The Effect of Management Accounting Systems and Environmental Uncertainty on Managerial Performance at Pt. Agromuko Bengkulu

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ABSTRAK

Penelitian ini bertujuan untuk menganalisis pengaruh Sistem Akuntansi Manajemen (SAM) dan Ketidakpastian Lingkungan terhadap Kinerja Manajerial pada PT. Agromuko Bengkulu. Di era industri 5.0, perusahaan dihadapkan pada tantangan lingkungan yang dinamis dan sulit diprediksi, seperti perubahan iklim, fluktuasi harga, dan kebijakan pemerintah yang berdampak langsung terhadap pengambilan keputusan manajerial. Sistem Akuntansi Manajemen menjadi alat penting dalam membantu manajer menyusun perencanaan, pengawasan, dan pengambilan keputusan yang efektif. Penelitian ini menggunakan pendekatan kuantitatif dengan metode survei terhadap 50 responden yang terdiri dari manajer dan staf PT. Agromuko Bengkulu. Data dianalisis menggunakan metode Partial Least Square-Structural Equation Modeling (PLS-SEM) melalui software SmartPLS. Hasil penelitian menunjukkan bahwa Sistem Akuntansi Manajemen berpengaruh positif secara simultan dan signifikan terhadap Kinerja Manajerial, demikian pula Ketidakpastian Lingkungan yang terbukti memiliki pengaruh terhadap efektivitas dan efisiensi secara simultan terhadap kinerja manajer. Temuan ini menegaskan pentingnya penerapan SAM yang fleksibel dan adaptif dalam menghadapi ketidakpastian untuk meningkatkan kinerja manajerial dan efisiensi operasional perusahaan.
Keyword: Sistem Akuntansi Manajemen; Ketidakpastian Lingkungan; Kinerja Manajerial; PT. Agromuko Bengkulu; SmartPLS

ABSTRACT

This study aims to analyze the effect of Management Accounting System (SAM) and Environmental Uncertainty on Managerial Performance at PT. Agromuko Bengkulu. In the era of industry 5.0, companies are faced with the challenges of a dynamic and unpredictable environment, such as climate change, price fluctuations, and government policies that have a direct impact on managerial decision making. The Management Accounting System is an important tool in helping managers plan, supervise, and make effective decisions. This research uses a quantitative approach with the survey method of 50 respondents consisting of managers and staff of PT Agromuko Bengkulu. The data was analyzed using the Partial Least Square-Structural Equation Modeling (PLSSEM) method through SmartPLS software. The results showed that Management Accounting System has a significant effect on Managerial Performance, as well as Environmental Uncertainty which is proven to have influence on the effectiveness and efficiency of managers' performance. These findings confirm the importance of implementing a flexible and adaptive SAM in the face of uncertainty to improve managerial performance and operational efficiency of firms.
Keyword: Management Accounting System; Environmental Uncertainty; Managerial Performance; PT Agromuko Bengkulu; SmartPLS

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1. INTRODUCTION

In the era of transformation 5.0, which is characterized by the increasing intensity of business competition, companies are required to face various challenges that affect their managerial performance. One

of the main challenges is environmental uncertainty, which can arise from the dynamics of economic, social, and technological factors. This uncertainty requires managers to be able to design, align, and organize activities and resources more efficiently in order to achieve organizational goals. In this regard, the Management Accounting System (SAM) plays an important role as a means of supporting decision making, where the existence of accurate data allows managers to identify opportunities and risks in order to formulate adaptive and appropriate strategies. Managerial performance, which is the output of a manager's efforts in planning, organizing, coordinating, supervising, and making decisions, is a major factor in determining the successful achievement of organizational goals. Amidst the uncertainty of the environment, the outcomes of managerial decisions may deviate from initial projections. Therefore, performance measurement, which involves both quality and quantity indicators of work, must be able to reflect the link between strategic planning and operational execution.

Effective implementation of SAM, by providing relevant financial and non-financial information, is expected to improve the process of planning, monitoring, and decision-making, thereby reducing the negative impact of environmental uncertainty. The phenomenon of misalignment between crop yields and the standard target of sorting production at PT Agromuko Bengkulu demands special attention. Companies operating in the agro-industrial sector, especially in CPO (Crude Palm Oil). Processing, are highly vulnerable to climate change, price fluctuations, and government policies. This condition causes managerial decision making to become more complex, where SAM must be able to adapt to the dynamics of an ever-changing environment.

Studies conducted by various researchers, as revealed by Putri et al. (2019), have highlighted the importance of system flexibility in dealing with uncertainty, although most of these studies are still limited to the creative industry sector. Therefore, there is a research gap related to the application of flexible and adaptive SAM in the plantation sector, especially in Indonesia. This study focuses on PT Agromuko Bengkulu with the aim of examining the effect of management accounting systems and environmental uncertainty on the company's managerial performance. By filling the gap between operational standards that have been set and practices in the field, this research is expected to provide theoretical contributions as well as practical recommendations in an effort to improve operational efficiency and competitive advantage of the company. The findings of this study are expected to provide strategic guidance for managers in setting policies and strategies that are more responsive to changes in the external environment.

Based on the previously outlined background, this study identifies two main problems. First, the Management Accounting System (MAS) implemented at PT. Agromuko Bengkulu is still not functioning optimally, which has led to a mismatch between the actual harvest outcomes and the standard fruit sorting production targets set by the company. This inefficiency in the system hampers managerial decision-making accuracy and overall operational effectiveness. Second, the company faces a high level of environmental uncertainty, including commodity price fluctuations, shifting government policies, and unpredictable climate conditions. These external uncertainties also contribute to inconsistencies between actual and targeted harvest results, further complicating strategic and operational planning. Therefore, this study aims to examine the extent to which the Management Accounting System and environmental uncertainty affect managerial performance at PT. Agromuko Bengkulu.

2. RESEARCH METHOD

This study uses a quantitative exploratory approach to analyze the effect of Management Accounting System and Environmental Uncertainty on Managerial Performance at PT Agromuko Bengkulu. Data sources were obtained primary through distributing structured questionnaires to the entire population, namely 50 managers and staff from various PT. Agromuko farms using the total sampling technique.

Data collection techniques were conducted through a questionnaire survey with a Likert scale of 1-5 to measure three main variables: management accounting system (X1), environmental uncertainty (X2), and managerial performance (Y). The data analysis technique uses Structural Equation Modeling (SEM-PLS) with the help of SmartPLS v4.0 software, which includes descriptive analysis, testing the outer model (validity and reliability), inner model (R-square test), and hypothesis testing through bootstrapping method.

The theory used in this study is Contingency Theory. Contingency theory emphasizes that leadership effectiveness depends on the fit between leadership style and organizational conditions. A leader must be able to adjust their leadership approach based on the situation at hand, where the relationship between superiors and subordinates, internal performance improvement, and positional power interact to create harmony with organizational conditions (Fiedler, n.d.). This approach asserts that there is no one-size-fits-all leadership style for all conditions; rather, leaders must adapt their strategies according to the specific situational characteristics.

Management Accounting System (MAS) is an integrated mechanism that functions to collect, manage, and convey economic information to support strategic decision-making in organizations. This system not only supports planning and organizing but also plays an important role in directing and supervising daily

operations (Firmansyah et al., 2020; Suryani, 2021). Additionally, SAM provides accurate and relevant data to support decision-making processes, enabling strategic adjustments in response to dynamic market conditions (Kholmi, 2019).

Environmental uncertainty refers to external conditions that are difficult to predict and significantly affect a company's operations and strategic planning. Rapidly changing market conditions, dynamic competition, and fluctuating government policies can cause complexity in managerial strategy formulation. Therefore, companies are required to develop adaptive strategies to anticipate the impact of these external factors (Siregar et al., 2023; Sudrajat, 2020). Such adaptation may involve boundary-spanning approaches or strategic partnerships to minimize the risks associated with uncertainty.

Managerial performance refers to the effectiveness of a manager in carrying out various management functions such as planning, coordination, supervision, and evaluation in order to achieve organizational goals. A high-performing manager is able to develop strategic plans, integrate activities across departments, and evaluate and adjust implemented policies so that the resulting output aligns with established targets (Qusyairi, 2019; Sudaryo, 2016). Thus, managerial performance serves as the primary indicator of an organization's success in implementing its designed strategies.

Based on the theoretical description presented above, two main hypotheses are proposed as initial assumptions to be tested in this study. The first hypothesis states that the implementation of Management Accounting Systems has a significant effect on managerial performance. The information generated by MAS is expected to support the strategic decision-making process, thereby increasing the effectiveness of managerial functions in achieving organizational targets. The second hypothesis proposes that environmental uncertainty has a significant effect on managerial performance, where unstable external conditions can pose challenges in formulating and implementing operational strategies. These initial assumptions will be further tested through empirical analysis to determine the strength and direction of each variable's influence on managerial performance.

3. RESULTS AND DISCUSSION

A. Respondent Characteristics Based on Length of Service

The majority of PT. AgroMuko Bengkulu employees who filled out the questionnaire were employees with a tenure of >1-5 years, with 35 respondents or 70% compared to employees aged > 5-10 years, with 15 respondents or 30%.

Table 1. Characteristics of Respondents Based on Length of Service

Term of Office	Frequency	Percentage
>1 - 5	35	70%
>5 - 10	15	30%
Total	**50**	**100%**

B. Outer Model Test Results

1) Convergent Validity

The results of the Convergent Validity Test can be seen in the table below:

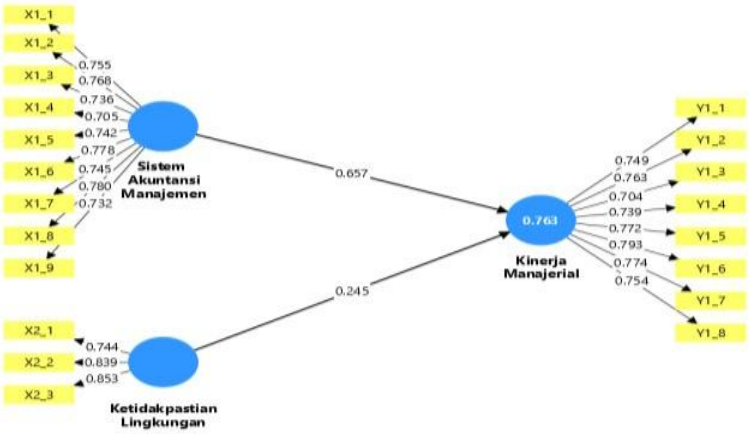


Figure 1. Calculation Results (PLS Algorithm) Initial Research Model

Construction can be considered to be of good quality or to have a high level of reflectivity. Therefore, the indicators used can be considered valid and consistent in representing the variables under study.

2) Discriminant Validity

Discriminant validity can also be evaluated using the Fornell Lacker approach as follows:

Table 2. Fornell Lacker

	Environmental Uncertainty	Managerial Performance	Management Accounting System
Management Accounting System	0.844	0.863	0.74 9
Environmental Uncertainty	0.813		
Managerial Performance	0.799	0.756	

The Fornell Lacker value obtained from the Management Accounting System variable was 0.749, which means that the Management Accounting System has a higher construct correlation with its own construct than with other constructs, thus having good discriminant validity.

3) Cronbach's alpha reliability test and composite reliability

The reliability of a construct can be determined by the composite reliability and Cronbach's alpha scores, if both are above 0.7:

Table 3. Cronbach's alpha and Composite Reliability

	Cronbach's alpha	*Composite reliability* (rho_a)	*Composite reliability* (rho_c)
X1	0.902	0.903	0.920
X2	0.741	0.742	0.854
Y1	0.893	0.893	0.914

Thus, all constructs are in accordance with reliability requirements. All variables and indicators in this study have successfully met or complied with all test criteria, so based on the findings, this study indicates that this research is reliable and tested.

C. Inner Model Test Results

1) R-Square Test

The R-Square value of this study can be seen in the following table:

Table 4. R-Square Test Results

	R-square
Kinerja Manajerial	0.763

The results show that the variables of Management Accounting System and Environmental Uncertainty can explain the variable of Managerial Performance by 0.763 or 76%, while the rest is influenced by other factors not included in the assumptions or discussion in this study.

D. Discussion

The following discussion presents the results of the hypothesis testing process that was previously conducted using SmartPLS based on data obtained from PT AgroMuko Bengkulu. This test aims to see the extent to which the independent variables, namely Management Accounting System (X1) and Environmental Uncertainty (X2), have an impact or contribution on the dependent variable, namely Managerial Performance (Y).

1) The Influence of Management Accounting Systems on Managerial Performance

According to the test results in Table, it can be seen that the Management Accounting System (X1) has a positive and significant effect on Managerial Performance (Y1), with an original sample value of 0.657, a t-statistic value of 3.544 (> 1.96), and a p-value of 0.000 (< 0.05). This indicates that the first hypothesis (H1) in this study is accepted. The reason H1 can be accepted can be seen based on the results of the questionnaire given to 50 respondents, where it was found that the statements related to the Management Accounting System (SAM) showed consistency and high positive perceptions. Respondents indicated that the information generated by MAS, such as timely, accurate, integrated, and easily accessible data, strongly supports decision-making and planning processes, thereby positively impacting managerial performance. The high loading values on the SAM measurement items further support this, so that when analyzed using SmartPLS, the t-statistic value for H1 exceeds 1.96 and the p-value is less than 0.05. This indicates that empirically, increased use of SAM significantly affects managerial performance at PT. Agromuko Bengkulu.

On the other hand, the questionnaire results measuring perceptions of Environmental Uncertainty show greater variation in opinions among respondents. Respondents' answers do not show strong consistency regarding the direct influence of environmental uncertainty on managerial performance, possibly due to the implementation of internal strategies (such as adaptive planning and risk mitigation efforts) to mitigate the impact of external fluctuations. As a result, when analyzed using SmartPLS, the t-statistic value for H2 was less than 1.96 and the p-value was greater than 0.05, indicating that the influence of Environmental Uncertainty on managerial performance is not significant.

In conclusion, the questionnaire results support that SAM significantly contributes to improving managerial performance (H1 accepted). This means that the better the implementation of the management accounting system, the higher the managerial performance at PT. AgroMuko Bengkulu. These results support the findings of Ilmy et al. (2021), who state that the implementation of a good management accounting system

can improve managerial work effectiveness, particularly in terms of decision-making, planning, and control. Management accounting systems provide accurate and relevant information through the dimensions of broad coverage, timeliness, integration, and aggregation. With this information, managers can respond quickly and appropriately to internal and external situations, thereby directly impacting the improvement of managerial performance. In other words, the results of this study emphasize the importance of a reliable management accounting information system in supporting the operational and strategic activities of a company. PT. AgroMuko Bengkulu is considered to have successfully implemented this system effectively, thereby making a tangible contribution to improving management quality.

2) The Effect of Environmental Uncertainty on Managerial Performance

Unlike the first hypothesis, the results of testing the second hypothesis (H2) show that Environmental Uncertainty (X2) does not have a significant effect on Managerial Performance (Y), with an original sample value of 0.245, a t-statistic of 1.190 (< 1.96), and a p-value of 0.235 (> 0.05). Therefore, the second hypothesis is rejected. The reason for rejecting H2 can be seen based on the questionnaire results, where measurements of Environmental Uncertainty showed considerable variation among respondents. Respondents' answers indicated inconsistent perceptions about the direct impact of environmental uncertainty on managerial performance.

This is reflected in the relatively low loading values on the measurement items of this variable, indicating differing views on the extent of the influence of these external factors. Additionally, the implementation of internal strategies such as adaptive planning and risk mitigation efforts may have led respondents to perceive that the impact of environmental uncertainty has been minimized. As a result, when the data was analyzed using SmartPLS, the t-statistic value was less than 1.96 and the p-value was greater than 0.05, indicating no strong empirical evidence supporting the direct influence of Environmental Uncertainty on Managerial Performance.

In conclusion, although environmental uncertainty is considered an important external factor, the questionnaire results and SmartPLS analysis indicate that, in the context of this study, its influence is not significant on managerial performance (H2 rejected) because the relationship between environmental uncertainty and managerial performance is not statistically significant. These findings indicate that although the company faces a dynamic and uncertain environment, this factor does not directly affect the quality of managerial performance at PT. AgroMuko Bengkulu. This can be interpreted as the company having adequate internal mechanisms to manage environmental changes, such as through risk mitigation strategies, adaptive planning, and operational flexibility.

Thus, external challenges do not necessarily reduce managers' ability to perform their roles and responsibilities. This study differs from the findings of Wijaya (2022) and Deliani et al. (2021), who stated that environmental uncertainty has a significant influence on managerial performance. This difference may be attributed to variations in industry characteristics, managerial readiness levels, or the supporting information technology infrastructure within the organization. Thus, this discussion emphasizes that within the PT. AgroMuko Bengkulu environment, strengthening the management accounting system is a more dominant factor influencing managerial performance compared to environmental uncertainty.

3) The Influence of Management Accounting Systems and Environmental Uncertainty on Managerial Performance

From the ANOVA summary, we obtained an F value of 74.478 with a p-value of 0.000, indicating that the Management Accounting System (X1) and Environmental Uncertainty (X2) simultaneously have a positive and significant effect on Managerial Performance (Y). Additionally, the coefficient of determination $R^2 = 0.763$ indicates that the combination of these two independent variables can explain 76.3% of the variation in Managerial Performance. In terms of cause and effect, Environmental Uncertainty creates external pressure for change, ranging from commodity price fluctuations to government policies that require managers to adapt quickly; where the role of a flexible and integrated Management Accounting System becomes crucial, as it provides comprehensive, timely, aggregated, and integrated information that supports planning, control, and strategic decision-making. Additionally, the average response scores for the Management Accounting System variable (X1) ranged from 4.471 to 4.706 (Mean X1_1-X1_9), and for the Environmental Uncertainty variable (X2) from 4.569 to 4.745 (Mean X2_1-X2_3), indicating that both managers and staff at PT Agromuko Bengkulu perceive high-quality SAM alongside significant levels of external uncertainty.

In conditions where external pressures such as fertilizer price fluctuations or government policy changes are categorized as high by 78% of respondents (X2_2 mean 4.745), managers tend to maximize the use of SAM, which is proven to be fast, integrated, and comprehensive (X1_2 mean 4.706) SAM to formulate adaptive planning, control, and target-setting strategies. In other words, environmental uncertainty triggers the need for more intensive accounting information, while SAM provides the necessary framework and data: this interaction strengthens managerial performance effectiveness. When analyzed simultaneously, the adaptive pressure from X2 drives the intensity and relevance of X1's application, so that together these two variables explain 76.3% of the variation in Managerial Performance ($R^2 = 0.763$) and yield an $F = 74.478$ ($p = 0.000$)

that is highly significant. Thus, the presence of a responsive SAM can neutralize the negative impact of uncertainty, so that improving the quality of SAM strengthens managerial performance amid external dynamics. This finding aligns with Ilmy et al. (2021), Suyanda et al. (2023), Erni & Al. (2019), and Wijaya (2022), who all reported that the integration of SAM and adaptation to environmental uncertainty simultaneously drive improvements in managerial performance. Therefore, hypothesis H3 (The Influence of Management Accounting Systems and Environmental Uncertainty on Managerial Performance) is accepted.

4. CONCLUSION

Several important points can be summarized as follows: 1. Management Accounting Systems have a significant effect on Managerial Performance. The test results show a t-statistic value of 3.544 and a p-value of 0.000, which means that the first hypothesis is accepted. This means that the better the implementation of management accounting systems in a company, the higher the managerial performance. This is because the system provides accurate and appropriate data for managerial decision-making. 2. Environmental uncertainty does not have a significant impact on managerial performance. The test results show a t-statistic value of 1.190 and a p-value of 0.235, which means the second hypothesis is rejected. Although the external environment of the company is dynamic and difficult to predict, it does not have a significant direct impact on managerial performance at PT. AgroMuko Bengkulu.

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