International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 07 Issue 07 July 2024
DOI: 10.47191/ijcsrr/V7-i7-20, Impact Factor: 7.943
IJCSRR @ 2024
www.ijcsrr.org

Improving the Performance Management System for Power Plant Operators in Caprycoal Mining Company

Mochammad Farid Mustaqim[1], Achmad Fajar Hendarman[2]
[1,2] School of Business and Management, Institut Teknologi Bandung, Indonesia

ABSTRACT: Caprycoal Mining Company, located in East Kalimantan, Indonesia, strives to be a leading coal supplier. The performance management system of Caprycoal Mining Company for power plant operators is the subject of this research, which critically evaluates and suggests a redesign. It incorporates the Resource-Based View (RBV), Performance Management Theory, Goal-Setting Theory, and Management by Objectives (MBO), focusing on strategic resources, clear objectives, and structured management. Using Soft System Methodology (SSM) and semi-structured interviews, significant gaps were identified, such as the lack of Key Performance Indicators (KPIs) and mechanisms for managing competency data. Existing training programs were unstructured and misaligned with operational demands. The study proposes a comprehensive overhaul, including a structured KPI framework based on SMART goals aligned with organizational objectives and a digital competency management system for efficient data handling. Regular, structured feedback and advanced data analytics are emphasized for continuous performance monitoring. Additionally, a formal rewards program is recommended to motivate and retain high-performing employees by linking performance outcomes with individual and team rewards.

KEYWORDS: Digitalization, Goal-Setting Theory, Key Performance Indicators (KPIs), Performance management system, Power plant operators, Technical competency.

INTRODUCTION

Caprycoal Mining company is a large coal mining company based in East Kalimantan, Indonesia. Caprycoal Mining Company envisions becoming the leading supplier of coal and its downstream products in Indonesia. This vision encompasses providing the highest value to all stakeholders, including customers, shareholders, employees, the government, and the surrounding society. The company strongly emphasizes aligning employee performance with its overarching goals through adherence to core principles. High-performance personnel are deemed crucial to achieving this vision, with employee performance being closely linked to their level of competence. Caprycoal Mining Company's core values act as an ethical compass, guiding decisions and actions across the organization. These values include Expertise, Integrity, Teamwork, Toughness, and Accountability, each embodying specific principles such as ethical standards, collaborative efforts, resilience, and responsible environmental and societal impact. The company places significant value on "Expertise" as a core value, denoting a commitment to excellence, continuous improvement, and industry leadership. Expertise indicates deep mastery of skills through substantial training and study, including technical knowledge and skills, problem-solving abilities, and communication proficiency (Komalasari et al., 2018).

Caprycoal Mining Company's competency structure, as depicted in Figure 1, categorizes competencies into Soft Competencies (core and managerial) and Hard Competencies (technical). These competencies are integral to achieving the company's vision of excellence. Soft competencies include Core and Managerial Competencies, managed centrally by the Training & Development Department under the Human Capital Division. Core competencies are derived from the company's vision, missions, and values and are expected of all employees regardless of their role. These competencies include a concern for health, safety, environment, and security (HSES), teamwork, business ethics, continuous learning, achievement orientation, and organizational commitment. Managerial competencies, tailored to specific positions, encompass leadership, communication, work planning & management, problem-solving & decision-making, adaptability, business acumen, developing others, budgeting & cost control, continuous improvement, client focus, social & cultural environment sensitivity, and report writing & presentation. Hard competencies, or technical competencies, focus on the functional skills necessary for specific tasks, such as strategic mining planning, equipment operation, and maintenance.

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 07 Issue 07 July 2024
DOI: 10.47191/ijcsrr/V7-i7-20, Impact Factor: 7.943
IJCSRR @ 2024
www.ijcsrr.org

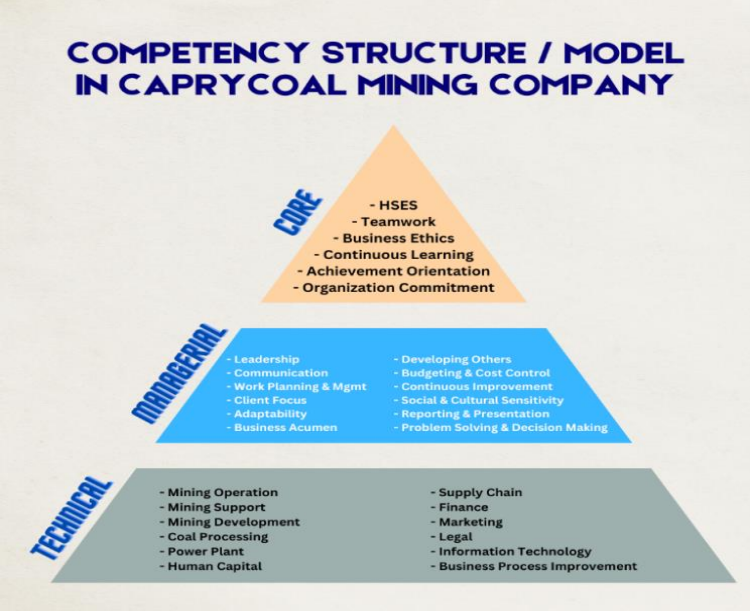

Figure 1. The current competency structure/model in Caprycoal Mining Company

Reliable electricity is essential to sustain coal mining activities at Caprycoal Mining Company because it uses many electric-powered fixed plant equipment to process the product coal from mining to shipment. Figure 2 illustrates the flow diagram of the coal chain at Caprycoal Mining Company, which highlights the importance of reliable power for the entire operation. The Company operates coal-fired power plants as the main sources of electricity for its operations. Since the new power plant started operating in 2017, the Power Plant Operation Department was established. Due to market conditions, many former heavy mining equipment operators became idle and were repurposed as power plant operators without prior technical backgrounds. This decision aimed to utilize existing personnel efficiently but resulted in a need for comprehensive training and competency development. The initial competency assessment conducted during the department's establishment was insufficient for long-term competency management. The current performance evaluation system, based on supervisor observations, fails to provide measurable data on operators' technical skills and knowledge. Accurate technical competency data is essential for effective training, job placement, and rotation to ensure safe, reliable, and efficient power plant operations.

Figure 2. The flow diagram of coal chain in Caprycoal Mining Company

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 07 Issue 07 July 2024
DOI: 10.47191/ijcsrr/V7-i7-20, Impact Factor: 7.943
IJCSRR @ 2024
www.ijcsrr.org

Regulatory changes have had a substantial impact on Caprycoal Mining Company. The expiration of the previous Coal Mining Work Agreement and the issuance of a new Special Mining Business License introduced additional provisions, including a significant increase in royalty rates and the requirement to deposit projected royalties for three months. Initially, high coal prices mitigated the financial burden of these new regulations, but declining coal prices in 2023 exacerbated the situation. The company's top management responded by instructing all departments, including the Power Plant Operation Department, to enhance productivity, effectiveness, and efficiency. Figure 3, which shows the Reference Coal Price chart issued by the Ministry of Energy and Mineral Resources of the Republic of Indonesia, underlines the importance of operational efficiency in a volatile market environment.

Figure 3. The graph of Reference Coal Price issued by Ministry of Energy and Mineral Resource of The Republic of Indonesia

In response to top management's directives, the Power Plant Operations Department Manager initiated a Focused Group Discussion (FGD) to develop comprehensive action plans. These plans addressed key areas such as preventing power plant trips, enhancing equipment reliability, optimizing manpower, and implementing cost-saving measures. However, the Power Plant Operations Department faces considerable challenges, particularly the lack of quantifiable data on operator performance and competence. Without accurate technical competency data of the operators, it is difficult to provide targeted technical training and ensure proper job placement and rotation. The current evaluation system of the operators, which is based on the subjective judgement of supervisors, is flawed due to its limited scope and potential for bias. This prompted department managers to request a measurable and continuous evaluation system for technical competencies to support objective annual performance appraisals and development plans for each operator. A formal performance management system incorporating quantifiable competency assessments for power plant operators is urgently required to enhance operator performance that will improve operational reliability and efficiency of power plant, ultimately benefiting the company's overall performance and financial health.

This research aims to identify gaps in the current performance management system for technical competence of power plant operators at Caprycoal Mining Company and develop an objective quantitative evaluation system. The goal is to create a performance management system for power plant operators with specific objectives, measurable assessment criteria, and online accessibility. This will ensure more effective and efficient power plant operations, improve overall departmental performance and contribute to corporate goals. This research focuses on developing an evaluation system for the technical competence of power plant operators. The findings will form the basis for operator competency development plan to improve power plant operational reliability and efficiency, accurately reflecting each operator's technical proficiency and training needs.

LITERATURE REVIEW

Resource-Based View (RBV) Theory

The Resource-Based View (RBV) theory states that a firm's internal resources are the primary source of competitive advantage and performance. Over the past decade, the RBV has significantly influenced business and strategy research, emphasizing valuable,

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 07 Issue 07 July 2024
DOI: 10.47191/ijcsrr/V7-i7-20, Impact Factor: 7.943
IJCSRR @ 2024
www.ijcsrr.org

rare, inimitable and non-substitutable resources (VRINs) to sustain competitive advantage (Galbreath, 2005; Peng, 2001; Bingham & Eisenhardt, 2008; Kroll, 2023; Lin & Wu, 2014). These resources include tangible assets such as buildings and equipment, and intangible assets such as intellectual property, organizational culture, and capabilities (Bertram, 2016; Clulow et al., 2003; Kraaijenbrink et al., 2010). Competence, which integrates knowledge, skills, attitudes, and characteristics, is an important strategic resource for competitive advantage. Managing these involves developing, aligning and improving them to meet organizational objectives, ensuring long-term sustainability and adaptability (Spencer & Spencer, 1993; Collis, 1994).

Intangible resources, particularly skills and capabilities, significantly impact organizational improvement due to their high causal ambiguity and barriers to duplication (Hall, 1992, 1993; Galbreath, 2005). Figure 4 illustrates the interaction between tangible and intangible resources in a company's portfolio. Competences, which are deeply embedded in operations and difficult to imitate, are essential for sustainable competitive advantage (Spencer & Spencer, 1993). Competency-based management aligns human capital with business objectives, identifying and bridging gaps through targeted strategies (Tripathi & Agrawal, 2014; Castillo Arias, 2021). Combining RBV and competency-based management leverages resources to improve performance and maintain competitive advantage (Bogner & Bansal, 2007).

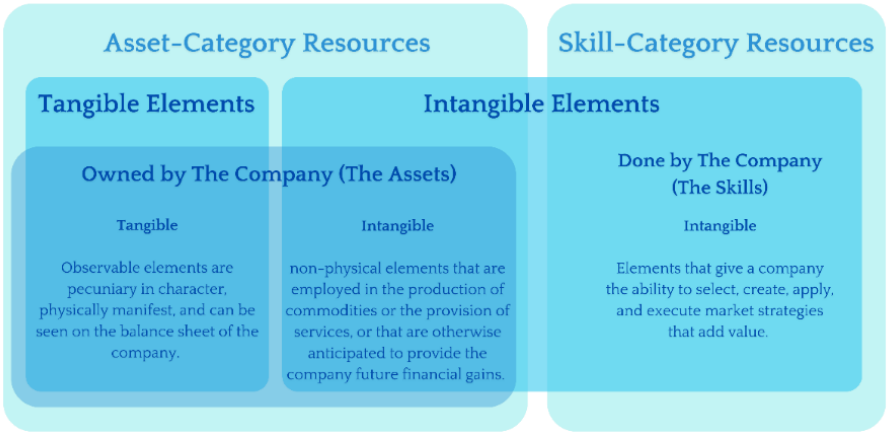

Figure 4. Enterprise resource portfolio diagram
(Source: Galbreath, 2005**)**

Performance Management Theory

Performance management is an ongoing process that involves determining, assessing, and improving team and individual performance while aligning it with the organization's strategic goals (Aguinis & Pierce, 2008). The ultimate goal is to create a high-performing and effective team or organization (Molan et al., 2019). These systems address the challenge of identifying, evaluating and motivating employee performance to improve organizational performance (Den Hartog et al., 2004). An efficient performance management system, which evaluates behavior, results, or both, is critical to achieving organizational effectiveness (Awan et al., 2020). This system involves four main components: planning, monitoring, developing, and rewarding. Planning sets clear and measurable goals aligned with organizational objectives, monitoring tracks performance and provides ongoing feedback, development identifies areas for improvement and offers training opportunities, and the reward component uses performance appraisals to inform promotions and bonuses. Modern performance management integrates technology to measure performance and manage feedback and development plans. Unlike performance appraisals, which are often annual and HR-driven, performance management is ongoing, supervisor-driven, emphasizes strategic alignment, and provides comprehensive feedback to improve future performance (Aguinis & Pierce, 2008).

Goal-Setting Theory

Goal Setting Theory posits a substantial correlation between goals and human performance, emphasizing that setting clear, specific and ambitious goals significantly improves individual and organizational performance (Locke & Latham, 2019). The theory, which has been studied since the 19th century, states that goals provide clear objectives and benchmarks for assessing performance (Latham & Locke, 2007). Goals influence performance through four mechanisms: direction, effort, persistence, and strategy development

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 07 Issue 07 July 2024
DOI: 10.47191/ijcsrr/V7-i7-20, Impact Factor: 7.943
IJCSRR @ 2024
www.ijcsrr.org

(Locke & Latham, 2002). Moderators such as goal commitment, feedback, and task complexity influence these relationships. Goal commitment relies on the perceived importance of the goal and self-efficacy, while feedback allows for adjustments to progress. Task complexity requires manageable goals (Locke & Latham, 2002; Latham & Locke, 2007). Participatory goal setting, visionary leadership and self-efficacy improve performance by fostering ambition and confidence (Latham & Yukl, 1976; Kirkpatrick & Locke, 1996). Goals serve as a measure of satisfaction, motivating long-term achievement despite the potential for immediate dissatisfaction (Mento et al., 1992; Locke & Latham, 2002).

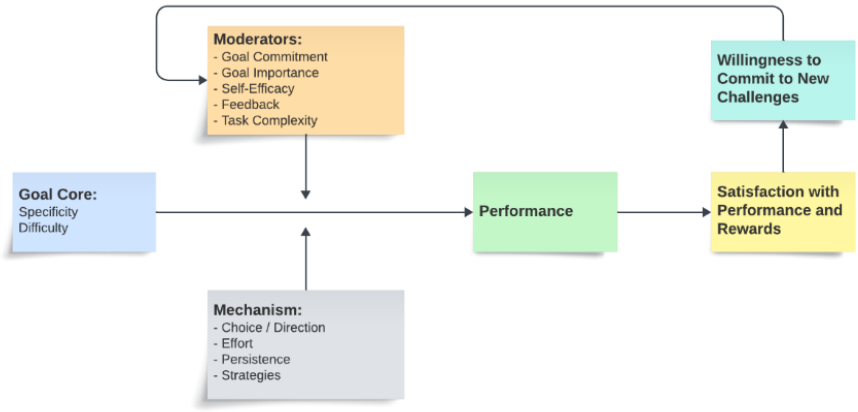

Figure 5. Key elements of goal setting theory and the high-performance cycle.
(Source: Locke & Latham, 2002)

Management by Objectives (MBO)

Management by Objectives (MBO) is a strategic management approach designed to improve organizational performance through the alignment of individual objectives with overall organizational goals. It fosters a sense of ownership and accountability among employees by involving them in the goal-setting process and making them responsible for achieving targets. The MBO process involves several steps: defining the strategic goals of the organization by senior management, collaborating with managers and employees to set SMART goals, conducting regular progress reviews, and evaluating performance to reward based on goal achievement. MBO is closely linked to the Performance Management System (PMS), which continuously identifies, measures, and develops individual and team performance to align it with organizational goals. Integrating MBO into the PMS will improve communication, collaboration and employee engagement by creating a clear link between individual efforts and organizational success. However, the challenge is to set realistic goals and avoid short-term thinking. Effective MBO and PMS implementation requires clear communication, training, regular progress reviews, and a culture that supports continuous learning and development. When executed well, MBOs and PMSs can drive employee engagement, productivity and overall business success by creating a high-performance culture that aligns individual and organizational goals.

Conceptual Framework

The research, conducted at the departmental level in the Power Plant Operations Department, aimed to evaluate the performance, especially technical proficiency, of power plant operators in response to management's challenge to improve organizational performance amidst poor cash flow and a weak coal market. Focusing on intangible resources, the study highlighted the significant impact of knowledge and capabilities on organizational success (Galbreath, 2005). This study examined the technical prowess of power plant operators, who were previously heavy mining equipment operators, to improve performance and meet departmental objectives. As no measurable technical competency assessment had been conducted since 2017, there was a need to develop an assessment mechanism for these operators.

Using qualitative methods, including thematic analysis and soft systems methodology, this study identified gaps in the existing operator performance management system. Based on Goal Setting Theory (Andrews et al., 2001; Latham et al., 2008; Mento et al., 1987), a new performance management system model for power plant operators is proposed. This model provides data on the technical

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 07 Issue 07 July 2024
DOI: 10.47191/ijcsrr/V7-i7-20, Impact Factor: 7.943
IJCSRR @ 2024
www.ijcsrr.org

competence of operators, answering the challenges posed by top management to improve productivity, effectiveness, and efficiency. Figure 6 illustrates the integration of the Resource-Based View (RBV), Goal Setting Theory and Management by Objectives (MBO) within the department, which emphasizes competencies as an important intangible resource and highlights the need for a structured approach to developing and managing competencies for sustainable operational success and efficiency.

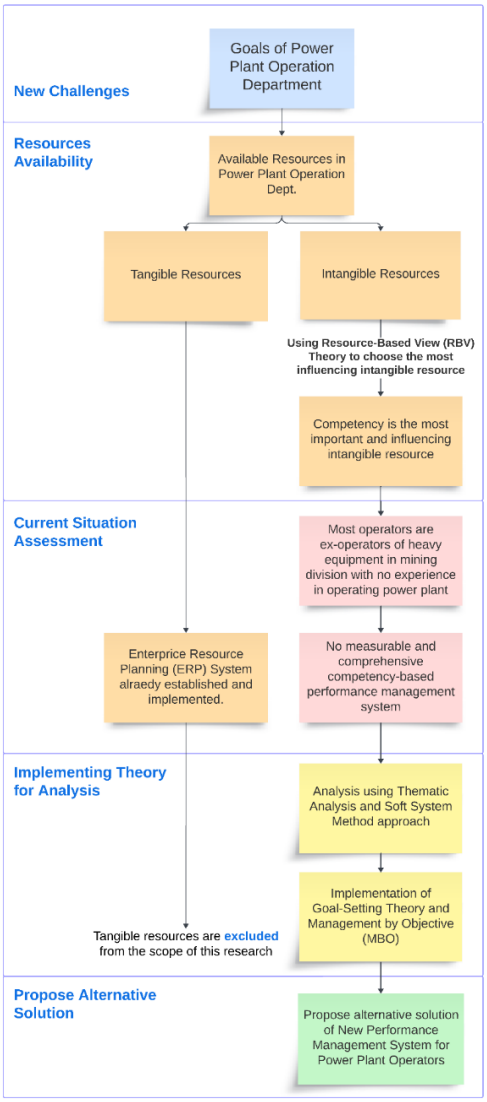

Figure 6. Conceptual framework of the research

RESEARCH METHODOLOGY

Research Design

Research design is a methodical approach to problem solving and understanding, involving clear objectives and techniques to advance theory development, research, and practical applications (Salkind, 2010). Research design serves as the foundation for the entire research process, ensuring methodologically sound research and reliable results. It involves defining clear objectives and appropriate statistical methods (Akhtar, 2016; Salkind, 2010). Akhtar (2016) explains that research design includes data collection, measurement, and analysis.

The objective of this study is to develop an operator performance management system that accommodates the various technical competencies mastered by power plant operators. Therefore, the collection of empirical data regarding their level of competence is essential, making the inductive procedure the most efficient approach. This research aims to create a performance appraisal system

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 07 Issue 07 July 2024
DOI: 10.47191/ijcsrr/V7-i7-20, Impact Factor: 7.943
IJCSRR @ 2024
www.ijcsrr.org

and a solution to improve the technical competence of power plant operators. The research methodology is illustrated in Figure 7, which shows the sequential progression of the research process: identifying the research background, defining the business problem, conducting a literature review, building a conceptual framework, collecting data, analyzing data, formulating business solutions, and developing an implementation plan.

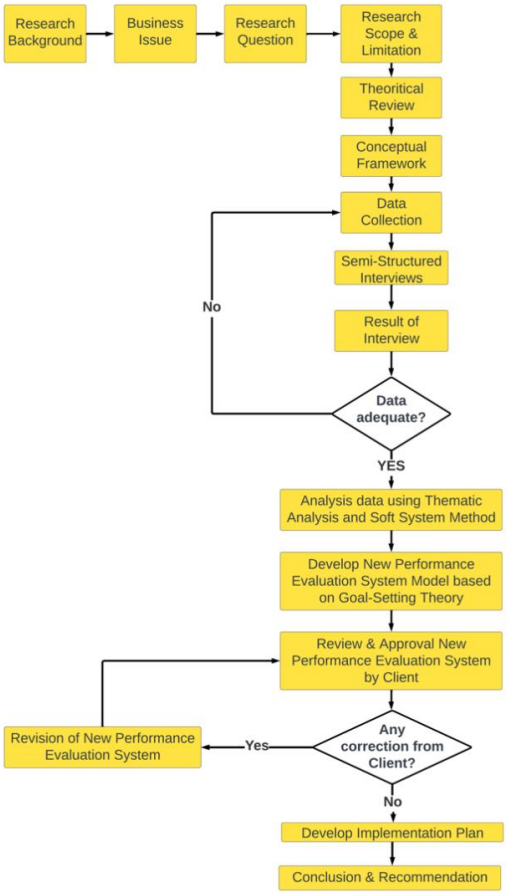

Figure 7. Research design

A qualitative approach was the optimal approach to address the research problem, using strategies such as goal setting theory (Andrews et al., 2001; Latham et al., 2008; Mento et al., 1987) to assess the performance management system. Given the limited time frame, a comprehensive approach was challenging, so thematic analysis and soft systems methodology (SSM) were used as the most appropriate methodologies.

Data Collection

The data used in this research is critical for scientific analyses, interpretations, and conclusions (Mills et al., 2015). This research includes data regarding the department's goals, the company's situation, gaps in the current performance management system, the current reward and punishment system, and stakeholders' expectations of the performance management system for the power plant operators. Data were collected through semi-structured interviews with various stakeholders in the Power Plant Operations Department, including managers, assistant managers, supervisors, and operators. Two respondents from each level provided diverse perspectives. The managers interviewed were the Power Plant Operations Department Manager and the Power Plant Engineering Department Manager. At the assistant manager level, two Power Plant Operations Assistant Managers were selected, who supervise the shift operations team. At the supervisor level, a Boiler-Turbine-Generator supervisor and a Power Plant Laboratory supervisor were selected. For operators, a Boiler-Turbine-Generator (BTG) operator and a Balance of Plant (BOP) lead operator were selected. This selection ensured a rich and comprehensive data set from various viewpoints within the power plant.

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 07 Issue 07 July 2024
DOI: 10.47191/ijcsrr/V7-i7-20, Impact Factor: 7.943
IJCSRR @ 2024
www.ijcsrr.org

The semi-structured interview questions were standardized to ensure comparability of answers. Individual interviews were conducted independently to avoid influencing the other respondents' answers. Data from the interviews were recorded in the original voice recordings, which were then transcribed verbatim. Interviews were conducted in Indonesian, except for one interview conducted in English with the Manager of the Power Plant Engineering Department, who is a foreign national (Indian). This resulted in seven transcripts in Indonesian and one transcript in English, as detailed in Table 1.

Table 1. List of Respondents of Semi-Structured Interview

No.	Code of Name of Respondents	Positions	Working Experience (Years)
1	R1 - AKN	Manager Power Plant Operation Department	24
2	R2 - SRM	Manager Power Plant Engineering Department	27
3	R3 - APR	Assistant Manager Operation Power Plant	19
4	R4 - RHU	Assistant Manager Operation Power Plant	15
5	R5 - BAP	Shift Supervisor Boiler-Turbine-Generator	12
6	R6 - AWP	Supervisor Laboratory Power Plant	10
7	R7 - WHE	Master Operator Balance of Plant	15
8	R8 - YAA	Operator Boiler-Turbine-Generator 2x5MW	13
9	R9 - RFM	Assistant Manager Organization Development, Human Capital Division	19

Data Analysis

Qualitative methods are effective for developing new performance management systems using goal setting theory (Travers et al., 2015). These methods extract and utilize experts' tacit knowledge to build performance models (Cohanier, 2014), help understand complex systems and develop comprehensive performance measurement systems (Abernethy et al., 2005).

1. Thematic Analysis

This study used thematic analysis, a qualitative research technique used to uncover, examine, and present recurring patterns (themes) in data (Thomas & Harden, 2008). This technique can be applied to different types of data, such as interviews, focus groups, and textual material, which provide new insights and concepts. Thematic analysis involves coding non-quantitative data, identifying patterns, and developing themes that bring together underlying meanings. This method is essential for a comprehensive understanding of qualitative data, making it suitable for evaluating performance management systems.

2. Soft System Methodology

Soft Systems Methodology (SSM), introduced by Peter Checkland, is widely accepted in various disciplines such as management, social sciences, and psychology. SSM addresses complex systems of human activity by building models of intentional behavior from multiple perspectives (Checkland & Poulter, 2010). SSM enables the strategic development, implementation, and oversight of performance management systems, promoting coordination and improvement through creative organizational change (Jacobs, 2004). The approach involves a seven-step process: understanding the unstructured problem situation, expressing the problem situation, defining basic definitions, building a conceptual model, comparing the model to the real world, defining feasible changes, and implementing actions. In the first step, understanding the unstructured problem situation, the focus is on exploring and gaining a comprehensive understanding of the problem without imposing any structure. The second step, expressing the problem situation, involves representing the gathered information using rich pictures—visual representations that capture various elements and relationships within the problem situation, aiding in visualizing the problem from different perspectives. In the third step, defining basic definitions (root definitions), the problem is framed in terms of the various stakeholders' viewpoints using the CATWOE mnemonic (Customers, Actors, Transformation process, Weltanschauung (worldview), Owners, and Environmental constraints) to encapsulate different perspectives. Next, in the fourth step, building a conceptual model, a logical and structured representation of activities that should occur according to the defined perspectives is developed. The fifth step, comparing the model to the real world, involves identifying gaps, differences, and areas of alignment between the conceptual model and the real-world situation. In the sixth step, defining feasible changes, practical and desirable changes that are possible within the given constraints and acceptable to stakeholders are identified. Finally, the seventh step, implementing actions, encompasses planning, executing, and monitoring the

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 07 Issue 07 July 2024
DOI: 10.47191/ijcsrr/V7-i7-20, Impact Factor: 7.943
IJCSRR @ 2024
www.ijcsrr.org

implementation process to ensure the changes lead to the desired improvements. This approach ensures comprehensive stakeholder engagement and practical and relevant solutions (Hermanto et al., 2022).

RESULTS AND DISCUSSION

Coding and Thematic Analysis

Thematic analysis of semi-structured interviews revealed some key challenges and opportunities in the performance management system for power plant operators at Caprycoal Mining Company. Fluctuating coal prices, increasing royalties and regulatory demands necessitate efficient operations to maintain continuous and uninterrupted service. According to R1, these economic pressures underscore the critical need to improve productivity and efficiency. R1 emphasised the important role of human resources, specifically the competence, knowledge, and experience of personnel, rather than physical assets, stating, *"Human resources are the most influential, specifically the personnel, their competence, knowledge, and experience."*

The competence gap among operators, especially regarding their technical skills and understanding of field operations, is significant. R2 highlighted the lack of specific data regarding individual competencies, which hinders effective assessment and development. R2 noted, *"Objectives are often not subdivided into smaller, manageable sub-objectives for individual evaluation,"* indicating inadequacies in the current performance management system. This was echoed by R3 who underlined that *"Operators have varying competencies. Some only understand one area, and theoretical knowledge is not fully applied."*

R4 elaborated further on the importance of non-physical resources, emphasising that "Intangible resources are more important." This viewpoint is supported by R5 (Shift Supervisor Boiler-Turbine-Generator), who believes that *"Skills, experience, and knowledge are the main capital in operating this power plant."* However, both R4 and R5 highlighted existing competency gaps, with R5 noting that *"Operators usually understand the field better, they just know how to do it, without knowing why they do it."*

The current assessment method, which is primarily based on supervisor observations, was criticised for its lack of transparency and measurable criteria. R6 said, *"Currently, the system relies solely on supervisor observations, so it does not accurately reflect the actual competence of operators."* This was echoed by R7, who pointed out the subjective nature of the evaluation, stating, *"The grading is done by the supervisor, and often the grades given by the supervisor to the operators are rotated, which means each operator gets a turn to get a grade above the standard, which is unfair."*

To address this issue, some respondents suggested implementing a more structured and objective grading system. R3 advocated *"real and measurable assessment with valid data, including theoretical and practical understanding."* Similarly, R7 recommended practical tests, written exams and real-time problem-solving scenarios to provide a thorough evaluation of operator competence. R8 also called for clearer and measurable criteria, saying, *"We don't know where the assessment measurements come from,"* highlighting the need for transparency in the evaluation process.

Rewards and recognition systems are seen as critical to fostering a high-performance culture. R2 and R6 emphasised the importance of performance-based rewards, with R6 suggesting, *"Rewards should be given to personnel who meet targets or even exceed targets."* R8 added that top-performing operators should be rewarded with certificates and public recognition within the department to motivate others. In addition, addressing underperformance through targeted training and support was also a common recommendation. R4 suggested, *"Provide the necessary training according to their competency level at the time,"* while R7 emphasised training and tailored solutions for operators who did not meet expectations, as well.

The results of the thematic analysis underscore the critical need for a structured and comprehensive competency-based assessment method for power plant operators at Caprycoal Mining Company. Implementing clear criteria, KPIs, regular training, feedback sessions and performance rewards are essential to address competency gaps and improve operational efficiency and effectiveness.

Soft System Method (SSM) Analysis

Step 1 Problem Situation Unstructured

Goal setting theory is critical to the performance management system of power plant operators at Caprycoal Mining Company. Research highlights the need for specific, challenging and measurable goals to improve performance and motivation (Bipp & Kleingeld, 2011; Neubert & Dyck, 2016). Fluctuating coal prices and increasing royalties create challenging conditions, so clear goals are needed to ensure the sustainability of operations (Neubert & Dyck, 2016). The importance of skills, experience and knowledge is emphasised, with research indicating that individuals who possess these attributes are more likely to achieve set goals (Bipp & Kleingeld, 2011; Galbreath, 2005). Significant competency gaps among power plant operators, particularly in technical

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 07 Issue 07 July 2024
DOI: 10.47191/ijcsrr/V7-i7-20, Impact Factor: 7.943
IJCSRR @ 2024
www.ijcsrr.org

understanding, were identified due to the lack of measurable data and structured assessments. Constructive feedback and skill development can help individuals improve their competence and achieve goals (Neubert & Dyck, 2016).

Current evaluation methods of the power plant operators, which rely on supervisor observations, lack comprehensiveness and are prone to bias. Accurate and objective performance evaluations are essential for meaningful feedback and employee development (Bipp & Kleingeld, 2011). Combining technical evaluation with subjective judgement and applying Key Performance Indicators (KPIs) aligns with goal-setting principles. Recognising and rewarding good performance through team-based rewards and individual recognition significantly increases motivation and commitment (Neubert & Dyck, 2016). Measures to address technical competency gaps, such as tailored technical training programmes and knowledge sharing sessions, are essential for skill development and performance improvement (Bipp & Kleingeld, 2011). Existing technical training programmes for power plant operators are inadequate, requiring more targeted solutions. The absence of detailed technical competency mapping of the power plant operators hinders alignment of technical training programmes with actual needs, compounded by subjective performance evaluations. Table 2 presents a detailed list of actors involved in this issue, describing their roles and the specific issues they face in the performance management system of the power plant operators.

Table 2. List of Actors Involved in the Problem

Actors	Problems
Power Plant Operators	Significant competency gaps, especially in theoretical understanding of field operations
Supervisor of Power Plant Operation	Subjective, non-comprehensive performance evaluation approach
Assistant Manager Power Plant Operation	Need to maintain safe, reliable operations without operator competency data
Manager Power Plant Operation	Need to maintain operations despite financial instability
Human Capital Division	Lack of clear and detailed data on individual competencies, hindering effective training and career development
IT Department	Existing system only available for supervisors or above

Meanwhile, Figure 8 illustrates the complexity and interconnectedness among the various actors and their challenges in the performance management system at Caprycoal Mining Company's Power Plant Operations Department.

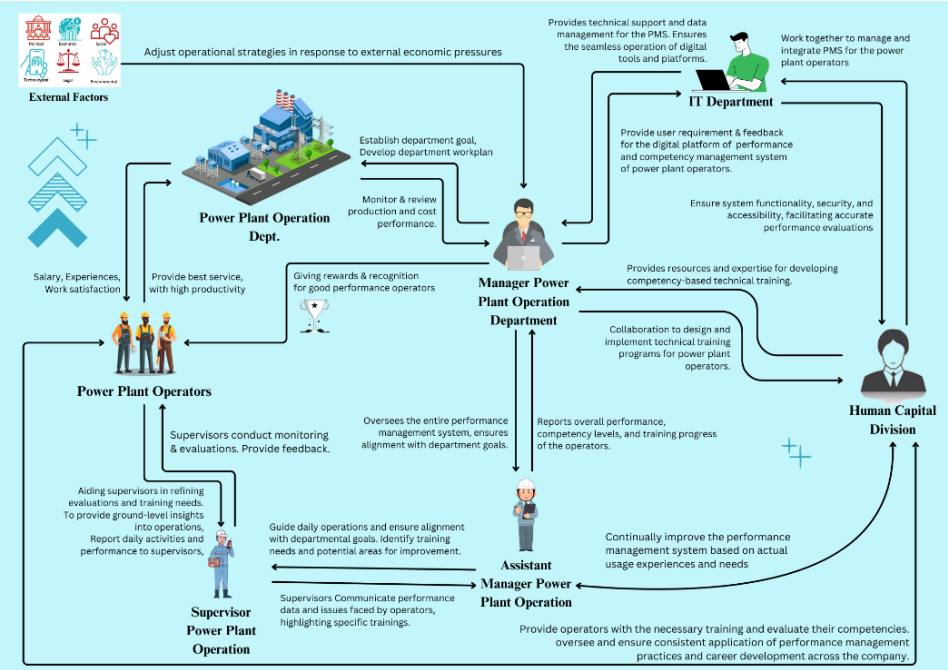

Figure 8. Rich pictures of problem

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 07 Issue 07 July 2024
DOI: 10.47191/ijcsrr/V7-i7-20, Impact Factor: 7.943
IJCSRR @ 2024
www.ijcsrr.org

Step 2 Problem Situation Expressed

The 7S Framework, developed by McKinsey, provides a comprehensive and holistic approach to analyse the performance management system for the technical competence of power plant operators at Caprycoal Mining Company. The framework includes seven key elements: Strategy, Structure, Systems, Shared Values, Style, Staff, and Skills, which collectively capture the diverse nature of organisational dynamics and offer a structured method to identify and address underlying issues. Applying the 7S Framework to Step 2 of the Soft Systems Methodology (SSM) (Table 3) enabled the systematic expression and analysis of the complex problem situation at Caprycoal Mining Company, ensuring that all important aspects of the organisation were considered.

Table 3. 7S Framework of Power Plant Operation Dept. of Caprycoal Mining Company

7S Component	Description	Problem
Strategy	Department strategic goal is to maximize efforts to achieve high productivity, reliability, and efficiency in power plant operations to support coal mining operations of Caprycoal Mining Company.	No aligned KPIs for operators, potentially misaligning their performance with department goals.
Structure	The organization consists of multiple levels, starting with Department Manager, Assistant Manager, Supervisor, and Operator.	Insufficient supervisors for the number of operators hinder accurate and continuous evaluations.
Systems	The current performance management system is only for supervisor level and above. At the operator level, there is no structured assessment system with measurable criteria, it only relies on observations from supervisors.	No structured assessment system for operators, leading to subjective evaluations.
Shared Values	Shared values emphasize the importance of technical competency to achieve power plant operation with high reliability, efficiency, and low cost.	Variations in operator backgrounds impact the uniform understanding and improvement of competencies.
Style	Leadership style of management is top-down.	Top-down management style limits feedback opportunities, affecting competency gap management
Staff	Operators constitute the most significant element of the power plant operations department	Inadequate data on individual competencies complicates task assignment and development planning.
Skills	Skills of operators and supervisors in performing tasks and providing feedback.	Large skill gaps in operators and supervisors necessitate more robust development programs

Based on this comprehensive analysis, the 7S Framework revealed specific areas that required attention and improvement within the Power Plant Operations Department at Caprycoal Mining Company. This holistic understanding provided valuable insights into the interconnected aspects of Strategy, Structure, Systems, Shared Values, Style, Staff and Skills, which enabled the formulation of detailed root definitions that encapsulated the essence of the changes and improvements required.

Step 3 Root Definitions of Relevant Systems

CATWOE's analysis of Caprycoal Mining Company's performance management system highlighted the need for specific, measurable and challenging goals for power plant operators to improve performance and motivation (Locke & Latham, 2019). Clear goals and tailored training programs are essential to address competency gaps and ensure operators have the necessary skills (Bipp & Kleingeld, 2011). Objective and comprehensive assessment systems, coupled with fair recognition and reward programs, support goal achievement and continuous improvement (Neubert & Dyck, 2016). Overcoming environmental constraints such as coal price fluctuations, regulatory pressures and organizational resistance is critical to success.

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 07 Issue 07 July 2024
DOI: 10.47191/ijcsrr/V7-i7-20, Impact Factor: 7.943
IJCSRR @ 2024
www.ijcsrr.org

The main root definition for the performance management system for power plant operators at Caprycoal Mining Company is articulated as a system owned by the Manager of Power Plant Operation Department, operated by Power Plant Operators, Supervisors, Assistant Manager Operation and the Manager of Power Plant Operation Department, to transform performance data and competency evaluations into improved technical competencies, better job placements, rotation and enhanced operator performance by assessing technical competencies and providing feedback and training, justified by the need for operational excellence, safety, reliability, and efficiency in power plant operations to meet strategic goals, while operating within the constraints of volatility of coal prices, increased royalties that must be paid by company to the government, regulatory compliance requirements, advancement of digital technology, limited financial budget, and the organization cultures since most of the operators are former heavy mining equipment operators. The CATWOE analysis for the key root definitions is detailed in Table 4.

Table 4. CATWOE Table for The Main Root Definition

Component	Description
Customers (C)	Power Plant Operators, Supervisors, Assistant Manager Operation, Manager Power Plant Operation, Top Management
Actors (A)	Power Plant Operators, Supervisors, Assistant Manager Operation, Assistant Manager Organization Development
Transformation (T)	Transforming the existing manual, subjective without clear KPI and criteria for the performance evaluation and lack of measurable competency assessment system, into an objective, comprehensive, and continuous performance management system that accurately reflects the technical competencies of power plant operators.
Weltanschauung (W)	The belief that a robust system is essential for achieving operational excellence and meeting strategic goals. This perspective underscores the importance of having a well-structured performance management system that ensures power plant operators possess the necessary technical competencies for safe, reliable, and efficient power plant operations.
Owner (O)	The Manager of Power Plant Operation Department.
Environmental Constraints (E)	Volatility of coal prices, Increased royalties and regulatory requirements, Technological advancements and maintenance needs of power plant equipment, Organizational culture and resistance to change, Limited budget, Availability of resources for training and development programs

Root definition 1, addressing the lack of clear data on individual competencies requires transforming the current vague and incomplete competency tracking system into one that is systematic, accurate and accessible. The CATWOE analysis for this root definition is detailed in Table 5.

Table 5. CATWOE Table for The Root Definition 1

Component	Description
Customers (C)	Power Plant Operators, Supervisors, Assistant Manager Operation, Manager Power Plant Operation, Manager of Training and Development
Actors (A)	Manager Power Plant Operation, Assistant Manager Operation, Assistant Manager Organization Development, Supervisors Operation, IT Engineers
Transformation (T)	Transforming the current lack of clear data on individual competencies into a systematic, accurate, and accessible competency tracking system that provides comprehensive insights into each operator's skills and development needs.
Weltanschauung (W)	The belief that accurate and accessible data on individual competencies is essential for effective task assignments, targeted training programs, and strategic workforce planning, ultimately enhancing operational efficiency and achieving strategic business goals.

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 07 Issue 07 July 2024
DOI: 10.47191/ijcsrr/V7-i7-20, Impact Factor: 7.943
IJCSRR @ 2024
www.ijcsrr.org

Owner (O)	Manager Power Plant Operation
Environmental Constraints (E)	Technological limitations and integration challenges, Data privacy and security concerns, Resistance to new data management systems, Availability of resources for developing and maintaining the system

Root Definition 2, transforming the current subjective and incomplete assessment methods into an objective, comprehensive, and continuous competency evaluation system is crucial. The CATWOE analysis for this root definition is detailed in Table 6.

Table 6. CATWOE Table for The Root Definition 2

Component	Description
Customers (C)	Power Plant Operators, Supervisors, Assistant Manager Operation, Manager Power Plant Operation
Actors (A)	Power Plant Operators, Supervisor Operation, Assistant Manager Operation
Transformation (T)	Transforming the current subjective and incomplete assessment methods into an objective, comprehensive, and continuous competency evaluation system for power plant operators.
Weltanschauung (W)	The belief that a fair, objective, and comprehensive assessment system is essential for accurately measuring operator competencies, guiding development efforts, and achieving strategic business goals.
Owner (O)	Manager Training & Development Department
Environmental Constraints (E)	Potential biases and inconsistencies in assessments, Resistance to change from staff, Availability of resources for implementing a new system, Regulatory requirements and industry standards

Root Definition 3, addressing the lack of tailored training programs specific to the technical needs of operators involves transforming general training programs into tailored and continuous ones. The CATWOE analysis for this root definition is detailed in Table 7.

Table 7. CATWOE Table for The Root Definition 3

Component	Description
Customers (C)	Power Plant Operators, Supervisors Operation, Assistant Manager Operation, Manager Power Plant Operation
Actors (A)	Power Plant Operators, Supervisors operators, Human Capital Division Staff
Transformation (T)	Transforming the existing general training programs into tailored and continuous training programs that address the specific technical needs and competency gaps of power plant operators.
Weltanschauung (W)	The belief that tailored training programs are crucial for enhancing the technical skills and knowledge of operators, ensuring efficient and safe power plant operations, and achieving strategic business goals.
Owner (O)	Manager Training & Development, Manager Power Plant Operation
Environmental Constraints (E)	Fluctuating operational demands, Limited resources and budget for training, Technological advancements and maintenance needs of power plant equipment, Organizational culture and resistance to change

Root Definition 4, tackling the issue of inadequate recognition and rewards for outstanding performance involves transforming the current system into a structured, fair, and motivating program. The CATWOE analysis for this root definition is detailed in Table 8.

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 07 Issue 07 July 2024
DOI: 10.47191/ijcsrr/V7-i7-20, Impact Factor: 7.943
IJCSRR @ 2024
www.ijcsrr.org

Table 8. CATWOE Table for The Root Definition 4

Component	Description
Customers (C)	Power Plant Operators, Supervisors Operations, Assistant Manager Operation, Manager Power Plant Operation
Actors (A)	Supervisors Operations, Assistant Manager Operation, Manager Power Plant Operation Department
Transformation (T)	Transforming the current inadequate recognition and rewards system into a structured, fair, and motivating program that acknowledges and rewards outstanding performance among power plant operators.
Weltanschauung (W)	The belief that a robust recognition and rewards system is crucial for motivating employees, enhancing performance, and retaining skilled operators, thereby contributing to the company's overall success.
Owner (O)	Manager of Power Plant Operations
Environmental Constraints (E)	Limited budget for rewards, Potential disparities in recognition leading to conflicts, Need for transparent and fair criteria, Organizational culture and resistance to new reward systems

These root definitions provide a clear and structured approach to addressing the key issues in the performance management systemfor power plant operators at Caprycoal Mining Company, ensuring a comprehensive strategy for enhancing power plant operator technical competencies and overall organizational performance.

Step 4 Conceptual Models

The new performance management system model for power plant operators is illustrated in Figure 9. The Performance Management System (PMS) model for power plant operators at Caprycoal Mining Company aims to improve operator performance through clear goals aligned with measurable Key Performance Indicators (KPIs), as highlighted by the Power Plant Operations Department Manager, who emphasised the need to *"maximise efforts to achieve company goals, particularly efficiency and effectiveness in operations"* (R1). The system was designed to address the shortcomings noted by the Power Plant Engineering Department Manager, who advocated that sub-goals could be brought down to the individual level for more precise performance evaluation (R2). The inclusion of objective technical evaluations and subjective judgements responded to concerns from the Boiler-Turbine-Generator Shift Supervisor about the current method that *"does not provide a quantifiable assessment of each operator's competence, and personal biases or relationships with supervisors can influence results"* (R5). Customised training and regular sharing sessions are essential to fill competency gaps, as indicated by the 2x5MW Boiler-Turbine-Generator Operator, who mentioned the need for *"training, sharing sessions between operators, from supervisor to operator"* (R8).

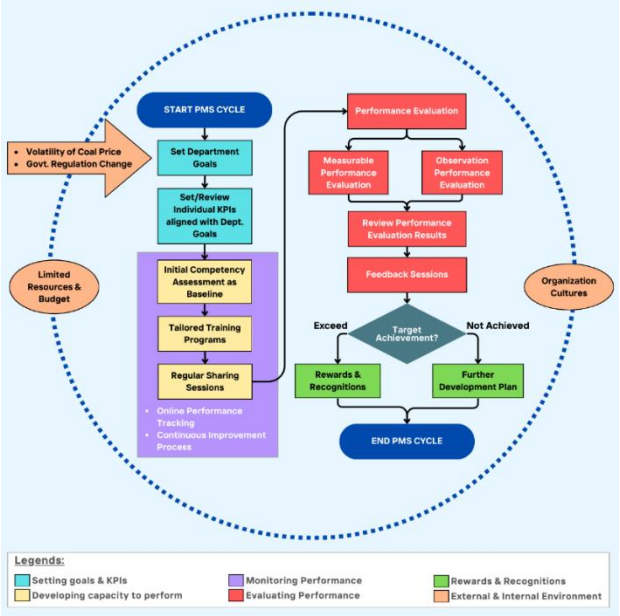

Figure 9. Conceptual Model of Performance Management System for Power Plant Operators at Caprycoal Coal Mining Company

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 07 Issue 07 July 2024
DOI: 10.47191/ijcsrr/V7-i7-20, Impact Factor: 7.943
IJCSRR @ 2024
www.ijcsrr.org

In addition, the Assistant Manager Power Plant Operations supported the implementation of a *"database or history so that the progress of each operator's competency development can be known" and an "online application system"* for more objective assessment (R4). Awards and emergency preparedness training were also emphasised by the Balance of Plant Master Operator, who argued that *"awards are very relevant to implement, sir. So that later it can trigger other friends to excel or compete"* (R7). However, implementation faces challenges such as fluctuating coal prices and limited resources for training and rewards, as highlighted by the Supervisor Laboratory Power Plant who noted the current downward trend in coal prices (R6). The proposed PMS seeks to provide a structured, objective and data-driven approach to managing and improving performance amidst these dynamic business conditions.

Step 5 Comparison of Models and Reality

In semi-structured interviews with the Manager of the Power Plant Operations Department at Caprycoal Mining Company, significant gaps in Table 9 were found to exist. The interview results showed that although departmental objectives are set hierarchically from top management and passed down, there are no specific KPIs for operators, leading to subjective performance evaluations based on supervisor observations. This absence of structured evaluation criteria and basic competency assessments makes effective training and workforce management difficult. The new PMS model proposes structured evaluation with clear KPIs, a digital performance management system, and a standardized feedback mechanism. It also proposes a formalized reward system to effectively recognize and motivate operators. These proposed changes aim to address the mismatch between current practices and model requirements, improving performance management of power plant operators at Caprycoal Mining Company.

Table 9. Comparison of Requirements in New PMS Model vs Real World Condition

Component	Real World Perception	Model Requirement	Comparison and Gaps	Corresponding Stakeholders
Performance Evaluation	Current evaluations are unstructured and subjective, heavily reliant on supervisor assessments.	A more objective and structured evaluation system with clear, measurable KPIs aligned with department goals.	No specific KPIs at the operator level, leading to subjective evaluations.	Ast. Mgr. Operation, Ast. Mgt. OPO, Human Capital Division, IT Dept
Competency Data Management	No structured system for collecting and managing data related to operators' technical competencies.	Implement a structured system for collecting and managing competency data, with initial assessments.	Technical competency database not available; no initial assessment conducted.	Ast. Mgr. Operation, Ast. Mgt. OPO, Human Capital Division, IT Dept
Training & Development	Training is limited to safety, based on TNA, and sharing sessions are unstructured.	More specific and comprehensive training covering various operational and technical aspects.	Training not tailored to competency; sharing sessions lack formal structure.	Ast. Mgr. Operation, Ast. Mgt. OPO, Supervisors, Human Capital Division
Evaluation Feedback Mechanism	Feedback sessions are inconsistent and informal, based on supervisor initiative without a standard approach.	Standard and consistency in feedback sessions to ensure all employees receive constructive evaluations.	Inconsistent and irregular feedback sessions.	Ast. Mgr. Operation, Supervisors, Human Capital Division
Rewards System	Current rewards system is informal and not standardized.	Formalized rewards system organized as certificates or recognition to boost motivation.	Unorganized rewards system.	Mgr. Power Plant Operation, Ast. Mgr. Operation, Supervisors

Step 6 Feasible and Desirable Changes

To improve the Performance Management System for power plant operators at Caprycoal Mining Company, several strategic changes are proposed. Firstly, the KPI development team will establish clear and industry-aligned performance indicators through workshops and piloting. A digital competency management system is also recommended to efficiently manage operator competencies,

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 07 Issue 07 July 2024
DOI: 10.47191/ijcsrr/V7-i7-20, Impact Factor: 7.943
IJCSRR @ 2024
www.ijcsrr.org

supported by the introduction of digital tools for objective and real-time performance evaluation. Regular technical competency assessments and structured technical training programs are planned to ensure operators maintain high performance standards. In addition, a robust reward system and clear career development path will be implemented to improve operator motivation and retention. These initiatives, which are feasible within the company's resources and aligned with the company's strategic objectives, aim to improve the operational efficiency and sustainability of the power plant.

Table 10. Implementation Plan for Feasible and Desirable Changes

Change	Reason for Change	Expected Impact	Implementation Strategy
Create clear & measurable KPIs aligned with department and company goals	Operators are evaluated subjectively without specific KPIs, making it difficult to assess their technical competency.	Aligning KPIs with department goals and market demand improves relevance and effectiveness, enabling the assessment of operators' competency levels.	- Form a committee including manager, ast manager operation, and supervisors to develop relevant KPIs for operators. - Introduce SMART KPIs gradually and integrate them into performance management system.
Implement a Digital Competency Management System	No structured system for collecting and managing competency data.	Competency data are available and accessible to supervisor for placing & rotating work area, and planning training & development	Use platform that integrated with performance management system to systematically collect, store, and analyze data on operators' competencies.
Enhance Performance Evaluation	The current performance evaluation process is manual, subjective, and lacks initial competency assessments, resulting in an inability to provide an objective and comprehensive assessment of operators' knowledge and skills.	- Actual level of technical competency of power plant operators can be determined - A more skilled and versatile workforce capable of handling diverse operational challenges.	- Transition to digital performance evaluations with objective criteria. - Select appropriate digital tools for performance evaluations - Incorporate regular and structured competency assessment in PMS. - Develop a comprehensive competency framework - Conduct initial assessments and schedule periodic evaluations - Pilot the tools in one section/crew before rolling out department-wide
Integrate Real-Time Data Tracking	To enhance the accuracy of performance monitoring and provide immediate feedback.	Improved responsiveness to performance deviations, leading to quicker corrective actions.	Deploy software that supports real-time data collection and analysis; train staff on its use.
Implement Structured	Feedback is currently informal and inconsistent, leading to	Structured feedback will ensure consistent improvement and development across all operators.	- Develop a feedback protocol and train supervisors on delivering effective feedback

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 07 Issue 07 July 2024
DOI: 10.47191/ijcsrr/V7-i7-20, Impact Factor: 7.943
IJCSRR @ 2024
www.ijcsrr.org

Change	Reason for Change	Expected Impact	Implementation Strategy
Feedback Mechanisms	varied developmental outcomes.		- Incorporate feedback sessions into the performance evaluation process. - Schedule regular review sessions with supervisors.
Establish a Reward System	There is a need to motivate and retain high-performing staff.	Increased motivation and retention rates among operators, contributing to overall operational efficiency.	- Define criteria for rewards and recognition, and communicate them clearly - Create a tiered reward system based on performance metrics. - Implement the reward gradually and ensure transparency
Adopt Adaptive Learning Programs	Technical training programs do not currently adjust to individual level of technical competency.	Tailored learning experiences improve individual performance and job satisfaction.	- Develop formal technical training programs based on competency assessments - Integrate adaptive learning technologies into existing training programs.

These changes are designed to improve the operational efficiency of the power plant and align with the organization's strategic goals, ensuring sustainability and competitiveness in the industry.

Step 7 Action to Improve the Problem Situation

The action plan of every step in new PMS model to improve the performance management system for power plant operators in Caprycoal Mining Company is described in Table 11.

Table 11. Action to Improve the Problem Situation

Step	Description	Expected Impact	Implementation Strategy
Set Department Goals	Define clear and specific goals for the department to ensure alignment with the overall company goals.	Clear direction and focused efforts towards achieving department targets.	Department manager determines department goals aligned with the divisional and company goals.
Set/Review KPIs to Align with Goals	Establish and regularly review Key Performance Indicators (KPIs) to ensure they align with the department's goals.	- Improved alignment of operator performance with strategic goals - Objective and measurable criteria for performance evaluations - Competency level of operators can be figured out	- Form a KPI development team. - Conduct internal workshop to identify relevant SMART KPI. - Research industry benchmarks and best practices. - Pilot the KPIs in a small section/crew in the department to test and refine.

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 07 Issue 07 July 2024
DOI: 10.47191/ijcsrr/V7-i7-20, Impact Factor: 7.943
IJCSRR @ 2024
www.ijcsrr.org

Step	Description	Expected Impact	Implementation Strategy
Initial Competency Assessment	Implement initial competency assessments to establish baseline levels of technical competency of the operators.	Accurate understanding of current competency levels and identification of gaps.	- Develop competency assessment framework and tools. - Conduct technical competency assessments.
Create Tailored Training Programs & Sharing Sessions	Develop structured training programs and sharing sessions based on competency assessments to enhance operator skills and knowledge.	- Enhanced technical competencies and operational efficiency. - Reduced skill gaps and improved job performance.	- Conduct a Training Needs Analysis (TNA) to identify gaps on technical competency. - Design training modules based on TNA and assessment results. - Schedule regular training session. - Evaluate the impact of training on operator performance.
Perform Objective Performance Evaluations	Transition to digital platforms for real-time monitoring and objective evaluation of operator performance, with SMART criteria.	- More accurate, fair, objective and comprehensive performance evaluations for operators. - Reduced reliance on subjective observations from supervisors.	- Identify and develop digital performance evaluation platform. - Use a combination of written & practical tests, and supervisor observation. - Conduct evaluation of operator performance, with SMART criteria.
Provide Feedback Sessions	Develop consistent and standardized processes for providing constructive and regular feedback to operators	- Improved operator understanding of performance expectations. - Enhanced motivation and job satisfaction.	- Create a feedback protocol and templates. - Train supervisors on effective feedback delivery. - Schedule feedback sessions. - Monitor feedback quality and consistency
Rewards and Recognition for Outstanding Performance	Establish a formal system for rewarding and recognizing the outstanding performance.	- Increased motivation and accountability among operators. - Fair and transparent performance management	- Define clear criteria for rewards. - Communicate and enforce the new policies.
Performance and Competency Data Monitoring	Use a digital platform to systematically collect, store, and analyse data on operators' technical competencies.	- Efficient and accurate management of competency data. - Better identification of competency gaps for job placement, rotation and training needs.	- Select and customize a platform - Roll out the system across the department. - Monitor its use and gather feedback for improvements

Business Solutions

The proposed business solutions for improving the performance management system for power plant operators at Caprycoal Mining Company address the identified research questions comprehensively and methodically. The gaps in the current performance

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 07 Issue 07 July 2024
DOI: 10.47191/ijcsrr/V7-i7-20, Impact Factor: 7.943
IJCSRR @ 2024
www.ijcsrr.org

management system have been meticulously identified and targeted through a series of structured and systematic interventions. These interventions are not only designed to bridge the existing gaps but also to ensure that the performance management system is robust, measurable, and aligned with the strategic goals of the company. Each solution component plays a pivotal role in transforming the current state into a more efficient and effective system.

a. **Developing Specific, Measurable, Achievable, Relevant, and Time-bound (SMART) KPIs.** By developing specific KPIs for power plant operators, the company can address the lack of measurable performance criteria, which is a significant gap in the current system. specific, measurable, achievable, relevant, and time-bound (SMART) KPIs provide clear benchmarks for evaluating operator performance.
b. **Implementing Digital Competency Management System.** A digital competency management system addresses the gap of not having a structured system to collect and manage competency data. This system allows for efficient tracking and analysis of operator skills and competencies.
c. **Develop Structured Technical Training Programs.** The lack of formal technical training is another gap. Structured technical training programs ensure that operators receive the necessary technical training to meet their job requirements. This technical training is very important to the power plant operators in Caprycoal Mining Company since most of the power plant operators are former heavy mining equipment operators with no experience in power plant operation.
d. **Regular Technical Competency Assessments.** The absence of regular technical competency assessments is a gap in the current system. Regular technical competency assessments provide ongoing insights into operator technical competencies and areas for improvement. The result of the technical competency assessment can be used to guide job placement, rotation, training and development, salary adjustment, and careed development.
e. **Digital Performance Evaluation Tools.** Digital tools allow for objective and real-time performance evaluations, including the measurement of technical competencies. This addresses the gap of relying on subjective, manual evaluations and the absence of competency assessment.
f. **Standardized Feedback Processes.** Consistent and constructive feedback helps operators understand their performance relative to technical competencies. This addresses the gap of inconsistent feedback mechanisms.
g. **Formal Rewards and Recognition System.** A formal system for rewards and recognition ensures that technical competencies are recognized and that underperformance is addressed, motivating operators to improve their skills.
h. **Increased Stakeholder Engagement.** Engaging stakeholders in the development and refinement of the performance management system ensures that technical competencies are appropriately valued and integrated into the system.

The identified gaps in the current performance management system of the power plant operators can be effectively addressed by following the business solutions, leading to a more robust, objective, and effective performance management system that aligns with the strategic goals of Caprycoal Mining Company. The one-year implementation plan includes several key phases designed to systematically improve the performance management framework. The Gantt chart outlines the project tasks over a 12-month period, starting with "SMART KPI" from January to March, focusing on setting specific, measurable, achievable, relevant, and time-bound key performance indicators. This is followed by "Implementing Digital Competency Management System" from January to August, which involves integrating digital tools to manage and track employee competencies effectively. The "Structured Technical Training Program" runs from April to December, aimed at enhancing the technical skills of the workforce through a series of planned training sessions.

Concurrent initiatives include "Digital Performance Evaluation Tools," which span the entire year from January to December, ensuring ongoing performance monitoring and evaluation through digital means. "Regular Technical Competency Assessments" take place from January to October, providing periodic evaluations to maintain high competency standards. From August to December, "Standardized Feedback Processes" and "Formal Rewards and Recognition System" are implemented to establish a consistent feedback mechanism and a formal system to recognize and reward employee achievements. Throughout the year, "Increasing Stakeholder Engagement" is continuously pursued to enhance collaboration and involvement from all stakeholders, ensuring their active participation and support. This structured approach ensures effective tracking and management of project milestones and objectives, leading to an improved performance management system for power plant operators that aligns with the strategic goals of Caprycoal Mining Company.

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 07 Issue 07 July 2024
DOI: 10.47191/ijcsrr/V7-i7-20, Impact Factor: 7.943
IJCSRR @ 2024
www.ijcsrr.org

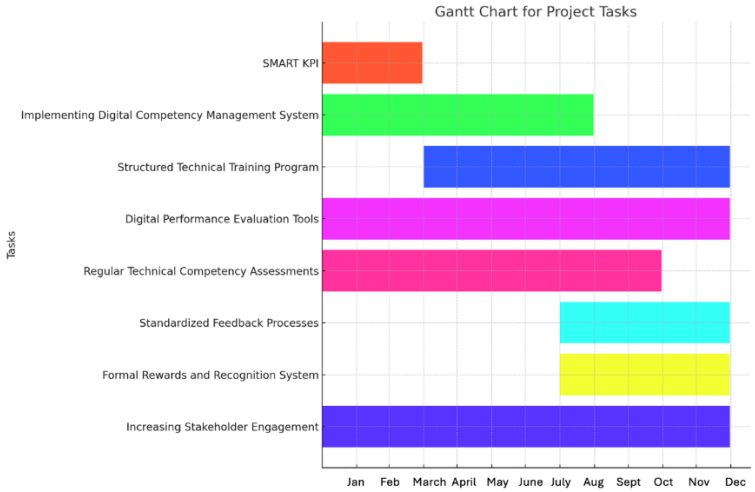

Figure 10. Implementation Plan

CONCLUSIONS

The exploration and proposals for the performance management system of power plant operators at Caprycoal Mining Company addressed critical deficiencies, leading to a robust framework aimed at improving operational efficiency and overall performance. By synthesizing theoretical perspectives such as the Resource-Based View (RBV), Performance Management Theory, Goal-Setting Theory, and Management by Objectives (MBO), the company identified critical gaps and proposed effective solutions. Key Performance Indicators (KPIs), developed through industry benchmark research and validation processes, provide a structured framework for performance evaluation, reducing reliance on subjective assessments and aligning individual performance with organizational goals. Regular staff training on these KPIs ensures that all stakeholders are well-informed and capable of meeting performance standards. Additionally, the introduction of a digital competency management system addresses inefficiencies in workforce planning by accurately tracking competency data, identifying skill gaps, and formulating targeted technical training programs. This system, customized to meet the specific needs of power plant operations and supported by comprehensive staff training, integrates seamlessly into existing processes, leading to more efficient management of operator competencies and better-informed training and development decisions.

Structured technical training programs replace the current ad-hoc approach, with detailed Training Needs Analysis (TNA) identifying specific knowledge and skill gaps among operators. Comprehensive technical training modules based on TNA results ensure operators receive necessary training, and regularly scheduled sessions maintain a continuous improvement cycle. Regular technical competency assessments, including initial and periodic evaluations, track progress and identify areas for improvement. These assessments guide training and development, ensuring operators continually develop their skills. The transition to digital performance evaluation tools, based on SMART goals, allows for objective, real-time assessments of technical skills. Standardized feedback processes ensure consistent and constructive feedback, enhancing motivation and job satisfaction. A formal rewards system recognizes outstanding performance, motivating operators to strive for excellence. Increased stakeholder engagement ensures that technical competencies are valued and integrated into the performance management system. Regular workshops and feedback sessions provide platforms for stakeholders to voice their opinions and contribute to continuous improvement. These solutions transform the performance management system into a robust, objective, and effective tool, leading to more motivated, skilled, and efficient operators, ultimately contributing to the long-term success of Caprycoal Mining Company. The alignment of individual performance with strategic goals, continuous development of operator competencies, and a culture of high performance are achieved through these meticulously implemented solutions.

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 07 Issue 07 July 2024
DOI: 10.47191/ijcsrr/V7-i7-20, Impact Factor: 7.943
IJCSRR @ 2024
www.ijcsrr.org

REFERENCES

1. Abernethy, M. A., Horne, M., Lillis, A. M., Malina, M. A., & Selto, F. H. (2005). A multi-method approach to building causal performance maps from expert knowledge. *Management Accounting Research*, *16*(2), 135–155. https://doi.org/10.1016/j.mar.2005.03.003
2. Aguinis, H., & Pierce, C. A. (2008). Enhancing the relevance of organizational behavior by embracing performance management research. *Journal of Organizational Behavior*, *29*(1), 139–145. https://doi.org/10.1002/job.493
3. Akhtar, I. (2016). Research Design. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.2862445
4. Andrews, B. H., Carpentier, J. J., & Gowen, T. L. (2001). A New Approach to Performance Measurement and Goal Setting. *Interfaces*, *31*(3), 44–54. https://doi.org/10.1287/inte.31.3.44.9629
5. Awan, S. H., Habib, N., Shoaib Akhtar, C., & Naveed, S. (2020). Effectiveness of Performance Management System for Employee Performance Through Engagement. *SAGE Open*, *10*(4). https://doi.org/10.1177/2158244020969383
6. Bertram, M. (2016). Theoretical foundation: The resource-based view (RBV) of the firm. In M. Bertram (Ed.), *The Strategic Role of Software Customization: Managing Customization-Enabled Software Product Development* (pp. 67–102). Springer Fachmedien Wiesbaden. https://doi.org/10.1007/978-3-658-14858-4_3
7. Bingham, C. B., & Eisenhardt, K. M. (2008). Position, leverage and opportunity: a typology of strategic logics linking resources with competitive advantage. *Managerial and Decision Economics*, *29*(2–3), 241–256. https://doi.org/10.1002/mde.1386
8. Bipp, T., & Kleingeld, A. (2011). Goal-setting in practice. *Personnel Review*, *40*(3), 306–323. https://doi.org/10.1108/00483481111118630
9. Bogner, W. C., & Bansal, P. (2007). Knowledge Management as the Basis of Sustained High Performance. *Journal of Management Studies*, *44*(1), 165–188. https://doi.org/10.1111/j.1467-6486.2007.00667.x
10. Castillo Arias, L. F. P. (2021). La gestión por competencias para el desarrollo organizacional en la Universidad Nacional Mayor de San Marcos. *Industrial Data*, *24*(1), 97–120. https://doi.org/10.15381/idata.v24i1.16287
11. Checkland, P., & Poulter, J. (2010). Soft Systems Methodology. In *Systems Approaches to Managing Change: A Practical Guide* (pp. 191–242). Springer London. https://doi.org/10.1007/978-1-84882-809-4_5
12. Clulow, V., Gerstman, J., & Barry, C. (2003). The resource-based view and sustainable competitive advantage: the case of a financial services firm. *Journal of European Industrial Training*, *27*(5), 220–232. https://doi.org/10.1108/03090590310469605
13. Cohanier, B. (2014). What qualitative research can tell us about performance management systems. *Qualitative Research in Accounting & Management*, *11*(4), 380–415. https://doi.org/10.1108/QRAM-06-2013-0023
14. Collis, D. J. (1994). Research Note: How Valuable Are Organizational Capabilities? *Strategic Management Journal*, *15*, 143–152. http://www.jstor.org/stable/2486815
15. Den Hartog, D. N., Boselie, P., & Paauwe, J. (2004). Performance Management: A Model and Research Agenda. *Applied Psychology*, *53*(4), 556–569. https://doi.org/10.1111/j.1464-0597.2004.00188.x
16. Galbreath, J. (2005). Which resources matter the most to firm success? An exploratory study of resource-based theory. *Technovation*, *25*(9), 979–987. https://doi.org/10.1016/j.technovation.2004.02.008
17. Hall, R. (1992). The Strategic Analysis of Intangible Resources. *Strategic Management Journal*, *13*(2), 135–144. http://www.jstor.org/stable/2486410
18. Hall, R. (1993). A framework linking intangible resources and capabiliites to sustainable competitive advantage. *Strategic Management Journal*, *14*(8), 607–618. https://doi.org/10.1002/smj.4250140804
19. Hermanto, R., Putro, U. S., Novani, S., & Kijima, K. (2022). Overcoming the challenge of those new with SSM in surfacing relevant worldviews for action to improve. *Journal of the Operational Research Society*, *73*(9), 1919–1934. https://doi.org/10.1080/01605682.2021.1970485
20. Jacobs, B. (2004). Using Soft Systems Methodology for Performance Improvement and Organisational Change in the English National Health Service. *Journal of Contingencies and Crisis Management*, *12*(4), 138–149. https://doi.org/10.1111/j.0966-0879.2004.00444.x

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 07 Issue 07 July 2024
DOI: 10.47191/ijcsrr/V7-i7-20, Impact Factor: 7.943
IJCSRR @ 2024
www.ijcsrr.org

21. Kirkpatrick, S. A., & Locke, E. A. (1996). Direct and indirect effects of three core charismatic leadership components on performance and attitudes. *Journal of Applied Psychology*, *81*(1), 36–51. https://doi.org/10.1037/0021-9010.81.1.36
22. Komalasari, N., Murad, D. F., Agustine, D., Irsan, M., Budiman, J., & Fernando, E. (2018). *Effect of Education, Performance, Position and Information Technology Competency of Information Systems to Performance of Information System*. https://doi.org/10.1109/ISRITI.2018.8864437
23. Kraaijenbrink, J., Spender, J.-C., & Groen, A. J. (2010). The Resource-Based View: A Review and Assessment of Its Critiques. *Journal of Management*, *36*(1), 349–372. https://doi.org/10.1177/0149206309350775
24. Kroll, A. (2023). Relational Mechanisms to Explain Collective Performance Data Use. *Perspectives on Public Management and Governance*, *6*(2–3), 106–118. https://doi.org/10.1093/ppmgov/gvad002
25. Latham, G. P., Borgogni, L., & Petitta, L. (2008). Goal Setting and Performance Management in the Public Sector. *International Public Management Journal*, *11*(4), 385–403. https://doi.org/10.1080/10967490802491087
26. Latham, G. P., & Locke, E. A. (2007). New Developments in and Directions for Goal-Setting Research. *European Psychologist*, *12*(4), 290–300. https://doi.org/10.1027/1016-9040.12.4.290
27. Latham, G. P., & Yukl, G. A. (1976). Effects of Assigned and Participative Goal Setting on Performance and Job Satisfaction: Erratum. *Journal of Applied Psychology*, *61*(3), 272–272. https://doi.org/10.1037/h0077977
28. Lin, Y., & Wu, L. Y. (2014). Exploring the role of dynamic capabilities in firm performance under the resource-based view framework. *Journal of Business Research*, *67*(3), 407–413. https://doi.org/10.1016/j.jbusres.2012.12.019
29. Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American Psychologist*, *57*(9), 705–717. https://doi.org/10.1037/0003-066X.57.9.705
30. Locke, E. A., & Latham, G. P. (2019). The development of goal setting theory: A half century retrospective. *Motivation Science*, *5*(2), 93–105. https://doi.org/10.1037/mot0000127
31. Mento, A. J., Locke, E. A., & Klein, H. J. (1992). Relationship of goal level to valence and instrumentality. *Journal of Applied Psychology*, *77*(4), 395–405. https://doi.org/10.1037/0021-9010.77.4.395
32. Mento, A. J., Steel, R. P., & Karren, R. J. (1987). A meta-analytic study of the effects of goal setting on task performance: 1966–1984. *Organizational Behavior and Human Decision Processes*, *39*(1), 52–83. https://doi.org/10.1016/0749-5978(87)90045-8
33. Mills, J. A., Teplitsky, C., Arroyo, B., Charmantier, A., Becker, Peter. H., Birkhead, T. R., Bize, P., Blumstein, D. T., Bonenfant, C., Boutin, S., Bushuev, A., Cam, E., Cockburn, A., Côté, S. D., Coulson, J. C., Daunt, F., Dingemanse, N. J., Doligez, B., Drummond, H., … Zedrosser, A. (2015). Archiving Primary Data: Solutions for Long-Term Studies. *Trends in Ecology & Evolution*, *30*(10), 581–589. https://doi.org/10.1016/j.tree.2015.07.006
34. Neubert, M. J., & Dyck, B. (2016). Developing sustainable management theory: goal-setting theory based in virtue. *Management Decision*, *54*(2), 304–320. https://doi.org/10.1108/MD-05-2014-0312
35. Peng, M. W. (2001). The resource-based view and international business. *Journal of Management*, *27*(6), 803–829. https://doi.org/10.1177/014920630102700611
36. Salkind, N. (2010). *Encyclopedia of Research Design*. SAGE Publications, Inc. https://doi.org/10.4135/9781412961288
37. Spencer, L. M., & Spencer, S. M. (1993). *Competence at Work Models for Superior Performance*. John Wiley & Sons, Inc.
38. Travers, C. J., Morisano, D., & Locke, E. A. (2015). Self-reflection, growth goals, and academic outcomes: A qualitative study. *British Journal of Educational Psychology*, *85*(2), 224–241. https://doi.org/10.1111/bjep.12059
39. Tripathi, K., & Agrawal, M. (2014). Competency Based Management In Organizational Context: A Literature Review. In *Global Journal of Finance and Management* (Vol. 6, Issue 4). http://www.ripublication.com

Cite this Article: Mochammad Farid Mustaqim, Achmad Fajar Hendarman (2024). Improving the Performance Management System for Power Plant Operators in Caprycoal Mining Company. International Journal of Current Science Research and Review, 7(7), 4778-4799