Central Community Development Journal (CCDJ)
E-ISSN: 3024-8302
P-ISSN: 3025-1826
DOI:10.55942/ccdj.v4i2.345

Volume 4
No 4
December Edition 2024

Implementation of the asset management system in PT. Bara Prima Utama

Rina Yuliastuty Asmara[1], Islamiah Kamil[2], Muhammad Iqbal Akbar[3], Meiliyah Ariani[4*]

[1]Faculty of Economics and Business, Mercu Buana University, Jakarta, Indonesia
[2]Faculty of Economic and Social Science, Dian Nusantara University), Jakarta, Indonesia
[3]Faculty of Economics and Business, Yarsi University, Jakarta, Indonesia
[4]Faculty of Economics and Business, Universitas Prof. Dr. Moestopo (Beragama) University, Jakarta, Indonesia
e-mail: meiliyahariannie@yahoo.co.uk

Received 20 October 2024
Revised 19 November 2024
Accepted 20 December 2024

ABSTRACT

Effective asset management is a key factor for supporting the sustainability of mining company operations. This community benefits from the execution of the Resource Administration Framework at PT. Bara Prima Utama, which works within the coal mining division. This framework is planned to improve the proficiency of observing, upkeeping, and administering the company's settled resources to optimize resource utilization and decrease operational costs. Through the application of data innovation in resource information administration, a company can distinguish resource conditions in real time and make quicker and more exact vital choices. In expansion, preparation for asset administration staff is additionally carried out to guarantee the ability to work this unused system. This execution is anticipated to extend the efficiency and support of a company's operations and amplify the life of resources. This program also bolsters the company's commitment to a more proficient and dependable administration of assets.

Keywords: *Resource administration, coal mine, resource administration framework, PT. Bara Prima Utama, operational effectiveness.*

1. INTRODUCTION

The coal mining industry plays a crucial role in the Indonesian economy (Husnah & Fahlevi, 2023; Meiryani et al., 2023), contributing significant income to the nation through trade and residential utilization. PT. Bara Prima Utama, as one of the driving coal mining companies in Indonesia, faces a major challenge in keeping up the maintainability of its operations. One vital angle in maintaining efficiency and benefit in this division is the viable administration of settled resources, which incorporate overwhelming gear, operational vehicles, mining foundations, and other supporting hardware (Jain et al., 2024; Kayani et al., 2024). Settled resources claimed by PT. Bara Prima Utama are crucial to the victory of mining operations, considering that the victory of mining exercises is profoundly subordinate on the effectiveness of the hardware. In any case, the greatest challenge confronted by mining companies is maintaining the condition of settled resources so that they proceed to operate appropriately and minimize downtime, which has the potential to cause operational misfortune. Ineffectual resource administration can lead to expanded repair and upkeep costs as well as diminished efficiency due to harm to gear or mining back offices. As innovation propels, mining companies are confronted with the opportunity to utilize data innovation to improve the effectiveness of resource administration. A data-technology-based Resource Administration Framework empowers real-time resource observation, expectation of repair needs, and more organized data management (Kuldasheva et al., 2023). Often, the significance of actualizing a resource administration framework lies in guaranteeing smooth mining operations, decreasing operational costs, and amplifying the life of assets (Fahlevi et al., 2023).

This community benefits program points to help PT. Bara Prima Utama in executing a comprehensive resource administration framework. In this manner, the company can screen the condition of its resources in real time, optimize gear utilization, and arrange upkeep more successfully and productively. The program also incorporates preparing for asset management staff to guarantee that they have the aptitudes required to function in the new framework and make data-driven choices. PT. Bara Prima Utama, as one of the most players within the coal mining industry, has expansive and complex settled resources. These resources incorporate overwhelming hardware, such as excavators, dump trucks, bulldozers, and mining frameworks, such as transport belts, handling plants, and other supporting offices (Meiryani et al., 2022). All these resources play a critical role in supporting the smooth operation of daily mining operations.

In any case, until now, resource administration at PT. Bara Prima Utama is still done physically, which incorporates recording support, observing resource conditions, and arranging hardware restoration. This manual administration framework regularly causes different issues, such as wastefulness in support plans, the need for real-time data on gear conditions, and delays in decision making with respect to resource repairs or substitutions. One of the most important issues is confronted with the PT. Bara Prima Utama is the visit downtime of gear due to unforeseen harm. When one of the overwhelming hardware breaks down, mining preparation must be temporarily halted, which includes a coordinate that affects efficiency and causes potential monetary misfortunes. In expansion, the need for a prescient framework to check resource conditions makes it difficult for the company to arrange preventive support, so upkeep costs are frequently higher than they should be.

According to Cassetti (2019), advanced mining companies that switch to data-technology-based resource administration frameworks can extend resource administration effectiveness by up to 20% and decrease startling support costs by 15%. Actualizing a resource administration framework prepared with real-time observation innovation permits companies to foresee repair needs, arrange preventive upkeep, and increase the life of resources. In expansion, PT. Bara Prima Utama too faces challenges in terms of resource information administration. Information related to hardware life, repair history, and current conditions is frequently scattered over offices, making it difficult to form speedy and exact choices. In a progressively computerized world, resource information integration is essential to guarantee that companies have a full perception of all their resources. Hastings (2010) emphasized that digitizing resource administration can offer assistance mining companies diminish downtime, increment straightforwardness, and encourage data-based decision-making. With the execution of an organized resource administration framework, PT. Bara Prima Utama can make strides this condition by centralizing resource information

in one effortlessly available framework. This framework permits company administration to screen hardware conditions in real-time, arrange upkeep, and make more suitable key choices based on current information. In expansion, this resource administration framework will offer assistance companies to oversee the resource life cycle, from acquirement, support, to hardware restoration (Yusuf et al., 2023).

Based on the circumstances investigation that has been depicted, a few major issues have been confronted by PT. Bara Prima Utama related to resource administration are as takes after:

1. Wasteful Manual Resource Administration

Manual resource administration frameworks cause wasteful aspects in recording upkeep, checking resource conditions, and making choices regarding gear repairs and substitutions. These manual forms take longer and frequently result in mistakes in the information utilized for operational arrangements.

2. Need of Real-Time Checking Framework

The non-attendance of a real-time observing framework for hardware conditions implies that companies cannot precisely foresee when the gear falls flat or requires repair. This regularly comes about in unforeseen downtimes, which results in diminished efficiency and expanded working costs.

3. Tall Upkeep Costs

Hardware upkeep costs at PT. Bara Prima Utama are frequently higher than anticipated due to the need of preventive and prescient checking. When hardware breaks down, the company must spend a parcel of cash on crisis repairs, which may have been anticipated through more arranged preventive support.

4. Confinements of Resource Information for Choice Making

Information related to resources, such as support history, current condition, and anticipated life, is scattered over offices and not well coordinated. This makes it difficult for the administration to create speedy and precise choices with respect to gear restoration or substitution.

5. Restrictions in Preventive Upkeep Arranging

Without a solid prescient framework, preventive upkeep arrangement is difficult to carry out productively. As a result, hardware regularly breaks down some time recently, repairs or support can be carried out, resulting in unforeseen operational costs.

By addressing these issues using a cutting-edge resource administration framework, PT. Bara Prima Utama is anticipated to move forward its operational proficiency, diminish downtime, and expand the life of its resources. The use of this framework will not increase efficiency, but it also guarantees that the company is able to compete within the exceedingly competitive mining industry.

2. METHOD OF IMPLEMENTATION

To supply a compelling arrangement to the detailing of resource administration issues at PT. Bara Prima Utama, a precise and organized approach is required through a few fundamental stages.This implementation method is designed to provide information technology-based solutions that are able to overcome efficiency problems, real-time asset monitoring, and data-based decision making. The following are the stages in implementing the community service program:

1. Needs Analysis and Asset Assessment

The first step that must be taken is to conduct a needs analysis of the asset management system to be implemented. Understand the asset profile and determine the initial conditions to determine the maintenance strategy and priorities for asset management.

2. Asset Management System Design and Development

designing and developing an information technology-based Asset Management System. Creating an automated and real-time asset management system to reduce the risk of downtime, increase operational efficiency, and enable better maintenance planning.

3. Asset Management Staff Training

One of the key factors for the success of implementing an asset management system is the ability of the internal staff to operate and utilize the system. Building the competence of the asset management team in utilizing technology to improve the efficiency and productivity of the company.

4. System Implementation and Field Trial

Ensuring that the asset management system is running according to operational needs and delivering the desired results, particularly in terms of cost reduction and improved equipment performance.

5. Post-Implementation Monitoring and Evaluation

This ensures that the system continues to function properly and provides long-term benefits to the PT. Bara Prima Utama in managing its assets.

6. Documentation and Reporting

Provide a complete record of the implementation process to support continuous improvement and as a reference for similar projects in the future.

This implementation method is designed to provide a comprehensive and practical solution for asset management problems in PT. Bara Prima Utama. By combining information technology with an asset management system, a company is expected to improve operational efficiency, reduce downtime, and significantly extend the life of assets (Ahmad et al., 2023; Aprilani et al., 2023). The implementation of this community service will not only have a direct impact on the company but can also be a model for other mining companies facing similar challenges.

3. RESULT & DISCUSSION

After the planned implementation method for this community service was carried out, the following are the results and discussions of each stage of the implementation of the Asset Management System at PT: Bara Prima Utama.

1. Needs Analysis and Asset Assessment

In the initial stage, the team successfully conducted a comprehensive asset identification. All the mining equipment, heavy equipment, operational vehicles, and supporting infrastructure were recorded in detail. Each asset is identified based on its type, age, current condition, and previous maintenance frequency. This process results in the following:

a) Centralized asset database: The data were spread across departments. After the identification process, asset data are centralized in a digital system, which makes it easy for management to access asset-related information at any time.
b) Asset condition assessment: From the assessment results, it was found that 30% of the heavy equipment was nearing the end of its service life and required more attention in maintenance. In addition, some critical equipment do not have a clear routine maintenance schedule.

This stage provides a deeper understanding of the condition of a company's assets. Structured information helps plan future asset maintenance and replacement. The most critical assets can be prioritized for maintenance, thereby reducing the risk of sudden downtime.

2. Asset Management System Design and Development

After the needs analysis, an asset management system based on a Computerized Maintenance Management System (CMMS) was successfully designed and developed. The system includes several key modules.

a) Real-Time Monitoring Module

Using Internet of Things (IoT) technology, sensors are installed on heavy equipment and major machinery to monitor the temperature, vibration, and other operating conditions. These data are integrated into the system and can be monitored by an asset-management team.

b) Programmed Upkeep Plan

Consequently, the framework produces a support plan for each resource based on real-time condition information and past upkeep history.

c) Information Integration

The framework coordinates with the company's monetary module, permitting a programmed announcement of support and repair costs.

With this framework, the PT. Bara Prima Utama can screen resource conditions in real-time and react to potential harm some time recently it happens. The comes about of the framework advancement appear

as an increment within the company's capacity to expect harm and optimize prescient support. Moreover, the CMMS framework encourages budgetary arrangements related to resource support so that investing is more controlled and productive.

3. Resource Administration Staff Preparing

Preparation given to the PT. Bara Prima Utama resource administration staff incorporates the utilize of CMMS frameworks, preventive support, and information examination for choice making. The comes about of the preparation incorporate

a) Staff prepared in utilizing innovation

All staff related to resource administration were prepared to utilize the modern framework. They can enter information, screen resources, and carefully oversee the support plans.

b) Understanding Prescient Upkeep

Staff obtain the significance of data-driven observation to anticipate breakdowns and can study markers given by IoT sensors to decide when resources require upkeep.

This training is crucial for ensuring that the implemented technology can be used effectively. Asset management staff now have the competencies needed to utilize real-time data to make maintenance decisions. This training also increases the speed and accuracy of maintenance, which has a direct impact on increasing the company's productivity.

4. System Implementation and Field Trial

The CMMS framework was effectively executed on basic resources such as excavators, dump trucks, and transport belts. After usage, a trial was conducted to guarantee that all framework capacities worked legitimately. The comes about of this organization:

a) Downtime Reduction

Within three months of implementation, the heavy equipment downtime was reduced by 20% because the company was able to identify potential problems earlier.

b) Maintenance Efficiency Improvement

Preventive maintenance can be better planned, and emergency repair costs can decrease by 15% owing to the predictive monitoring system.

c) Real-Time Report Access

The management team can monitor asset conditions and maintenance schedules anywhere through the system dashboard, which provides full visibility of all company assets.

Field trials have shown that the system can not only reduce downtime but also improve the efficiency of maintenance planning. The implemented system has a positive impact on operational costs and mine productivity. The short-term results of system implementation have shown significant benefits, and it is expected that these results will continue to improve over time.

5. Post-Implementation Monitoring and Evaluation

During the monitoring and evaluation phases, the system was continuously monitored to ensure that all features were working according to the company's needs. Some of the evaluation results are as follows.

a) Increased Asset Life: After using this system, assets that previously often experienced damage can be used longer because maintenance is carried out in a planned manner. The service life of some equipment increased by up to 10%.
b) Cost Efficiency: Operational and maintenance costs decreased by 12% during the 4-month period after implementation. This reduction resulted from maintenance optimization and a reduction in sudden breakdowns.
c) Positive Feedback from Management Team: The management team provided positive feedback on this system, especially in terms of transparency and the speed of decision-making regarding assets.

Monitoring and evaluation showed that this asset management system provides sustainable results. The use of real-time data allows the company to maintain a more stable operational performance, whereas cost efficiency shows that investment in this system provides significant added value for PT. Bara Prima Utama. The key to the success of this system is the effective integration of technology, staff training, and monitoring of asset conditions.

Figure 1. Cash Flow Report Material Explanation Activity

Evaluation is an important stage in assessing the success of community service programs. In this context, an evaluation was conducted to assess the effectiveness of the implementation of the Asset Management System at PT. Bara Prima Utama. The evaluation included an assessment of the results achieved, the impact of implementation on company operations, and feedback from the company regarding the benefits felt after the program was implemented. The following are the evaluation points:

1. Operational Efficiency

The asset management system has proven to be successful in increasing the operational efficiency at PT. Bara Prima Utama. With the real-time monitoring module, the company can reduce the risk of sudden downtime, which often occurs owing to equipment failure. This increase in operational efficiency is also reflected in the increased availability of heavy equipment, which is longer and functions more optimally. The use of IoT for monitoring equipment conditions, such as temperature, vibration, and pressure, provides much-needed information to predict when the equipment needs maintenance. This system allows maintenance staff to take action before major damage occurs, thereby reducing the disruption of mine operations.

2. Reduced Maintenance Costs

One of the main goals of the system is to reduce the maintenance costs. Within a few months of implementation, the cost spent on equipment maintenance decreased by 12-15%. This cost reduction was owing to a decrease in the frequency of emergency repairs and an increase in preventive maintenance. Before implementation, companies often spent large budgets to repair damaged equipment, because maintenance was not carried out regularly or predictably. With the new system, companies can plan maintenance more effectively, contributing to operational cost savings.

3. Data-Driven Decision Making

The implemented asset management system enabled PT. Bara Prima Utama to make better and faster decisions regarding asset management. With access to real-time data on asset conditions, management can prioritize equipment that requires immediate attention. This helps in planning preventive maintenance more efficiently and making long-term decisions about asset replacement or rejuvenation. In addition, system integration with the financial module also provides full visibility into the maintenance budget, allowing the company to allocate resources more appropriately and efficiently.

4. Staff Feedback

The training provided to the asset management and operational staff during the system implementation was considered very useful. The staff felt that they could easily operate the new system and understood how to utilize data to improve operational performance. Feedback from the staff also indicated that the CMMS system helped them organize their maintenance schedules better and improve their daily work efficiency.

5. Asset Monitoring Quality

The quality of the monitoring of mining assets has improved significantly with the IoT technology used in this system. Prior to implementation, asset condition monitoring was performed manually, which often causes delays in maintenance or problem detection. Now, with sensors installed on the equipment, management can know the condition of the equipment in real time and predict maintenance needs based on accurate data.

Figure 2. Community Service Activities

4. CONCLUSION AND SUGGESTION

Use of the Resource Administration Framework at PT. Bara Prima Utama has had a critical affect on the operational effectiveness and administration of the company's resources. Based on an assessment conducted after a few months of usage, this framework has been demonstrated to be able to extend efficiency, decrease overwhelming hardware downtime, and lower support costs. The Web of Things (IoT) innovation utilized for the real-time checking of mining resources permits company administration to pick up full perceivability into the condition of their resources. Consequently, downtime that occurs regularly due to sudden harm can be diminished by up to 20%, whereas support costs have diminished by 12-15%. Moreover, this resource administration framework makes a difference to PT. Bara Prima Utama in arranging upkeep more successfully, by utilizing information gotten in genuine time to anticipate when gear needs upkeep. With prescient and preventive upkeep, the company does not maintain a strategic distance from more prominent harm but amplifies the life of the resource, which features a coordinate effect on long-term fetched investment funds. In expansion, the preparation given to the operational and

resource administration staff has also demonstrated effectiveness. Staff feel more comfortable utilizing this unused framework, and they are able to function the computer program to enter information, screen resource conditions, and plan upkeep better. Criticism from the company's administration appeared in tall fulfillment with the comes about of the execution of this framework, particularly in terms of expanding information straightforwardness, ease in overseeing upkeep budgets, and speedier and data-based choice making. In conclusion, the use of the Resource Administration Framework at PT. Bara Prima Utama has met the expressed destinations, specifically expanding operational productivity, lessening downtime, and bringing down support costs. This program provides long-term benefits for the company, permitting it to oversee resources more deliberately and viably.

REFERENCES

Ahmad, M., Kuldasheva, Z., Nasriddinov, F., Balbaa, M. E., & Fahlevi, M. (2023). Is achieving environmental sustainability dependent on information communication technology and globalization? Evidence from selected OECD countries. *Environmental Technology and Innovation*, *31*. Scopus. https://doi.org/10.1016/j.eti.2023.103178

Aprilani, T. L., Jermsittiparsert, K., Joemsittiprasert, W., Mustanir, A., Ahmad, J., Fahlevi, M., & Aljuaid, M. (2023). Do Social Factors Contribute to International Sports Performance: A Panel Data Analysis of Countries' Performance in the Asian Games. *Revista de Psicologia Del Deporte*, *32*(1), 92–100. Scopus.

Cassetti, J. (2019). Digital transformation in asset management: Real-time monitoring and predictive maintenance. *Mining Industry Journal, 35(1)*, 12–19.

Fahlevi, M., Ahmad, M., Balbaa, M. E., Wu, T., & Aljuaid, M. (2023). The efficiency of petroleum and government health services to benefit life expectancy during the inefficiencies of hydroelectricity consumption. *Environmental and Sustainability Indicators*, *19*, 100289. https://doi.org/10.1016/j.indic.2023.100289

Hastings, N. A. J. (2010). *Physical asset management: With an introduction to ISO 55000*. Springer.

Husnah, H., & Fahlevi, M. (2023). How do corporate social responsibility and sustainable development goals shape financial performance in Indonesia's mining industry? *Uncertain Supply Chain Management*, *11*(3), 1383–1394. https://doi.org/10.5267/j.uscm.2023.5.099

Jain, A. K., Dsouza, S., Kayani, U., Nawaz, F., Fahlevi, M., & Aziz, A. L. (2024). Nexus of firm specific variables and capital structure decisions: An evidence from Asia Pacific region amid covid-19 crisis times. *Cogent Social Sciences*. https://www.tandfonline.com/doi/abs/10.1080/23311886.2024.2413619

Kayani, U. N., Mumtaz, R., Fahlevi, M., Nasseseredine, H., & Hadinata, A. (2024). Unbridling the Economic Growth and Environmental Nexus in Pakistan. *International Journal of Energy Economics and Policy*, *14*(1), Article 1. https://doi.org/10.32479/ijeep.15528

Kuldasheva, Z., Ahmad, M., Salahodjaev, R., & Fahlevi, M. (2023). Do Tourism and Renewable Energy Influence CO2 Emissions in Tourism-Dependent Countries? *International Journal of Energy Economics and Policy*, *13*(6), Article 6. https://doi.org/10.32479/ijeep.14410

Meiryani, Fahlevi, M., Rivalldo, K., Ariefianto, M. D., Winoto, A., Wahyuningtias, D., & Syamil, A. (2023). Corporate governance and return on assets in mining industry companies: The developing market study. *Corporate Governance and Organizational Behavior Review*, *7*(4), 94. https://doi.org/10.22495/cgobrv7i4p8

Meiryani, M., Delvin Tandyopranoto, C., Emanuel, J., Lindawati, A. S. L., Fahlevi, M., Aljuaid, M., & Hasan, F. (2022). The effect of global price movements on the energy sector commodity on bitcoin price movement during the COVID-19 pandemic. *Heliyon*, *8*(10), e10820. https://doi.org/10.1016/j.heliyon.2022.e10820

Yusuf, M., Hakim, L., Hendra, J., Kamar, K., Idawati, W., Winarso, E., Meiden, C., & Fahlevi, M. (2023). Blockchain technology for corporate governance and IT governance: A financial perspective.

International Journal of Data and Network Science, *7*(2), 927–932. Scopus. https://doi.org/10.5267/j.ijdns.2022.12.018