

The consequences of electronic participatory budgeting: moderating effect of management accounting systems on managerial performance

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ABSTRACT

The aim of this research was to evaluate the impact of decentralization and electronic participatory budgeting on managerial performance. Additionally, the study sought to investigate the management accounting system's role in strengthening the effect of decentralization and electronic participatory budgeting on managerial performance. This quantitative research involved 30 regional units, using primary data collected through questionnaires of 108 fund management officials. The findings of this study demonstrated that decentralization and electronic participatory budgeting both have a positive and significant effect on managerial performance. Furthermore, the management accounting system was found to act as a moderator between decentralization and performance, but not between electronic participatory budgeting and performance.

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1. Introduction

Indonesian local governments continue to make efforts to enhance the performance of public services to the community. Regional government, which derives its power from the community, is responsible for running government affairs. The trust given to the government by the community must be matched with good governance to effectively improve services and benefit the public (Saleh et al., 2021; Furqan et al., 2020). In the autonomy context, decentralization can empower subordinates in electronic participatory budgeting, and organizations with a high degree of decentralization must be professional, productive, and transparent (Cabannes, 2015). The goal is managerial performance appraisal which serves as a standard for evaluating managers' success in meeting their duties, and it is essential to consider factors such as decentralization and electronic participatory budgeting to improve managerial performance, which includes preparation, coordination, supervision, selection of employees, and evaluation of achievements (Zahra et al., 2022).

Numerous investigations in the realm of management accounting focus on issues related to management control systems such as electronic participatory budgeting (Miori & Russo, 2011; Mærøe et al., 2021) and decentralization (Gul & Chia, 1994; Hammad et al., 2013), which are believed to impact the attitudes and conduct of members of an organization. Additionally, the alignment of manager values with innovations in decentralization and electronic participatory budgeting can enhance management accounting systems and managerial performance (Rahmadani et al., 2016). According to the Chartered Institute of Management Accountants (CIMA), the process of management accounting involves the identification, measurement, accumulation, analysis, compilation, interpretation, and communication of information utilized by management for planning, evaluating, and control purposes to guarantee appropriate and accountable resource utilization. Numerous factors, including decentralization and electronic participatory budgeting, affect the efficacy of regional government units, and the promptness of implementation of the electronic participatory budgeting plan is crucial for maximum budget realization.

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Management accounting system plays a key role in decentralization and improving managerial performance in public sector organizations. Decentralization is the process of delegating authority and decision-making power to lower levels in an organizational structure, while management accounting system is a tool that provides information to managers for decision-making purposes. Management accounting system (MAS) and electronic participatory budgeting (EPB) are two crucial components of financial management in modern organizations. MAS is a comprehensive information system that provides financial and non-financial information to managers, while EPB is a budgeting process that engages the participation of employees and stakeholders in the decision-making process. The combination of MAS and EPB can potentially enhance managerial performance. This research aims to empirically examine the moderating effect of the management accounting system in the relationship between decentralization and electronic participatory budgeting on managerial performance.

2. Literature Review and Hypothesis Development

Decentralization in public sector contexts entails assigning decision-making power to lower levels. It involves higher managers giving lower managers explicit authorization to perform a task, and the delegation of authority comes with accountability, ensuring organizational goals are met. According to law number 23 of 2014, decentralization is the practice of transferring governmental affairs to autonomous regions, granting them autonomy. Essentially, decentralization is the transfer of authority within an organization (Nasution, 2017). Hence, taking part in decision-making is a clear demonstration of the democratic process. Through participation, middle and lower-level managers can better administer bureaucratic organizations, establish objectives and goals, and support top-level managers in budgeting. By employing electronic means of participatory budgeting, lower-level managers become more accountable and are inspired to generate fresh ideas. The act of participating allows employees to recognize and uphold their duties to the organization. Furthermore, electronic participatory budgeting is a fruitful method as it facilitates the exchange of information, leading to better budget decisions with input from those with specialized knowledge and expertise of the organization's operating environment.

According to Nanda (2016), performance refers to the successful implementation of an activity, program, or policy to achieve the goals, objectives, vision, and mission of an organization. In Government Regulation no. 8 of 2006, performance is defined as the output or result of a program, achieved through the use of a budget with measurable quantity and quality. Regional government managerial performance is the level of success in achieving goals and objectives, based on the vision, mission, and strategy of local government agencies, and the implementation of activities aligned with the agency apparatus' main tasks and functions, as explained by Sari (2017). Managerial performance is defined by Prasetio (2018) as the level of skill of managers in carrying out various management activities, including planning, coordinating, directing, and supervising, that can increase effectiveness. Siregar & Eduard (2017) describe management accounting system as a quantitative system that utilizes money as a means of measuring and aiding organizational operations. This type of system gathers, analyzes, stores and presents financial and operational data to help decision makers evaluate managerial activities. Such information is defined as a formal form of data that fits the characteristics associated with management accounting system information, such as broad scope, timeliness, and integration.

Several studies have found that decentralization has a positive and significant effect on managerial performance. Chia (1995) found that decentralization increases the speed of decision-making, leading to faster responses to customer needs and increased satisfaction. Fiaz et al. (2017) found that decentralization improves employee motivation and satisfaction, resulting in increased productivity and efficiency. One of the main advantages of decentralization is its ability to increase flexibility and adaptability. Mikalef et al. (2021) and Amagoh (2008) found that decentralization allows local authorities to respond more quickly and effectively to changing and uncertain conditions, leading to improved performance. Decentralization has also been found to enhance accountability and transparency. According to Rondinelli (2017), decentralization improves accountability by making managers more responsible for their decisions and actions. Decentralization also enables better monitoring and evaluation of performance, leading to increased transparency and better reporting.

H₁: Decentralization has a positive and significant effect on managerial performance.

Electronic Participatory Budgeting (EPB) refers to the utilization of technology in the process of budgeting, which involves the participation of citizens or stakeholders (Mærøe et al., 2021). Gordon et al. (2017) assessed the impact of EPB on organizational performance. The study found that electronic budgeting increased transparency, accountability, and citizen participation in budgeting processes, which led to better decision-making and improved organizational performance. Milosavljević et al. (2020) concluded that EPB enhanced the decentralization of decision-making, improved the quality of budgeting, and facilitated better communication between stakeholders, leading to improved managerial performance and organizational outcomes. Moreover, a study by Wang, Zhang, and Fan (2016) investigated the impact of EPB on local government performance. The findings indicated that EPB led to greater transparency, accountability, and citizen participation in the budgeting process, which improved the performance of local government organizations (Touchton et al., 2019; Mærøe et al., 2021). In addition, Gilman (2016) revealed that EPB increased stakeholder engagement, fostered better decision-making, and improved performance outcomes in the areas of governance and accountability.

H₂: E- Participatory Budgeting has a positive and significant effect on managerial performance.

Appelbaum et al. (2017) state that MAS is instrumental in providing managers with accurate information to make informed decisions. Napitupulu (2018) suggests that MAS enhances the delegation of authority to lower levels by providing vital information to managers. Additionally, the use of MAS through the implementation of Activity-Based Costing (ABC) has been found to strengthen decentralization efforts in organizations (Zhang et al., 2015). Zhang et al. (2015) suggest that ABC is a tool to identify the cost of organizational activities and empowers managers at lower levels with decision-making authority. Mahal & Hossain (2015) found that ABC use leads to better decentralization of organizational decision-making processes. Furthermore, studies show that MAS facilitates the use of performance measures, which are key to decentralization efforts. Nasution (2017), Verbeeten & Speklé (2015) reveal that MAS provides managers with performance measures that help in evaluating the performance of lower level employees. Similarly, Nguyen et al. (2023) argues that decentralization requires the use of performance measures to align the interests of lower-level managers with the organization's objectives.

In the relationship between MAS and EPB, Chen et al. (2016) found that MAS can facilitate EPB by providing timely and accurate information to support decision-making, improve communication and collaboration among participants, and enhance transparency and accountability. Van Helden & Uddin (2016) argued that MAS can help to overcome the challenges of implementing EPB, such as information overload, lack of trust and commitment, and resistance to change. However, few studies have specifically investigated the combined effect of MAS and EPB on managerial performance. Groen et al. (2017) examined the effect of MAS on employee participation in the budgeting process and found that MAS can enhance the quality and relevance of budgeting decisions, increase employee empowerment and motivation, and improve performance outcomes. Namazi & Rezaei (2023) found that EPB can improve managerial performance by increasing employee engagement, reducing the risk of budgetary slack, and enhancing organizational learning and innovation. However, neither of these studies directly investigated the combined effect of MAS and EPB on managerial performance.

H3: Management accounting system strengthens the influence of decentralization on managerial performance.

H4: Management accounting system strengthens the effect of electronic participatory budgeting on managerial performance.

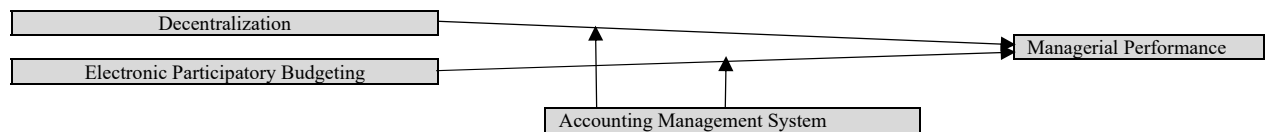


Fig. 1. Theoretical Framework

3. Research Method

This study falls under the category of quantitative research which follows positivist principles and involves analyzing populations and samples chosen at random. Research instruments are used to collect data which is then statistically evaluated to test predetermined hypotheses. The study focuses on two independent variables, that are Decentralization (X1) and electronic participatory budgeting (X2) and a moderating variable which is Management Accounting System (Z), while managerial performance (Y) serves as the dependent variable.

The study took place at 30 units in Sigi Government, Central Sulawesi Province, Indonesia. The research was initiated due to certain inconsistencies described in the previous section. Due to the distance and time constraints, the research was conducted in November 2022 for a duration of one month. The data was collected using questionnaires as a research tool. The study population was composed of regional financial managers who met criteria determined by the researcher in accordance with Ministry of Home Affairs No. 77 of 2020 and Government Regulation No. 12 of 2019. The sample size included 108 officials responsible for fund management.

Operational variables are research activities that aim to reduce the level of abstractness in a concept so that it can be measured statistically. In this study, decentralization was defined as the transfer of government responsibilities from central to autonomous regions based on the principle of autonomy, aimed at promoting a democratic government that provides effective, efficient, and economical public services. Electronic participatory budgeting was defined as a process of evaluating individual performance based on achieved budget targets to improve attitudes and performance within an organizational system. Management Accounting System was defined as a tool used to measure the reliability of management accounting information, consisting of broad scope, timeliness, aggregate, and integration measures. Performance can generally be defined as an individual's or organization's level of success at a particular time. Meanwhile, managerial performance refers to the abilities and accomplishments of individuals in carrying out managerial tasks such as planning, investigation, coordination, evaluation, supervision, staffing, negotiation, and representation. In this study, managerial performance was defined as the effectiveness and efficiency of an organization measured by the performance of individual members in managerial activities such as planning, coordination, direction, and supervision. Decentralization is measured using five indicators: budget allocation determined by authority, program activities determined by authority, employee involvement determined by authority, priorities scale determined by authority, and addition and termination of employees determined by authority. Electronic participatory budgeting is assessed through three indicators: participation in budget preparation, level of influence on budget determination, and income provision needs. Management Accounting System is evaluated using four indicators: scope,

punctuality, aggregate, and integration. Lastly, Managerial Performance is measured by four indicators: planning, organizing, controlling, and supervision. Prior to distributing the research questionnaire, a technique for testing the research instrument was implemented to ensure its validity and reliability. This testing mechanism is utilized by researchers to ensure that the questionnaire provided to respondents is accurate and dependable. The validity test is utilized to evaluate the accuracy of the questionnaire, while the reliability test ensures the consistency and stability of respondents' responses over time. To gather information about the research respondents, descriptive statistical analysis was utilized. This method provides a clear and easy-to-understand representation of the study participants. The analysis determines the criteria for respondents' answers to each question item and decision-making is based on mean values. Prior to conducting the analysis, a classic assumption test is carried out to ensure that the data is appropriate for study. This includes tests for normality, heteroscedasticity, and multicollinearity. To explore the interaction between variables, regression analysis was conducted using SPSS version 25.0 software. The T test was used to assess the response of the dependent variable to the independent variable, while the F test was used to determine the simultaneous impact of the independent variables on the dependent variable. The independent variables are considered to have a significant impact if the probability is less than 5% of the level of significance.

4. Results

The study gathered information about the respondents by asking them to identify themselves through a questionnaire. The questionnaire contained questions about their gender, age, education level, job position, and years of service. Out of the 108 completed questionnaires, the characteristics of the participants were summarized in Table 1.

Table 1
Demographic Characteristics

Characteristics	Frequency	Percentage	Characteristics	Frequency	Percentage
Gender:			Length of work		
Male	62	57.41	<1 Year	0	0
Female	46	42.59	>1 Year	108	100
Total	108	100	Total	108	100
Education:			Age (years old)		
Higher school	9	8.33	18-30	2	1.85
Diploma	2	1.85	31-40	24	22.22
Bachelor	73	67.59	41-50	61	56.48
Postgraduate	24	22.22	>50	21	19.44
Total	108	100	Total	108	100

Validity testing is a process of evaluating the accuracy and relevance of data or research findings. It is an essential step in ensuring that the research is reliable and that the outcomes are trustworthy. Table 2 shows the results of validity testing for four different variables, namely decentralization, electronic participatory budgeting, management accounting system, and managerial performance. Each variable has several indicators that measure different aspects of the variable. The R-value represents the correlation coefficient, which indicates the strength and direction of the relationship between the indicators and the variable. In this case, all indicators have a high R-value, indicating a strong and positive relationship with the variable. Therefore, the confirmation column shows that all indicators are valid, meaning that they accurately measure the variable they are intended to measure. The results of validity testing provide researchers with confidence in their findings and enable them to draw sound conclusions based on the data.

Table 2
Validity and Reliability

Variable	Indicators	R-value	Cronbach's Alpha	Confirmation
Decentralization			0.934	Reliable
	DEC01	0.883		Valid
	DEC02	0.889		Valid
	DEC03	0.906		Valid
	DEC04	0.884		Valid
Electronic Participatory Budgeting			0.895	Valid
	EPB01	0.765		Reliable
	EPB02	0.769		Valid
	EPB03	0.784		Valid
Management Accounting System			0.867	Reliable
	MAS01	0.767		Valid
	MAS02	0.859		Valid
	MAS03	0.779		Valid
Managerial Performance			0.821	Valid
	PER01	0.782		Valid
	PER02	0.739		Valid
	PER03	0.761		Valid
	PER04	0.822	Valid	

Reliability testing is a process of evaluating the consistency and stability of measurements, instruments or procedures used in research. It aims to ensure that the results obtained from these measurements or procedures are trustworthy and can be replicated. In this context, Cronbach's alpha is a statistical measure used to assess the internal consistency and reliability of a set of test items or questions. A score above 0.70 typically indicates an acceptable level of reliability. Table 2 shows the results of Cronbach's alpha based on standardized items for four variables, namely decentralization, electronic participatory budgeting, management accounting system, and management performance. The data displays the Cronbach's Alpha data for each research variable, all of which are greater than 0.70. As all four variables have an alpha score above 0.70, therefore, it can be concluded that the question items representing the variables in this study have met the necessary criteria for reliability.

Table 8

T-Test results

Model	B (Unstd.)	Std. error	B (Std.)	t	Sig.
Constant	19.044	3.407		5.590	0.000
Decentralization	0.199	0.126	0.136	1.584	0.116
Electronic participatory budgeting	0.878	0.158	0.476	5.552	0.000

Dependent variable: performance management

The results of the test indicate that the variable of decentralization does not have a significant impact on managerial performance, as it has a significance value of 0.116 which is higher than the threshold of 0.05. Therefore, the first hypothesis asserting that decentralization affects managerial performance is rejected. Conversely, the electronic participatory budgeting variable has a significant positive effect on managerial performance, with a significance value of 0.000, below the threshold of 0.05. Hence, the second hypothesis that electronic participatory budgeting affects managerial performance is accepted. Furthermore, the F-test was conducted to examine the combined impact of both independent variables on the dependent variable, and the results indicate that both decentralization and electronic participatory budgeting have a simultaneous influence on managerial performance, as their Fcount value of 20.205 is greater than the F-table of 3.931, with a significance value of 0.000 (Table 4).

Table 4

ANOVA and Adjusted R-square

Model	Sum of squares	df	Mean square	F	Sig.
Regression	1599.862	2	799.931	20.205	.000 ^b
Residual	4157.128	105	39.592		
Total	5756.990	107			
R	0.527 ^a R Square 0.278 Adjusted R square 0.264 Std. error of the estimate 6.29219				

a. dependent variables; management performance; b. Predictors: (constant) electronic participatory budgeting, decentralization

Regarding the research model, the coefficient of determination (R²) demonstrates that the research variables have a small effect, indicating that the independent variable's capacity to influence the dependent variable is limited. Based on Table 4, it shows that the R Square value is 0.278, suggesting that the influence of Decentralization and Participation of Managerial Performance Budget variables is 27.8%, and the remaining 63.2% is influenced by other variables that are not part of this research model.

Table 5

Indirect Effects

Model	Sum of squares	df	Mean square	F	Sig.
Constant	24.365	3.716		6.557	0.000
Decentralization	1.237	0.504	0.843	2.454	0.016
Electronic participatory budgeting	0.634	0.467	0.334	1.360	0.177
Decentralization*Management Accounting System	0.031	0.015	0.805	2.038	0.044
electronic participatory budgeting * Management Accounting System	0.0439	0.012	1.150	3.155	0.002

*Dependent variable: performance management

The aim of conducting the mediating test was to assess the impact of the interaction of Management Accounting System variables on the relationship between the independent variables of Decentralization and electronic participatory budgeting, and the dependent variable of Managerial Performance.

Table 6

ANOVA (Indirect Effects)

Model	Sum of squares	df	Mean square	F	Sig.
Regression	2073.613	4	518.403	14.496	.000 ^b
Residual	3683.377	103	35.761		
Total	5756.990	107			

Dependent variable: managerial performance

Predictors: (constant) electronic participatory budgeting*MAS, decentralization, participation budget, decentralization*MAS

The findings from the test are shown in Table 5, which indicates that the Management Accounting System acted as a moderating variable between Decentralization and Managerial Performance, with a significance value of $0.044 < 0.05$. As such, Hypothesis three is confirmed since the Management Accounting System reduced the sig value of Decentralization from 0.016 to 0.044. In contrast, the Management Accounting System variable as a moderating variable did not affect the relationship between electronic participatory budgeting and Managerial Performance, with a significance value of $0.177 > 0.05$. Hence, Hypothesis four is validated since the Management Accounting System reduces the sig value of electronic participatory budgeting from 0.177 to 0.000 (Table 5). Table 6 indicates that the significance value is 0.000, less than 0.05, while the F-statistic value of 14.496 is larger than the F-table value of 3.931. Therefore, it can be concluded that the combined influence of decentralization, electronic participatory budgeting, Management Accounting System, the interaction between Management Accounting System and Decentralization (DEC*MAS), and the interaction between Management Accounting System and electronic participatory budgeting (EPB*MAS), all have a same or simultaneous effect on Managerial Performance.

5. Discussion

According to the partial test results, there is no correlation between the decentralization variable and managerial performance variables, leading to the rejection of hypothesis H1, which states that decentralization affects managerial performance. Managerial performance refers to the ability of regional government units to achieve their goals and carry out their activities, without interference from the central government. Decentralization was implemented to give authority to regional governments to manage their own regions; however, this decentralization had no impact on performance, indicating that government programs promoting decentralization were unsuccessful. Thus, delegating authority to managers did not lead to successful outcomes, as some tasks remained incomplete due to factors like the addition and transfer of employees. These findings are consistent with previous research studies (Lempas et al., 2014; Ikhtiyarini & Machmuddah, 2019). Consequently, the results of the data processing render the first hypothesis of this study unacceptable.

Following partial testing, it has been shown that electronic participatory budgeting has an impact on Managerial Performance. This confirms the validity of H2, which states that electronic participatory budgeting is a factor affecting managerial performance. This finding suggests that electronic participatory budgeting can support organizational managers in developing budgets, setting goals, and effectively communicating ideas to top managers to enable the realization of organizational targets. Participation in budgeting by managers at various levels enhances decision-making processes, fosters coordination, and ensures that organizational goals are achieved harmoniously. Participatory budgeting also increases personal commitment to achieving set goals among employees, as they are involved in the budget preparation process. Consequently, budgeting serves as a planning, coordinating, and control function for organizational activities. Based on the results of descriptive analysis and simple regression analysis, an increase in budgeting participation is followed by an increase in managerial performance. This conclusion is supported by previous research from Wahyudi (2020), Handayati and Safitri (2020) and Handayati et al. (2020) that asserts the importance of participatory budgeting involving all agency managers in achieving set targets.

The study examined the impact of the management accounting system on the decentralization of authority and its impact on managerial performance. The results of the moderated regression analysis showed that the management accounting system strengthens the influence of the decentralization system on managerial performance. This suggests that middle and lower managers benefit from the delegation of authority as they are able to provide timely and useful information to improve service efficiency and effectiveness. The use of an effective management accounting system plays a crucial role in providing timely and accurate planning information and helps managers set achievable goals. Management accounting system acts as a control mechanism in an organization and helps delegation of authority by providing useful information to predict the consequences of activities. The contingency approach can optimize the decentralization function in regional apparatus organization planning, ensuring that the level of availability of the management accounting system supports each performance in different organizational conditions. Through this approach, the management accounting system plays an important role in the management control system of an organization, especially in the process of planning and controlling. Thus, it is important for management to implement the management accounting system appropriately, especially in regional government units with complex tasks, to ease organizational performance. These findings support previous studies (Lempas et al., 2014; Ikhtiyarini & Machmuddah, 2019) that concluded that management accounting system can be used to improve the relationship between decentralization and managerial performance.

The study investigated the role of the management accounting system in enhancing the effect of electronic participatory budgeting on managerial performance through moderated regression analysis (MRA). The findings indicated that the management accounting system helped strengthen the relationship between electronic participatory budgeting and managerial performance. The budget served as a performance benchmark, and managers with supporting information showed improved performance through active participation in the budgeting process. The management accounting system provided aggregate information to reduce conflicts and prevent information overload. Financial managers working in regional government units could benefit from the system, which promotes accurate reporting by reducing uncertainty and improving quality. The study expanded on the findings of Windasari and Sujana (2016), which also highlighted the potential of the management accounting system to improve the relationship between electronic participatory budgeting and managerial performance.

6. Conclusion

Drawing from the research and discussion presented, it can be deduced that decentralization does not impact the Managerial Performance of regional government units in Sigi due to inadequate delegation of authority and responsibility to managers. However, electronic participatory budgeting has a positive influence on Managerial Performance and an increase in such budgeting would result in a corresponding improvement in Managerial Performance. The Management Accounting System plays a moderating role, reinforcing the impact of Decentralization on Managerial Performance, primarily by supporting the control and planning of organizational information. Additionally, the Management Accounting System strengthens the effect of electronic participatory budgeting on Managerial Performance by providing budgetary preparation information for financial managers of regional government units.

The recommendations in this study are based on research findings. With regard to the Government of Sigi Regency, it is suggested that they establish regulations concerning decentralization for regional administrative organizations to ensure that delegated authority is utilized effectively. Financial managers should organize seminars or activities related to financial management for regional government units to promote optimal management, alongside regular appraisals of budget preparation. In addition, leaders should optimize the delegation of authority and responsibility to regional organizational leaders by implementing policies, which will prove to be a crucial resource in enhancing managerial performance.

This study had its limitations, as only 120 individuals were included in the sample and only 108 questionnaires were returned. Difficulties were encountered during the distribution of the questionnaires to various units, as some respondents were unavailable. Additionally, some respondents were only represented by their subordinates when completing the questionnaire. Researchers should use the findings of this study as a benchmark for comparison and reference in future research. They may also wish to explore other variables such as organizational commitment and budget clarity to further enhance their research.

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