ATLANTIS PRESS

Advances in Economics, Business and Management Research, volume 89

1st Asia Pacific Business and Economics Conference (APBEC 2018)

EFFECTIVENESS OF MANAGEMENT CONTROL SYSTEMS ON BUDGET REALIZATION IN A GOVERNMENT ORGANIZATION BASED ON LEVERS-OF-CONTROL THEORY: A CASE STUDY AT THE INDONESIAN AGENCY FOR RESEARCH AND DEVELOPMENT OF ENERGY AND MINERAL RESOURCES

Hartanto Adhi Nugroho
Department of Accounting
Faculty of Economic and Business
Universitas Indonesia
Depok, Indonesia
hartanto_gama@yahoo.id

Dwi Hartanti
Department of Accounting
Faculty of Economic and Business
Universitas Indonesia
Depok, Indonesia
dwi.hartanti71@ui.ac.id

***Abstract*—The purposes of this research are to analyze the effectiveness of the implementation of an upstream/downstream control system applied to research units and to overcome the problems faced by the delay and the low achievement of expenditure realization occurring in prior years. The study uses qualitative methodologies, leveraging questionnaire survey data from 121 budget managers from the highest to the operational-manager levels. Furthermore, our triangulation technique is deepened with interviews, secondary document analysis, and a literature review. Effectiveness analysis of control systems is achieved by referring to the levers-of-control (LoC) theory framework. The analysis of managerial accounting information quality uses characteristic dimensions developed by Chenhall and Morris. We obtain evidence that the implementation of an upstream/downstream control system can change the pattern of budget realization achievement in all work units. The applied control system incorporates four elements from the LoC. Notably, the diagnostic system and interactive controls can effectively improve the performance of budget realization. As perceived by budget managers, the information generated via the diagnostic control systems can provide quality information that encourages interactive systems to function better. Interaction between elements in this system can further boost organizational performance. This research shows that the implementation of a management control system applied to a research unit can solve the problem of delays and low achievement of budget realization performance. Thus, it can be used as reference for other government organizations in Indonesia.**

Keywords—management control system, budget realization performance, levers of control

I. INTRODUCTION

Government spending is expected to create a multiplier effect on other sectors of the economy by demonstrating the strategic aspects of government budget management. Over the last few years, the topics discussed about government expenditures have been about absentee spending performance against targets and absorption delays. Government spending always accumulates during Q4. This reduces the function of national-growth stimuli. The issue has even disquieted the President, such that through Presidential Instruction No. 1/2015, it was ordered that all ministries and central and local agencies take immediate steps to accelerate the realization of expenditures.

Several studies have been conducted to analyze the causes of the delayed absorption of government spending in Indonesia. Siswanto and Rahayu [1] concluded at least there were four technical problems such as internal organizational, procurement mechanism, budget beaurocracy, and also force majeur budget revision. Another study conducted by Herryanto [2] examined the factors affecting delays in the absorption of central work-unit budgets, stating that budget absorption comprised mainly goods and capital expenditures accumulated during Q4 (more than 50%). This research also concluded that the delay of budget absorption in a central work unit in Jakarta was caused by several factors: planning (42.91%); administration (8.84%); human resources (7.8%); administrative factors of procurement documents (6.47%);

payment administration (5.41%); and others (28.57%). These studies referenced several other studies that focused more on factor mapping and delays of budget absorption. They did not provide a systematic solution for how a controlling system should be implemented to ensure that budget realization targets can be achieved.

Referring to data on central government expenditures for personnel, goods and services, and capital (excluding subsidy and transfer expenditures) from 2011–2017, the average achievement through Q1 was 12.32%, and the average until the first half was 35.54%. The achievement of budget performance at end of the fiscal year (FY) was only 89.17 %, indicating that the absorption of central government budget for these three types of expenditures averaged about 10%. Compared to the achievement of central government expenditure realization, the Ministry of Energy and Mineral Resources' (ESDM) performance during the period of 2011–2015 included low criteria. Budget realization in five FYs reached the lowest achievement of 51.28% and the highest achievement of 64.39%, having an average score of only 59.55%, as presented in Table 1. The achievement of low expenditure realization is followed by a pattern of absorption of expenditures accumulated at the end of the FY. During FY 2015, until the end of Q3, realization of expenditures only reached 21.71%, and Q2 only reached 7.33%, even with a Q1 achievement of only 1.54%.

Theoretically, the application of a good managerial control system (MCS) ensures better supervision and control implementation, ensuring that existing planning is implemented effectively and efficiently. Therefore, to improve the quality of budget performance, the ESDM implements a MCS supported by an upstream–downstream control system managerial accounting system. It is expected that, via the implementation of this system, the achievement of budget realization can increase over previous periods.

TABLE I. REALIZATION OF EXPENDITURE BUDGET, MINISTRY OF ENERGY AND MINERAL RESOURCES FOR FISCAL YEAR 2011–2016

year	percentage budget realization			
	Q1	*Q2*	*Q3*	*Q4*
2011	0.97%	5.73%	14.73%	57.51%
2012	1.89%	10.55%	20.20%	60.71%
2013	3.04%	13.67%	26.23%	64.39%
2014	1.70%	8.53%	19.49%	51.28%
2015	1.54%	7.33%	21.71%	63.88%
Average	1.83%	9.16%	20.47%	59.55%

[a.] Source: Ministry of Energy and Mineral Resources Realization Report 2011–2015.

Based on data published by the Government Financial Statements of 2016, an increase in the realization of expenditure performance at the ESDM provides the impetus to conduct research related to the impact of the implementation of MCSs. This kind of research has not been conducted within the Ministry of ESDM or in other ministries related to system implementation. It is expected that this research can provide added value by providing in-depth analysis related to the implementation of a budget realization control system at an institution. Research on management controls in a non-profit organization is considered lacking. Previous study suggested that more research was needed on non-profit organizations [3]. This also provides motivation for researchers to be able to contribute the production of research references related to the implementation of MCSs in a government organization.

In this research, the four research objectives are to determine whether the upstream–downstream control system improves the quality of budget absorption in all working units at the research unit, to determine whether the system has good levers-of-control (LoC) coverage as an MCS, to determine the perception of budget managers on the effectiveness of the system in terms of LoC theory [4], and to learn how user perceptions of quality of accounting information is generated by the system [5]. The research method used in this research is qualitative, intended to view, in depth, the application of an extant MCS so that a complete picture of the problem can be formulated by focusing on the process.

The presentation of research results in this paper is divided into five parts. The first section presents an introduction containing the background research and research objectives. The second section presents a review of the literature, which discusses the related theories and research. The third section describes the research methodology. Furthermore, the fourth part pares the results of research and discussion. The fifth part presents conclusions containing conclusions based on answers to research questions.

II. LITERATURE REVIEW

A. MCS Definition

Extant literature contains several definitions related to MCSs. Maciariello and Kirby [6] said that management control describes activities undertaken to ensure that organizational goals and tasks are realized in a manner consistent with applicable regulations, and that they are effective, efficient, cost-effective, and timely. The important aspect of control were the use of information from the management accounting system (MAS) and the good management of relationship between strategic planning and operational control [7,8] The purpose of MCS is to provide information to managers to support their decision-making processes. This is also necessary in planning and evaluating activities [9]. Furthermore MCS was a structure and a process by which managers attempted to influence members of the organization to implement strategy [10].

Management control includes the stages of determining strategic planning, programming, and budgeting. It also included standard operating procedures manifest in as organizational structure, organizational culture, and organizational policies (e.g., MASs) and cybernetic controls, which include a budgeting system and incentive compensations [11]. MCS is a management tool that directs organizations toward strategic goals and competitive advantages [10]. Organizational strategy is

implemented through management controls, organizational structure, management, and human-resource culture.

Chenhall [3] said that, at the very beginning of its development, MCSs were seen as passive tools for providing only quantitative financial information used to assist managerial decision making. To date, the definition of MCS has evolved toward a more comprehensive and broader range. Currently, MCSs comprise external information about market conditions and other non-financial information. Predictive information is also considered part of the MCS.

Chenhall [3] said that, while studying MCS, it was important to understand the various types of existing controls and to broadly understand their aspects. One way is to divide control into formal and informal methods [12] According to Chenhall [3], mechanistic controls are characterized by formal rules, standard procedures, and routines, whereas organic control is more flexible, responsive, and requires more data. According to this classification, diagnostic controls and systems can be classified as mechanistic controls. This type of system is used for target planning and to provide information on organizational operations. Apart from the diagnostic control system, the interactive control system is part of a more flexible organic control, because it has elements related to free cooperation, communication, and information flow [3, 13]. Studies on MCS have taken a formal system approach, perhaps because non-formal factors (e.g., culture) are poorly measurable. As stated in Langfield-Smith [14] that research on MCS and its strategies have focused largely on the concept of formal control.

In our research related to the upstream–downstream control system, we take the perspective that MCS is a formal system used by management to influence the activities of the organization. This agrees with the definition of MCS according to Simons [4] about MCS.

B. Related Theory on MCS Research

Our research is performed with regard to several theoretical approaches. A popularly used theory is contingency theory. Chenhall [3] suggested that contingency theories were widely used in MCS-related studies. This theory implies the existence of conditional associations of two or more independent variables with dependent results. Several studies using this approach include Langfield-smith [14], Fisher [11], and Otley [15]. Langfield-smith [14] conducted an empirical study using contingency theory and a case-study approach related to the deepening of specific aspects of MCS and their relationship to organizational strategy. In Otley [15], proposed a framework for analyzing the operation of a structured MCS related to objectives, strategies, and plans for achievement, targeting, incentives, and reward structures and information feedback. Merchant [16] relied on contingency theory and stated that controls could be applied to various levels within an organization and that the types of controls applied could vary at different organizational levels. Regarding the organizational environment, Macy and Arunachalam [17] stated that the use of contingency theory suggested that organizations should align their systems and processes according their environment (i.e., external factors) and strategies (i.e., internal factors). They also suggested that the effectiveness of MAS depended on the extent to which characteristics of the MAS meets the requirements of the various organizational contingencies.

Chenhall [3] discussed contingency-based studies about various dimensions of control, such as participatory budgeting, budget discussion meetings, formal communications, system sophistication, linkages with reward systems [18, 19], budget completion [20, 16, 21, 22], post completion audits [5, 23], and analysis of variants [24]. Chenhall [3] provided examples of contra-based research regarding new MCS innovations, such as activity-based costing and activity-based management, as performed by Anthony and Young [25] and Gosselin [26], on the discussion of non-performance measures of finance [27], and on the analysis of economic value [28]. Research focusing on information dimensions, such as scope, timeliness, and aggregation is [5], [29], Larcker [30]. Contemporary theory-based research was also conducted [4], relating to the control of interactive strategies and diagnostic control.

The alternative theory used by Chenhall [3] was an economics and psychology theory. Agency theory considers the role of an incentive scheme to profit from the commitment of employees or agents to organizational goals, as determined by the organization's leaders [3]. As stated in Baiman [31], agents are assumed to be self-serving and opportunistic. Chenhall [3] stated that, regarding the use of agency theory as a basis, most research used analytic techniques. Many studies used agency theory and survey methods to study organizational flexibility [20], accounting responsibilities [32], performance measures [33] and participatory budgeting [34]. Shields [35] provided an overview of the different types of management control research, including studies using agency theory. Tiessen and Waterhouse [36] argued that agency theory was more detailed and could be further developed. The agency theory is based on the concept that a contractual relationship exists between two groups (i.e., principals and agents) having conflicting goals. Agents are directed to take action to maximize the welfare of the principal. The ideas developed from this theory include the use of self-serving aspects of behaviors as moderation variables associated with incentives and performance, embedding an attitude that focuses on the interests of organizations requiring different incentive schemes [37, 38].

Regarding the aspects of non-financial considerations, Luft [39] argued that agency theory could be empirically supported by considering factors important to the agent, such as ethical considerations and justice. Several other theories have been used for MCS research, including population ecology and related theories of psychology.

C. Characteristics of Information Quality

Simons [4] developed the LoC framework for a theory related to business strategy control. According to Simons, the need to balance innovation and control was a central managerial challenge. It required four control systems to provide the means to balance conflicting demands. Two control systems (i.e., trust systems and interactive controls)

were used as positive control systems to encourage the search for new opportunities and to motivate members of the organization to engage in creative behavior. Conversely, the boundary and diagnostic systems were negative, used as a counterweight to the positive system via mechanisms implemented to limit certain behaviors [4].

Simons [40] defined a belief system as an explicit statement of an organization that is communicated formally and reinforced through a systematic mechanism to provide basic values, goals, and direction. Belief systems are used by managers to define and communicate core values to inspire and motivate employees to seek, explore, create, and put effort into action [41]. Diagnostic control systems were used as formal feedback systems to monitor organizational performance and to correct errors in accordance with the standards of organizational performance. The purpose of the diagnostic control system as to motivate employees to align behavior with organizational goals and to provide monitoring mechanisms. This was done in addition to the diagnostic control system. Employees had the freedom to innovate, create, and achieve specific targets within an organization [9]. Interactive control systems help managers to regularly and actively get involved in decision making and employee activities [41]. Interactive control systems are two-way communication processes between managers and subordinate employees at various levels of the organization [42, 43].

Ferreira and Otley [44] concluded that the Simons framework had a clear strategic focus, including a broader perspective on the overall operation of the organizational control system. The framework focused on control options and differing objectives. Therefore, it provided a useful typology for the classification of different uses [44]. However, Collier [45] argued that the LoC framework had limitations in its application to small enterprises in the form of social and cultural controls.

D. Characteristics of Information Quality

MAS is an important part of MCS. It is a diagnostic control system when viewed from the four aspects of the LoC framework. Chenhall and Morris [5] conducted a study using several perceived information characteristics related to MAS effectiveness, including broad scope, timeliness, aggregation, and integration. Broad scope relates to the dimensions of focus, quantification, and time span. Traditional MAS provides focused information about events within the organization quantified in monetary terms and linked to historical data. The broad scope of MAS provides information relating to the external environment, but is non-monetary. The characteristics of timeliness in MASs can affect the ability of managers to respond quickly to events. Timeliness information enhances the facilities of the MAS to report on the latest events and to provide appropriate feedback on decisions made. Timeliness includes the frequency of reporting and its speed. The three types of aggregation are information by function, time period, and decision model. Information by function is information that concerns the application of formal policy relating to the outcome of decisions made by other units. An important organizational control element is the coordination of the various segments within sub-organizations. Integrated information from MASs can be used as a coordination tool between sub-units and segments of sub-units. Integrated information is useful to managers when faced with a decision that may affect other sub-units.

III. METHODOLOGY

A. Research Methods

The research approach used in this study is qualitative. We leverage the approach of Creswell [46], a method that explores and understands the motivations of individuals or groups derived from social or humanitarian problems. The objective is to realize an in-depth application of an existing MCS, such that it can provide a complete picture of problems and that it can focus on processes and discover meanings behind phenomena.

B. Data Source

Research was conducted at ESDM, primarily sampling Echelon-I level organizations. At the ESDM, we looked at five Echelon-II work units in Jakarta and West Java. The key consideration was to focus more on case studies of units comprising fairly complex characteristics, including significant budgets and large amounts of employees.

Primary and secondary data were used. Primary data were obtained from questionnaires. The number of respondents was 121, representing key figures of organizational budget activities at the five working units within ESDM. Respondents comprised Echelons I, II, III, and IV structural officials and functional officials related to budget management. Data were collected from January to March 2017.

Other data were obtained from interviews to confirm problems and data. A typical selected resource is a structural official in charge of a problem under study having a minimum life of three years. Qualitative observations were also conducted to gain a deeper understanding of the data. Secondary data came from data literature and various documents (e.g., internal and external reports).

C. Data Analysis

The first objective of the study was to analyze and prove the increase of budget realization performance in all work units. Analysis was performed by comparing the achievement pattern of expenditure realization before and after the implementation of the new control system. Based on the conclusions, we further deepened the research via interviews.

The second objective of the study was to analyze the coverage of LoC in the upstream-downstream control system. To achieve the research objectives, data analysis was performed using the process of identifying and classifying the four elements of control systems, as proposed by Simon (1995). This implies a belief system, a limitation system, a diagnostic system, and an interactive system. Data sources were identified via paper analysis, including a checklist for the suitability among dimensions obtained from the four levers of control and using elements

of the MCS implementation. Identification was accomplished via interviews, secondary document sources, and questionnaire data. Measurement variable adequacy was considered good if the dimensions assessed were formally evidenced, were implemented in the field, and were confirmed by the source. The third research objective of this study was to analyze the perpectives of budget adminsitrator about the effectiveness of the upstream-downstream control system based on LoC framework. It was achieved by performing questionnaire data analysis to understand the perception of budget managers related to the effectiveness of the MCS. MCS implementation effectiveness is measured against the four aspects of Simons' LoC. The questionnaires were prepared based on operational variables of research by Hendri [47] and Widener [9], with modifications of item question details. Management system effectiveness characteristics were measured through four system dimensions: belief, boundary, diagnostic control, and interactive control. The effectiveness of MCS was grouped as follows: perfect, effective, moderate, ineffective, and highly ineffective. The findings of the questionnaire data were further deepened through interviews with informants and reconciled with relevant secondary data.

To answer the fourth research question, which is to analyze the perspective of budget administrator about the quality of accounting information derived from upstream-downstream control system, we used a data analysis questionnaire as a measuring tool to assess the perceptions of budget managers. When conducting the analysis, qualitative measurements and assessments were used with key reference characteristics of managerial accounting information developed from modifications of research questionnaire items promulgated by Chenhall and Moris [5]. The quality scale of managerial accounting information is grouped as perfect, good, good enough, less, and least. Interviews with informants or resource persons were conducted as part of the triangulation technique to validate the data obtained from the questionnaire. The other data depths in this study were conducted using secondary data from literature reviews and other relevant documents.

IV. Research Finding

A. Performance Change of Budget Realization

Performance achievement of expenditure realization at ESDM over the past 10 years was less satisfactory (see Table 2). The realization of expenditures in each Q1 from 2006–2015 was 3.82%, with the lowest achievement in 2011 at 2.39% and the highest in 2008 with 4.69%. The average achievement of each Q2 from 2006–2015 was 15.98%, with the lowest achievement in 2011 at 8.85% and the highest in 2008 at 19.89%. The average achievement of each Q3 during the past 10 years was 34.56%, with the lowest achievement in 2011 at 22.83% and the highest in 2008 at 46.63%. The average achievement of each Q4 over the past 10 years was 79.27%, with the lowest achievement in 2014 at 68.51% and the highest in 2008 at 87.79%.

TABLE II. Realization of Expenditures, Budget Research Agency for Fiscal Year 2011–2016

REALIZED PERFORMANCE OF BUDGET 2006–2016				
Year	***Q1***	***Q2***	***Q3***	***Q4***
2006	3.06%	18.23%	34.76%	82.83%
2007	2.64%	14.28%	30.28%	82.06%
2008	4.69%	19.89%	46.63%	87.79%
2009	4.34%	18.09%	42.05%	82.85%
2010	4.15%	16.23%	33.08%	78.75%
2011	2.39%	8.85%	22.83%	74.03%
2012	4.62%	16.73%	32.51%	69.63%
2013	4.35%	17.40%	35.94%	83.58%
2014	3.73%	13.61%	30.09%	68.51%
2015	4.19%	16.46%	37.42%	82.64%
average	3.82%	15.98%	34.56%	79.27%
2016	17.29%	47.89%	70.77%	97.36%
Increase	353%	200%	105%	23%

The performance of budget realization in 2016, or the period after the implementation of upstream–downstream control system, shows significant performance improvement (see Table 2). Achievement during Q1 was 17.29%, increasing 353% compared to the average from 2006–2015. During Q2, achievement increased 200%. During Q3, it increased 105%. Actual realized expenditures at the end of Q4 of 2016 reached 97.4%, assuming the average value of achievements from 2006–2015 plus an increase of 23%. Achievement of performance over the whole period shows record breaking during the past 10 years. Based on the data, it can be concluded that the new control system consistently changed the pattern of achievement of budget realization performance from previous periods at ESDM. These performance improvements occurred evenly across the organization.

B. Levers of Control Coverage

Based on the analysis related to LoC coverage, it can be concluded that the upstream–downstream control system included the four LoC elements. Thus, the control system was a combination of systems (Simons, 1995). Based on the checklist, data sufficiency variables were identified to support coverage of the four LoC dimensions on the implementation of the upstream–downstream control system at the agency (see Table 3). Each measured dimension obtained evidence as presented in the table in the form of official documents, minutes, interviews, and questionnaires. It can be concluded that the system applied included all four LoC elements.

C. Effectiveness of MCS

Based on questionnaire data, it can be concluded that the overall upstream–downstream management system was perceived by budget managers as effective, as judged by the LoC framework.

TABLE III. CHECKLIST PAPER: COVERAGE OF FOUR LOCS

Levers of Control	Dimension	Check Mark	Reference/Data Source
Belief system	Vision and Mission Organization	√	Dokument, informant statement, questionnaire, Poster
	Organization Basic Value	√	Informant statement, questionnaire, Poster
	Communicates the basic values of the organization	√	Informant statement, questionnaire, audio physical proof
	Employee awareness of the organization's basic values	√	Informant statement, questionnaire
Boundary systems	Establishment and enforcement of ethical codes	√	Dokument, informant statement, questionnaire
	Code of Conduct informs about behavior that is out of bounds	√	Dokument, informant statement, questionnaire
	Risk mitigation	√	Documents, Computer Data, Notulensi, Informants, Questionnaires
	Awareness abides by the code of ethics	√	Documents, Computer Data, Notulensi, Informants, Questionnaires
Diagnostic control system	Review progress for organizational goals	√	Documents, Computer Data, Notulensi, Informants, Questionnaires
	Monitor the results achieved	√	Documents, Computer Data, Notulensi, Informants, Questionnaires
	Compare the results achieved with the planned	√	Documents, Computer Data, Notulensi, Informants, Questionnaires
	Review the key steps of success	√	Documents, Computer Data, Notulensi, Informants, Questionnaires
Interactive control system	Interactive discussion	√	Documents, Computer Data, Notulensi, Informants, Questionnaires
	Data-driven challenges and debates	√	Documents, Computer Data, Notulensi, Informants, Questionnaires
	Commitment to the achievement of organizational goals	√	Documents, Computer Data, Notulensi, Informants, Questionnaires
	Search for Solutions by focusing on the main issues	√	Documents, Computer Data, Notulensi, Informants, Questionnaires
	Pay attention to key success factors	√	Documents, Computer Data, Notulensi, Informants, Questionnaires
	Develop effective communication	√	Documents, Computer Data, Notulensi, Informants, Questionnaires

TABLE IV. PERCEPTION OF BUDGET MANAGERS OF SYSTEM QUALITY MANAGEMENT CONTROL BASED ON LEVERS OF CONTROL FRAMEWORK

Levers of Control	Elements Indicator	Sub Score	Sub Index Absolute	Score	Index Absolute
Belief system	Vision and Mission Organization	3.80	76.03%	3.23	64.56%
	Organization Basic Value	3.67	73.39%		
	Communicates the basic values of the organization	3.79	75.87%		
	Employee awareness of the organization's basic values	2.83	56.69%		
Boundary systems	Establishment and enforcement of ethical codes	3.01	60.22%	2.96	59.26%
	Code of Conduct informs about behavior that is out of bounds	3.17	63.31%		
	Risk mitigation	3.08	61.65%		
	Awareness abides by the code of ethics	2.51	50.25%		
Diagnostic control system	Review progress for organizational goals	3.87	77.44%	3.94	78.72%
	Monitor the results achieved	4.01	80.12%		
	Compare the results achieved with the planned	4.01	80.21%		
	Review the key steps of success	3.82	76.49%		
Interactive control system	Interactive discussion	4.09	81.82%	3.85	77.07%
	Data-driven challenges and debates	3.83	76.61%		
	Commitment to the achievement of organizational goals	3.95	78.93%		
	Search for Solutions by focusing on the main issues	3.65	72.98%		
	Pay attention to key success factors	3.78	75.62%		
	Develop effective communication	3.76	75.12%		

TABLE V. PERCEPTION OF BUDGET MANAGEMENT OF QUALITY MANAGERIAL ACCOUNTING INFORMATION "UPSTREAM–DOWNSTREAM CONTROL"

Information Characteristics	Elements Indicator	Score	Index Absolute	Score	Index Absolute
Broad Scope	Focus	4.08	81.53%	4.08	81.62%
	Quantification	4.03	80.66%		
	Horizon time	4.17	83.31%		
Timeliness	Frequency of reporting	4.29	85.79%	4.27	85.45%
	Relevant	4.27	85.45%		
	Reporting speed	4.26	85.12%		
Aggregation	Function	3.65	73.06%	3.70	74.05%
	Period of time	3.72	74.38%		
	Decision model	3.74	74.71%		
Integration	The right target for sub-unit activities	4.05	81.03%	4.05	80.93%
	Reporting on intra sub units	4.02	80.50%		

This is demonstrated by an average questionnaire score of 3.5 and an absolute value of 69.90. Details of the effectiveness of each control system, according to the rules of measurement (see Table 4), can be compiled to draw the following conclusions. The belief system, as perceived by budget managers, was less effective. This was shown with an average questionnaire score of 3.23. This implies that repair efforts were needed to further leverage this control. The boundary system, as perceived by budget managers, was less effective. This is shown with an average questionnaire score of 2.96. This means that a repair effort is needed to further leverage this control. The diagnostic system, as perceived by budget managers, was shown with an average questionnaire score of 3.94. The perceived system was good, but it requires reinforcement to achieve perfection. The interactive control system, as perceived by effective budget managers, was demonstrated by an average questionnaire score of 3.85. The perceived system was good; it also requires reinforcement to achieve perfection.

D. Quality of Managerial Accounting Information

Based on the perception of budget managers on the quality of their MAS via the questionnaire, we obtained an average score of 4.03. This can be interpreted to reflect the effectiveness of the managerial accounting system and its control activities in pursuit of budget realization. Analysis further indicates that the need for reinforcement on aspects considered requires reinforcement.

The detailed discussion of quality of information, based on characteristics of managerial accounting systems, is as follows (see Table 5). The quality of information having broad scope characteristics, as perceived by budget managers, was effective. This was demonstrated by an average score of 4.08 on the questionnaire. This means that the scope of information met the expectations of users. It only needs to be refined to achieve perfection. Quality of information with timeliness characteristics, as perceived by the budget managers, was effective. This was shown with an average score of 4.27 on the questionnaire. This means that the managerial accounting system provided information with good quality, because it is seen to effectively affect the actions of budget managers. Quality of information with an aggregation characteristic perceived by effective budget managers was measured to an average questionnaire score of 3.7. The perceived system is good; it only requires reinforcement to achieve perfection. Quality of information with the characteristics of integration, as perceived by the managers of effective budget, is shown with an average questionnaire score of 4.05. The perceived system is good; it only requires reinforcement to achieve perfection.

Table 5 shows the scores per indicator of each managerial information characteristic referred to in the study by Chenhall and Morris [5]. The captured score of 4 is found in all elements of the aggregate indicator, and other elements score more than 4 (absolute index 80%).

V. CONCLUSION

After implementing the new control system, the absorption of expenditures shifted away from an absorption pattern of prior realization. The spending realization cycle moved during the earlier period, compared to before the introduction of the new system. There is evidence of consistency in the performance improvement of budget realization in all working units analyzed. This increase occurred during the entire range of quarter, semester, and fiscal-year measures. The upstream–downstream control system proved to have good LoC coverage as an MCS. The system included four LoC components, including a belief system, a limitation system, a diagnostic control system, and an interactive control system. However, this system tended to be strong on the aspects of diagnostic and interactive controls.

Based on the perception of budget managers toward the upstream–downstream management system, it was considered effective when viewed from the theory of LoC. Thus, the budget managers agreed that the overall control elements in MCS ran well to achieve the goal of improving the performance of budget realization. However, if every aspect of the control system were analyzed, only the diagnostic control system and the interactive control system would be considered more effective. The level of quality of information generated by the upstream–downstream control system was considered to be of good quality by budget managers. Of the four characteristics of quality information used in this study, timeliness contributes mostly to improving the quality of budget performance. Judging from the LoC theory framework, the quality of managerial accounting relates to the diagnostic control system. Improved quality of managerial accounting information moves in the same direction as improving the quality of the diagnostic system. For the case discussed in this study, it can be stated that

improving the quality of managerial accounting information leads to increased effectiveness of the diagnostic control system. Enhancement of the next diagnostic control system allows the interactive control system to be better developed, because interactive controls work more effectively. This is because of the availability of data generated by the diagnostic control system, which allows dialog and interactive discussions between leaders and subordinates data support.

ACKNOWLEDGMENT

We are grateful for the support from Research and Development Division at the Ministri of Energy and Minerals Resources Republic of Indonesia which has supplied us the necessary data to conduct this research. We are also thankfull for the support giving by KPPRI Universitas Indonesia for this article.

REFERENCES

[1] Siswanto, R. (2011). *Faktor-faktor penyebab rendahnya penyerapan belanja kementrian/ lembaga tahun 2010,* Working paper, Ministry of Finance Republic Indonesia, Jakarta

[2] Heriyanto. (2012). *Faktor-faktor yang mempengaruhi keterlambatan penyerapan anggran belanja pada satuan kerja kementerian/lembaga di wilayah Jakarta,* Tesis, Fakultas Ekonomi, Universitas Indonesia

[3] Chenhall, R. H. (2003). Management control systems design within its organizational context: Findings from contingency based research and directions for the future. *Accounting, Organizations and Society, 28,* 127-168.

[4] Simons, R. A. (1995). *Levers of control: How managers use innovative control systems to drive strategic renewal.* Boston: Harvard Business School Press.

[5] Chenhall, R. H., & Morris, D. (1986).The impact of structure, environment and interdependence on the perceived usefulness of management accounting systems. *The Accounting Review*.

[6] Maciariello, J., Kirby, C., (1994). *Management control systems-using adaptive systems to attain control*, Prentice Hall, New Jersey.

[7] Giraud et al. (2011). *Fundamentals of management control*, Pearson Education, Paris.

[8] Asel, J. A. (2009). *Risk Management and Management Control-The Impact of the Financial Crisis on the Use of Management Control Systems*, Vienna: EDAMBA Summer Academy, Vienna.

[9] Widener, S. K. (2007).An empirical analysis of the levers of control framework. *Accounting, Organizations and Society, 32,* 757-788.

[10] Anthony, R., & Govindarajan, V. (2007). *Management Control Systems,* Chicago, Mc-Graw-Hill Irwin.

[11] Fisher, J. G. (1998). Contingency theory, management control systems and firm outcomes: Past results and future directions. *Behavioral Research in Accounting, 10,* 47-64.

[12] Jaworski, B. J. (1988). Toward a theory of marketing control: Environmental context, control types, and consequences. *Journal of Marketing, 52,* 23-39

[13] Henri, J. (2006). Management control systems and strategy: A resource based perspective. *Accounting, Organizations and Society, 31,* 529-558.

[14] Langfield- Smith. K. (1997). Management control systems and strategy: A critical review. *Accounting, Organizations, and Society, 22,* 207-232.

[15] Otley, D. T. (1999). Performance management: A framework formanagement control systems research. *Management Accounting Research, 10,* 363-382.

[16] Merchant, K. (1985a). Budgeting and the propensity to create budgetary slack. *Accounting, Organizations and Society, 10,* 201-210.

[17] Macy, G., & Arunachalam, V. (1995). Management accounting systems and contingency theory: In search of effective systems. *Advances in Management Accounting, 4,* 63-86.

[18] Bruns Jr., W. J., & Waterhouse, J. H. (1975). Budgetary control and organizational structure. *Journal of Accounting Research, Autumn,* 177-203.

[19] Merchant, K. (1981). The design of the corporate budgeting system: influences on managerial behavior and performance. *The Accounting Review, 4,* 813-829.

[20] Dunk, A. (1993). The effects of budget emphasis and information asymmetry on the relation between budgetary participation and slack. *The Accounting Review, 2,* 400-410.

[21] Van der Stede, W. A. (2000). The relationship between two consequences of budgetary controls: Budgetary slack creation and managerial short-term orientation. *Accounting, Organizations and Society,* 25, 609-622.

[22] Dunk, A., & Nouri, H. (1998). Antecedents of budgetary slack: A literature review and synthesis. *Journal of Accounting Literature, 17,* 72-96.

[23] Smith, K. J. (1993). Investment monitoring systems, abandonment of capital assets and firm performance. *Journal of Management Accounting Research, 5,* 281-299.

[24] Emsley, D. (2000). Variance analysis and performance: Two empirical studies. *Accounting, Organizations and Society, 1,* 33-47.

[25] Anthony, R., & Young, D. (1999). *Management control in nonprofit organizations*, Boston, Irwin McGraw-Hill.

[26] Gosselin, M. (1997). The effects of strategy and organizational structure on the adoption and implementation of activity- based costing. *Accounting, Organizations and Society, 22,* 105-122.

[27] Ittner, C. D., & Larcker, D. L. (1998). Innovations in performance measurement, trends and research implications. *Journal of Management Accounting Research, 10,* 205-238.

[28] Biddle, G. C., Bowen, R. M., & Wallace, J. S. (1998). Does EVA beat earnings? Evidence on the association with stock returns and financial values. *Journal of Accounting and Economics, 24,* 301-336.

[29] Gordon, L. A., & Narayanan, V. K. (1984). Management accounting systems, perceived environmental uncertainty and organization structure: An empirical investigation. *Accounting, Organizations and Society, 1,* 33-47.

[30] Larcker, D. F. (1981). The importance of selected information characteristics and strategic capital budgeting decisions. *The Accounting Review, 56,* 519-538.

[31] Baiman, S. (1990). Agency research in managerial accounting: a second look. *Accounting Organizations and Society, 15,* 1-39.

[32] Baiman, S., Larcker, D. F., & Rajan, M. V. (1995). Organizational design for business units. *Journal of Accounting Research, 33,* 205-229.

[33] Bushman, R. M., Indjejikian, R. J., & Smith, A. (1995). Aggregate performance measures in business unit manager compensation: The role of intrafirm interdependencies. *Journal of Accounting Research,33,* 101-129.

[34] Shield, M.D. & Young, S. M. (1993). Antecedents and consequency of participative budgeting: Evidence on the effect of asymmetrical information. *Journal Of Management Accounting Research, 5,* 265-280

[35] Shield, M. D. (1997). Research in management accounting by North Americans in 1990s. *Journal of Management Accounting Research, 9,* 3-61

[36] Tiessen, P., & Waterhouse, J. H. (1983). Towards a descriptive theory of management accounting. *Accounting, Organizations and Society, 8,* 251-267.

[37] Davis, J. H. (1997a). Davis, Schoorman, and Donaldson reply: the distinctiveness of agency theory and stewardship theory. *The Academy of Management Review, 22,* 611-613.

[38] Davis, J. H. (1997b). Towards a stewardship theory of management. *The Academy of Management Review, 22,* 20-48.

[39] Luft, J. L. (1997). Faimess, ethics and the effect of management accounting on transaction costs. *Journal of Management Accounting Research, 9,* 200-216.

[40] Simons, R. A. (2000). *Performance measurement and control systems for implementing strategy.* New Jersey: Prentice Hall.

[41] Simons, R. A. (1994). How new top managers use control systems as levers of strategic renewal. *Strategic Management Journal, 15,* 169-189.

[42] Abemethy, M. A., & Lillis, A. M. (1995). The impact of manufacturing flexibility on management control system design. *Accounting, Organizations and Society, 20,* 241-258.

[43] Speklé, R. F. (2001). Explaining management control structure variety: A transaction cost economics perspective. *Accounting, Organizations and Society, 26,* 419-441.

[44] Ferreira, A., & Otley, D. (2005). The design and use of management control systems: an extended framework for analysis. *Working paper, SSRN.*

[45] Collier, P. M. (2005). Entrepreneurial control and the construction of a relevant accounting. *Management Accounting Research, 16,* 321-339.

[46] Creswell, J.W. (2009). Research design qualitative, wuantitive and mixed methods approach, Sage Publication, New York.

[47] Henri, J. (2006). Management control systems and strategy: A resource based perspective, Accounting, Organizations and Society, 31, 529-558