The Role Of Management Control System On Firm Performance

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Abstract

The aim of the study is to investigate the extent to which the use of management control system are interactive and diagnostically enhance firm performance both environmental and customer performance by mediating good corporate governance. In order to generate the aim of the study, we conduct a survey study on one of the country's leading state-owned industries managers. We analyze a 39 usable data using structural equation model, in particularly SmartPLS. The result of the study found that Interactive control use has a direct effect on environment performance and indirect effect through good corporate government that can lead to the improvement of environmental performance. However diagnostic control use only has a positive effect on environment performance. This study implies that interactive and diagnostic control uses endorse the improvement of environment performance.

Keywords: Interactive Control use, diagnostic control use, good corporate governance, customer performance, environment performance

1.   Introduction

Over past decade, many researchers discuss the role of management control systems (MCS) on performance (Chenhall, 2005; Henri, 2006a; Müller-Stewens, Widener, Moller, & Steinmann, 2020; Simons, 1990, 2000). Much of them suggest that management control uses has an important element to tract information both diagnostically and interactively to respond an organisation objective (Henri, 2006a; Müller-Stewens et al., 2020; Yuliansyah & Jermias, 2018). Most of them focus on managerial and organisational performance (Bisbe & Otley, 2004; Moulang, 2015). More specifically, some authors use ROA and ROI profitability as indicators of organisational performance (Henri, 2006a; Hoque & James, 2000; Yuliansyah, Gurd, & Mohamed, 2017; Yuliansyah & Jermias, 2018).

Currently, however, many companies accept good corporate governance as a mainstream business activity (Kim, Li, & Li, 2014). Although there exist a large number of studies of the effect of good corporate governance on performance, the link between management control system and specific indicator are complicated. For example, however, the specific effects of *[management control system]* diagnostic and interactive control uses are more conflicted (Müller-Stewens et al., 2020: p.1). Thus, the goal of this research is to clarify the influence of management control system and good corporate governance (GCG) on performance.

We believe that management control system interactive and diagnostically enhance performance both directly and indirectly through good corporate governance; that is, when an organisation implements management control system, the system itself enhances the organisation's governance (Arjaliès & Mundy, 2013; Marginson, 2002; Simons, 1987, 1990). The MCS provides details of activities that can be done by management, for example breaking down the GCG targets into key performance indicators based on the goals of the firms. Then, organizations monitor each KPI to meet the targets. Hence, MCS can lead to the achievement of organisational goals (Hasanudin, Yuliansyah, Said, Susilowati, & Muafi, 2019).

Similar to *diagnostic* performance measurement systems, interactive performance measurement system identifies current and previous activities, and achieves future objectives, by facilitating direct communication between top and lower level management. During bottom-up communication, top management gets actual and current information about the firm's objectives. It is not only good information that is welcome, because when a firm receives unwelcome information about a problem, it can find a solution more quickly. Hence, management control system is interactive and diagnostically increases the attainment of GCG. As been noted above, the improvement of GCG automatically enhances performance, both customer and environmental.

Based on the above explanation, we address this question

To what extent does MCS interactive and diagnostically affect customer and environmental performance through GCG?

To execute our main research question, we do a quantitave study by distributing questionaire in state-owned enterprise in particularly the semen Indonesia Group. The Cement Indonesia Group is the biggest cement company in Indonesia. It is a state-owned holding company with four subsidiaries, and as a state-owned company it is obliged to provide 2.5% its profit for the GCG fund. By law, Cement Indonesia must increase people's quality of life, one of the three pillars of the National Strategy: *profit, planet*, and *people* (3P).

This study contributes in several aspects. First, pure research. As above, links between PMS and GCG are hardly to be found (Hosoda & Suzuki, 2015). We contribute to the relationship between management control system and GCG in the Indonesian manufacturing context. Second, our research sample. Studies in public sector focus on municipal government, and studies of state-owned companies (in particular, Cement Indonesia) are rare.

These sections follow: Section 2 reviews the literature and develops hypotheses. Section 3 explains our research method. Section 4 is results, and Section 5 is our conclusion and recommendations.

2.   Review of literature and Hypothesis Development

In recent years, many companies recognize GCG as a mainstream business activity (Crane et al, 2018). GCG increases a firm's outcomes (Hasanudin et al., 2019; Kim & Statman, 2012). Kaplan (2006) suggests that outcomes of GCG become leveraged when a firm develops operational and activities tools as a strategy implementation. These operational and activities tools may help an organisation to define strategic objectives, both quantitative and non-quantitative. In respect of non-quantitative objectives, MCS has considerable value to improve performance (Chong & Mahama, 2014; Hasanudin et al., 2019; Matsuo & Matsuo, 2017; Müller-Stewens et al., 2020; Yuliansyah & Jermias, 2018; Yuliansyah, Khan Ashfaq, & Fadhilah, 2019)
          Previous scholar reveal that MCS facilitates business strategy and quick responses to environmental uncertainty when it happens (Chenhall, 2003, 2005; Henri, 2006b). Thus MCS helps managers to improve an organisation's GCG. GCG increases not only financial performance but also non-financial performance. For example, Arora and Sharma (2016) find that greater GCG enhance decision making which in turn improves performance. Hasanudin et al. (2019), in manufacturing companies in Banten, West Java, find that GCG increases an organisation's reputation. Salim, Arjomandi, and Seufert (2016)'s study in Australian Bank found that good corporate governance can improve bank efficiency.
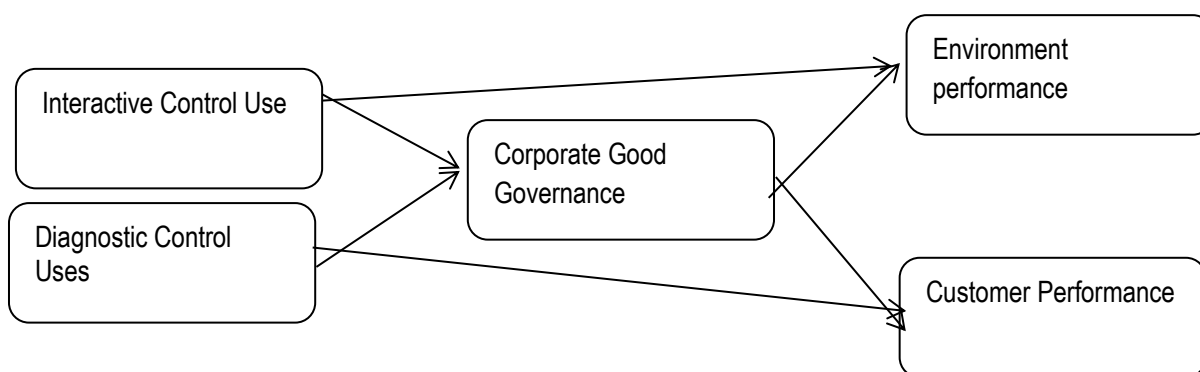
Figure 1: Research Framework

Based on the above explanation, we will explain one by one of hypotheses.

Hypotheses development

Management control system and good corporate governance

Top management should develop internal resources within an organisation to gain benefits for stakeholders (Chenhall, 2005; Kramer & Hartmann, 2014; Naranjo-Gil & Hartmann, 2007; Yuliansyah & Jermias, 2018). In addition, to an effective internal resources development, top management may create an MCS that is linked to organisational objectives (Baird, 2017; Burney & Widener, 2007; Chenhall, 2005; Li, Gu, & Liu, 2009; Mohammad & Sushil, 2018; Riccardo, Monica, Anna, & Franco, 2015; Speziale & Klovienė, 2014; Yuliansyah & Jermias, 2018). Companies rely on GCG as a business strategy to improve performance (Salim et al., 2016), and it is possible to design customer and environmental indicators that link into PMS (Speziale & Klovienė, 2014). Similarly, Arjaliès and Ponssard (2010) note that managers benefit from GCG in deciding on business strategy.

Empirical studies found that there are positive effects of MCS on GCG (Hasanudin et al., 2019; Yi, Liu, He, & Li, 2012). Yi et al. (2012) agree, using data from 585 firms in China. We hypothesise thus
H₁= MCS has a positive effect on GCG

Good corporate governance and Performance

As been noted above that prior studies found that GCG has a long-term benefit on profitability. Petrenko, Aime, Ridge, and Hill (2016) mentioned that GCG have double impacts to increase organizational reputation by distributing resouces that lead to the improvement of organisational performance. Thus, allocation of organizational resources can support customer and environmental activities (Arjaliès and Mundy, 2013). Based on Economic perspective, GCG creates economics value added by developing services and products that will help environment values (Torugsa, O'Donohue, & Hecker, 2012; Torugsa, O'Donohue, & Hecker, 2013). This argument is supported by Asif, Searcy, Zutshi, and Fisscher (2013)'s study mentioned that GCG can improve environmental performance.

In addition, Asif, Searcy, Zutshi and Fisscher (2013) revealed that GCG activities are conducted based on organisational responsibility that behave in customer manner. Moreover, GCG can deliver a message that the benefit of GCG itself pertain with customer objectives Du, Bhattacharya, and Sen (2010). In addition, they also noted that stakeholders may request to do customer activities that fit with organisational purposes when an organization involves in GCG activities that impact on customer performance. In this activities will creates organisational reputation (Hasanudin et. al, 2019).

Some studies found that GCG can improve performance (Fauver & Fuerst, 2006). Empirical investigation from Peni and Vähämaa (2012) of large publicly traded U.S. banks found that strong good governance can increase performance. According above explanation, we propose the H₂.

H₂ = GCG has a positive effect on performance

Management control system and performance

We believe that management control system can interactive and diagnostically improve organizational performance (Chenhall, 2005; Henri, 2006a; Yuliansyah, Bui, & Mohamed, 2016; Yuliansyah & Jermias, 2018). Simons (2000) notes that the use of management control system can boost performance. An example from interactive control system that is that it may help managers to find and respond environmental uncertainty quickly as member of organization have a direct communication channel to discuss current situation of the strategy achievement (Simons, 2000). Further, direct communication between upper and lower level management can enhance learning and innovation between them (Arjaliès & Mundy, 2013; Marginson, 2002; Simons, 2000; Tessier & Otley, 2012; Yuliansyah & Khan, 2015; Yuliansyah & Razimi, 2015). This will impact on the improvement of organisational performance.

Empirical evidence that support a positive relationship between management control system and performance can be seen the following studies. Pešalj, Pavlov, and Micheli (2018) study in a Dutch Small Medium Enterprise (SME) found management control system can help an organization to manage short- and long-term focus, predictable goal achievement and search for new opportunities, internal and external focus, and control and creativity. Similarly, Yuliansyah et al. (2019)'s study in Indonesia financial services sector firms found that management control system can help an organization control its customer-focused strategy. Based on this argument, we have a proposal of the the following hypothesis:

H₃ = Management control system has a positive effect on performance

3. Research Methodology
3.1. Sample Study

This study, we do a quantitative by distributing questionaire to managers at the Cement Indonesia Group – one of the biggest Indonesia's state-owned enterprises. As one of the biggest state-owned enterprises, this company provide big amount of GCG fund. To improve feedback from respondents, we have some strategies that are being suggested by some scholars both in designing of questionaire and collecting of data (Dillman, 2007). In addition, similar to Henri (2006a)'s study, we execute four steps. First, initial contact or communication. This step ask respondents to participate filling a questionaire survey including contact person and phone number. Second step is the distributing questionaire. In this step, since after, we receive permission from respondents, we distribute questionaires person to person based on initial comunication. The third step is first reminder. In this step we remand respondent to fill questionaire. This step is asked after one month questionaire that is being sent. The fourth step is second reminder. Similar to the third step, this step we ask respondent second time to fill questionaire.

According to above way, we sent 90 questionaire and we received 39 usable data.

3.2. Variable Measurment

Management control system

This instrument consists on diagnostic and interactive control uses. This instrument use questionnaire from Müller-Stewens et al. (2020). They redesign those questionnaire from previous study (Henri, 2006a). While diagnostic control system uses four item questions, interactive control system uses six item questions. The respondents are asked how much they agree or disagree with a statement. Following a five-likert scale, we start from 1 (strongly disagree) to 5 (strongly agree), and 3 neither to agree nor disagree.

Good corporate governance (GCG)

GCG variable is used a questionnaire developed by Sutedjo and Nugroho (2018). Using an four item of question, we asked respondent to mention the extent to which item of GCG condition in the companies using a five-point Likert scale that are started from 1 (very low) to 5 (very high)

Environmental and customer Performance

Dimension of environmental Performance applies a a four item questions. This instrument used a constructed developed by Chiou, Chan, Lettice, and Chung (2011). Customer performance on this article use instrument developed by Brown and Gulycz (2006). A five-item question of this instrument represent the relative important of group respondents in customer activities. Participants are asked to mention their opinion of the importance of a firm concern of the question by appling a five-point likert scale starting from 1 (Not very important) to 5 (very important).

4.   Structural Equation Modelling

This study applies structural Equation Modelling (SEM), in particularly SmartPLS, to evaluate the aim of the study. One of obvious advantage of using SmartPLS compared to other Structural Equation Model software package is that it can be used for small data. Furthermore, as our usable data is 39 respondents, SmartPLS is considered appropriate to be used compared to AMOS or Lisrel. Prior studies note that SmartPLS has two sequential actions: 1) the asssesment of model and 2) the assesment of structural model.

4.1. Assesment of model

We test model in two types of evaluation, test of reliability and validity. Reliability test is conducted through evaluation of Cronbach's Alpha and Composite Reliability. According susggestion from scholars that acceptable score of measurement reliablity is higher than 0.7. Table 2 illustrates that the values of cronbach alpha and composite reliability of all constructs are more than 0.7. Thus, we claim that that measurement model of reliability of this study is adequate.

Assesment of validity is calculated in two models: convergent and discriminat validity. The assesment of convergent validity is measured by evaluating the Average Variance Extracted (AVE). A good AVE if its score is more thatn 0.5. Based on Table 2 that all AVE scores of each variable is higher than 0.5. This indicate that convergent validity of the study is good.

Table 2: Cronbach's Alpha, Composite Reliability, Average Variance Extracted (AVE) and R Square

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)	R Square
Interactive Control	0.829	0.874	0.537	0.847
Diagnostic Control	0.750	0.827	0.562	0.873
GCG	0.697	0.809	0.591	0.734
Environment Performance	0.900	0.920	0.589	0.900
Customer Performance	0.764	0.843	0.541	0.849

The assesment of dicriminant validity is assessed using two measuarement: Cross Loading and fornel-Lacker Criterion. Measurement discriminat validity using Cross loading sees that a good score of its measurement if the items score of variable is higher than items score of other variables. Table 3 seems that all

items of each variable is higher than other indicators of variables. Hence, measurement validity evaluation through the Cross Loading is good.

Table 3: Cross Loading

	Interactive Control	Diagnostic Control	GCG	Environment Performance	Customer Performance
INT1	0.704	0.131	0.375	0.297	0.452
INT2	0.779	0.383	0.423	0.589	0.563
INT3	0.627	0.092	0.198	0.310	0.249
INT4	0.761	0.267	0.296	0.473	0.375
INT5	0.778	0.168	0.387	0.286	0.446
INT6	0.735	0.225	0.405	0.398	0.468
DIAG1	0.232	0.923	0.134	0.479	0.192
DIAG2	0.203	0.678	0.058	0.308	-0.010
DIAG3	0.344	0.871	0.032	0.354	0.222
DIAG4	0.138	0.421	-0.130	0.064	0.014
CG1	0.463	-0.083	0.837	0.371	0.822
CG2	0.422	0.233	0.839	0.450	0.643
CG3	0.027	0.151	0.606	0.072	0.275
ENV1	0.604	0.413	0.625	0.771	0.715
ENV2	0.637	0.345	0.540	0.739	0.620
ENV3	0.517	0.308	0.571	0.788	0.632
ENV4	0.469	0.430	0.219	0.749	0.298
ENV5	0.337	0.437	0.311	0.765	0.512
ENV6	0.225	0.359	0.220	0.765	0.403
ENV7	0.213	0.140	0.146	0.729	0.194
ENV8	0.378	0.412	0.159	0.828	0.273
CUST1	0.439	0.088	0.601	0.407	0.822
CUST2	0.628	0.233	0.746	0.688	0.850
CUST3	0.463	-0.083	0.837	0.371	0.822
CUST4	0.467	0.369	0.473	0.381	0.747
CUST5	-0.056	0.220	0.254	0.323	0.269

Fornel-Larcker Criterion measurement of validity revealed that a good score when the AVE2 score diagonally is higher than the score other constructs both vertically and horizontally. Even Table 3 score Customer Performance is higher, at whole we claim that validity of this study is satisfactory.

Table 3: Fornell-Larcker Criterion

	Customer Performance	Diagnostic Control	Environment Performance	GCG	Interactive Control
Customer Performance	0.735				
Diagnostic Control	0.180	0.749			
Environment Performance	0.594	0.463	0.768		

| GCG | 0.845 | 0.090 | 0.455 | 0.769 | |
| Interactive Control | 0.601 | 0.310 | 0.551 | 0.488 | 0.733 |

4.2. Assessment of structural model and the test of hypothesis

Measurement structural model can be seen along with the test of hypothesis that can be explained in below discussion.

H1: *Management control systems has a positive effect on GCG*

We claim that a management control system has a positive effect on GCG. Based on statistical analysis we found that ICS has a positive effect on GCG. It can been seen from Table 4 that β= -0,044 and t= 0.193 in p< 0.01). But not DCS with GCG (-β= -0.968; t= 0.265 p< 0.01). Thus, hypothesis 1 is partly accepted.

Table 4: Path Coefficients of each constructs

Dependent Variables	Independent Variables		GCG	R^2
	Interactive Control	Diagnostic Control		
GCG	0.509 (1.707)	-0.068 (0.265)		0.243
Environment Performance	0.312 (2.056)	0.342 (1.688)	0.272 (1.338)	0.454
Customer Performance	0.232 (1.428)	0.042 (0.171)	0.728 (2.701)	0.763

Hypothesis 2 states that GCG *has a positive effect on performance*

As seen on Table 4 above, GCG has a positive effect on 1) customer performance (β= 0.728, t= 2.701, p< 0.01), but it is not for 2) environmental performance (β= 0.272, t= 1.338), p< 0.10. Thus, hipotesis 2 is partly accepted.

Hypothesis 3 states management control systems has a positive effect on performance

According to statistical analysis, we found that interactive perfomance mesureemnt systems has a positive effect on environmental performance (β= 0.312, t= 2.056), p<0.05 It, however, has no positive effect with customer performance (β= 0.232 t= 1.428), p< 0.01. In addition, another aspect of management control system – diagnostic control system has a weak positive effect on environmental performance (β= 0.342, t= 1.688), p<0.01). It, however, has no positive effect with customer performance (β= 0.042; t= 0.171), p< 0.01. Thus hipotesis 3 is partly accepted.

4.3. Path Analysis

Path analysis is conducted if all indicators have a positive effect (Baron & Kenny, 1986). As these indicators not support on above argument, path analysis is not executed.

5.   Conclusion

One of the most prominent impacts of the use of management control system is that top management and lower level management can actively evaluate the progress of firm objectives. As GCG is a firm's activities that

can increase a firm reputation, a top management can see impact of its activities both for organization and customer. Hence, when firm face problem of the implementation of GCG, firm can quickly respond to find and solve problem. Futhermore, we want to investigate how MCS can provide a positive effect on performance through GCG both interactive and diagnostically. Thus, we propose that MCS can help firm's GCG activities and it can leverate fim performance both environmental and customer.

We claim that study discussing how management control system can monitor and evaluate GCG is scare. We believe that management control system interactive and diagnostically can help organisation to monitor and evaluate the activities of GCG. Since GCG can be effectively implemented, it will lead organisational reputation. Then, according to resouces-based theory, organisational reputation can boost that organitational performance. In this context we claim that the improvement of organizational performance can be both customer and environmental performance.

In order to test our preposition, we conduct a survey study of managers in the Semen Indonesia Holding Company - state-owned enterprises – one of leading cement industries in Indonesia. This company has 13 subsidiaries and affliates local and overseas. In order to generate higher response rate, we search a potential contact person that have link to all subsidiaries and affiliates. Hopefully, we generate 39 responses of 102 distributed questionares (35.29%). According to model, we analyse it using structural equation model.

Based on 39 usable data, we analyse it using smartPLS. The study found that interactive control use has a direct effect on environment performance not on customer performance. In addition, indirect effect between ICS and performances through GCG exist in this study but does not strong. In addition, diagnostic control system has a positive effect with both to performance dimensions. However, indirect effect between DCS and performances through GCG does not exist in this study. This study implies that when state-owned enterprises implement both ICS and DCS, those enable to enhance environment performance. We predict that the improvement of customer performance through the use of ICS rather than environmental performance as PT Semen Indonesia provides more funding to improve better income in society rather than spend more money to make an environment protection.

This research implies that the use of ICS improve customer perfomances. Thus, this study confirms that GCG does not support organisational perfomance using interactive performance measurement systems. Bsut the use of interactive control systemcan directly improve customer performance. We may suggest that 1) PT Semen Indonesia may allocate more funding to make an environmental protection as it is also important to society. 2) Since ICS does not support firm's GCG, firm should consider measurement alternatif that can improve GCG activities that can help organisation performance.

We also suggest for future studies that 1) author can expand our study is not only in one of state-owned companies but is also more than one of state-owned companies that allocate their funding to GCG. 2) Since this research is a quantitative study by distributing a questionaire, the result of the study may not generate more information about the impact of GCG funding to society and performance. Thus, futher study may conduct both qualitative study and mixed study that can help authors to provide more detail information about the impact of ICS and GCG on the improvement of performance.

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