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Design of an Interactive Dashboard For Performance Monitoring of The Management Development at PT Kalimantan Prima Persada

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Abstract
PT Kalimantan Prima Persada is an integrated mining contractor services company operating in the coal, gold, and nickel sectors. This research is driven by issues in the reporting and monitoring process of performance achievements for the Management Development position within the Corporate Planning Management Development Department, including delays in reporting, incomplete performance achievement data and documentation, and the absence of an integrated platform to collect, manage, and present performance achievement information across all mining districts on a monthly basis. To address these challenges, this study aims to design an integrated platform using the User-Centered Design (UCD) method to systematically collect, manage, and present performance achievement information. The outcome of this research is a dashboard that includes the Main Dashboard, Strategic Management Index, Evidence Strategic Management Index, Strategic Management Effectiveness, Evidence Strategic Management Effectiveness, Follow-Up ASAP, System Management, Evidence System Management, EIIC (Employee Innovation Involvement Cover), CI Infrastructure, and CI Performance. Testing results show that the developed dashboard functions effectively and meets user requirements. It is expected that this dashboard will enhance the effectiveness and efficiency of performance monitoring and evaluation processes.
Keywords: Performance Achievement, Dashboard, Scenario Testing, Monitoring and Evaluation, User-Centered Design.

I. Introduction

The increasingly intense competition among companies demands that organizations remain productive in order to stay competitive. One approach companies take is to evaluate employee performance achievements. Performance measurement is a fundamental

management principle that helps identify the gap between actual and expected performance (Weber & Thomas, 2005). A company's performance reflects the level of success in achieving its targets (Sarabis, 2022). To achieve optimal results, companies must enhance their performance through continuous performance management, including monitoring and evaluation.

PT Kalimantan Prima Persada is a mining contractor specializing in coal, nickel, and gold, with operations across key regions such as Kalimantan, Sumatra, Sulawesi, and West Nusa Tenggara. Each operational district is staffed with 1 to 3 Management Development (MD) personnel, reporting to the Project Manager within the Project Management Department, which oversees operations, information systems, and continuous improvement. The MD role is responsible for delivering training, conducting audits, socialization activities, and ensuring operational alignment with corporate strategic standards. Performance outcomes for this role are assessed and reported monthly to the Corporate Planning Management Development (CPMD) department for analysis and evaluation, ensuring alignment between planned and actual field performance.

Table 1 Summary of Incomplete Documentation from All Districts

Month	Completed Evidence	Total Evidence	Gap
May	13	48	-35
June	1	64	-63
July	3	64	-61
August	7	32	-25
September	9	40	-31
Total	33	248	-215

However, the current performance reporting and monitoring system remains inefficient and faces several challenges. As shown in Table 1, there is a significant amount of incomplete activity documentation across all regions; out of a total of 248 documents, only 33 have been fulfilled, leaving 215 documents incomplete. Additionally, there are delays in report submission of up to 11 days, and there is no integrated platform capable of collecting, managing, and presenting performance achievement information for Management Development positions across all mining districts on a monthly basis. This is due to the reporting system still being conducted manually using Microsoft Excel, which hinders the evaluation process and decision-making within the Corporate Planning Management Development (CPMD) department.

To resolve this, the project aims to design an integrated performance reporting and monitoring system for the CPMD department using a User-Centered Design (UCD) approach and Power BI tools. User needs were identified through discussions and interviews to serve as the basis for dashboard design, ensuring that performance data for Management Development positions can be presented in line with user requirements, thereby supporting a more effective and efficient monitoring and evaluation process.

1.1. Business Intelligence

Business Intelligence helps decision-makers by analyzing and integrating data from various sources (Tavera, et al., 2021).. It provides insights to uncover opportunities, monitor performance, and track market trends (Lim, et al., 2013). BI also improves operational

efficiency, speeds up decision-making, and enhances stakeholder relationships (Darudiato, et al., 2010)..

1.2. Extract, Transform, Load (ETL)

Extract, Transform, Load (ETL) is a key process in building a data warehouse. It extracts data from multiple sources, transforms it for consistency and quality, and loads it into a centralized system. While often unseen by end users, ETL accounts for up to 70% of data warehouse development efforts (Sifa, 2024). Its data sources can include On-Line Transactional Processing (OLTP) systems, legacy platforms, web content, documents, and real-time data streams (Sabrina, 2024).

1.3. Power BI

Microsoft Power BI is an integrated application used to process and present data from multiple sources into actionable insights that support decision-making (Sifa, 2024). Power BI integrates with various data sources such as SQL, Excel, and websites, enabling the creation of interactive dashboards that facilitate data interpretation (Sabrina, 2024). With its ease of use and efficiency, Power BI supports real-time analytics, making it a reliable and adaptable tool for both individuals and organizations (Akbar, et al., 2018)..

1.4. User Centered Design

User Centered Design (UCD) is a multidisciplinary approach that actively involves users through iterative design and evaluation processes to understand their needs. This approach proves more effective than traditional system-focused designs (Mao, et al., 2005).. User Centered Design combines investigative methods such as surveys and interviews with creative techniques like brainstorming sessions to identify user requirements. The process is iterative, with each stage evaluated before moving forward (Tunas, et al., 2023).

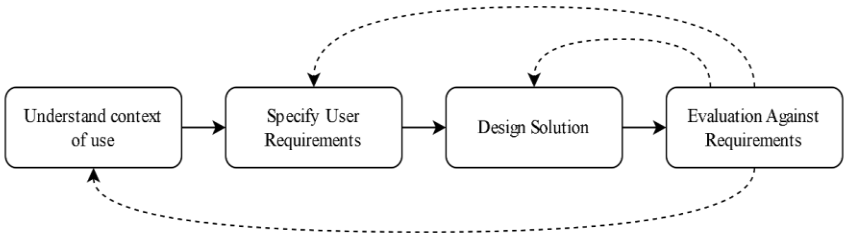

Figure 1 *User-Centered Design Flow*

1.5. Usability Testing

Usability testing aims to ensure that the system aligns with user needs. This evaluation is conducted by observing how users perform tasks or navigate the product to identify any deficiencies in its design (Bastien, 2010). Key aspects of this testing include user success in completing tasks, speed in achieving objectives, interface appeal in delivering a pleasant experience, the system's ability to prevent and manage errors, and ease of learning and operating the system (Quesenbery, 2004)..

2. Research Method

The design of the performance monitoring dashboard for the Management Development position was conducted using the User-Centered Design (UCD) approach to ensure that the system developed meets user needs. The following is the conceptual framework of this research:

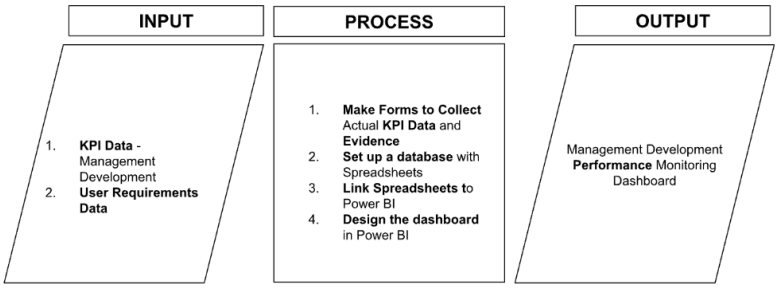

Figure 2 Conceptual Framework

3. Results and Discussions

User Requirements Data

Based on interviews with users, the identified needs include an integrated system capable of gathering performance achievement data for Management Development into a single platform, and an interactive dashboard to monitor performance achievements in Management Development roles. This is intended to support more efficient data-driven evaluation and decision-making processes.erdasarkan hasil wawancara dengan *user,* kebutuhan yang diidentifikasi mencakup sistem terintegrasi yang dapat mengumpulkan informasi capaian kinerja *Management Development* dalam satu *platform*, dan *dashboard* interaktif untuk memantau capaian kinerja posisi *Management Development*, sehingga mempermudah proses evaluasi dan pengambilan keputusan berbasis data.

Data Warehouse Infrastructure

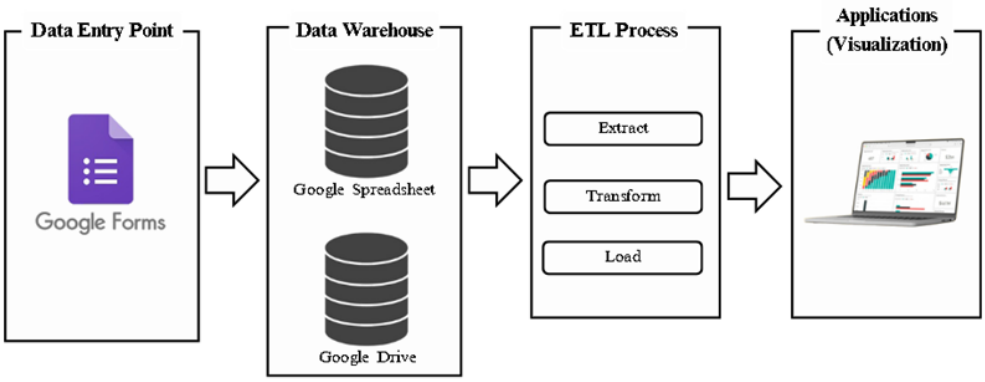

Figure 3 Spreadsheet-Based Data Warehouse Schema

The data warehouse infrastructure shown in the diagram illustrates the data flow from collection to visualization. Data is collected through Google Forms and stored in Google Spreadsheets and Google Drive as the data repository. Subsequently, the data undergoes the ETL (Extract, Transform, Load) process, in which it is extracted, cleaned, and loaded into the visualization system. The final output is presented via Power BI, enabling users to detect patterns and trends that support data-driven decision-making.

Use Case Diagram

This stage outlines user activities within the system to provide a clear picture of system operation. The diagram illustrates the relationships between use cases and the actors involved. In the KPI Data Management System for Management Development and the Management Development KPI Dashboard, there are two actors involved: Management Development (MD) position holders and employees from the Corporate Planning Management Development (CPMD) department.

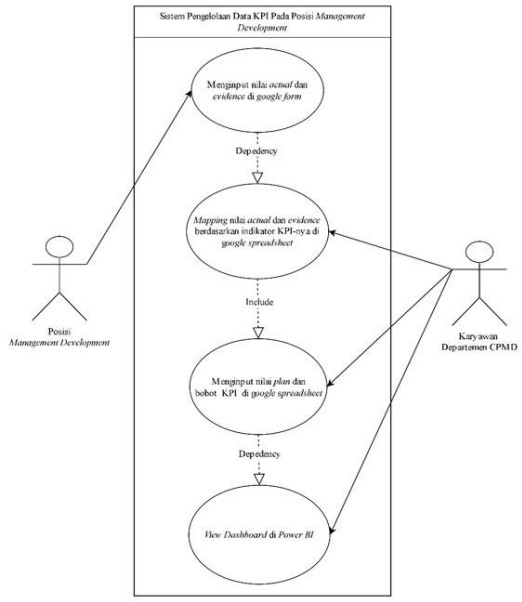

Figure 4 KPI Data Management System for Management Development (MD)

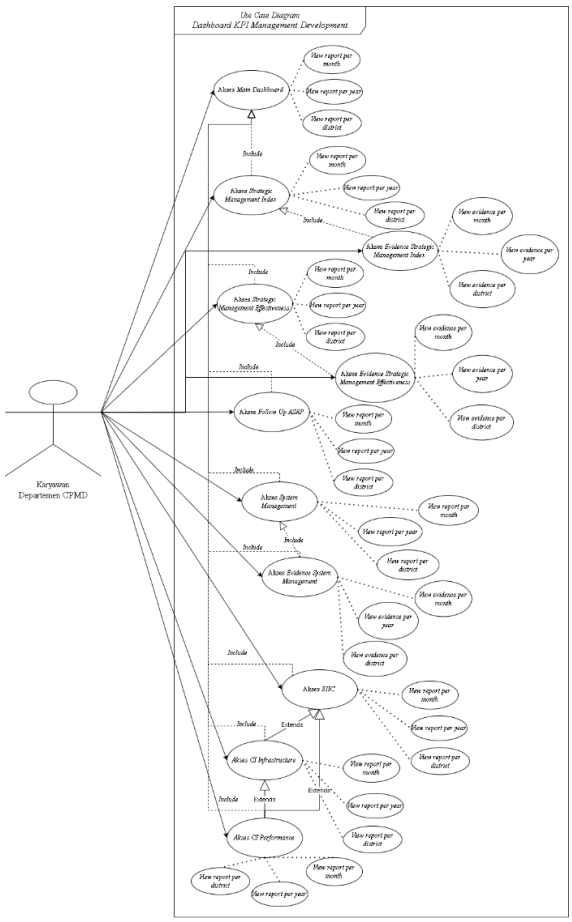

Figure 5 Use Case Diagram of Management Development KPI Diagram

Dashboard Design Results

Following the design and data processing stages, the result is a Power BI-based performance monitoring dashboard for the Management Development position, developed using the User-Centered Design method. The following are all dashboard interface pages created in Power BI:

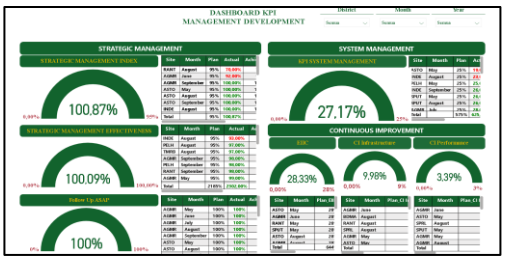

Figure 6. Main Dashboard Page

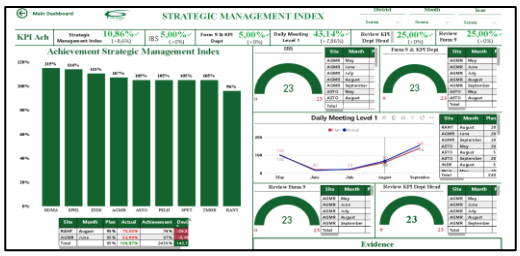

Figure 7. Strategic Management Index Page

Figure 8. Strategic Management Index Evidence Page

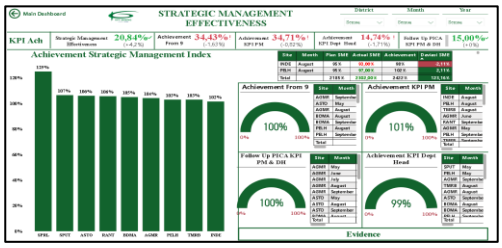

Figure 9. Strategic Management Effectiveness Page

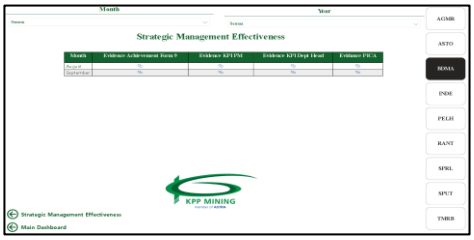

Figure 10. Evidence for Strategic Management Page

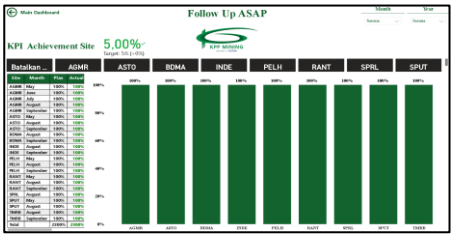

Figure 11. Follow-Up ASAP Page

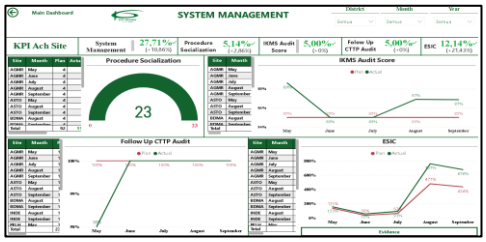

Figure 12. System Management Page

Figure 13. Evidence for System Management Page

Figure 14. EIIC Page

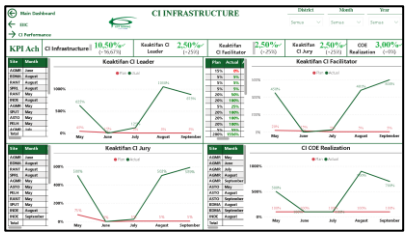

Figure 15. CI Infrastructure Page

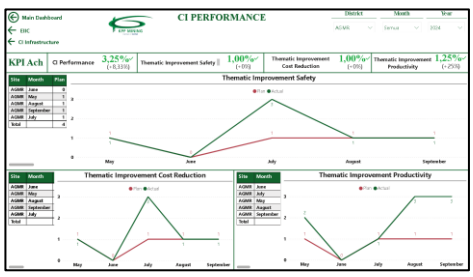

Figure 16. CI Performance Page

Scenario Validation Results

Based on scenario testing, the designed dashboard has met functionality aspects, as it can present relevant information in accordance with user needs. This includes performance indicator achievements, supporting KPI activities, and related evidence, all delivered efficiently. Users can easily access and filter data as needed, demonstrating that the dashboard's functionality works properly. Regarding usability, testing results indicate that users could operate the dashboard with ease, experiencing no difficulties. This confirms that the dashboard design prioritizes user-friendliness, resulting in high accessibility and effective usage.

Data Warehouse Infrastructure Analysis

This research employs a cloud-based database infrastructure, using Google Spreadsheet and Google Drive as the primary tools for data storage and processing, while Power BI is used for data analysis and visualization. This approach was selected for its ease of use, accessibility, and collaborative features, aligned with user preferences and requiring no advanced technical expertise in database management. Compared to SQL-based systems, this infrastructure has limitations in terms of query speed, storage capacity, and security/access management. Google Spreadsheet supports up to 10 million cells per file, and Google Drive allows up to 2 TB of data. In contrast, SQL databases offer higher storage capacities and more efficient indexing and querying capabilities for handling large data volumes. Nonetheless, Google Spreadsheet and Drive were chosen due to their current active use by the users in their daily work environment.

4. Conclusion

The dashboard design for monitoring Management Development performance using the User-Centered Design method produced report pages including the Main Dashboard, Strategic Management Index, Evidence of Strategic Management Index, Strategic Management Effectiveness, Evidence of Strategic Management Effectiveness, Follow Up ASAP (As Soon As Possible), System Management, Evidence of System Management, EIIC (Employee Innovation Involvement Cover), CI Infrastructure, and CI Performance.

The scenario testing results of the performance monitoring dashboard for the Management Development position at PT Kalimantan Prima Persada indicate that the dashboard functions properly and shows consistency between the information provided, navigation, and filter application. During testing, all navigation elements responded correctly, directing users accurately to the related pages when menus or navigation items were clicked. Additionally, the filter functions worked well by displaying data accurately according to the selected criteria. Therefore, the alignment between the presented information, system navigation, and filter use in this monitoring dashboard meets user expectations.

For future research, it is recommended to develop an integrated system across the company's departments using a more efficient database management system such as SQL, Oracle, Amazon Redshift, or others. Furthermore, it is advisable to process larger data volumes to improve the accuracy and completeness of information.

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