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The Role of Pay Scheme and Ethics Level for Decreasing Budgetary Slack: Experiment Setting

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***Abstract*—Budgeting is an important tool for evaluating a manager's performance. Unfortunately, budgets are susceptible to budgetary slack, in which a manager provides an overly pessimistic and conservative estimation of income and expenses. This study aims to investigate the effect of pay scheme and ethics level on budgetary slack creation. Hypotheses were tested using experiments with 2x2 factorial designs. The participants of this study were students who had completed a managerial accounting course. The main interaction effects were analyzed using a general linear model univariate. The results show that pay scheme plays a significant role in decreasing budgetary slack. Participants who scored high on the DIT instrument were more likely to create budgetary slacks than were low-scoring participants. This finding also shows that there is a significant impact of interaction between payment scheme and ethics level on budgetary slack.**

Keywords: Budgetary slack, payment scheme, ethics

I. INTRODUCTION

Companies often face scarcity of resources for business process. It requires management for using input economically. Budget as a tool for planning, coordination, and implementation must be formulated accurately and cautiously to achieve company's objectives. Management as an agent of stakeholders should formulate budget effectively and efficiently.

On the other hand, based on agency theory, management has different interests from the stakeholders. Management focuses on obtaining high bonuses from achieving their target. Finally, management will propose the target under their actual ability because it is easier. This condition is called as budgetary slack.

According to Widanaputra & Mimba, budgetary slack lowers corporate profits [1]. The budgetary slack often occurs in one of two ways: managers set an understatement of income or set an overstatement of costs. Research has shown that budgetary slack often occurs during budget formulation. Tavakoli & Etemadi stated that misinformation of budget affects the budgetary slack [2].

Various studies have been conducted to reduce the budgetary slack. Steven investigated the budgetary slack using the Pay scheme [3]. The results showed that the Pay scheme (truth inducing and slack inducing) influenced the budgetary slack creation. In Indonesia, Nugrahani and Sugiri conducted budget research using pay scheme without compares between truth inducing and slack inducing [4]. Hobson, Mellon, and Stevens have found that participants who formulated their budget under a slack inducing condition would be susceptible to budgetary slack, whereas participants under truth-inducing would not [5].

Recent researches have also investigated the impact of moral judgment on budgetary slack. Various experimental studies have concluded that ethic perceptions impact budgetary slack. Hobson, Mellon, and Stevens found that participants with high scores on the personality questionnaire (JPI-R) were more likely to perceive budgetary slack as unethical [5]. On the other hand, Schatzberg and Stevens stated that there was no evidence to show that moral judgments have an impact on budgetary slack [6].

This variability of results on this topic do not cover the measurement of ethics level using DIT remains unexplained. In addition, the impact of different pay scheme on budgetary slack in Indonesia setting is also unanswered. Based on contingency theory, the characteristic of an organization will affect system fit, and the regional background influences the method for processing information. We address this slack in the literature by investigating the role of pay scheme and ethics levels on budgetary slack.

The novelty of this research is in the integration and performance of simultaneous tests between the pay scheme variable and the ethical level. The results of this study will provide a comprehensive explanation of the primary effect and interaction effect.

This study uses experimental design produce a high level of internal validity. For that, it will ensure that the influence on budgetary slack is determined by pay schemes and ethics level. The results of the study show that pay scheme plays a significant role in decreasing budgetary slack. Participants who scored high on the DIT instrument are not significantly different in terms of budgetary slack creation than low-scoring participants. These findings also show that the impact of interaction between payment scheme and ethics level on budgetary slack is insignificant.

The structure of this paper is outlined as follows. First, literature review and formulation of hypotheses is presented, followed by the research method. Finally, this paper provides findings and limitations of research.

II. LITERATURE REVIEW

A. Theoretical Background

In positive theory of accounting, people are assumed to maximize their utility. This premise provides an explanation for different interests between the management and the stakeholder. This conflict of interest is called the agency problem. According to agency theory, management may state misleading information to maximize their utility because management has specific information in their capability. Based on this explanation, budgetary slack is a method for management to increase their utility contrary with stakeholder objectives.

Contract theory, especially pay scheme, deals with the contract requirements that should be considered as tools for reducing agency problem (budgetary slack). Using fit pay scheme, management will make decisions on the allocation of resources based on accurate information and consistent with the objective of the company.

According to moral decision-making theory, management decision making is affected by ethics level [7]. For that, it is suggested that management with a high ethics level will avoid fraud, especially budgetary slack while management with a low ethics level will create budgetary slack.

B. The Budgetary slack

Budgetary slack is defined as a management behavior in which revenues are understated and expenses are overstated for easier achievement [8]. Waller defines the budgetary slack as the difference between the performance capability of a division's expectation and a predetermined target or performance standard [9]. Participative budgeting is a budgeting mechanism which is vulnerable to budget disparities as it allows to include personal interests in the budget [10]. Most companies are likely to use participative budgeting.

Falikhatun explains that there are three reasons that encourage managers to create budgetary slack [11]:

The management believes that its performance seems good when it reaches the budget.

Budgetary slack is often used to deal with uncertain conditions so that management can achieve budget targets.

Budget are often trimmed by resource constraints.

In decentralized organizations, participative budgeting has an opportunity for budgetary slack as implied by agency theory [12]. Based on organizational justice theory, participative budgeting has a negative relationship to the budgetary slack because perceptions of budget constraints to justice increase in budget participative conditions, thereby reducing the tendency to create budgetary slacks [13].

Various variables that have been used in research related to budgetary slacks are budget emphasis by Dunk, budget evaluation by Kenis, emphasis on accounting performance measures by Harrison [14]-[16]. Nevertheless, various research results have inconsistent inconsistencies. For example, for budget-based pay variables. The results of Huang and Chen showed a positive result, Cammann showed no relationship (non-significant), and Van der Stede showed negative results (negative relationship) [17]-[19].

C. Pay Scheme

Pay scheme is important for increasing productivity. This payment scheme encourages employees to deliver true productivity. In this scheme, employees who deliver productivity below the level set by the company, the employee does not get a bonus or get a penalty.

The truth inducing Pay scheme was first adopted in a study by Weitzman under the title "The New Soviet Incentive Model." The inducing truth scheme is described by Weitzman as follows [20]:

$$C = F + X_1B + X_2 (A-B)$$

$$\text{If } A > B$$

$$F+X_1B+X_3(A-B)$$

$$\text{If } A < B$$

Where:
C = Total Payment
F = Fixed Payment
A = Actual Outcome
B = Budgeted Outcome
X = Bonus Coefficient

The results of some research have provided empirical evidence that subordinates will tend to engage in lower budget slots if superiors compensate the truth-inducing scheme [21]. The results of Nugrahani and Sugiri also explain that there are differences in management behavior when obtaining different pay schemes [4]. The results of his research show that management who get a truth-based pay scheme will tend to make slack lower than the management that get slack inducing pay scheme.

When a company establishes a pay scheme using truth induction, the subordinate (manager) will carefully estimate the productive capacity held by a unit or responsibility center. This is done by subordinates because the budgeted or proposed rate is a benchmark in measuring bonus receipts. If actual performance is higher or lower than budgeted performance, then subordinates will get a basic salary deduction or a fine.

Based on the above description, the second hypothesis is stated as follows:

In low-inducing slack conditions, managers tend to slack higher than the truth inducing conditions.

D. Ethics

Ethics is important in every profession, from medicine to law to accounting. Kholberg explains that ethical behavior is influenced by the level of education [7]. To that end, the purpose of education is not only to improve the ability to think critically but also the ability to identify unethical behavior. Liyanarachchi and Newdick and Poneman and Glazer mentioned that the educational process should improve understanding of ethical behavior and moral goodness (sense of ethics and moral beliefs) [22], [23].

A person's ethical level is influenced by individual circumstances and the environment. The sensitivity to ethical behavior is determined by the value system internalized by the individual [24]. The ethical dilemma often arises when there is a conflict of interest between the individual and the moral demands of the other [25].

On the topic of budgeting, the behavior of creating a budgetary slack is closely related to ethics [3]. The results show that ethical responsibility is positively related to the budgetary slack [3].

Based on the above description, the second hypothesis is stated as follows:

In low ethical conditions, managers tend to slack higher than in high ethical conditions.

III. RESEARCH METHODOLOGY

A. Overview

The research problems of this study is variability of research in budgetary slack topics doesn't coverage the measurement of ethics level using DIT. Besides that, the impact of different pay scheme on budgetary slack in Indonesia setting is remain unexplained. This research addresses this lack in the literature by investigating the role of pay scheme and ethics levels on budgetary slack. For that, research questions for this study is whether pay scheme and ethics level could reduce budgetary slack.

The theory which consistent in this topic are agency theory, contract theory, and moral decision-making theory. Agency theory is used to explain budgetary slack, contract theory is used to explain pay scheme as deals for reducing agency problem (budgetary slack), moral decision-making theory is used to explain impacts of ethics levels on budgetary slack.

This study employees experimental design to produce high level of internal validity. The design, task of experiment, and participant were described below.

B. Research Method

The method for this study is quantitative especially experiment. The type of data is primary. Individual is a unit analysis for this study.

1) Task of Experiments

The experimental tasks and instruments used in this study are the instruments developed and used by Nugrahani and Sugiri [4]. Participants were given cases to produce paper aircraft. The experimental procedure as follows:

Participants are informed their duty is produces paper aircraft and the amount of payment is under a predetermined scheme.

The participants were divided into two groups (truth inducing and slack inducing), the measurement of ethical level was measured with a defining issue test (DIT).

Participants are required to carry out production for two minutes and are used to measure the standard average production amount.

Participants are required to carry out a second production task for two minutes. The production results of this stage and previously used to measure the potential productivity of subordinates (expected performance).

At this stage, the participants were again asked to carry out a third production task for two minutes. The results in this stage are used to measure actual production results.

The budgetary slack is measured by actual production minus the budget/production proposal divided by the expected performance [3], [4].

2) Design and Procedure

This research uses laboratory experimental method with a 2x2 (pay scheme: truth inducing or slack inducing; ethics: high or low) design. Participants were grouped into each experimental group at random. Randomization is done by giving chance to enter the room randomly. The purpose of this randomization is to improve the internal validity and to give high confidence on the causality relationship of a research variable.

The first between subject is the pay scheme. In truth inducing conditions, the pay scheme information is described as follows:

P = 1.000 + Rp. 100 x A, Jika A =B

P = 1.000 – (Rp. 100 x A – B), Jika A > B

P = 1.000 – (Rp. 100 x B – A), Jika B > A

Where:

P = Total Payment

A = Total Actual

B = Total Budgeted

In the condition of truth inducing, maximum payment are obtained when the actual performance equals the budgeted amount. In inducing slack scheme, the participant will receive fixed income if A ≤ B. When A> B then the participant will get Pay for fixed salary and bonus as the following formula:

$$P = 1{,}000 - (Rp\ 100 \times A - B), \text{ If } A > B$$

The main difference between the two schemes is penalty. In the truth-inducing scheme, the participant who performs the production but does not meet the target will be fined. On the other hand, under slack-inducing conditions, there is no fine.

The second between subject is the level of ethics. Participants were given a questionnaire adopted from Rest (1986) [26] about the level of ethics. This measure is called the Defining Issues Test (DIT). When participants scored below or equal to 5, they are categorized in the low group. When participants scored above 5, they are categorized in the high group (see Table I).

TABLE I. EXPERIMENTAL DESIGN

	Ethics Level	
	High	***Low***
Truth Inducing	K1	K2
Slack Inducing	K3	K4

The dependent variable (budgetary slack) is measured by actual production results minus the amount of budgeted production then divided by expected performance. This is consistent with Anthony, R. N., and V. Govindarajan (2007) [8] in that the definition of the budgetary slack is the difference in the amount of budget proposed by management compared to its best estimate.

3) Participants

Participants involved in this study were regular students at the Kalbis Institute. Participants are students who have taken management accounting courses. Participants who have taken the course are assumed to have the ability to understand the budgetary slack.

Experimental design in the research is 2x2 antarsubjek. The number of participants involved in this study is 58 students. The sample size was determined based on Cowles' (1974) recommendation in Christensen, which states that the minimum number for each experimental cell is 15 people [27]. Each participant receives assignment randomly. It aims to obtain high internal validity002E

In behavior research, students are often surrogating professionals because there is an assumption in psychological research that the behavior of student has similarities with professional behavior in making simple decisions. The equivalence of professionals with students is due to various researches in the field of psychology focusing only on how individuals process information and make decisions in general [28]. In addition, this study has a simple experimental task that remains valid even though it is done by the students.

C. Data Analysis

This research uses general linear model univariate for data analysis. This analysis provides regression analysis and variance for one or more independent variable (factors) and one dependent variable. Using this General Linear Model procedure, it could identify the effects of factors on the means of dependent variable. It also investigates interactions effect between ethics level and pay scheme as the effects of individual independent variables.

It is appropriate for this study because the dependent variable is more than one (metric and interval) and the independent variable is more than one or more (non-metric or nominal). In addition, general linear model univariate has a primacy over other statistical tools because researchers can test the mean differences simultaneously.

IV. RESULTS

This chapter discuss about manipulation check, descriptive statistic and hypothesis testing. Manipulation check for ensuring that instrument is well understood by participant. Descriptive statistic provides simple summaries about data observations in every group. Result from hypothesis testing provides conclusions that extend beyond the collected data.

A. Manipulation checks

In the end of instrument, participants are required to answer a question to check manipulation and identify whether manipulation (treatment) has been well received by participants or not. The check manipulation question is how pay is calculated.

In the truth-inducing pay scheme condition, the participants who answered that their total payment is calculated using slack induction are assumed misinterpreted. Conversely, under the slack-inducing condition, the participants who responded that their pay calculation used truth induction are assumed misinterpreted. The total participants who received the truth inducing treatment is 30. However, two respondents responded incorrectly to manipulation check (dropped). In slack inducing group, total participants are 30 students. The participants in every group are described in the table below (see Table II).

B. Descriptive Statistic

This chapter presents the descriptive statistics in every group. In the sample, the truth-inducing group has an average slack budget of 0.273. In the slack-inducing group, the mean response across participants is 0.25. It could be concluded that the difference between the groups is 0.023 (see Table III).

For the low ethic-level group, the mean of budgetary slack is 0.3356, while in the high-level group, the mean response across participants is 0.2318. The difference between the truth-inducing and slack-inducing groups is thus 0.1038.

C. Hypothesis Testing

Based on the general linear model univariate results for testing hypotheses, it is shown that mean differences between slack inducing and truth inducing is significant. The result supports Hypothesis 1, which predicts that management under those who set slack-inducing will be more likely to create a budgetary slack.

For Hypothesis 2, which stated that under low ethical conditions, managers tend to will be more likely to create budgetary slack than under high ethical conditions, is also supported. This argument based on a value of significance below 0.05. The interaction between pay scheme and ethics level also significantly reduces intention management for creating budgetary slack.

Table IV indicates that the coefficient of determination (R^2) is 0.79, which means that variation in the budgetary slack is predictable from ethics level and pay scheme in the amount of 79%. It provides information about how well the proportion of total variation of budgetary slack is explained by the model.

TABLE II. DISTRIBUTION OF PARTICIPANTS

	Ethics Level	
	High	***Low***
Truth Inducing	15	13
Slak Inducing	15	15

TABLE III. DISTRIBUTION OF PARTICIPANTS

Pay Scheme	**Ethics Level**	**Mean**	**Std. Deviation**	**N**
Truth Inducing	Low	.0342	.03844	13
	High	.0210	.03442	14
	Total	.0273	.03633	27
Slack Inducing	Low	.3014	.08632	16
	High	.2108	.07081	15
	Total	.2576	.09047	31

TABLE IV. GENERAL LINEAR MODEL UNIVARIATE RESULTS

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	.830[a]	3	.277	69.433	.000
Intercept	1.160	1	1.160	291.214	.000
Pay_Scheme	.753	1	.753	188.968	.000
Ethics_Level	.039	1	.039	9.757	.003
Pay_Scheme * Ethics_Level	.022	1	.022	5.423	.024
Error	.215	54	.004		
Total	2.356	58			
Corrected Total	1.045	57			
a. R Squared = .794 (Adjusted R Squared = .783)					

V. DISCUSSION

This study aims to examine the role of pay scheme and ethics level regarding budgetary slack made by management. Recent experimental results on pay scheme suggest that budgetary slack is minimized by truth-inducing scheme [21]. Our results support the contract theory that optimal pay scheme could minimizes agency problem. In particular, this result suggests that pay scheme play a significant role in minimizing budgetary slack. Thus, this study provides new insights regarding pay scheme for reducing in budgetary slack.

Recent study on ethics shows that ethical behavior is determined by ethics level [24]. The dilemma of ethics often arises around conflict of interest between the individual and the ideal behavior [25]. In budgeting topic, the behavior of budgetary slack is determined by ethics [3]. The results also show that ethical responsibility is positively related to the budgetary slack [3]. In this research found that managers in low ethical conditions tend to will be more likely to create budgetary slack than high ethical conditions. The interaction between ethics level and pay scheme is also reduces intention management for creating budgetary slack significantly.

VI. CONCLUSION

The main findings of research show that pay scheme play a significant role in decreasing the budgetary slack. Participants who scored high on DIT instrument different significantly with low score participants in budgetary slack creation. This finding also shows that the impact of interaction between payment scheme and ethics level on budgetary slack vary significantly.

Limitations of the study are related to the participants. Although this research used students who completed subjects common to physiological studies, this research does not provide complete characteristics of expert management.

The next limitation is that of the treatment instrument. This research only employed simple treatments. Subsequent studies should provide more complex cases.

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