Model of Fit Perceived Environment Uncertainty (PEU) and Budgetary Characteristics on Managerial Performance: A Residual Approach

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Abstract

This study examines effects of budgetary goal characteristics that are budgetary participation, budget goal clarity, budget goal difficulty, budgetary feedback on managerial performance using regression analysis (stepwise). This study also examined the contingency theory to seen the fit between budgetary goal characteristics system and environment on organization effectiveness, in this case budgetary system and perceived environmental uncertainty (PEU) to increasing managerial performance using residual approach. The application of residual analysis is illustrated by examining the interaction fit of budgetary goal characteristics and perceived environmental uncertainty and their effect on managerial performance. Residual approach used to enhance the potential for model of fit and be unformattable for future management accounting contingency theory studies. Based on the response of 64 managers in Makassar Industrial Area. The results of the study showed that that budgetary participation and budget goal clarity tend to have positive and significant effect on managerial performance. The results related to influence of budgetary goal's difficulty level (about right, tight but attainable, too tight) to the average of managerial performance also showed insignificant relationship. This study showed that lack of fit between budgetary participation and budgetary goal clarity to environment uncertainty have negative and significant correlation with managerial performance.

Keywords: Budgetary Participation, Budget Goal Clarity, Budget Goal Difficulty, Budgetary Feedback, Managerial.

Introduction

Budget is a quantitative representation of management objectives and serves as a tool to determine progress in achieving those objectives. Mazorodze & Buckley (2019) explained that

a budget is a method of translating the goals and objectives of an organization into operational terms. Budgeting is not only the financial planning of responsibility centers within a company but also a tool for control, coordination, and communication (Liutyi & Bilyavska, 2021). The influence of budgets on the behavior, attitudes, and performance of lower-level managers largely follows the top management's budgeting style (Bris et al., 2021). Five target characteristics of budgeting stated by Henttu-Aho & Järvinen (2013) include budgetary participation, budget goal clarity, budgetary goal difficulty, budgetary evaluation, and budgetary feedback. Research conducted by Machmud et al (2022) found a positive and significant relationship between budgetary participation and managerial performance. Moreover, the relationship between budget goal clarity and managerial performance has not been extensively explored. Still, the clarity and specificity of task-goal relationships with commitment to goal achievement and employee satisfaction have been found to have a positive correlation (. et al., 2018)found that the influence of budgetary goal difficulty on managers' attitudes, motivation, and performance is weak and not significant. Regarding the relationship between budgetary feedback and managerial performance (Rizzo, 2023). In light of these inconclusive results by Chiluwal & Bhandari (2017) stated that the lack of consistency in budgeting research findings might be due to the fact that the relationship between budgets and managerial performance depends on specific factors (contingency variables). These variables include individual, interpersonal, organizational, cultural, technological, and environmental factors. The higher the "fit" between the control system and contextual factors, the higher the performance achieved by an organization. McCloskey (1999) mentioned that these contextual factors include various elements such as task and environmental uncertainty, technology and interdependencies, industry, and competitive strategy.

The budgeting process in uncertain situations, as highlighted by Vierlboeck et al (2019), faces more complex challenges, especially in unpredictable environments. Several studies have investigated the impact of environmental uncertainty on the relationship between budgetary participation and managerial performance (Sofyani et al., 2020). However, other dimensions of budgeting systems such as budget goal clarity, budgetary goal difficulty, and feedback have been less explored. Question Research formulate as follow (a) do budgetary goal characteristics, namely participation, goal clarity, goal difficulty, and budgetary feedback, affect managerial performance?, (b) do perceived environmental uncertainty and budgetary goal characteristics, namely participation, goal clarity, goal difficulty, and budgetary feedback, influence managerial performance?

This research aims to provide empirical evidence on the direct influence of each budgetary goal characteristic, namely participation, goal clarity, goal difficulty, and budgetary feedback, on managerial performance. It also seeks to examine the impact of the perceived environmental uncertainty's alignment with budgetary goal characteristics on managerial performance. The findings of this study are expected to contribute to the development of theory, particularly in the fields of behavioral accounting and management. Additionally, the research findings are anticipated to offer practical contributions to organizations in goal-setting, especially concerning budgetary goal characteristics.

Literature Review

Theory of Goal-Setting

Edwin Locke initiated a series of experiments starting in 1968 to consolidate his ideas into a more comprehensive framework for building the goal-setting theory. Goals have two main attributes: content and intensity by Maditinos et al (2015) Content refers to the basic activities or ultimate objectives. Intensity is related to an individual's level of interest in the goal. Goals contain direct primary connections and regulate the effort exerted because different goals require varying amounts of effort. Meanwhile, goal intensity can influence both the direction and level of effort. Maditinos et al (2015) proposed that intentions to work toward a goal are a primary source of work motivation. This means goals provide an employee with what needs to be done and how much effort needs to be expended. Specific goals can enhance performance. Even though these goals may be difficult to achieve, if they are well-accepted, they can lead to higher performance than easy goals. Additionally, feedback is necessary to achieve high performance (Kuroki & Motokawa, 2021). Participative goal setting might also enhance goal acceptance as a desired objective to be achieved. The Characteristics of Budgeting Systems and Managerial Performance as follow:

a. *Budgetary Participation*

Participative budgeting refers to the extent to which managers are involved in preparing the budget and influencing budget goals in each responsibility center. Participation in setting budget goals motivates managers to achieve objectives and engage in their (Zatonatska et al., 2022)states that management participation in the budgeting process is the process through which managers are evaluated based on achieving budget targets, their involvement, and influence on setting these budget goals. Managerial performance obtained by managers is one of the factors that can be utilized to enhance organizational effectiveness. Conducted field research on 48 mid-level cost center managers working in large-scale manufacturing companies in San Francisco. Zatonatska et al (2022)study involving 108 out of 224 questionnaires sent to mid-level managers from various functions in two electronic industries and one steel industry. Ichsan et al (2023) research reported a positive and significant correlation between participation in budgeting and attitudes toward the job and the company. However, the relationship between participation and managerial performance was very weak. Junjunan et al (2020) also reported positive attitudes among subordinates when they participated in budget preparation.

b. *Budget Goal Clarity*

Budget Goal Clarity" refers to the extent to which budget goals are specifically and clearly defined, and can be understood by those responsible for achieving them Susilowati Mardjono & Nur DP (2016) stated that setting specific goals is more productive than having no goals at all and encourages employees to do their best. Ambiguous goals can lead to tension, confusion, and employee dissatisfaction. Research on the relationship between budget goal clarity and managerial performance is limited. However, some studies support the positive influence of goal clarity and task-goal specificity on employee commitment, performance, and satisfaction (Kewo, 2014) The findings of Smolarek & Dziendziora (2022) research indicated that managers have a positive and relatively strong response to increased

budget goal clarity.

c. Budget Goal Difficulty

Budget goals can range from being very loose and easily achievable to being very tight and difficult to attain. Goals that are too easy to achieve do not challenge managers, leading to low motivation. On the other hand, goals that are excessively tight and hard to attain can result in feelings of failure, frustration, low aspirations, and managers rejecting the goals Rizzo (2023) also stated that the difficulty of task goals leads to lower performance compared to easily achievable goals. Anthony and Govindarajan (1995) believe that the ideal budget is one that is tight yet managers are confident in achieving it. The results of Lau & Caby (2010) research regarding the influence of budgetary difficulty on managers' attitudes and performance overall are inconclusive; all relationships are weak and not significant. Kumar (2020) reported a positive and significant impact of perceived task-goal difficulty on managers and self-rated managerial performance. However, studies by Hermawan et al (2021) and Carroll and did not support this finding. Additionally, studies by Cantarelli et al (2018) failed to support the positive influence of goal difficulty on motivation and performance. Dowd et al (2010) results also indicated that a "tight but attainable" level is optimal for budget goal difficulty.

d. Budgetary Feedback

Feedback on the extent to which budget goals are achieved is a crucial motivational variable. According to (Dowd et al., 2010) if members of an organization cannot know the results they achieve, they won't have a basis to perceive success or failure, and won't be incentivized to perform well; ultimately, this can lead to dissatisfaction. This feedback can reinforce or deter employee behaviors. Empirical studies demonstrating the influence of feedback on performance include Goddard & Mkasiwa (2016), who found that positive feedback was correlated with self-rated goal achievement. Matsoso et al (2021) also reported a significant positive correlation between feedback and performance. However, studies by Roreng et al (2019) provided less support for this notion, and Dos Santos et al (2021)found a weak and non-significant relationship between budgetary feedback and managerial performance. Based on model (1), the researcher proposes the following hypotheses regarding the relationship between budgetary goal characteristics and managerial performance:

H_1: Budgetary participation has a positive influence on managerial performance.
H_2: Budget goal clarity has a positive influence on managerial performance.
H_3: Budget goal difficulty has a negative influence on managerial performance.
H_4: Budgetary feedback has a positive influence on managerial performance.
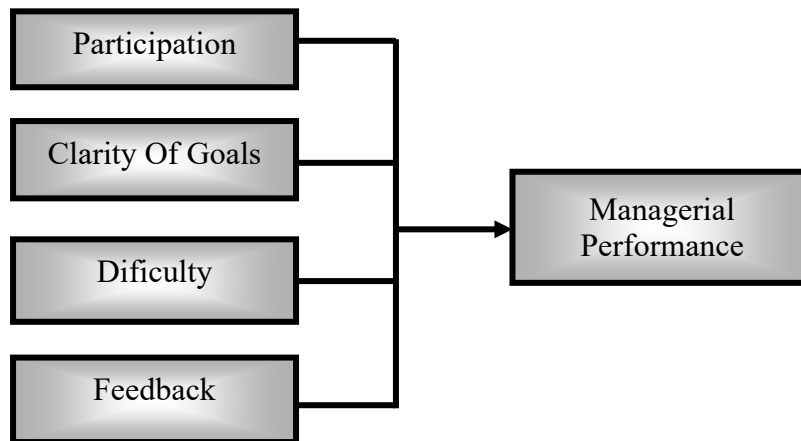
Figure 1. Relationship between Budgetary Goal Characteristics

Contingency theory

The contingency approach in management accounting is based on the premise that there is no universally applicable management accounting system that can be applied to all organizations in every situation. Instead, the management accounting system depends on situational factors within the organization. By relying on the contingency approach, it is possible that there are other determining variables that interact with each other, aligning with specific conditions faced. Better fit between the control system and contingency variables, as hypothesized in several studies, results in improved organizational performance (Zhang et al., 2022). The use of the fit concept in contingency theory indicates the level of alignment between contextual factors (contingencies) and management accounting systems (such as accounting design and budgeting systems), enabling managers to enhance company performance Visedsun & Terdpaopong (2021) explains that organizations adapt to contingency conditions by arranging controllable factors (those owned by the company) to create a suitable configuration or match, with the expectation of achieving organizational effectiveness.

Perceived Environmental Uncertainty

Specifically, Jansson et al (2022) defines the environment as the overall physical and social factors that can directly influence considerations in individual decision-making behavior. Furthermore, Upadhyay (2021) states that both dynamics and complexity contribute to the perception of environmental uncertainty. Jansson et al (2022) explains that environmental uncertainty consists of three types (stated uncertainty, effect uncertainty, and response uncertainty). State uncertainty is closely related to perceived environmental uncertainty. Bresciani et al (2023) states that top managers of organizations may experience these three types of environmental uncertainty, as they try to understand, sense, and respond to external environmental conditions. Therefore, the most appropriate way to measure environmental uncertainty is by using top managers' perceptions of the uncertainty they perceive. Several studies strongly argue that measuring environmental uncertainty is a perceptual phenomenon rather than a characteristic of the organizational environment (Seitz & Watanabe, 2009) Perceived environmental uncertainty is the result of top managers'

perceptions regarding the conditions of uncertainty in the external (Bris et al., 2021) statement, asserting that perceptions of uncertainty are more influential than actual environmental uncertainty, as these perceptions impact the decisions made by managers in responding to the operational environment of the company.

Characteristics of Budgeting and Environmental Uncertainty

The results of Ezzamel (1990) study, examining the relationship between environmental uncertainty and budgeting system characteristics, indicate a connection between budget goal difficulty and perceived environmental uncertainty. These findings are consistent with Chong & Leung Tak-Wing (2003) opinion that managers, when faced with uncertainty, should be provided with goals that can motivate them and are potentially achievable. Other characteristics, such as participation, goal clarity, evaluation, and budgetary feedback, were not supported. Lunardi et al (2019) state that budgetary participation is linked to improved performance, yielding positive outcomes. Participation can address the organization's need to gain an understanding of its environment. Effective performance may be achieved by building and applying expertise focused on analyzing and predicting environmental changes (Ali Almohtaseb et al., 2020). Ali Almohtaseb et al (2020) states that managers with "very tight" budget goals are reported to experience significantly high job pressure and low job satisfaction and performance. Job pressure describes the stress arising from psychological stress in the work environment; Mozgovoy (2022) asserts that managers facing high job pressure tend to exhibit negative behavior. Environmental uncertainty is expected to be one of the selected variables that will influence the usefulness of this characteristic. The heterogeneity and dynamics of the environment, referred to by Mozgovoy (2022) as the main sources of environmental uncertainty, require achievable goal ranges. Sisto et al (2020) states that the implication of feedback is the extent to which budget goal achievement is ineffective in improving performance and less effective in enhancing managerial attitudes. However, in uncertain situations, quick responses to unpredictable changes are needed. Timely feedback is highly anticipated. In much management accounting literature, it is explained that timely feedback can trigger subjective feelings of success or failure.

The Concepts of Fit

The central concept of contingency theory is fit, Sisto et al (2020) identified three different conceptual approaches to fit: selection, interaction, and systems. In the selection approach, the performance implications of a system are not discussed. This concept is the earliest fit concept introduced in the literature. More specifically, fit is defined as the interaction between pairs of system-contextual factors on performance. In this approach, the primary research agenda focuses on examining the contextual factors that determine or influence the impact of a system on performance. One alternative regression-based approach adopted in accounting research is residual analysis. This approach focuses on the lack of fit between contingency variables and subsequent consequences on effectiveness. Specifically, the application of contingency theory involves examining the impact of deviations in budgeting systems from an ideal contextual model on performance. Lack of fit results from deviations from the linear relationship between the environment and budgeting systems.
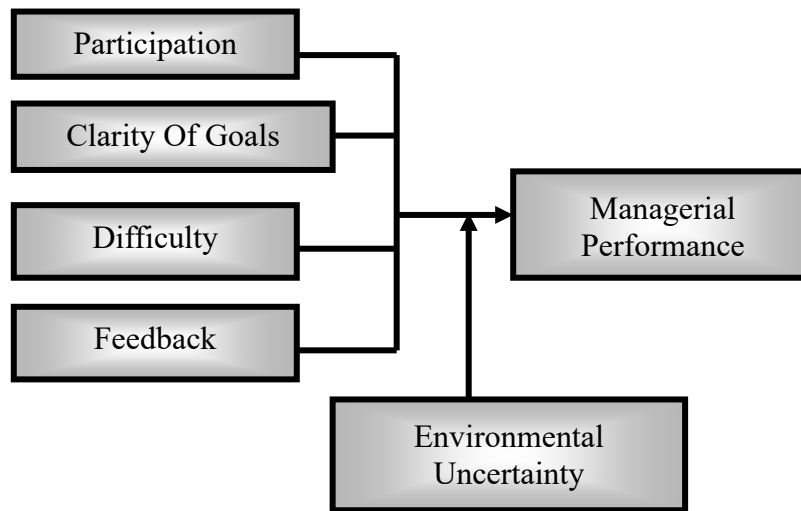
Figure 2: The Influence of Environmental Uncertainty on the Relationship Between Budgeting Characteristics

H₅: The fit between budgetary participation and environmental uncertainty contingency factors will positively influence managerial performance.

H₆: The fit between goal clarity in budgeting and environmental uncertainty contingency factors will positively influence managerial performance.

H₇: The fit between budgetary goal difficulty and environmental uncertainty contingency factors will positively influence managerial performance.

H₈: The fit between budgetary feedback and environmental uncertainty contingency factors will positively influence managerial performance.

Research Methods

Collecting Data and Sample

The data was collected by delivering questionnaires directly to the respondents' addresses, and the completed questionnaires were also collected in person from the respondents' addresses as promised. This method was chosen because the companies under study were located within a specific area (the Makassar Industrial Zone). Additionally, this approach was expected to reduce the low response rate. The researcher utilized all manufacturing companies present in the Makassar Industrial Zone as the sampling frame. The Makassar Industrial Zone is managed by PT Kawasan Industri Makassar (PT KIMA). According to the list of companies in the Makassar Industrial Zone, there were 102 companies, out of which 58 were in production, 12 had temporarily ceased production, 15 were under construction, and 17 had not yet started construction/production. The research data was collected by distributing 200 questionnaires to managers and department heads at the managerial level in 58 manufacturing companies currently in production in the Makassar Industrial Area. Out of the 200 questionnaires, 73 managers and department heads at the managerial level returned their responses, resulting in a response rate of 36.5%. However, 9

responses could not be included in the analysis due to incomplete filling, making a total of 64 questionnaires eligible for analysis (usable response rate of 23%).

Measurement of Variables
- Budgetary Participation = The instrument used to measure the variable of participation utilizes a tool developed by Sisto et al (2020), comprising 5 items that assess the level of participation, perceived influence, and respondents' contributions in the budgeting process, using a scale ranging from 1 to 7. Additionally, there is one question item included to maintain its validity (reverse item).
- Clarity of Budget Objectives = The variable of budgetary objective clarity in this study is measured using an instrument developed by Sisto et al (2020). The instrument consists of 3 items to measure the level of budgetary objective clarity, including 1 question item used to maintain its validity. Respondents are asked to select a scale from 1 to 7 for each question.
- Difficulty of Budget Objectives = The instrument used to measure this variable is adopted from Sisto et al (2020), comprising 5 items that measure the level of budgetary difficulty and the effort required to achieve the established budget, including 1 question item used to maintain its validity. The scale ranges from 1, indicating very loose budget objectives, to 7, indicating tight budget objectives.
- Feedback = Budgetary feedback is measured using three question items adopted from Sisto et al (2020). Each respondent is asked to express their perception by selecting a value on a scale where 1 indicates strongly disagree, and 7 indicates strongly agree with the manager's perception of budgetary feedback.
- Perceived Environmental Uncertainty = To measure managers' perceptions of perceived environmental uncertainty, 11 question items developed by Sisto et al (2020) are used. The question items are scored using a Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). A low score indicates high perceived environmental uncertainty, while a high score indicates low perceived environmental uncertainty.
- Managerial Performance = Managerial performance is measured using a self-rating instrument developed by Sisto et al (2020). Each respondent is asked to assess their own performance across eight dimensions, as well as one overall dimension measuring a manager's performance. The performance scale ranges from 1 to 7, where respondents rate their own performance by selecting a value on this scale. A low score (1) indicates low performance, whereas a high score (7) indicates high performance.

Data Analysis
- Data Quality Testing (Instrument) = Reliability and validity tests were conducted to assess the consistency and accuracy of the data collected using the instrument. The results of reliability and validity testing indicated a reasonably good level of consistency and accuracy. In the internal consistency reliability test, Cronbach's Alpha coefficient for all variables was found to be acceptable, above 0.60 (Sisto et al., 2020). Validity testing was conducted by assessing data homogeneity through correlational analysis between each item's score and the total score (Pearson Correlation). The results showed positive and significant correlations at the 0.01 level. Furthermore, construct validity was examined through factor analysis, aimed at ensuring that each question would load onto the predetermined variables or confirming their theoretical

grouping   Factor analysis was performed on each variable using Varimax Rotation. Moreover, the factor loadings for each variable were sufficiently adequate, meeting the acceptance threshold of 0.40. A summary of the reliability and validity test results can be seen in Table 1.

Results and Discussion

Table 1. Summary of Reliability and Validity Testing Results

Variable	Cronbach's Alpha	Pearson Correlation	Kaiser's MSA	Factor Loading
Participation	0,94	0,84 – 0,93**	0,90	0,83 – 0,93
Clarity	0,95	0,94 – 0,97**	0,74	0,95 – 0,97
Difficulty	0,76	0,61 – 0,71**	0,70	0,74 – 0,81
Feedback	0,85	0,87 – 0,90**	0,73	0,86 – 0,90
Uncertainty	0,86	0,50 – 0,77**	0,81	0,53 – 0,77
Performance	0,83	0,60 – 0,73**	0,85	0,58 – 0,75

** significant at the level 0,01 level

In line with the suggestion by Mahoney et al. as cited in (Sisto et al., 2020), the eight items measuring managerial performance should collectively explain at least 55% of the overall managerial performance dimension. Based on regression analysis conducted for each performance dimension independently against the overall performance dimension, the variation in the overall performance dimension is accounted for by the eight performance dimensions at 65.4%. This R-squared value exceeds the threshold recommended by Mahoney et al. at 61%, as well as (Sisto et al., 2020) at 35%.

Analysis Technique
This study employs two models to test the hypotheses developed in this research. First, a regression analysis (stepwise) is used to test hypotheses 1 to 4. The regression equation can be formulated as follows:

$$Y = b_0 + b_1X_{11} + b_2X_{12} + b_3X_{13} + b_4X_{14} + e \ \ldots\ldots(1)$$

Y: Managerial performance (the dependent variable you are trying to predict).
X_{11}:   Budgetary participation (in the context of managerial activities, it refers to the involvement of managers in the budgeting process).
X_{12}:   Clarity of budget goals (how clear and well-defined the budget objectives are).
X_{13}:   Difficulty of budget goals (the level of challenge or complexity associated with budget objectives).
X_{14}:   Budget feedback (the information provided to managers about their budget performance).
b_0:   Constant or intercept (the value of Y when all independent variables are 0).
       $-b_1, b_2, b_3, b_4$: Regression coefficients (indicate the change in Y for a unit change in corresponding independent variable while keeping other variables constant).
e: Disturbance or error term (represents the variability in Y that is not explained by the independent variables).

The statement you provided in English is already quite clear. In the context of statistical analysis, it mentions that hypotheses 5 to 8 are tested using a multiple regression method with a

residual approach. It then outlines the first step of this approach, which is to "determine the line of fit between the characteristics of budget targets and the perceived level of environmental uncertainty through regression analysis." The term "residual approach" typically refers to analyzing the residuals (the differences between the observed values and the predicted values) in a regression analysis. The overall goal is to assess how well the independent variables explain the variance in the dependent variable while considering the residuals. In the first step, you're trying to establish a relationship between the characteristics of budget targets and the perceived level of environmental uncertainty using regression analysis.

$$X_1 = a + b_1 X_2 + e \dots\dots\dots\dots\dots\dots\dots(2)$$

X1: Characteristics of the budgeting system (an independent variable representing specific attributes or features of the budgeting process/system).

X2: Perceived uncertainty (another independent variable indicating the level of uncertainty as perceived by individuals).

a: Constant or intercept (the value of the dependent variable when all independent variables are 0).

b1: Unstandardized regression coefficient (represents the change in the dependent variable for a unit change in X1, without standardizing the variables).

e: Lack of fit residual (the difference between the observed values and the values predicted by the regression equation, indicating the unexplained variance in the dependent variable).

If (b1\) is positive (\(b1 > 0\)) and significant, it aligns with the expectations of the contingency theory, indicating a correspondence between the characteristics of budget targets and the perceived environmental uncertainty (Sisto et al., 2020). Determining the deviation value, which is the absolute value of the residual, indicates the mismatch, i.e., the extent to which the actual combinations of companies deviate from the best-fit line (equation 3)."

$$DEV = \sqrt{[X - b_0 (b_1 * X_{sys})]^2} \dots\dots\dots\dots\dots (3)$$

DEV ($|e|$): Deviation value, which represents the absolute value of the residual ($|e|$ indicates the absolute value of e, the difference between the observed and predicted values in the regression equation).

X: Perceived environmental uncertainty (an independent variable representing the level of uncertainty as perceived by individuals).

Xsys: Characteristics of the budgeting system (another independent variable indicating specific attributes or features of the budgeting process/system).

b0: Constant or intercept (the value of the dependent variable when all independent variables are 0).

b1: Regression coefficient (represents the change in the dependent variable for a unit change in the corresponding independent variable).

Conducting the correlation of the deviation value (absolute residual value) with managerial performance. A significantly negative correlation coefficient serves as evidence to support the congruence hypothesis (high mismatch associated with low performance and vice versa). In this

context, the analysis involves calculating the correlation coefficient between the deviation value (absolute residual value) and managerial performance. If this correlation coefficient is significantly negative, it supports the hypothesis that high mismatch (deviation) between predicted and actual values is associated with low managerial performance, and vice versa. Before testing the hypothesis, classical assumption tests were conducted to determine whether the regression model to be used can serve as a good prediction tool. Based on the classical assumption tests to be conducted, the results indicate that the model does not exhibit multicollinearity and heteroskedasticity and fulfills the normality assumption. Characteristics of Budget Targets Based on the results of the regression analysis, Model 2 has been chosen as the 'fit' model, where two variables (difficulty of budget goals and budget feedback) have been excluded (excluded variables), while the other two variables, namely budgetary participation and clarity of budget goals, have been selected as the best predictors for managerial performance.

Table 2. Summary of Regression Results

Variable	Coefficient Beta	Score of Coefficient	Standard Error	t-value	Prob.
Constant	b_0	30,297	2,721	11,134	0,000
Participation (X_{11})	b_1	0,249	0,114	2,179	0,011
Clarity (X_{12})	b_2	0,472	0,180	2,625	0,033
Difficulty (X_{13})	b_3	-0,127	-	-1,051	0,298
Feedback (X_{12})	b_4	-0,110	-	-0,716	0,477
$R^2 = 0,296$; n = 64; F = 12,848; *p < 0,001*					

The regression analysis results, as shown in Table 2, support Hypothesis 1, which states that budgetary participation has a positive influence on managerial performance. The relationship indicated by the regression coefficient is 0.249 and significant at $p < 0.05$, meaning that if participation in budgeting increases, managerial performance also increases.

Hypothesis 2 tests the influence of clarity of budget goals on managerial performance. The analysis results show that the clarity of budget goals has a positive and significant impact, with a regression coefficient of 0.472 and significance at $p < 0.05$, on managerial performance. This indicates that higher clarity in budget goals corresponds to higher managerial performance. Therefore, this study supports Hypothesis 2. These findings do not support the results of Kenis' (1979) study."

The testing of Hypothesis 3 reveals that the variable 'difficulty of budget goals' has a regression coefficient of -0.127 and is not significant ($p>0.05$). Thus, this result fails to support Hypothesis 3 regarding the influence of the difficulty of budget goals on managerial performance. These findings align with Kenis' (1979) study, which found a weak and non-significant relationship between the difficulty of goals and managerial performance.

The testing of Hypothesis 4 indicates that budget feedback has a regression coefficient of -0.110 and is not significant ($p>0.05$). This result suggests that budget feedback does not have a significant influence on managerial performance. Therefore, this study rejects Hypothesis 4, which posited that higher budget feedback leads to higher managerial performance. These findings support Kenis' study but are not consistent

The inconsistency in the results of this study with previous research findings may be attributed to the presence of other variables that need to be considered in the relationship between the characteristics of budget targets and managerial performance.

Difficulty of Budget Goals: Further Observations. Further analysis of the difficulty of budget goals involved examining trends in the average values of managerial performance variables at different levels of difficulty (loose, tight but achievable, very tight). This analysis aimed to determine the optimum level of budget goal difficulty expected to influence performance. To conduct the analysis, sequential t-tests were employed. The results of the t-test on the average scores of managerial performance at different levels of budget difficulty can be seen in Table 3.

Table 3. Average Managerial Performance Scores at Different Levels of Budget Target Difficulty

	Loose	Strict but attainable	Strict	Description
	n = 16	n = 23	n = 25	
Managerial performance	-0,888	-0,741	-1,592	Not significant

The presented data indicate that t-tests conducted on various levels of budget goal difficulty, ranging from loose to tight but achievable, tight but achievable to very tight, and from loose to very tight, all show non-significant results. This suggests that managers who perceive their budget goals as loose, tight but achievable, or very tight report similar performances. Therefore, these results do not conclude an optimum level of budget goal difficulty that is expected to influence managerial performance. This might be because, overall, budget goal difficulty does not influence managerial performance, consistent with the findings of hypothesis testing in Hypothesis 3. This study supports Kenis' (1979) findings. Fit between Characteristics of Budget Targets and Environmental Uncertainty. For hypotheses 5 to 8 testing, the residual analysis method was employed. The steps conducted for this testing are as follows:

Phase 1 : Regression Analysis

Determining the alignment between budgetary participation and the perceived level of environmental uncertainty is achieved by conducting regression analysis to estimate the equation (2); $X1 = a + b1X2 + e$. The regression results for the alignment between each characteristic of budget targets and environmental uncertainty can be seen in Tables 4 to 7.

Table 4. Alignment of Budgetary Participation - Environmental Uncertainty

Variable	coefficient Beta	Score coefficient	Standart Error	t-value	Prob.
Constant	b_0	31,639	3,717	8,511	0,000
Uncertainty	b_1	-0,213	0,129	-1,654	0,103
$R^2 = 0,042$; n = 64 ; F = 2,736; *p > 0,005*					

Table 5. Alignment of Budget Target Clarity - Environmental Uncertainty

Variable	coefficient Beta	Score coefficient	Standard Error	t-value	Prob.
Constant	b_0	16,814	2,402	6,999	0,000
Uncertainty	b_1	-0,069	0,083	-0,836	0,406
$R^2 = 0,011$; n = 64 ; F = 0,700; *p > 0,005*					

Table 6. Alignment of Budget Target Difficulty - Environmental Uncertainty

Variable	Coefficient Beta	Score of Coefficient	Standard Error	t-value	Prob.
Constant	b_0	14,562	1,929	7,549	0,000
Uncertainty	b_1	0,012	0,067	0,182	0,856
	$R^2 = 0,023$; n = 64 ; F = 0,033; *p > 0,005*				

Table 7. Alignment of Budget Feedback - Environmental Uncertainty

Variable	Coefficient Beta	Score of Coefficient	Standard Error	t-value	Prob.
Constant	b_0	31,639	3,717	8,511	0,000
Uncertainty	b_1	-0,213	0,129	-1,654	0,103
	$R^2 = 0,042$; n = 64 ; F = 2,736; *p > 0,005*				

The regression results indicate that all regression coefficients are not significant ($p > 0.05$) and in unexpected directions. These findings suggest that there is no significant relationship between environmental uncertainty and budgetary participation. The non-significant and unexpected direction of the results indicate that this study was unable to determine the best fit between budget target characteristics and perceived environmental uncertainty, thus not aligning with the expectations of contingency theory.

Phase II: Correlation Analysis

The second stage of the analysis involves comparing the variability in lack of fit with the variability in managerial performance, using correlation analysis to demonstrate the strength of the relationship between these two variables, as shown in Table 8.

Table 8. Correlation Matrix of Lack of Fit in Budget Target Characteristics - Environmental Uncertainty with Managerial Performance

	Y	DEV_1	DEV_2	DEV_3	DEV_4
Y	1,000				
DEV_1	**-0,340**	1,000			
DEV_2	**-0,288***	0,182	1,000		
DEV_3	**-0,181**	-0,032	0,092	1,000	
DEV_4	**-0,060**	0,490	0,173	0,047	1,000

** Significant at 0,01 level

* Significant at 0,05 level

The correlation coefficient value for Dev1 (the absolute residual value of the contingency variable perceived environmental uncertainty-budgetary participation) with managerial performance is -0.331 with a significance level of $p < 0.001$. The negative and significant sign should support Hypothesis 5. The negative and significant result in the correlation analysis indicates that lack of fit is expected to be associated with poor managerial performance. Therefore, there should be alignment between budgetary participation and environmental uncertainty, which affects managerial performance. The correlation coefficient value for Dev2 (the absolute residual value of the contingency variable perceived environmental uncertainty-clarity of budget goals) with managerial

performance is -0.287 with a significance level of $p < 0.05$. The negative and significant sign should support Hypothesis 6. The negative and significant result in the correlation analysis indicates that lack of fit is expected to be associated with poor managerial performance. Therefore, there should be alignment between the clarity of budget goals and environmental uncertainty, which affects managerial performance.

Testing of Hypothesis 7 was conducted by correlating the variable managerial performance with Dev3. The correlation coefficient for Dev3 (the absolute residual value of the contingency variable perceived environmental uncertainty-difficulty of budget goals) with managerial performance is -0.181 but not significant ($p > 0.05$). The negative and non-significant correlation coefficient does not support Hypothesis 7. This indicates that environmental uncertainty does not significantly impact the relationship between the difficulty of budget goals and managerial performance. Similar to the testing of Hypothesis 7, testing of Hypothesis 8 was conducted by correlating the variable managerial performance with Dev4. The correlation coefficient for Dev4 (the absolute residual value of the contingency variable perceived environmental uncertainty-budget feedback) with managerial performance is -0.060 but not significant ($p > 0.05$). The negative and non-significant correlation coefficient does not support Hypothesis 8. This indicates that environmental uncertainty does not influence the relationship between budget feedback and managerial performance. Overall, the results of testing Hypotheses 5 to 8 using the residual approach show unclear outcomes. The ambiguity in the results of these hypotheses testing may be attributed to several factors, including:

1. Perceived environmental uncertainty scores indicate a low level of environmental uncertainty. The low level of uncertainty perceived by managers might not have a significant impact on budget target characteristics and managerial performance.
2. The lack of significance in the results of this study might also be due to the sampling method employed. On the relationship between budget target characteristics and environmental uncertainty showed a significant correlation between the difficulty of budget goals and environmental uncertainty. Muslimah's (1998) study included manufacturing companies from all over Indonesia, whereas this study only focused on manufacturing companies within an industrial area (Makassar Industrial Zone).
3. Validity testing on the perceived environmental uncertainty instrument using factor analysis indicated that each question did not load clearly on the predetermined variables, or in other words, did not show theoretical grouping clarity.
4. The R^2 values in the regression analysis, as shown in Tables 8 to 11, are very low and not significant. This indicates that the variation in budget target characteristics might originate from several factors, such as environmental factors not covered in perceived environmental uncertainty (specification error), cross-sectional variability inherent in the dependent variable, disturbances (noise) in the measurement of constructs (measurement errors), and lack of fit.
5. The presence of other limitations in this study, as described in section (5), might also contribute to the findings of this research.

Conclusion

This study is a continuation of previous research, particularly related to testing the impact of behaviors and psychology associated with goal setting. The findings of this

research indicate that variations in budgetary style demonstrated in budgetary system characteristics can have a significant influence on managerial performance. Overall, the findings of this study suggest that top management can enhance the performance of lower-level managers by emphasizing budgetary participation and clarity of budget goals in goal setting. The level of difficulty of budget goals and feedback on goal achievement seem to have limited consequences.

However, testing the influence of the alignment between budget target characteristics and environmental uncertainty on managerial performance yielded unclear results. The ambiguity in these findings may be due to factors that were not considered and controlled for in relation to the use of residual analysis. The scope of this research was limited by the sample size; only manufacturing companies within the Makassar Industrial Zone were included as the sampling framework. The use of a Likert scale to measure attitudes, presented in written form through questionnaires, might have introduced response bias and affected internal validity. Other biases (such as leniency bias) could stem from self-rating performance measurements; measurements based on formal performance reports or evaluations by supervisors might yield different results. Additionally, the use of the perceived environmental uncertainty instrument was subjective in nature. The research outcomes might differ if objective measures were employed to depict the environmental uncertainty faced. The acceptance of several hypotheses in this study suggests that various budget target characteristics (budgetary participation, clarity of budget goals, difficulty of budget goals, and budget feedback) need to be considered when formulating budget goals, as budget goals can be used as a means to influence performance.

Recommendations for future research could be directed towards more in-depth investigations with broader scope or in different industries. Exploring outcome variables such as job satisfaction, engagement, work pressure, and attitudes toward budgeting, besides managerial performance, could be valuable. Additionally, incorporating managerial, organizational, and environmental variables as control variables for budget target characteristics, as well as the use of moderating variables such as personality traits, goal acceptance, motivation, organizational variables, and environmental variables (such as task uncertainty) would be relevant for similar research. Research designs applying residual analysis methods should consider aspects such as developing a deep theoretical framework in model formation, the reliability of the measures used, understanding the inherent nature of the relationships between specific variables, and anticipating biases that might occur in the application of the residual approach.

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