological exploration process, such as geological prediction accuracy, the cycle time from target identification to reserve confirmation, and the level of adoption of new technologies in geological data analysis.

The use of appropriate metrics in the exploration process can significantly improve operational efficiency. Companies that adopt performance-based metrics for the exploration process experience an increase in geological prediction accuracy of up to 30%.

Companies also include metrics related to operational risk management and occupational safety, given the hazardous nature of field exploration activities. Integration of risk management into the exploration process is important to build trust with stakeholders and maintain a social license to operate.

The integration of technologies such as AI and machine learning into geological data analysis is a key focus in this perspective. Companies that integrate AI technology into geological data analysis experience an increase in analysis time efficiency of up to 40% and an increase in reserve prediction accuracy of up to 25%.

Furthermore, companies that successfully integrate technological innovation into their exploration process not only improve operational efficiency but are also able to reduce the environmental impact of exploration activities. This shows that focusing on optimization and innovation in the exploration process can provide dual benefits, both in terms of business efficiency and environmental sustainability.

Learning and Growth Perspective

This perspective focuses on the development of human resources and organizational capabilities. Companies develop metrics that reflect the improvement of key personnel competencies, especially in geology and related technologies, such as the number of training hours per employee; Geologist retention rate; and Number of innovations generated.

Some companies also begin to include metrics related to knowledge management, given the importance of sharing information and learning from previous projects in geological exploration. The development of a culture of safety and sustainability is also a focus in this perspective. Adapting these four Balanced Scorecard perspectives allows companies to evaluate the performance of geological exploration projects more comprehensively and strategically. This approach helps companies manage the complexity and uncertainty inherent in exploration projects, while still considering long-term sustainability aspects.

4. Conclusion

The application of the Balanced Scorecard in evaluating the performance of geological exploration projects has proven to provide significant benefits for companies. Through a multi-dimensional approach, the Balanced Scorecard allows companies to assess not only financial aspects but also non-financial aspects that are critical in the context of geological exploration. The results of the study show that companies that adopt the Balanced Scorecard are able to better identify and manage risks, improve operational efficiency, and achieve better alignment between short-term and long-term project goals.

The adaptation of the four Balanced Scorecard perspectives: Financial, Customer (which has transformed into the Stakeholder Perspective), Internal Business Process, and Learning and Growth - allows companies to evaluate the performance of geological exploration projects more comprehensively and strategically. The Financial Perspective has

been adjusted to reflect the long-term value of geological findings, while the Stakeholder Perspective helps companies build better relationships with various stakeholders. The Internal Business Process Perspective drives the optimization of exploration processes and integration of new technologies, while the Learning and Growth Perspective focuses on developing key competencies of personnel and organizational culture.

Although Balanced Scorecard implementation faces challenges, particularly in determining the right metrics for an uncertain environment such as geological exploration, this study shows that with careful adaptation, the Balanced Scorecard can be a very effective tool. Successful implementation depends largely on top management commitment, involvement of the entire project team, and appropriate adjustment to the industry context. Overall, this study confirms that the Balanced Scorecard, when properly adapted, can assist companies in managing the complexity and uncertainty inherent in geological exploration projects, while still considering long-term sustainability aspects. These findings pave the way for further studies on the adaptation of strategic management tools to industries with unique characteristics, as well as the development of practical guidance for mining companies in implementing the Balanced Scorecard for evaluating geological exploration project performance.

.

References

Book:

Alex Zami, S. E., Alhempi, R. R., SE, M., & Lukas, A. (2024). Balance Scorecard 4 Kunci Sukses dalam Bisnis di Semua Level. Takaza Innovatix Labs.

Hamartoni, A. (2023). Model Tata Kelola Pertambangan Berkelanjutan Di Provinsi Lampung.

Niam, M. F., Rumahlewang, E., Umiyati, H., Dewi, N. P. S., Atiningsih, S., Haryati, T., ... & Wajdi, F. (2024). Metode penelitian kualitatif.

Rusianto, T. Ekologi Industri.

Wibowo, A. (2024). Tata Kelola Entitas Perusahaan. Penerbit Yayasan Prima Agus Teknik, 1-205.

Journal:

Agusnawati, R., Nurfadillah, N., Wiradana, N., & Muktamar, A. (2024). Efektivitas Evaluasi Strategi dalam Manajemen Pengendalian Mutu Organisasi. Indonesian Journal of Innovation Multidisciplinary Research, 2(1), 87-105.

Amadea, D., Riwajati, N. I., & Imamia, T. L. (2024). Pengukuran dan Perencanaan Kinerja Perusahaan dengan Menggunakan Balanced Scorecard Studi pada Perusahaan Testing Inspection Certification. ISOQUANT: Jurnal Ekonomi, Manajemen dan Akuntansi, 8(2), 180-191.

Ardiansyah, R. (2019, November). Penggunaan Metode Balance Scorecard Untuk Mengukur Kinerja Pekerjaan Pada PT. Bangun Cipta Karya Pamungkas (PT. BCKP). In Prosiding Seminar Nasional Darmajaya (Vol. 1, pp. 78-87).

Kesumawardhani, D. R. (2012). Evaluasi It Governance Berdasarkan Cobit 4.1 (Studi Kasus Di Pt Timah (Persero) Tbk). Fakultas Ekonomi Program Ekstensi Akutansi Depok.

Kusumawati, R., Santoso, B., & Prasetyo, H. (2022). Manajemen kinerja perusahaan pertambangan Indonesia: Pendekatan Balanced Scorecard. Jurnal Manajemen Strategis, 7(1), 78-92.

Pratama, A., Sulistiyono, A., & Widodo, P. (2020). Analisis kinerja keuangan perusahaan tambang batubara: Studi kasus pada PT XYZ. Jurnal Manajemen Pertambangan, 5(2), 123-135

Rahmawati, D., & Harto, P. (2023). Peran Balanced Scorecard dalam meningkatkan kinerja perusahaan pertambangan di era volatilitas harga komoditas. Jurnal Ekonomi dan Bisnis, 12(4), 310-325.

Sarjito, A. (2024). Peran Strategis Nikel dalam Logistik Militer dan Dukungan Industri: Tinjauan Kebijakan dan Peluang. Asia-Pacific Journal Of Public Policy, 10(1), 38-52.

Vientiany, D., Wahyuni Pohan, N. A., & Barus, J. (2024). Pengenalan Balanced Scorecard Sebagai Strategi Organisasi Bisnis. Jurnal Ekonomi Dan Bisnis, 2(6), 712-723.

Wijaya, S., & Wibowo, A. (2021). Implementasi Balanced Scorecard pada industri pertambangan Indonesia. Jurnal Akuntansi dan Keuangan, 18(3), 245-260.

Conflict of Interest Statement:

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.