

The Influence of Management Control System and Environmental Management Control System on Environmental Performance and Its Implications on Company's Financial Performance: Empirical Study on Coal Mining Industry in Indonesia

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Abstract: The inability of coal mining companies to anticipate environmental changes associated with the decline in coal demand as a result of the global economic slowdown is an environmental change that coal mining companies are unable to anticipate, allegedly as a result of ineffective management control (Management Control System/MCS). The ineffective implementation of reclamation in the mining area, despite being mandated by the Indonesian government, has caused environmental damage in the coal mining area. Based on this, the purpose of this study is to determine the impact of the Management Control System (MCS) and the Environmental Management Control System (EMCS) on environmental performance and the financial performance of the company. This study is a quantitative descriptive and verification study. In this study, the unit of analysis and the unit of observation are all coal mining companies that are members of the Indonesian Coal Mining Association (APBI) as of December 31, 2019, which are categorized into groups of companies that have been listed on the Indonesian stock exchange and groups of companies that have not been listed on the Indonesian stock exchange. According to this study, there are 35 Indonesian coal mining enterprises. The results of the study indicate that the Management Control System (MCS) and Environmental Management Control System (EMCS) are urgently required to enhance the company's environmental performance, which will have an effect on its financial performance. The novelty produced by the research is used to prepare proposals for the application of research findings in an effort to improve the performance of coal mining companies in Indonesia through environmental performance improvement and the development of a Management Control System (MCS) and an Environmental Management Control System (EMCS).

Keywords: Management Control System (MCS), Environmental Management Control System (EMCS), Environmental Performance, Financial Performance, Company Performance.

INTRODUCTION

Every business requires a planning procedure in order to attain its organizational objectives. Therefore, effective management control is required. Management control is a method of organizing and regulating business activities. This activity falls between two other activities: strategy formulation, which is performed by the highest management, and task management, which is performed by the lowest management. The application of the concept of management control in this organization is necessary to aid management in controlling all activities in order to attain organizational objectives effectively and efficiently.

Management control does not necessitate that every action adhere to a predetermined strategy. If the circumstance has changed at the time of implementation, the original strategy may no longer be appropriate for implementation. (Anthony et al., 1989) In this instance, management control will be utilized to anticipate future conditions and ensure the company's objectives are met.

The company must also pay attention to the environmental management system (Environmental Management System), which is an integration of organizational structure, authority and responsibility, mechanisms and procedures/processes, operational practices, and resources for implementing environmental management. By controlling the environmental impact of the company's activities, the environmental

management system provides a mechanism for attaining and demonstrating excellent environmental performance. According to ISO 14001, the environmental management system consists of five interdependent components: environmental policy, planning, implementation and operation, inspection and corrective action, and management evaluation. These five elements comprise a sequence of processes consisting of a series of interconnected implementation stages, and they guarantee the continuous improvement (continuous improvement) of an organization's environmental performance.

The rapid environmental change encountered by the coal mining industry makes it difficult to formulate a strategy and then design a management system to implement the chosen strategy. In conditions comparable to those confronting the coal mining industry, it is possible that this strategy will emerge through a process of experimentation and processes that arise outside of existing plans, which will be significantly influenced by the company's management control system. According to (Anthony et al., 1989) and their respective studies, interactive controls are functions that transform current controls into the foundation for devising new strategies.

The coal mining industry can be compared to a double-edged weapon, as it provides economic benefits while also causing environmental damage. Throughout its lengthy history, the primary concerns regarding the environmental impact of mining activities have shifted from traditional land uses and land degradation to water contamination and ecological damage (Foster, 2001).

Coal mining activities, whether conducted above or below ground, can affect the environment on multiple levels. In general, land subsidence, damage to water sources and acid drainage, residual coal solid waste, gas leakage, pollution, noise, radiation, vibration, habitat and biodiversity damage, and soil erosion are the environmental effects of coal mining.

Low energy prices, increasingly stringent environmental regulations, and a transition to the use of other energy sources, such as natural gas, pose complex challenges for the coal mining industry. The inability of the coal extraction industry to regulate prices is its greatest obstacle. In addition to increasingly stringent environmental regulations, the company's performance was hampered by a decline in demand for coal exports due to the global economic downturn, which was felt most acutely in China, which purchases nearly half of the world's coal mining output.

Through Law number 11 of 1967 concerning Basic Mining Provisions to Law number 4/2009 concerning Minerba Mining and its derivative legal products, the Indonesian government requires coal mining corporations to conduct reclamation following coal mining. According to the Regulation of the Minister of Energy and Mineral Resources of the Republic of Indonesia Number 07 of 2014, Article 1 paragraph 1, reclamation is an activity conducted during mining business activities to organize, restore, and improve the quality of the environment and ecosystem so that it can function as intended.

Coal mining areas on the Indonesian islands of Sumatra and Kalimantan have suffered environmental damage as a result of the ineffectual implementation of reclamation in mining activity areas, despite being mandated by the government. This damage not only jeopardizes the sustainability of environmental functions and impedes the implementation of sustainable ecodevelopment, but it also results in human deaths.

(Song et al., 2017) The modern economy, reclamation costs, and environmental preservation efforts are interconnected. On the one hand, coal mining companies cannot neglect environmental issues, but on the other hand, this reclamation is extremely expensive. Furthermore, the coal mining industry itself did not promptly reap the benefits of the costs incurred for reclamation at that time. Reclamation costs are conventionally viewed as general costs without obvious benefits for the coal mining industry and as costs that can reduce expected profits, resulting in a decline in the company's financial performance.

Management control also incorporates sustainability into the company's strategy in order to provide a clearer picture of how the company's operations affect environmental and social changes (Bebbington & Thomson, 2013). Future environmental degradation will hinder the company's sustainable development. Government pressure in the form of reclamation regulations makes it impossible for the coal mining industry to ignore its environmental impact.

Numerous companies have developed a strategy and program to obtain more environmentally friendly production and production processes after realizing the gravity of this threat to the environment. As a result, it has become imperative for researchers to link management control with the issue of corporate environmental responsibility or a sustainable management control system (Pondeville et al., 2013).

In the context of continuous integration between corporate environmental aspects and management control, (Guenther et al., 2016) the concept of environmental management control system (EMCS) is defined as an integrated approach between managerial processes and company internal decision makers that can improve corporate environmental performance and corporate financial performance. Despite the fact that EMCS-related research is a relatively new discipline, there are a number of empirical studies focusing on EMCS with fragmented and divergent findings (Henri & Journeault, 2010).

When a company is experiencing a decline in financial performance, post-mining environmental improvements must be able to generate financial benefits that will have a positive effect on the company's financial performance. In other words, enhancing the environmental performance of a company must result in enhanced financial performance.

His research raises the question of whether environmental management can increase the competitiveness of businesses (Porter & Linde, 1995). If a company demonstrates how it protects and enhances its environment and cultivates a positive social image, it will be able to increase product sales and increase its market share. In terms of return on assets (ROA), (Waddock & Graves, 1997) discovered a positive correlation between corporate environmental management and corporate financial performance. According to (Klassen & McLaughlin, 1996), environmental management enhances financial operational performance by enhancing other operating income or decreasing production costs. According to (Russo & Fouts, 1997), a higher ROA is the result of enhanced environmental management, which will have a positive impact on the company's future financial performance.

Improving corporate environmental management can also improve financial performance as a result of an improvement in corporate image as a result of environmental enhancements, quality green products, and cost reductions from new eco-friendly technologies (Sroufe, 2003). According to research (Heal, 2004), a company's behavior that protects the environment can add benefits, such as improving financial performance through the efficient use of resources, enhancing the company's reputation and competitiveness, boosting employee productivity, and fostering better employee relations.

In addition, a company's behavior that protects the environment can reduce its business risk by enhancing its relationship with regulators and customers. Additionally, through the reduction of penalties and costs resulting from environmental damage-related lawsuits. Ultimately, the company's efforts to preserve the environment can increase the company's value. The balance between income and investment will result from the company's investment in environmental sustainability. According to (Song et al., 2017), corporate environmental management is substantially positively related to the company's future financial performance, but is not significantly related to the company's current financial performance.

In addition, the coal mining industry must be able to see the direct effect of the interaction between MCS and EMCS on the performance of coal mining companies in Indonesia as conditional factors in the contingency approach for its control system in order to improve both the environmental performance and financial performance of the company.

THEORETICAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

Effect of Management Control System (MCS) on Environmental Performance

According to (Riccaboni & Luisa Leone, 2010), the Management Control System, or MCS for short, is crucial to the implementation of a sustainable strategy. We focus on the capacity of the MCS to implement the chosen sustainability-oriented strategy, as well as the pattern of change that the MCS exhibits whenever there is a shift in strategic orientation toward a "sustainable" path. In addition, we discovered that MCS has the potential to have a substantial impact on a variety of issues, including financial, social, and environmental issues. In the situations we observed, adopting a sustainability strategy does not necessitate ad hoc procedures and practices, as this strategy is fully integrated with existing practices. According to the case study's conclusion, businesses should broaden the scope of their MCS to make attaining their social and environmental objectives simpler. Incorporating social concerns may be more challenging due to the difficulties associated with translating nebulous and complex conceptions into objective and precise metrics, despite the apparent simplicity of the approach when it comes to environmental concerns. According to (Malmi & Brown, 2008), MCS are the procedures and systems used to monitor and link employee actions to organizational objectives.

However, relatively little research has examined the incorporation of environmental concerns into MCS. One of the fundamental voids in the literature is the fact that most studies focus on information-based controls, such as performance appraisal systems, rather than investigating MCS with the aim of attaining behavioral alignment. In addition, research frequently focuses on environmental MCS separately or only addresses a select few environmental MCS. Recent research in management accounting has demonstrated that many MCS operate concurrently within an organization in bundles, and that the operation of individual controls may be dependent on the operation of other controls in the package. If environmental management control systems (EMCS) are to be evaluated independently from one another and from the remainder of an organization's MCS, a thorough comprehension of how they operate is necessary.

H1: MCS and environmental performance are associated.

The Influence of the Environmental Management Control System (EMCS) on Environmental Performance

Environmental Management Control System (EMCS) refers to the portion of an organization's management system (including all human, economic, and infrastructure assets) that seeks to manage the environmental aspects of its activities, products, and services. Its primary objective is to enhance the environmental performance of businesses (Perotto et al., 2008).

The application of the Environmental Management Control System (EMCS) with ISO 14001 certification is anticipated to assist organizations in controlling and enhancing environmental performance and minimizing the negative effects of excessive operations on the environment. Environmental Management Control System (EMCS) with an ISO 14001 certification has an impact on the management of greenhouse gas emissions for Australian businesses, according to (Rankin et al., 2011; Yunus et al., 2016). According to (Dianawati, 2016), companies with an ISO 14001 Environmental Management System certification have not been able to minimize and manage carbon-related pollution and are still primarily focused on producing the final product. The implementation and certification of EMCS assists businesses in integrating their environmental, health, and safety management systems, and in some cases their environmental and quality management systems (Rankin et al., 2011). Possibly because the ISO 14001 certified Environmental Management System requires employee participation, strong initiatives, and high environmental training programs, companies can report increased awareness in the environmental aspects of their work and responsibilities and a diminished corporate image. perspective of negative impact from stakeholders.

H2: Environmental performance is associated with EMCS.

The Effect of Management Control System (MCS) on Company Performance

(Nixon & Burns, 2012) MCS influences the selection of a strategy that will be used to attain company performance goals. MCS is a formal process used by managers to influence the behavior of all organization members so that they use all company resources effectively and efficiently in order to achieve predetermined company goals. MCS is also a tool for management to carry out management functions within the company to improve company performance (Malmi & Brown, 2008). His research incorporates a performance measurement system to expand the traditional view of cybernetic financial control systems that demonstrate the relationship between MCS and company performance.

This MCS is a control system that can accommodate all of the company's operational activities; in addition, it must be able to monitor the implementation of the company's strategies and make corrections when various deviations occur, so that the predetermined performance goals can be met. Therefore, through a properly designed MCS, it will be able to influence contingency variables that can enhance company performance (Pernot & Roodhooft, 2014).

Environmental audits are one of the internal mechanisms pertinent to the environmental performance of the company. This environmental audit must be incorporated into environmental control for it to be effective within the organization (Ilinitich et al., 1998). According to research conducted by (Guenther et al., 2016), EMCS can simultaneously enhance financial and environmental performance by transforming environmental objectives and activities into a competitive advantage and, ultimately, superior financial performance.

It is also anticipated that the company's environmental conduct will improve as a result of EMCS. Companies can use their natural resources as efficiently as possible, improve their reputation in terms of

environmental damage by implementing environmental regulations, and reduce the risk of penalties from regulators and lawsuits due to environmental damage by exhibiting good environmental behavior. Good corporate environmental behavior can also reduce the hazards companies face by nurturing good relationships with regulators and corporate consumers and by lowering the cost of capital. With this positive environmental behavior, the company's investment in safeguarding the environment becomes worthwhile, which in turn improves the company's competitiveness and company value by boosting financial performance (Heal, 2004).

H3: There is a connection between MCS and firm performance

The Influence of the Environmental Management Control System (EMCS) on Company Performance

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H4: The Environmental Management Control System (EMCS) is associated with Company Performance.

The Effect of Environmental Performance on Company Performance

Performance is always dependent on expectations being met. By increasing the company's environmental performance, which is the result of innovation and efficiency of the company's operational activities related to its ecological environment, the company can enhance its environmental reputation and employee dedication, thereby enhancing its competitive advantage. Pollution and waste are attributed to businesses' inefficient or ineffectual utilization of resources. These controls and strategies for minimizing pollution and waste enable the business to realize substantial cost savings. Incorporating eco-friendly materials into product designs and manufacturing processes can provide businesses with competitive advantages.

Good environmental performance has an impact on market perceptions, as evidenced by the favorable attitudes and actions of investors toward the company. In addition, good corporate environmental performance determines and increases brand loyalty and goodwill, making it easier for companies to communicate effectively with consumers in their efforts to retain their customers, which will have a positive effect on the company's financial performance.

Several researchers' findings support the notion that enhancing the financial performance of coal mining companies by improving their environmental performance is possible (Ruf et al., 2001) define environmental performance as the extent to which a company meets stakeholder expectations regarding corporate responsibility for its ecological environment. In other words, businesses are increasingly obligated to generate profits while also preserving their ecological environment (Lankoski, 2000).

The company's environmental performance is the result of the company's innovation and operational efficiency (Aguilera-Caracuel & Ortiz-de-Mandojana, 2013), which can increase the company's competitive advantage (Russo & Fouts, 1997), increase the company's environmental reputation and in turn employee commitment (Dögl & Holtbrügge, 2014), increase corporate legitimacy (Hart, 1995), and reflect strong organizational and management capabilities (Aschehoug et al., 2012). Pollution and waste are regarded as the outcome of inefficient or ineffectual use of resources by businesses (Porter & Linde, 1995) consequently, these controls and strategies to reduce pollution and waste enable businesses to realize substantial cost savings.

H5: Environmental Performance and Organizational Performance are related.

The Effect of Management Control System (MCS) on Company Performance Through Environmental Performance

According to (Riccaboni & Luisa Leone, 2010), the Management Control System, or MCS for short, is crucial to the implementation of a sustainable strategy. We focus on the capacity of the MCS to implement the chosen sustainability-oriented strategy, as well as the pattern of change that the MCS exhibits whenever there is a shift in strategic orientation toward a "sustainable" path. In addition, we discovered that MCS has the potential to have a substantial impact on a variety of issues, including financial, social, and environmental issues. In the situations we observed, adopting a sustainability strategy does not necessitate ad hoc procedures and practices, as this strategy is fully integrated with existing practices. According to the case study's conclusion, businesses should broaden the scope of their MCS to make attaining their social and environmental objectives simpler. Incorporating social concerns may be more challenging due to the difficulties associated with translating nebulous and complex conceptions into objective and precise metrics, despite the apparent simplicity of the approach when it comes to environmental concerns.

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H6: Environmental Performance is related to the Management Control System (MCS) and firm performance.

The Influence of the Environmental Management Control System (EMCS) on Company Performance Through Environmental Performance

According to research conducted by (Guenther et al., 2016), EMCS can simultaneously enhance financial and environmental performance by transforming environmental objectives and activities into a competitive advantage and, ultimately, superior financial performance. It is also anticipated that the company's environmental conduct will improve as a result of EMCS. Companies can use their natural resources as efficiently as possible, improve their reputation in terms of environmental damage by implementing environmental regulations, and reduce the risk of penalties from regulators and lawsuits due to environmental damage by exhibiting good environmental behavior. Good corporate environmental behavior can also reduce the hazards companies face by nurturing good relationships with regulators and corporate consumers and by lowering the cost of capital. With this positive environmental behavior, the company's investment in safeguarding the environment becomes worthwhile, which in turn improves the company's competitiveness and company value by boosting financial performance (Heal, 2004).

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H7: Environmental Performance is related to Environmental Management Control System (EMCS) and Company Performance.

METHODS

This study's objective is to acquire a description of the studied variables, namely Management Control System (MCS), Environmental Management Control System (EMCS), Environmental Performance, and Company Performance. Based on these aims, this study employs a quantitative methodology with descriptive and verification designs. Quantitative research employs numerical data and focuses on the objective measurement of results through statistical analysis. Based on the time horizon or time horizon, the collected data is cross-sectional, meaning that information or data is collected from the same or distinct research objects at unequal time intervals (Sugiyono, 2019).

This study's unit of analysis is the Indonesian coal mining industry, and the research population consists of all Indonesian coal mining companies listed on the Indonesia Stock Exchange, comprising 35 businesses. The observation unit is the manager, which includes decision-makers at the director, general manager, or senior manager level in finance, operations, and Internal Audit. Operationalization of variables is used to obtain data and information by revealing a number of variables that include concepts, subvariables, indicators, and measurement scales. There are five classes of variables in this study, based on their position in the relationship between variables: independent variables, dependent variables, intervening variables, exogenous variables, and endogenous variables. In this investigation, the independent variables are MCS (X1) and EMCS (X2), the intermediate variable is environmental performance (Y1), and the dependent variable is firm performance (Z). In implementing a green environmental strategy, the environmental performance variable can be used as a solution strategy for the coal mining industry in Indonesia to improve environmental performance and financial performance. The capital structure decision is an intermediate variable between MCS and EMCS and the dependent variable, which is company performance. Its function can either strengthen or diminish the association between MCS and EMCS and firm performance variables. Data gathered from the distribution of questionnaires and the collection of secondary data, processed in four steps: coding, revising, data processing, and data analysis. Frequency distributions, bar graphs, or histograms are used to illustrate significant aspects that align with the research objectives. While the causality analysis employs a variance-based (Partial Least Square) structural equation model. This model is used to analyze the relationship between MCS and EMCS variables regarding environmental performance and business performance.

RESULTS

In PLS, the model compatibility test is conducted with two models: the outer model and the inner model. The objective of the outer model (measurement model) is to evaluate the validity and reliability of the dimensions and indicators used to measure construct research variables. It is possible to conduct this analysis by evaluating discriminant validity, loading factor, construct validity, and composite reliability. Examining the square root of average variance extracted (AVE) value is the technique for assessing discriminant validity. The suggested value is greater than 0.5. Construct Explaining validity is the factor loading value.

In the measurement model analysis, two phases of measurement (second order) were performed. The first is an analysis of a measurement model that demonstrates the relationship between the manifest variables (indicators) and their dimensions, while the second demonstrates the relationship between the dimensions and their respective latent variables.

Table 1. Reliability

Variables	Dimensions-Indicators	Loading factor	t Statistics	Prob.	Composite Reliability	Average Variance Extracted (AVE)
Management Control System (MCS)	Management Control System (MCS) -> Interactive system	0.976	240,948	0.000	0.944	0.620
	Management Control System (MCS) -> Diagnostic system	0.958	197,719	0.000	0.921	0.703
	Management Control System (MCS) -> Cybernetic Control	0.923	85,283	0.000	0.868	0.686
	Management Control System (MCS) -> Planning control	0.950	107,447	0.000	0.910	0.835
	Management Control System (MCS) -> Administrative control	0.954	95,370	0.000	0.893	0.737
	Management Control System (MCS) -> Management Control	0.909	47,414	0.000	0.927	0.618

Variables	Dimensions-Indicators	Loading factor	t Statistics	Prob.	Composite Reliability	Average Variance Extracted (AVE)
Environmental Management Control System (EMCS)	Environmental Management Control System (EMCS) -> Formal	0.860	42,230	0.000	0.818	0.603
	Environmental Management Control System (EMCS) -> Informal	0.865	38,627	0.000	0.773	0.544
	Environmental Management Control System (EMCS) -> Act	0.833	34,334	0.000	0.761	0.616
	Environmental Management Control System (EMCS) -> Cost	0.847	31,572	0.000	0.820	0.603
	Environmental Management Control System (EMCS) -> Stakeholders	0.903	65,065	0.000	0.779	0.543
	Environmental Management Control System (EMCS) -> Environment	0.801	25,726	0.000	0.800	0.572
	Environmental Management Control System (EMCS) -> Ownership	0.789	25,055	0.000	0.769	0.513
	Environmental Management Control System (EMCS) -> EMS	0.863	45,981	0.000	0.856	0.545
Environmental Performance	Environmental Performance -> Good Mining Practice (GMP)	0.991	490,991	0.000	0.965	0.587
	Environmental Performance -> Sustainable Development Goals (SDGs)	0.922	96,653	0.000	0.842	0.582
Company Performance (KP)	Company Performance_(KP) -> Profitability	0.883	38,666	0.000	0.854	0.663
	Company Performance_(KP) -> Company growth	0.967	243,455	0.000	0.931	0.818
	Company Performance_(KP) -> Capital structure	0.861	54,455	0.000	1,000	1,000
	Company Performance_(KP) -> Company cash flow	0.935	80,195	0.000	0.892	0.675

Source: Primary data processed by Smart PLS

AVE values greater than 0.5 indicate that all dimensions and variables in the estimated model satisfy the discriminant validity criteria. Similarly, the Composite reliability value is greater than 0.70 and Cronbach's Alpha is greater than 0.70, so it can be concluded that the reliability of all dimensions and variables is high.

The inner model is evaluated using the Goodness of Fit Model (GoF), which is used to validate measurement models (outer models) and structural models (inner models), where GOF values 0.25 are considered small, 0.25-0.36 are considered moderate, and >0.36 are considered large. This measure is indicated by the R² and Q-Square values, where Q-Square values above 80% are regarded as satisfactory. The construct's GoF and Q-Square values are as follows:

Table 2. Structural Model Testing (Inner Model)

Variable	Dimensions	R Square	Communality	Q-Square	GoF
Management Control System (MCS)		-	-	0.566	0.617
	Interactive system	0.953	0.574	0.541	
	diagnostic system	0.918	0.636	0.563	
	Cybernetic control	0.852	0.576	0.364	
	planning control	0.903	0.749	0.433	
	Administrative control	0.910	0.665	0.458	
	Management Control	0.826	0.506	0.500	
Environmental Management Control System (EMCS).		-	-	0.359	
	Formal	0.740	0.436	0.228	
	informal	0.748	0.386	0.150	
	Constitution	0.693	0.415	0.027	
	Cost	0.717	0.420	0.224	
	stake	0.815	0.435	0.129	
	Environment	0.642	0.353	0.163	
	Ownership	0.623	0.313	0.217	
	EMS	0.745	0.390	0.321	
Environmental Performance		0.304	0.123	0.406	
	Good Mining Practices (GMP)	0.981	0.470	0.451	
	Sustainable Development Goals (SDGs)	0.849	0.304	0.228	
Company Performance_(KP)		0.620	0.385	0.562	
	Profitability	0.780	0.504	0.336	
	Company growth	0.935	0.760	0.600	
	Capital structure	0.741	0.737	1.000	
	company cash flow	0.875	0.579	0.460	

Source: Primary data processed by Smart PLS

The table above provides the average R² value for each construct at high criteria (> 0.6) and a GoF value of > 0.36; Q-Square is in the strong category; therefore, the research model is supported by empirical conditions or fit models. The following figure illustrates the outcomes of model testing using Smart PLS 3.0.

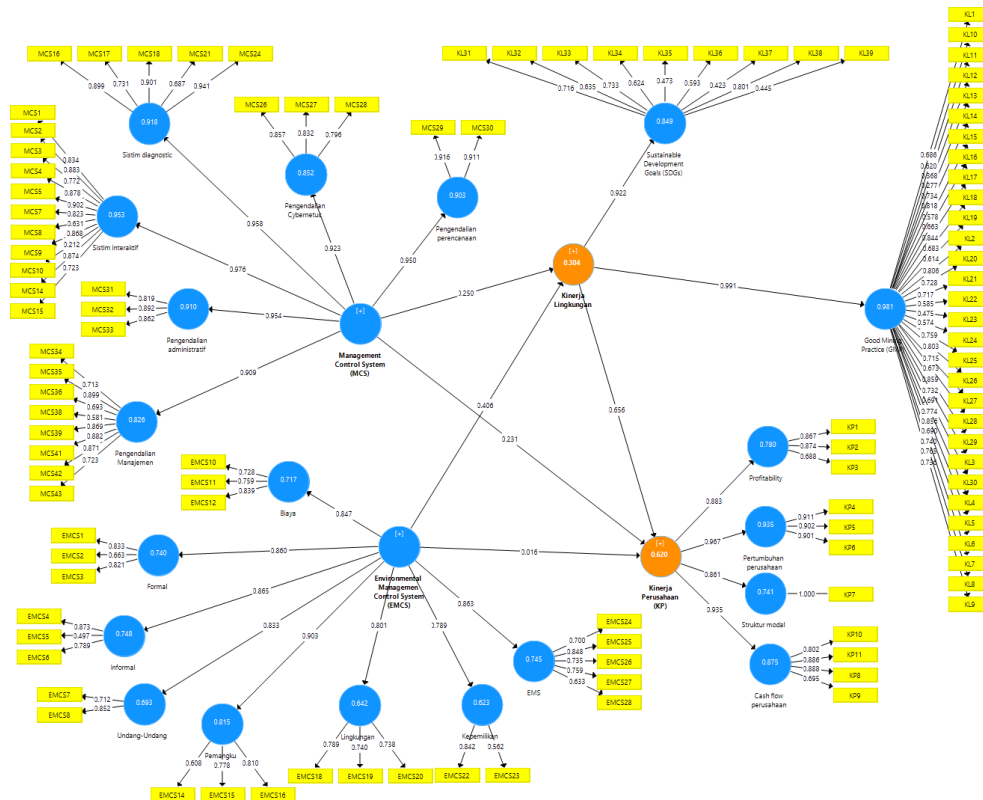


Figure 1. Research Model Testing Results

The results of processing the full model above have the following Structural Model.

$$KI = 0.250MCS + 0.406EMCS + \zeta_1$$

$$KP = 0.656KI + 0.016MCS + 0.231EMCS + \zeta_2$$

Hypothesis Testing

Effect of Management Control System (MCS) on Environmental Performance

The test results are illustrated as follows:

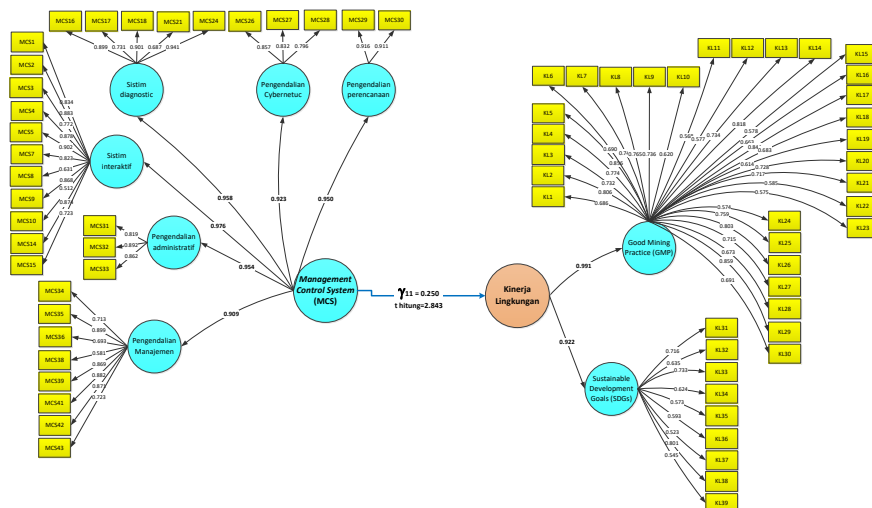


Figure 2. Hypothesis Testing Path Diagram 1

This model has the following structural equation.

$$KL = 0.250MCS + \zeta_1$$

Table 3. Hypothesis Testing 1

Structural Models	γ_{ij}	SE(γ_{ij})	t-count	prob	R ²	Information
Management Control System (MCS) → Capital Structure Decision	0.250*	0.088	2,843	0.005	0.063	Hypothesis accepted

*significant at $\alpha=0.05$ (t table = 2.03)

Management Control System (MCS) has a significant impact on environmental performance where t count > 2.03 and prob 0.05 with R² = 0.006. According to (Malmi & Brown, 2008), MCS are the procedures and systems used to monitor and link employee actions with organizational objectives. However, relatively little research has examined the incorporation of environmental concerns into MCS. One of the fundamental voids in the literature is the fact that most studies focus on information-based controls, such as performance appraisal systems, rather than investigating MCS with the aim of attaining behavioral alignment. In addition, research frequently focuses on environmental MCS separately or only addresses a select few environmental MCS. Recent research in management accounting has demonstrated that many MCS operate concurrently within an organization in bundles, and that the operation of individual controls may be dependent on the operation of other controls in the package. If environmental management control systems (EMCS) are to be evaluated independently from one another and from the remainder of an organization's MCS, a thorough comprehension of how they operate is necessary.

MCS is therefore viewed as a propelling force in the process of organizational transformation, but it remains within the prevalent business paradigm. However, this approach lacks a nuanced comprehension of the environment (or nature) (Banerjee, 2003). (Guenther et al., 2016) discovered that the use of a Management Control System (MCS) in the integration of sustainability and corporate environmental aspects is extremely advantageous. In addition, the management control system influences the behavior of a company's resources in order to determine its strategy.

Environmental Management Control System (MCS) on Environmental Performance

The test results are illustrated as follows

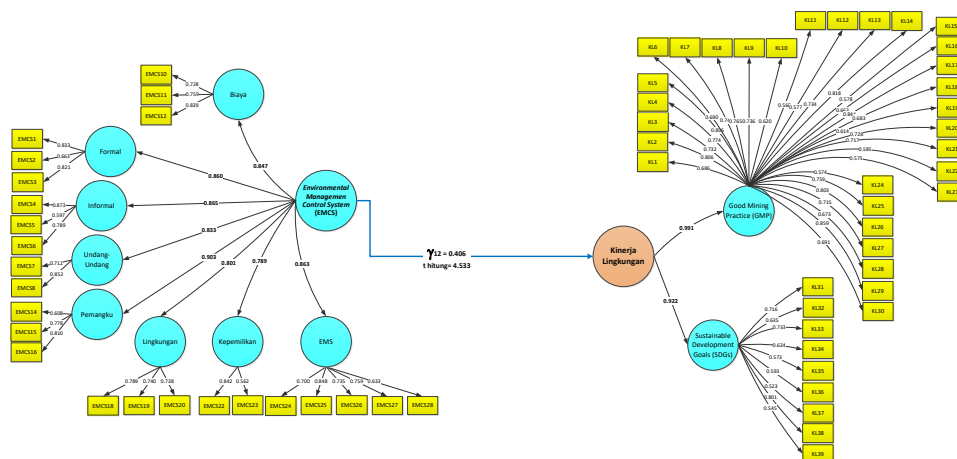


Figure 3. Hypothesis Testing Flowchart 2

This model has the following structural equation.

$$KL = 0.406 * EMCS + \zeta_2$$

Tabel 4. Hypothesis Testing 2

Structural Models	γ_{ij}	SE(γ_{ij})	t-count	prob	R ²	Information
Environmental Management Control System (EMCS) -> Environmental Performance	0.406*	0.090	4,533	0.000	0.165	Hypothesis accepted

*significant at $\alpha=0.05$ (t table = 2.03)

The following hypothesis testing findings indicate that the Environmental Management Control System (EMCS) has a significant influence on environmental performance when t count > 2.03 and prob 0.05 with R² = 0.165. According to (Dianawati, 2016), organizations having an ISO 14001 Environmental Management System accreditation have not been able to limit and control pollution connected to carbon emissions since they are still focused on generating the end product. EMCS installation and certification assists businesses in integrating their environmental, health, and safety management systems, as well as their environmental and quality management systems in some circumstances (Rankin et al., 2011). Perhaps because the ISO 14001 certified Environmental Management System necessitates employee participation and strong initiatives, as well as high environmental training programs, companies can report increased awareness in the environmental aspects of their work and responsibilities, thereby reducing corporate image. Stakeholders' unfavorable effect viewpoint.

The ISO 14001 Environmental Management System Certificate provides confidence to show to external parties that the company has control over important aspects of the operating system, is committed to complying with environmental regulations so that they are relevant, and is constantly seeking improvement in their environmental performance (Dianawati, 2016). (Dianawati, 2016) demonstrates that enterprises in Indonesia have a limited knowledge of the relevance of environmental concerns in the manufacturing process.

Management Control System (MCS) On Company Performance

The test results are illustrated as follows:

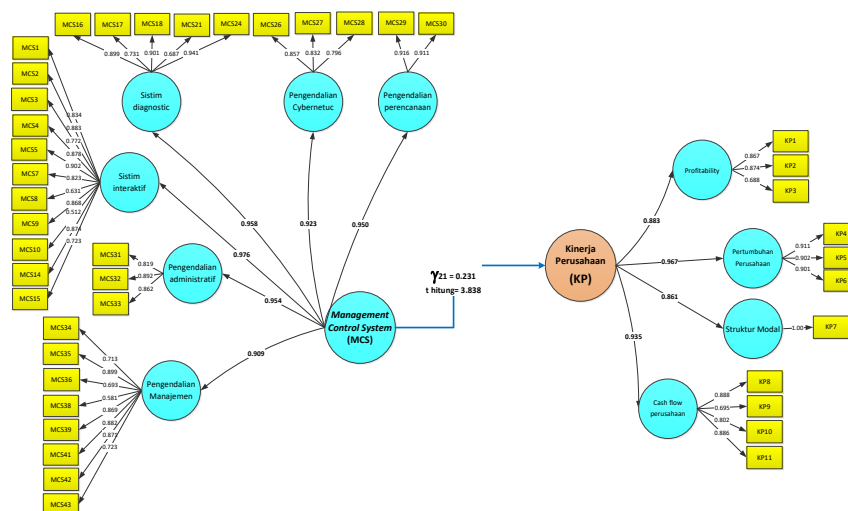


Figure 4. Hypothesis Testing Flowchart 3

This model has the following structural equation.

$$KP = 0.231 * MCS + \zeta_3$$

Table 5 Hypothesis Testing 3

Structural Models	γ_{ij}	SE(γ_{ij})	t-count	prob	R ²	Information
Management Control System (MCS) -> Company Performance_(KP)	0.231*	0.060	3,838	0.000	0.053	Hypothesis accepted

*significant at $\alpha=0.05$ (t table = 2.03)

The findings of the above hypothesis testing reveal that the Management Control System (MCS) has a significant influence on firm performance when t count > 2.03 and prob 0.05 with R²=0.053. MCS impacts decision making in order to select a strategy that will be employed to meet firm performance objectives (Nixon & Burns, 2012). MCS is a systematic method used by managers to influence the behavior of all employees of the organization in order to successfully and efficiently use all of the firm's resources in order to meet established corporate aims. MCS is also a tool for management to carry out management functions within the company in order to improve company performance (Malmi & Brown, 2008). He is conducting research that expands the traditional view of cybernetic financial control systems by incorporating a performance measurement system into his research.

This MCS is a control system that can accommodate all of the company's operational activities. Additionally, the MCS must be able to monitor the implementation of the strategies implemented, as well as make corrections when various deviations occur, in order to achieve the predetermined performance targets. As a result, a well-designed MCS will be able to impact contingency factors that can improve corporate performance (Pernot & Roodhooft, 2014).

Environmental Management Control System (MCS) on Company Performance

The test results are illustrated as follows:

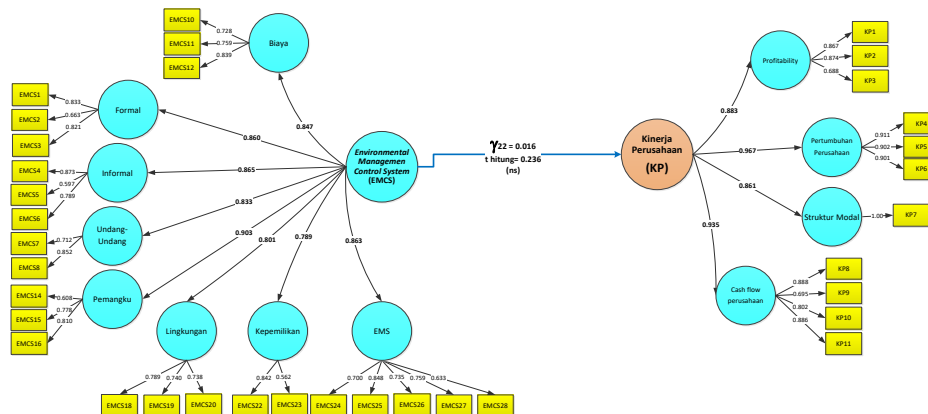


Figure 5. Hypothesis Testing Flowchart 4

This model has the following structural equation.

$$KP = 0.016 * EMCS + \zeta_4$$

Table 6 Hypothesis Testing 4

Structural Models	γ_{ij}	SE(γ_{ij})	t-count	prob	R ²	Information
Environmental Management Control System (EMCS) -> Company Performance_(KP)	0.016	0.067	0.236	0.813	0.000	The hypothesis is rejected

*significant at $\alpha=0.05$ (t table = 2.03)

The preceding hypothesis testing findings demonstrate that the Environmental Management Control System (EMCS) has no significant influence on firm performance with t count 2.03 and prob 0.05 and a very modest R^2 (near to zero). The goal of environmental analysis is to understand the organizational environment so that management can respond appropriately to any changes. Additionally, management has the ability to respond to various critical environmental issues that have a fairly strong influence on the company. The environment is divided into two parts: the outward environment and the interior environment.

The internal environment, according to (Jauch et al., 1994), is separated into five categories: marketing and distribution factors, research and development considerations, production and operations management aspects, human resource factors, and financial and accounting factors. Meanwhile, in this study, elements (management control, administrative control, planning control, cybernetic control, diagnostic system, and interactive system) impact the company's internal environmental aspects.

The concept of environmental analysis, according to (Jauch et al., 1994), is a procedure used by strategic planners to analyze the environmental sector in order to determine possibilities or risks to organizations. In this research, the external environment is the broad environment of the firm. (Grant, 2009) claimed in his research that when corporate resources are merged, the consequence is a variety of organizational capacities. (Grant, 2009) defines organizational competence as "the expertise of the individuals in the organization." This capacity demonstrates a coal mining company's ability to combine its resources in order to fulfill the defined goals. These talents can be combined to form a company's core competencies. This core skill may be subject to core rigidities. Core rigidities are a relic of core competences that sow the seeds of organizational stagnation, strategic myopia, and inhibit businesses from responding adequately to changes in their external environment (Leonard-Barton, 1992). The regulator has a responsibility to carry out post-mining reclamation actions, which is an additional expenditure required as a consequence of increased revenue that cannot be ascertained or felt during the mining expenditure period. According to (Sandberg et al., 1987), the idea of financial leverage is particularly effective in characterizing the use of debt to raise the profit accessible to enterprises and shareholders. According to (Dyson, 1990), understanding and use of capital budgeting procedures is a key financial resource for selecting investment projects to be bought and financed.

Based on the findings of the interviews with respondents, it is clear that the idea of financial leverage is not the best way to characterize the use of debt to increase the company's earnings. Companies must choose between issuing shares and selling bonds or debentures to support their operations. Selling bonds to fund activities really encourages or increases income per share. This increase is due to loan interest that the corporation must pay. The interest paid on this loan reduces taxable income, resulting in a higher profit after tax. As a result, shareholders will profit from increasing stock prices and/or dividends. However, the presence of debt raises the break even point or break even point that should occur if the firm is self-funded. As a result, high leverage is perceived as a company's strength during periods of increasing sales or high sales and as a vulnerability during periods of recession and decreasing sales, like coal mining businesses are experiencing now.

In addition to the non-optimal use of the concept of financial leverage, capital budgeting techniques are frequently not used optimally for investment in the form of post-mining reclamation activities as required by the regulator; the non-optimal use of this capital budgeting technique for an investment activity can be seen from investment ratings not made based on criteria or hurdle rate, which includes the time required to receive investment returns (payback period). Post-mining reclamation investment activities have a payback time, and the rate of return cannot be attained during the period in which additional expenditures for post-mining reclamation activities are spent. This post-mining reclamation operation actually reduced the current year's earnings, and determining the break-even period is similarly problematic.

Individuals in a coal mining firm have the capacity to employ the notion of financial leverage and capital budgeting approaches, which are the company's resources that, when combined, result in a competence that is the company's core strength. However, the idea of financial leverage is not used efficiently in selecting funding sources for corporate operations and financing new investments and capital budgeting approaches in post-mining reclamation activities. Then, this core competence becomes core rigidity, preventing companies in the coal mining industry from responding appropriately and quickly to changes in their external environment, such as changes in demand for coal production from abroad due to changes in demand from coal consumers such as China and India, as well as the existence of alternative EBT energy.

It is also envisaged that EMCS would improve the company's environmental conduct. Companies that practice good corporate environmental behavior can use their natural resources as efficiently as possible, improve their reputation in terms of environmental damage by implementing environmental regulations, and thus reduce the risk of penalties from regulators and lawsuits due to environmental damage. Good corporate environmental conduct may also decrease the risks that businesses face by cultivating positive relationships with regulators and corporate consumers, as well as lowering the cost of capital. With this positive environmental behavior, the company's investment in environmental protection becomes valuable, boosting the company's competitive capacity and value through improving financial performance (Heal, 2004).

Environmental Performance on Company Performance

The test results are illustrated as follows:

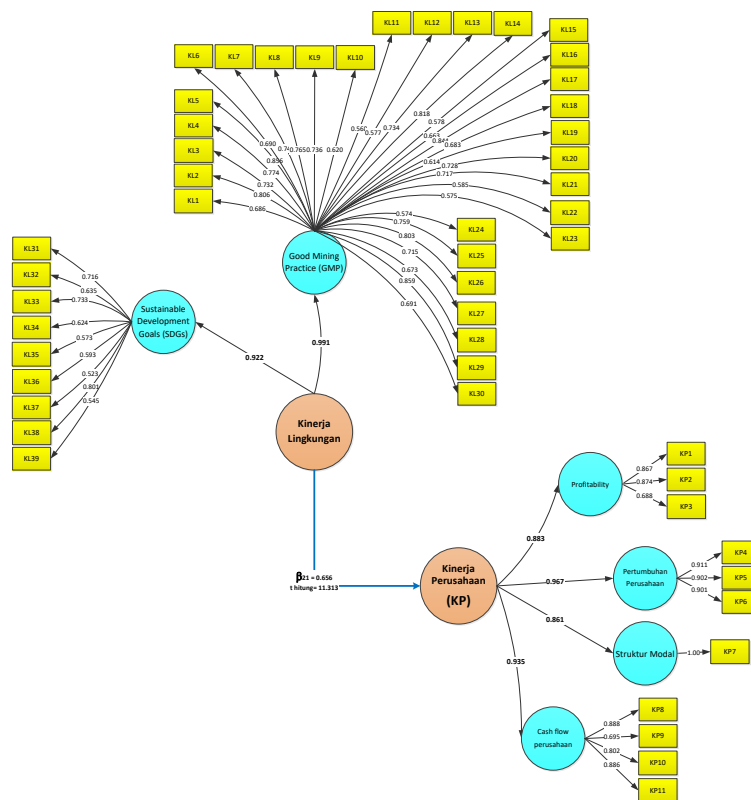


Figure 6. Hypothesis Testing Flowchart 5

This model has the following structural equation.

$$KP = 0.656 * KL + \zeta_5$$

Table 7 Hypothesis Testing 5

Structural Models	γ_{ij}	SE(γ_{ij})	t-count	prob	R ²	Information
Environmental Performance Company Performance_ (KP)	0.656*	0.058	11.313	0.000	0.430	Hypothesis accepted

*significant at $\alpha=0.05$ (t table = 2.03)

The results of testing the above hypothesis suggest that Environmental Performance has a substantial influence on firm performance when t count > 2.03 and prob 0.05, with R²=0.430. In general, performance is usually linked to satisfying expectations. It is possible to improve the company's environmental reputation and employee commitment by increasing the company's environmental performance, which is the result of innovation

and efficiency in the company's operational activities related to its ecological environment. Pollution and waste are seen to be the outcome of inefficient or poor resource usage by businesses. These pollution and waste reduction measures and methods enable the organization to save money. Integrating environmentally friendly items into product designs and operations can provide businesses with a competitive edge.

Good corporate environmental performance has an influence on market views, as evidenced by investors' positive attitudes and behavior toward the firm. Furthermore, good corporate environmental performance determines and increases company brand loyalty and goodwill, making it easier for companies to communicate effectively with consumers in the company's efforts to retain customers, which will ultimately impact the company's financial performance.

Several studies' findings support improving the environmental performance of coal mining firms, which can increase the company's financial performance. Environmental performance may be defined as the extent to which a corporation satisfies its stakeholders' expectations about corporate responsibility for its ecological environment (Ruf et al., 2001). In other words, firms are increasingly expected to create profits while also conserving their environmental surroundings (Lankoski, 2000).

The company's environmental performance is the result of its innovation and operational efficiency (Aguilera-Caracuel & Ortiz-de-Mandojana, 2013; Porter & Linde, 1995), which can increase the company's competitive advantage (Hart, 1995; Russo & Fouts, 1997), increase corporate legitimacy (Hart, 1995), and reflect strong organizational and management capabilities (Aschehoug et al., 2012). Pollution and waste are considered as the result of inefficient or ineffective use of resources by companies (Porter & Linde, 1995), these controls and strategies to reduce pollution and waste allow companies to make significant cost savings.

Product stewardship, which incorporates environmental friendliness into product design and procedures, can contribute to a competitive advantage for businesses (Hart, 1995). If a company is considered environmentally responsible, it is also considered fair in its policies, so the benefits of a strong corporate image based on environmental performance can lead to reduced investor attention to financial costs, provide legitimacy to the company, and reduce company cash out for compensation payments. As a result of litigation involving environmental harm caused by firm operations, market players' attitudes of the environment have changed. Good corporate environmental performance has an influence on market views, as evidenced by investors' positive attitudes and behavior toward the firm. Furthermore, good corporate environmental performance determines and increases company brand loyalty and goodwill, making it easier for companies to communicate effectively with consumers in the company's efforts to retain consumers, which will ultimately impact the company's financial performance (Ahada, 2015).

Strict environmental requirements demand corporate managers to perform excellent environmental management in order to reduce the firm's negative influence on the environment and to safeguard investments in the form of environmental improvement and protection. Such environmental policies significantly increase the company's financial performance while also meeting stakeholder requests for environmental preservation (Nakao et al., 2007).

Environmental protection techniques will enhance energy efficiency and production efficiency, as well as lower related environmental expenses such as material and energy consumption, environmental restoration costs, and trash recycling, among others. These environmental safeguards will expose the company's operational hazards. Environmental protection technology that produces green products will entice customers to consume green products and will become a corporate promotional tool to increase the firm's competitive potential.

Management Control System (MCS) on Company Performance through Environmental Performance

The test results are illustrated as follows:

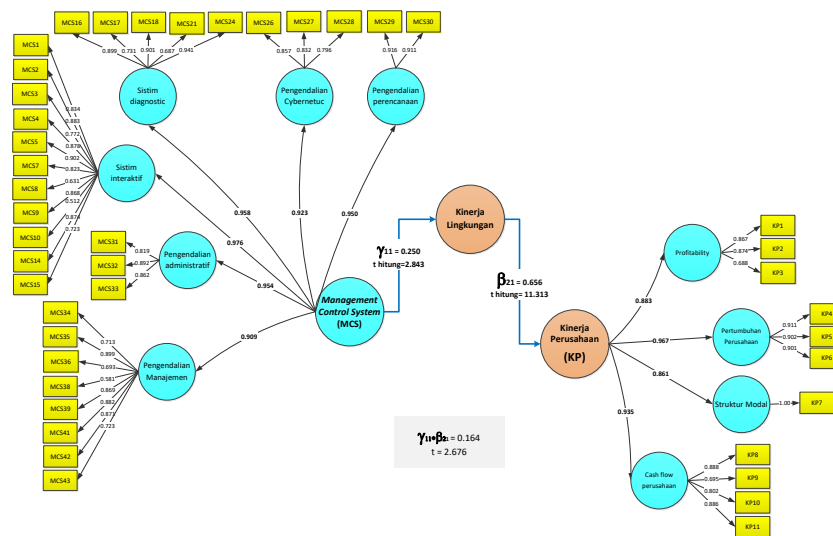


Figure 7. Hypothesis Testing Flowchart 6

This model has the following structural equation.

$$KP = 0.164MCS * KL + \zeta_6$$

Table 8 Hypothesis Testing 6

Structural Models	γ_{ij}	SE(γ_{ij})**	z-count	Prob.	R ²	Information
Management Control System (MCS) -> Environmental Performance -> Corporate Performance (KP)	0.164**	0.061	2,676	0.008	0.164	Hypothesis accepted

* significant at $\alpha=0.05$ (z table = 1.96)

** Sobel test

The partial test results indicate that the Management Control System (MCS) and Environmental Management Control System (EMCS) have a significant influence on company performance via environmental performance, as measured by a R square of 0.164 or 16.4%. According to (Riccaboni & Luisa Leone, 2010), the Management Control System, or MCS for short, plays a crucial role in the implementation of a sustainable strategy. We focus on the capacity of the MCS to implement the chosen sustainability-oriented strategy, as well as the pattern of change that the MCS exhibits whenever there is a shift in strategic orientation toward a "sustainable" path. In addition, we discovered that MCS has the potential to have a substantial impact on a variety of issues, including financial, social, and environmental issues. In the situations we observed, adopting a sustainability strategy does not necessitate ad hoc procedures and practices, as this strategy is fully integrated with existing practices. According to the case study's conclusion, businesses should broaden the scope of their MCS to make attaining their social and environmental objectives simpler. Incorporating social concerns may be more challenging due to the difficulties associated with translating nebulous and complex conceptions into objective and precise metrics, despite the apparent simplicity of the approach when it comes to environmental concerns.

Several researchers' findings support the notion that improving the financial performance of coal mining companies by enhancing their environmental performance is possible. (Ruf et al., 2001) define environmental performance as the extent to which a company meets the expectations of its stakeholders regarding corporate responsibility for its ecological environment. In other words, businesses are increasingly obligated to generate profits while also preserving their ecological environment (Lankoski, 2000).

Good environmental performance has an impact on market perceptions, as evidenced by the favorable attitudes and actions of investors toward the company. In addition, good corporate environmental performance determines and increases brand loyalty and goodwill, making it easier for companies to communicate effectively with consumers in their efforts to retain their customers, which will have a positive effect on the company's financial performance.

Environmental Management Control System (MCS) on Company Performance through Environmental Performance

The test results are illustrated as follows:

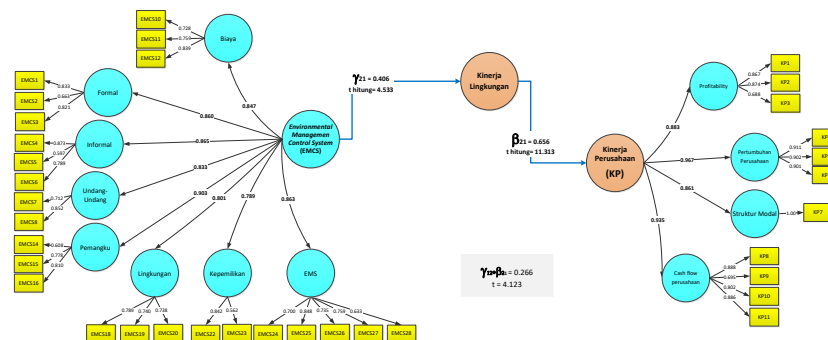


Figure 8. Hypothesis Testing Flowchart 7

This model has the following structural equation.

$$KP = 0.266EMCS * KL + \zeta_7$$

Table 9 Hypothesis Testing 7

Structural Models	γ_{ij}	SE(γ_{ij})**	z-count	Prob.	R ²	Information
Environmental Management Control System (EMCS) -> Environmental Performance -> Corporate Performance (KP)	0.266**	0.065	4,123	0.000	0.266	Hypothesis accepted

* significant at $\alpha=0.05$ (z table = 1.96)

** Sobel test

Partial test results indicate that the Environmental Management Control System (EMCS) has a significant influence on company performance via environmental performance, as measured by a R square of 0.266%, or 26.6%. In accordance with (Perotto et al., 2008), the Environmental Management Control System (EMCS) is a component of an organizational management system (including all human, economic, and infrastructure assets) designed to manage environmental aspects related to activities, products, and services. Its primary objective is to enhance the environmental performance of businesses (Perotto et al., 2008).

According to research conducted by (Guenther et al., 2016), EMCS can simultaneously enhance financial and environmental performance by transforming environmental objectives and activities into a competitive advantage and, ultimately, superior financial performance. It is also anticipated that the company's environmental conduct will improve as a result of EMCS. Companies can use their natural resources as efficiently as possible, improve their reputation in terms of environmental damage by implementing environmental regulations, and reduce the risk of penalties from regulators and lawsuits due to environmental damage by exhibiting good environmental behavior. Good corporate environmental behavior can also reduce the hazards companies face by nurturing good relationships with regulators and corporate consumers and by lowering the cost of capital. With this positive environmental behavior, the company's investment in safeguarding the environment becomes worthwhile, which in turn improves the company's competitiveness and company value by boosting financial performance (Heal, 2004).

Product stewardship, which incorporates environmental sustainability into product design and manufacturing processes, can lead to a competitive advantage for businesses (Hart, 1995). If a company is viewed as responsible for the environment, it is also viewed as fair in its policies. As a result, the benefits of a strong corporate image based on its environmental performance can lead to reduced investor attention to financial costs, provide legitimacy to the company, and decrease company cash out for compensation payments. As a consequence of litigation related to environmental damage caused by a company's operations, market participants' perceptions of the environment have changed.

The figure below depicts a model of research findings based on the description of the research results presented previously.

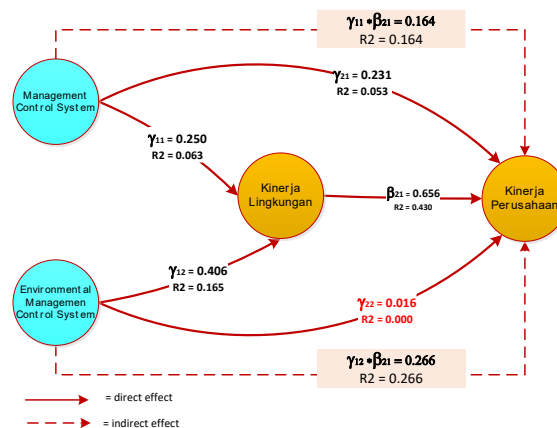


Figure 9. Research Result

According to the aforementioned research, the Environmental Management Control System (EMCS) has the greatest impact (16.5%) on improving environmental performance, but the Environmental Management Control System (EMCS) has no significant impact on directly improving company performance. Environmental performance has the greatest impact on company performance improvement. In order for the Environmental Management Control System (EMCS) and Management Control System (MCS) to contribute more and substantially to the indirect improvement of company performance via environmental performance.

The Environmental Management Control System (EMCS) is a propelling force for environmental performance, with the largest indirect contribution being the improvement of coal mining industry companies in Indonesia. Improving company performance in the coal mining industry is contingent on the Environmental Management Control System (EMCS) and Management Control System (MCS) enhancing environmental performance. Based on the findings of this study, it is suspected that the inability of brick mining companies to anticipate environmental changes is due to a poorly functioning Management Control System (MCS). Then there was a decline in coal production and prices, but there was an increase in expenses, which had a direct impact on the company's declining financial performance year after year. To improve the company's financial performance and environmental performance, the Environmental Management Control System (EMCS) and Management Control System (MCS) are required to aid in capital structure decisions that will affect the company's financial performance and environmental performance.

According to the findings of this study, the Environmental Management Control System (EMCS) and Management Control System (MCS) variables contribute substantially to environmental performance, which has a subsequent effect on the company's financial performance. Whereas there are still very few studies that explicitly examine the relationship between the Environmental Management Control System (EMCS) and the Management Control System (MCS) on environmental performance, which has an effect on the company's financial performance, this study aims to address this gap.

CONCLUSION

The findings of this study indicate that the Management Control System (MCS) has an effect on environmental performance. To achieve optimum environmental performance, the Management Control System

(MCS) prioritizes the development of interactive and diagnostic systems, as well as the implementation of administrative controls, in order to provide support for environmental performance enhancement. Environmental performance is affected by the Environmental Management Control System (EMCS). To achieve optimal environmental performance, the Environmental Management Control System (EMCS) can expand the role of stakeholders, both formal and informal, and the Environmental Management System (EMS) in order to increase support for sustainable environmental performance. The Management Control System (MCS) has an effect on business performance. In the Management Control System (MCS), interactive systems, diagnostic systems, and the execution of administrative controls cannot enhance company performance.

The Environmental Management Control System (EMCS) has no effect on company performance. The function of stakeholders, both formal and informal, is a crucial component of the Environmental Management Control System (EMCS) in aiding the enhancement of business performance. Environmental performance has an influence on company performance. Good Mining Practice (GMP) is an essential environmental performance factor that can boost business performance. Indirect test results demonstrate that only environmental performance contributes to the improvement of the Management Control System (MCS) on company performance. Environmental performance is an imperfect mediator (partial mediator) for the Management Control System (MCS) because MCS has a significant direct influence on company performance, so MCS can affect company performance either directly or through environmental performance mediation. Indirect test results indicate that only environmental performance contributes to the improvement of the Environmental Management Control System (EMCS) on company performance. Environmental performance is a perfect mediator (full mediator) for the Environmental Management Control System (EMCS), where EMCS does not have a significant direct impact on company performance, but must do so via environmental performance.

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