

Management Control Systems and Contextual Variables in the Hospitality Industry

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Abstract

Purpose – The paper examined management control systems (MCS) in Indonesian hospitality sector. This study examines the impact of six contextual factors at one time to determine the importance of each factor on the design of MCS.

Design/methodology/approach – The paper is based upon data collected through a survey sent to “star” hotels in Central Java, Indonesia. Using Chenhall (2003) design, a regression equation is run to examine the relationship between MCS and the contextual variables of environment, technology, structure, size, strategy and culture.

Findings – The paper finds that higher levels of the contextual variables of technology, structure, and culture are related to more sophisticated MCS while size is related to more traditional MCS.

Research limitations/implications – These findings are related to the hospitality industry in Indonesia. Future research could examine different settings (i.e. country, industry, etc) and investigate the effect of each contextual variable on the relationships between MCS and firm performance.

Originality/value – The present study extends the scope of MCS system in accounting literature by testing Chenhall (2003) works on the relationship between contextual variables and MCS. It attempts to fill the gap in contingency-based studies that have previously focused on one aspect of contingency by considering six contextual factors. Furthermore, this paper also contributes to a fuller understanding of MCS practices in Indonesia and the hospitality industry and helps management in determining its most effective design.

Keywords Hospitality management, Management Control Systems, Indonesia, Contextual Variables

Paper type Research Paper

Introduction

As the hospitality industry has become an important factor in most economies, there has been a call for further research on this industry, and in particular its relationship to management control systems (MCS) (Chenhall, 2003). Harris and Brown (1998) in their review of hospitality studies also cited the need for more empirical and contextual research on the hospitality industry. Haktanir and Harris (2005) noted that detailed studies in the hospitality accounting have been limited, especially in the MCS area. As competition in the hospitality industry has increased and more effective operations and business decision making activities have become more critical, there is a need for additional research to help hospitality managers design a better system that can be used to influence the behavior of their managers to follow organizational strategies and achieve organizational goals.

Information, both quantitative and qualitative, plays key roles in managing an organization and their decision making activities. Accounting information as part of the information systems (especially management accounting information), significantly contributes to the effective functioning of the management process. Management accounting provides management with information they need to make effective decisions (Horngren, 2004). Its focus is on how management uses controls, primarily through the use of management accounting information, for planning and control activities.

When companies face increasing competition, management frequently reviews and adjusts company goals and strategies to cope with these external as well as internal changes. A tool that management can use to influence the behavior of their managers to achieve these goals and follow strategies is an effective formalized system called MCS (Horngren et al., 2008). This study adopts the view that MCS can be conceptualized in terms of a continuum that ranges from traditional to the sophisticated (Simons, 1995). Traditional MCS systems rely mainly on diagnostic controls while sophisticated systems rely on a combination of belief systems, boundary systems, diagnostic control systems and interactive control systems (Simons, 1995).

Chenhall (2003) cites six factors that affect the design of MCS in contingency-based management accounting: environment, technology, structure, size, strategy, and culture. As the environment where a company operates can be ever changing and unpredictable, sophisticated MCS can help management cope with the changing conditions in times of high uncertainty. Technology refers to the complexity of the business processes and the tools management use and, therefore, it affects the level of MCS. Organizational structure is the way an organization manages its people to attain the organizational goal. A component of structure refers to the degree of decentralization. When environment changes, either do to complexity or change in the size of the company, management often delegates decision making to lower level managers. This requires the need for a more highly sophisticated MCS in order to integrate the many different activities. The culture of the country that a company operates in will also impacts its decision making and strategies. In short, these six factors, often called contextual variables, will determine level of sophistication or effectiveness of MCS.

This study will test the relationship of MCS to these contextual factors in the Indonesian Hospitality Industry. This study extends prior work in several ways. First, our investigation draws on the work of Chenhall (2003) and considers all six contextual factors of the contingency approach for predicting the design of MCS. Second, this study also attempts to fill the gap in the contingency-based studies mapped by Fisher (1995) which have previously focused on one aspect of contingency at one time. As a result, this study examines multiple contextual factors at

one time to determine the importance of each factor. In addition to extending prior research on MCS, this study attempts to fill the gap on the relationship between contextual factors and MCS in the hospitality industry. In particular, it is the first study to extend the literature on MCS to the Indonesian Hospital Industry. By providing insights on the relationship of MCS and contextual variables, we provide initial evidence on which contextual factors are important in designing a MCS for the hospitality industry in general and specifically which factors are important to Indonesian managers to encourage employees to achieve organizational goals. This paper is organized as follows. The next section provides an overview of the literature and the paper's hypotheses. The research design and methodology then follows in Section 3. Results are presented in Section 4. Finally, Section 5 has the summary and conclusions.

Prior literature and hypotheses

The function of management accounting is to provide information for decision making, motivate manager's behavior, and promote the organization efficiency and effectiveness, the field into which the domain of MCS falls (Belkaoui, 1980). Consequently, management accounting draws on and uses information from the fields of behavioral science, organization, and decision-making (Belkaoui, 1980). Therefore, research in MCS encompasses these fields (Hayes, 1977; Merchant, 1981; Dunk, 1989; Imoisili, 1989; Durden, 2008; Modell, 2009).

The part of a formalized information systems used by organization to influence the behavior of their managers to attain the organizational objectives is called MCS (Horngren et al., 2008). Four levers of controls, including belief systems, boundary systems, diagnostic control systems and interactive control systems have been used to measure MCS (Simons, 1995). Belief systems are formal systems used by management "to define, communicate, and reinforce the basic values, purpose, and direction for the organization" (Simons, 1994). These systems are communicated through formal documents, such as mission statements and statement of purposes. Formal systems that are used by management to establish rules and limits that must be respected by employees are called boundary systems. These systems are created through codes of business conduct, strategic planning systems and operating directives and are typically minimum standards that are based upon the risks that the company wants to avoid (Simons, 1994). Diagnostic control systems refer to formal feedback systems (budgets and business plans) used to monitor and correct deviations from standard performance procedures. Interactive control systems are formal systems used by top management to personally and regularly involve themselves in subordinate decision making (Simons, 1994). Their purpose is to focus attention and insure communication and education throughout the organization. MCS systems that focus mainly on diagnostic controls are considered more traditional systems while MCS that use all four levers are considered more sophisticated systems.

The introduction of the contingency model from modern organization theory has contributed to the development of MCS especially in explaining the factors affecting organizational performance. The appropriateness of different control systems depends on the setting of the business according to contingency control, though control system generalizations can be made for classes of business settings (Fisher, 1995). Additionally, under the contingency framework more than one contingent factor can influence the effectiveness of MCS. Hayes (1977) introduced three factors as determinant of organizational performance: internal, interdependency, and environment. In attempts to advance the knowledge of MCS and the relationship between budgetary aspects and performance (Ivancevich, 1976; Kenis, 1979;

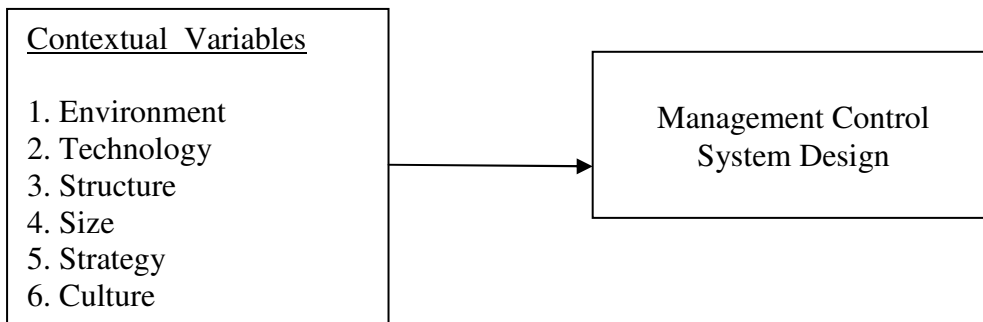
Merchant, 1981) researchers added other factors in their models as moderating variables (Dunk, 1989; Imoisili, 1989; Kren, 1992, Indriantoro, 1993, Subramanian and Mia, 2001).

From the user's point of view, the contingency concept is very critical in designing MCS to ensure that the system fits their need. This proposition has been examined by researchers individually and simultaneously by researching the effects of the contextual variables of environmental uncertainty and organizational structure on MCS (Anshari, 1977; Gordon and Narayanan 1984; Otley, 1999 and 2001). Chenhall and Morris (1986) and Chenhall (2003) have also provided additional evidence of the effect of the contextual variable on MCS by inclusion of the contextual variable of job interdependency.

The three contextual variables of external environment, organizational interdependency and organizational structure and their relationships to MCS, consisting of scope and timeliness, aggregation and integration, was examined by Chenhall and Morris (1986). They found that environmental uncertainty significantly correlates with the MCS characteristic of scope and timeliness, organizational interdependency with the MCS characteristic of scope, aggregation, and integration, and decentralization with the MCS characteristics of aggregation and integration. Additionally they also found an interaction effect of environment uncertainty and decentralization on the MCS characteristics of scope and aggregation and an interaction effect of organizational interdependency and decentralization on the MCS characteristics of scope and integration.

In recent works, Chenhall (2003), based upon a deductive research approach, summarized that there are six contextual variables that affect the design of MCS. As shown in Figure 1 these contextual variables include environment, technology, organization structure, company size, business strategy, and culture.

Figure 1: Relationships between MCS and Contextual Variables



In focusing on the hospitality industry, Kosturakis and Eyster (1979) study of small hotel companies revealed that budgets were mainly used for control purposes. This is consistent with Cruz (2007) findings of the strong use of budgeting and budgetary control practice in the hotel industry in Portugal. Schmidgall and Ninemeier (1987) noted the increasing use of sophisticated control systems in multi-unit hotel chains, while Rusth (1990) noted that when environmental uncertainty is high, simplified budgeting control systems are more suitable for small or single-unit organizations. Additionally, research has found that that the failure of MCS to use participation, feedback, communication and training can lead to resistant to the MCS and attempts to manipulate or destroy the system (See Harris and Brown, 1998).

Environment

Since MCS is used to carry out organizational objectives and strategies, the pattern of MCS design depends upon the environment the company is facing (Chenhall, 2003). According to Emmanuel et al. (1990) the relevant characteristics of environment affecting MCS are the degree of predictability, the extent of competition faced in the market place and the number of different product-markets faced by a degree of hostility (price, product, technological and distribution competition). In conditions of a stable environment, traditional or less sophisticated MCS systems would be more appropriate for management decision making (Simons, 1995). On the other hand, when environmental uncertainty is high, a more complicated and sophisticated MCS would be more appropriate to cope with the changing environment and help make more effective decisions. To cope with uncertain conditions, Simons (1995) suggest that the use of interactive control systems will be more effective. Chenhall (2003) suggest that the more uncertain the external environment, the more open and externally focused should be the MCS.

A steady stream of prior research has confirmed that the level of environment uncertainty is associated with the design of MCS (see Chenhall, 2003). Consistent with prior research, we anticipate the following:

H1: Higher levels of environmental uncertainty will be associated with more sophisticated MCS.

Technology

Though technology has many meanings in organizational behavior, it generally refers to how the organization transforms inputs into output including hardware, materials, people, software and knowledge (Chenhall, 2003). Literature has defined technology in terms of five different dimensions: technical complexity (Woodward, 1965), operations technology and variability (Hickson et al., 1969), interdependence (Hrebiniak, 1974), routine and non-routine (Perrow, 1967 and 1970), and manageability of raw material (Mohr, 1971).

Bell (1965) found that the components of technology can be a predictor of MCS. Using interdependence as a dimension of technology and MCS as defined by operating budgets and statistical reports, Macintosh and Daft (1987) found that interdependence activities highly relied upon operating budgets and statistic reports. By extending the technology concept to include automation, Abernethy and Lillis (1995) found that flexible machine systems also affect the MCS design. Chenhall (2003) notes that organizations producing highly specialized, non-standard, differentiated products require controls to encourage flexible responses, higher levels of open communications and a MCS that can manage the interdependencies. Abernethy et al. (2004) went on to prove that companies having advanced technologies, characterized by high levels of interdependence have more informal controls of MCS. Based upon prior research, we would expect that technology will affect MCS and anticipate the following:

H2: Higher levels of organizational technology will be associated with more sophisticated MCS

Structure

Structure is concerned about the official of roles of organization's members to ensure that the organizational activities are carried out (Chenhall, 2003). Employee motivation, efficiency of work, information flow and control systems are affected by the structural arrangement. The

general typology of structure frequently cited in literature is the one developed by Pugh et al. (1969a and 1969b). This typology structure includes the dimension of integrations, formalization, specialization, and decentralization. Haldma and Laats (2002) using the decentralization dimension in their case study approach for a Finland company setting found support for the relationship between structure and MCS. In general, high levels of structures are associated with more sophisticated MCS, enabling organizations to cope with the complexities involved. However, Abernethy and Stoelwinder (1990) found in a public hospital setting that structure did not support choice of the MCS. As a majority of previous research supports the relationships between structure and MCS (see Chenhall, 2003), we propose the following hypothesis:

H3: Higher levels of organizational structure will be associated with more sophisticated MCS.

Size

Firm efficiency seems to improve with the growth of a company as there is more opportunity for specialization and division of labor. As an organization becomes larger, they began to increase controls in order to handle greater quantities of information (Chenhall, 2003). This argument is consistent with Merchant (1981) who defined size as complexity in business and concluded that when complexity is increased, the use of budget for control tools will grow. Except for the studies summarized by Fisher (1995) and of Chenhall (2003), few studies explicitly examined the relationship between the contextual variable of size and MCS design. Chenhall (2003) argued that the larger the size of an organization, the more emphasis on and participation in budgets and sophisticated controls. The propositions lead to the conclusion that MCS design will be contingency on size. This leads us to the following hypothesis:

H4: Size of an organization will be positively associated with sophisticated MCS

Strategy

Strategy is the means whereby managers can influence the nature of organizations culture, external environment, technologies of the organization, structural arrangements and the MCS (Chenhall, 2003). Prior research has noted a relationship between strategy and MCS (Merchant, 1981; Simons, 1987 and 1991; Govindarajan and Gupta, 1985; Govindarajan, 1988; Govindarajan and Fisher, 1990; Marginson, 2002). When organizations are faced with a changing or highly competitive environment, strategy becomes more intense and more sophisticated levels of MCS are employed. Chenhall (2003) notes that more formal and traditional MCS¹ are associated with strategies of conservatism, defender orientation and cost leadership. Based upon prior research, we propose the following hypothesis:

H5: Higher levels of strategy will be associated with more sophisticated MCS

Culture

Countries possess different cultural characteristics, which in turns predispose individuals within cultures to respond in distinctive ways to MCS (Chenhall, 2003). Though previous research on the relationship of culture to MCS have tested culture through social controls (Hopwood, 1976)

and boundary systems (Simons, 2000), the most frequently used typology of culture is the one developed by Hofstede (1991) called national culture. National culture includes the five dimensions of power and distance, individualism and collectivism, masculinity and femininity, uncertainty avoidance and Confucian dynamism.

Research has found a relationship between culture and MCS. Harrison and McKinnon (1999) identified twenty studies over the past ten years supporting the relationships between culture and MCS. Chow et al. (1999) using the Hofstede typology of culture and seven dimensions of MCS found the importance of culture on MCS design. The findings suggest that when organizational culture stresses openness, transparency, equality and sound values there is more reliance on traditional MCS. While organization with highly unsettled cultures need more reliance on sophisticated MCS. Based on this prior research, we propose the following hypothesis:

H6: Higher levels of organizational culture will be associated with more sophisticated MCS

Research design and methodology

Sample Selection

The original sample for our study came from a report from the Indonesian Government's Tourism Unit that contained all "star" hotels in Central Java, Indonesia. A total of 141 hotels in 19 regions were contacted to confirm their "star" status and to inquire about their willingness to participate in the survey. A total of fifty hotels were dropped from the sample as they declined to participate or were no longer "star" status hotels, resulting in a final sample size of 91 hotels. Questionnaires were sent via courier and regular mail to these 91 star hotels in thirteen regions of Central Java. Each hotel was provided with three envelopes, one each for the general manager, marketing manager and operational manager, for a total of 273 questionnaires. A total of 137 questionnaires were returned. Of these questionnaires, 62 were eliminated due to incomplete responses, resulting in a final sample size of 75 usable questionnaires.

Instrument

Subjects received a 15 page questionnaire designed to solicit their perceptions of MCS and the contextual variables of environment, technology, structure, size, strategy, and culture for the hotels they work in (Appendix I²). All responses solicited, with the exception of MCS responses, were taken from instruments used in prior research (Indriantoro, 1993; Govindarajan and Fisher, 1990; Miles and Snow, 1978; and Pugh et al., 1969a). Items concerning MCS variables were based upon Simons' (1995 and 2000) four dimensions of belief system, boundary system, diagnostic control system, and interactive control system. All responses were elicited on a six-point response scale.

Model

Based upon previous research, we use a multiple regression model to test the relationship between MCS and the contextual variables of environment, technology, structure, strategy, culture and size. Our model represents a main effect regression as suggested by Fisher (1995) and previously used by Alexander and Randolph (1985) in their study on contingency factors of technology and structure. Additionally, we use the contextual variables as suggested by Chenhall (2003) to test our hypotheses as he notes that much is to be gained by considering the

elements of environment, technology, strategy and structure at the same time when evaluating their relationships with MCS. Our hypotheses are tested through the following regression equation:

$$MCS_i = b_0 + b_1 \text{Environment}_i + b_2 \text{Technology}_i + b_3 \text{Structure}_i + b_4 \text{Size}_i + b_5 \text{Strategy}_i + b_6 \text{Culture}_i$$

Where:

$i = \text{firm}$

Dependent variable

Management Control System: MCS is defined as the perceived usefulness and importance of the system based upon Simons' four levers of controls (1995 and 2000). These levers of control include belief system, boundary system, diagnostic control system and interactive control system. MCS systems that focus mainly on diagnostic controls are considered more traditional systems while MCS that use all four levers are considered more sophisticated systems. Subjects are asked to respond to series of 16 belief system items, 48 boundary system items, 29 diagnostic control system items and 14 interactive control system items relating to their work situation using a six point scale where 1 = "Extremely low" to 6 = "Extremely high". Total MCS score is calculated by summing the response to each of the 107 items. Higher scores are indications of more reliance on all four levers of control (sophisticated MCS) while lower scores are indications of reliance on diagnostic controls only (traditional MCS).

Independent Variables

Environment: Environment is defined in this study as business uncertainty according to Miles and Snow (1978). This construct includes competitors' action, technology, product attributes/design, market demand, raw material availability, raw material prices, government regulation and labor union actions. Managers were asked their perception of how these eight factors related to the hotel they worked in using a six point scale where 1 = "Extremely difficult to predict" to 6 = "Extremely easy to predict". The environment score is calculated by summing the response to each of the eight items. Lower scores indicate environments with high uncertainty where higher scores indicate stable environments.

Technology: Technology is defined according to Pugh et al. (1969a) as technology that used in the workflow activities and is applicable to service companies, such as hotels. This construct includes repeat-cycle equipment, single purpose equipment, fixed line operation, single point procedure, waiting time, buffer stock, breakdown workflow, output of workflow and precise specification-based evaluation. Subjects responded to nine items concerning the use of technology in their hotel using a six point scale, where 1 = "Extremely low" to 6 = "Extremely high". The technology score is calculated by summing the response to each of the nine items. A lower score indicate low complexity of operations while higher scores indicate more complex operations.

Structure: Structure is based on Pugh et al. (1969a) and includes the four dimensions of integration, formalization, specialization and decentralization. Subjects responded to three integration items, ten formalization items and 14 specialization items concerning the structure of their hotel using a six point scale where 1 = "Extremely rare to use" to 6 = "Extremely often used".

Additionally, they responded to ten decentralization items using a six point scale where 1 = Decision Made by Top Management” to 6 = Decision made by Individuals under First Level Supervision”. The total structure score is calculated by summing the response to each of the 37 items. Higher scores indicate more complex organization of operations while lower scores indicate a simpler organizational structure.

Company size: Company size measures the complexity of a company (Merchant, 1981 and Al-Khadash, 2003). As complexity increases in a company, total assets, employees, and sales often increase. As many of the hotels are privately owned in Indonesia, information concerning total assets and sales is not publicly available, thus consistent with prior research this study uses number of employees to measure size (Merchant, 1981). Subjects were asked to supply the number of employees working at their hotel.

Strategy: Strategy is operationalized per Govindarajan and Fisher (1990) as the level of competition and includes the categories of cost leadership, differentiation, and niches. Items included in this construct include pricing, research and development cost, product quality, brand, and product feature. Subjects were asked to position their company relative to their competitors for each of these five items based upon a six-point scale where 1 = “Extremely low” to 6 = “Extremely high.” The strategy score is calculated by summing the response to each of the five items. Higher scores are indicative of a more competitive environment.

Culture: Culture is operationalized using Indriantoro’s (1993) questionnaire, which was based upon Hofstede (1991) typology. This typology includes power distance, individualism and collectivism, masculinity and femininity, and uncertainty avoidance. They represent the levels of openness, transparency, equality and other values of corporate culture. Based upon their work setting, subjects were asked to respond to 29 questions using a six point scales where 1 = “Strongly disagree” to 6 = “Strongly agree”. Total culture score is measured by summing the response to each of the 29 questions. Low scores are indicative of sound company values.

Result and discussion

Validity and reliability

Validity tests were conducted for all variables to determine the reliability of the research instrument. A high reliability measure indicates that repeated administration of the instrument to the same or similar groups of people would produce the same results. The result of our tests indicated that all variables consisting of 107 items for MCS, 8 items for environment, 9 items for technology, 37 items for organization structure, 5 items for strategy and 29 items for culture all appear to measure their respective construct as the Cronbach alphas are significant at .05 level. Based on this reliability test, the variables have a Cronbach's alpha of 0.973 for MCS, 0.629 for environment, 0.783 for technology, 0.938 for structure, 0.790 for strategy and 0.776 for culture.

Descriptive Data

Table 1 shows the response means, standard deviations and correlation for each of dependent and independent variables. The average mean score for MCS is 437.80, while the average mean scores for environment, technology, structure, size, strategy and culture is 31.13, 34.04, 145.50, 67.84, 21.04 and 120.83, respectively. Of the contextual variables, technology, structure, strategy and culture are significantly related to MCS at $p < .05$.

Table 1
Descriptive Statistics and Correlations for MCS and Contextual Variables

Variable	Mean	SD	MCS	Environment	Technology	Structure	Size	Strategy
MCS	437.80	58.4						
Environment	31.13	5.47	-.0528					
Technology	34.04	4.44	.5936*	.0509				
Structure	145.50	23.74	.5770*	-.3146*	.4140*			
Size	67.84	34.08	-.0874	-.4285*	.1418	.1217		
Strategy	21.04	2.71	.3172*	.2401*	.5031*	.2617*	.0642	
Culture	120.83	11.61	.3510*	.0087	.2517*	.1126	.1190	.1337

*p<.05

Table 2 shows the breakdown of the respondents by hotel position. Twenty-two general managers, 26 marketing managers and 27 operational managers completed the questionnaires.

Table 2
Descriptive Statistics Based on Respondent Category

Variable	General Manager Mean (Stand. Dev.) N=22		Marketing Manager Mean (Stand. Dev.) N=26		Operational Manager Mean (Stand. Dev.) N=27	
MCS	434.5	(48.93)	444.88	(72.74)	433.67	(51.06)
Environment	29.86	(5.66)	32.12	(5.25)	31.22	(5.51)
Technology	33.41	(4.22)	34.96	(4.62)	33.67	(4.47)
Strategy	147.77	(22.75)	147.03	(22.88)	141.89	(25.75)
Size	68.68	(35.29)	68.92	(33.48)	66.11	(34.90)
Structure	21.31	(2.40)	20.96	(2.75)	20.89	(2.99)
Culture	121.91	(11.69)	121.04	(10.37)	119.74	(12.93)
N (%)	22	(29.33%)	26	(34.67%)	27	(36%)

ANOVA test was performed to determine if there was a difference in responses for each variable by manager level³. The results of our ANOVA test, as shown in Table 3, show that all variables are insignificant, indicating no differences in responses for any variable by level of management⁴.

Table 3
Analysis of ANOVA between General Managers, Marketing Managers and Operational Managers

Variables	Mean of Square	F-Value	Sig*
MCS	3,380.145	0.289	0.750
Environment	137.490	1.686	0.196
Technology	184.130	1.232	0.298
Structure	600.594	0.451	0.639
Strategy	7.276	0.157	0.855
Culture	145.888	0.170	0.844

*P< 0.05

Test of Hypotheses

Table 4 shows the results of regression equation examining our dependent variable of MCS and the six contextual variables of environment, technology, structure, size, strategy and culture. The model is significant at p<.000 and has an adjusted R-squared of .5392. The results of our hypotheses are as follows:

Table 4
Regression Result MCS and Contextual Variable

Variables	Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sign.
(Constant)	13.236	35.054		.378	.707
Environment	-.416	.563	-.073	-.739	.462
Technology	2.455	.688	.352	3.567	.001*
Structure	.546	.123	.418	4.426	.000*
Size	-.191	.081	-.211	-2.350	.022**
Strategy	.882	1.091	.077	.809	.421
Culture	.617	.216	.231	2.855	.006*
F Value = 16.076					.000*

Dependent Variable: MCS

*Significant at 1%

**Significant at 5%

H1 Environment: Table 4 shows that environment is not significantly related to MCS indicating that the environment does not affect MCS and Hypothesis 1 is not supported. Though this finding is consistent with Subramaniam and Mia's (2001) it contradicts the studies of Chenhall (2003), Simons (1995) and Emmanuel et al. (1990).

H2 Technology: As shown in Table 4 technology is significantly positively related to MCS at $p < .001$ and finds support for Hypothesis 2. This indicates that at higher the level of technology a more sophisticated MCS system is needed to handle the complexities of the organization. This finding is consistent with Macintosh and Daft (1987), Alberbathy and Lilis (1995) and Abernethy et al. (2004).

H3 Structure: As shown in Table 4, Hypothesis 3 is supported as structure is significantly related to MCS at $p < .000$. This suggests that when structure is complex a more sophisticated MCS is needed to cope with the complexities of the organization. These results are consistent with Haldma and Laats (2002).

H4 Size: Per table 4, size is significantly negatively associated with MCS at $p < .02$. These findings are inconsistent with Hypothesis 4 as we predicted that size and MCS would be positively related, thus Hypothesis 4 is rejected. Our results suggest that as firms grow in size, they tend to rely on more formal traditional MCS. These finding are contrary to the findings of Merchant (1981) and Chenhall (2003). Our results could be due to the possibility that none of the hotels examined were extremely large. The average hotel in our sample size had 68 employees. The smallest hotel had only 15 employees while the largest hotel had 138 employees. At these level of employees it may be possible to effectively manage the hotel through the increasingly use of more budgeting or traditional MSC.

H5 Strategy: Contrary to our Hypothesis 5, Table 4 shows that strategy is not significantly related to MCS. This finding contradicts with the previous studies by Merchant (1981), Govindarajan and Gupta (1981), Govindarajan (1988), Givindarajan and Fisher (1990), and Marginson (2002) who all found a positive relationship between Strategy and MCS.

H6 Culture: Per Table 4, Hypothesis 6 is supported as culture is significantly positively related to MCS at $p < .006$. These findings suggest that when corporate culture is strong and supports openness, transparency and equality that there is less of a need to have sophisticated MCS systems as traditional MCS systems adequately meet the organizations need. This finding is consistent with Harrison and Mckinnon (1999) and Chow et al. (1999).

Summary and conclusion

This study addresses the research question of whether contextual variables of environment, technology, organization structure, size, business strategy, and culture affect the structure of MCS. Our findings suggest the importance of the contextual variables of technology, structure, size and culture on an organizations MCS. The relationship between MCS and technology, structure and culture were positively related as predicted, indicating that higher levels of technology, structure and culture are related to more sophisticated MCS. Interestingly, the relationship between MCS and size is in the opposite direction of what was expected, indicating that organizations of larger size tend to rely more on traditional MCS. These results could be a

caused by the small hotel sizes used in the study as the average hotel employed 68 employees while the largest hotel employed only 138 employees. The results of prior research which show the positive relationship between MCS and size may only be applicable to much larger companies. Contrary to prior research, no support was found between the relationship between the contextual variables of environment and strategy with MCS.

Furthermore, our results find no difference in MCS and the contextual variables by manager level. These findings suggest that there are no differences in the perceptions of middle and upper levels managers in regards to factors that influence MCS design. All levels of management appear to perceive the effectiveness of MCS and their relationship to contextual variables in a consistent manner.

The main contribution of this study is in furthering the understanding of the relationship of MCS and contextual variables by being one of the first studies to consider the relationship of six contextual factors at one time. This study attempts to fill the gap in contingency-based studies which have previously focused on one aspect of contingency at one time. Additionally, we add to research on MCS in the hospitality industry. Our results provides insights to the hospitality industry in general and to the Indonesian hospitality industry specifically on how contextual factors affecting MCS design can influence the behavior of their managers to attain organizational goals.

Several limitations of the current study are acknowledged. Firstly, although established measurement instruments were used in most of the study, the MCS items used in the questionnaire were novel. Secondly, the use of data restricted to the hospitality industry in Indonesia perhaps limits the generalization of results to other nationalities and other industries. Future research could examine different settings (i.e. country, industry, etc) and investigate the effect of each contextual variable on the relationships between MCS and firm performance.

Endnotes

¹ Traditional MCS focus on specific operating goals and budgets, cost controls and rigid budget controls (Chenhall, 2003)

²The attached survey represents an English translation of the original survey written in Indonesian.

³ As size is measured by the number of employees at each hotel, all managers at the same hotel would have the exact same size measurement.

⁴The homogeneity of variance between manager types for each variable except size was tested to ensure that the assumptions for ANOVA were met¹. The results of the Levene test are insignificant for all variables, suggesting the same variance for all manager groups.

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Appendix 1
QUESTIONNAIRE

**SURVEY ON MANAGERS' PERCEPTION OF THEIR COMPANY'S
CONTEXTUAL VARIABLES, MCS DESIGN AND PERFORMANCE**

INFORMATION ON COMPANY:

1. Company Name: _____
2. Address: _____
3. Number of Employees: _____

RESPONDENT INFORMATION

1. Name _____ (Optional)
2. Position _____
3. Age _____
4. Gender _____
5. Highest Educational Level _____
6. Tenure _____

MANAGEMENT CONTROL SYSTEM

The objective of the following questions is to obtain empirical data on the characteristics of the management control system design in your company. The characteristics include four categories: (1) *belief system*, (2) *boundary system*, (3) *diagnostic control*, and (4) *interactive control*. Each category will include several questions that you will need to answer. Please answer each question according to the number from the following scale that best corresponds to your answer:

1	2	3	4	5	6
Extremely Low	Low	Fairly Low	Fairly High	High	Extremely High

Respond the following statement or question by marking (✓) in the box number provided in accordance with description of the aforementioned scale.

1	2	3	4	5	6
Extremely Low	Low	Fairly Low	Fairly High	High	Extremely High

Belief System

a) To what extent does your company have and formally communicates the following items to inspire and guide employees to search for new alternative?

	1	2	3	4	5	6
Company's vision and mission						
Basic of principle and value						
Company's objective						
Core value						

b) What is the importance of the following items in your company?

	1	2	3	4	5	6
Company's vision and mission						
Basic of principle and value						
Company's objective						
Core value						

c) *Opportunity-seeking behavior*

To which extent does your company create opportunity-seeking behavior to search for new alternatives?

1	2	3	4	5	6

d) *Degree Empowerment*

To which extent does your company empower employees to continuously search for new ways to satisfy customers?

1	2	3	4	5	6

e) *Degree of Autonomy*

To which extent are the following responsibilities delegated to lower management level?

	1	2	3	4	5	6
New product or service development						
Equipment acquisition						
Recruitment and lay off						
Raw material purchase						
Scheduling and implementing procedures						
Pricing						

1	2	3	4	5	6
Extremely Low	Low	Fairly Low	Fairly High	High	Extremely High

Boundary System

a) Fatal of Error

Following are possible fatal errors incurred by employees that may lead to strategic risk. To which extent is your company fully aware of them?

	1	2	3	4	5	6
Error of commission						
Error of omission						
Incomplete management information						
Inefficiency and breakdown						

b) Risks to be Avoided

To which extent does your company understand and cope with the following strategic risks?

	1	2	3	4	5	6
Operation risk						
Asset impairment risk						
Competitive risk						
Franchise or name risk						

c) To which extent is your company facing the following situations?

	1	2	3	4	5	6
Bad delivery of goods or services						
System downtime						
Customer complaints						
Environmental problems						
Social problems						
Exchange rate problems						
Debt problems						
Customer's collection problems						
Country risk						
Patent						
Recent product introduction by competitors						
New regulation						
Pending litigation						

d) To which extent does your company have internal pressure of the following items due to growth factors?

	1	2	3	4	5	6
Pressure for performance						
Rate of expansion						
Inexperience of key employees						

1	2	3	4	5	6
Extremely Low	Low	Fairly Low	Fairly High	High	Extremely High

e) To which extent does your company have internal pressure of the following items due to culture factors?

	1	2	3	4	5	6
Reward for entrepreneurial risk-taking						
Executive resistance to bad news						
Level of internal competition						

f) To which extent does your company have internal pressure of the following items due to information management?

	1	2	3	4	5	6
Transaction complexity and velocity						
Gaps in diagnostic performance measures						
Degree of decentralized decision making						

g) *Code of Business Conduct*

In order for employees to avoid activities leading to strategic risk, there should be a code of business conduct and sanctions for noncompliant. To which extent does your company apply the code of business conduct for the following items?

	1	2	3	4	5	6
Conflict of interest						
Activities that violate anti-trust laws						
Disclosure of confidential company information						
Trading in company securities based on nonpublic information						
Illegal payment to government officials						

h) *Strategic Boundaries*

Companies have strategic boundaries, which employees should understand and, if well implemented, can help prevent the use of companies' resource and business ideas from violating the company's strategy. To which extent does your company have and communicates the following strategic boundaries as part of a formal planning process?

	1	2	3	4	5	6
Minimum levels of financial performance (for example: ROI)						
Minimum sustainable competitive position (for example: market leader)						
Products and services that do not draw on core competence						
Market position and competitors to be avoided						

1	2	3	4	5	6
Extremely Low	Low	Fairly Low	Fairly High	High	Extremely High

i) Internal Control

As part of a boundary system to control strategic risk, internal controls are needed. To which extent are the following items implemented in your company?

	1	2	3	4	5	6
Segregation of duties						
Levels of authorization						
Physical security for valuable assets						
Independent audit						
Complete and accurate record keeping						
Restricted access to information system and database						
Timely management reporting						
Adequate expertise for accounting and control staff						
Rotation in key jobs						
Sufficient resource						

Diagnostic Control

a) Feed Back System

A control system commonly used in companies is called diagnostic control. To which extent does your company use the following systems?

	1	2	3	4	5	6
Profit plan						
Balanced scorecard						
Expense center budgets						
Project monitoring system						
Market share monitoring system						
Human resource system						
Standard cost-accounting system Standards						

b) Goals

	1	2	3	4	5	6
To which extent are company goals important?						
Do company goal meets the following criteria?	<i>Understandable</i>					
	<i>Measurable</i>					
	<i>Difficult but achievable</i>					
To which extent are subordinates' goals congruent with company's goals?						
To which extent does lower level management participate in setting company's goals?						
To which extent does managers consider slack?						
To which extent are uncontrollable factors considered in setting the company goals?						

1	2	3	4	5	6
Extremely Low	Low	Fairly Low	Fairly High	High	Extremely High

c) Performance Measurement

	1	2	3	4	5	6
To which extent does your company set performance measures as key factors in implementing strategy?						
To which extent are you sure that the performance measures do not measure the wrong performance variable?						

d) Incentive

	1	2	3	4	5	6
To which extent is the importance of a compensation system in your company?						
To which extent does the company's compensation system represent performance of the recipient?						
To which extent does financial reward increase as targets or goals are met as indicated in the unit's budgets in your company?						

e) Performance Reporting

	1	2	3	4	5	6
To which extent is performance reporting important in your company?						
To which extent does your company issue regularly and timely performance reports to the responsible managers?						
To which extent does your company use the principle of management by exception in performance reporting?						
To which extent can the company's system detect deviations from plans?						

f) Following Up Significant Exception

	1	2	3	4	5	6
To which extent is follow up to significant exceptions important to the planning and budgeting process?						
To which extent does your company follow up on exceptions from budgets?						
Following are possible steps in responding to deviations from budgets. To which extent does your company use each of these?	Fixing problem					
	Finding alternative methods					
	Changing strategy					

1	2	3	4	5	6
Extremely Low	Low	Fairly Low	Fairly High	High	Extremely High

Interactive Control

a) Strategic uncertainty

(1) To which extent is your company aware that it faces strategic uncertainty that may put the company at risk in attaining their goals?

1	2	3	4	5	6

(2) To which extent is it important to have a system that focuses on uncertainty by detecting any internal and external problem that may risk strategy implementation and report it to management?

1	2	3	4	5	6

(3) To which extent is your company vulnerable to the following changes?

	1	2	3	4	5	6
Technology						
Customer taste and demography						
Government regulation and market protection						
Competitor's entry and exit						

(4) To which extent is it important for lower level employees understand corporate strategy?

1	2	3	4	5	6

(5) To which extent does your company set corporate strategy?

1	2	3	4	5	6

(6) To which extent is communication important, both in formal and informal, between higher and lower level employees in decision making activities?

1	2	3	4	5	6

(7) To which extent does your company use the following systems in their formal interactive process?

	1	2	3	4	5	6
Profit planning						
Project management						
Company intelligence						

1	2	3	4	5	6
Extremely Low	Low	Fairly Low	Fairly High	High	Extremely High

(8) To which extent is it important for the staff to support the interactive control system.

1	2	3	4	5	6

(9) To which extent does your company have sufficient staff?

1	2	3	4	5	6

BUSINESS ENVIRONMENT

Uncertainty of business environment in your company can significantly be measured using the statements below. Please answer each item according to the number from the following scale that best corresponds to your answer.

1	2	3	4	5	6
Extremely difficult to predict	Difficult to predict	Fairly difficult to predict	Fairly easy to predict	Easy to predict	Extremely Easy to predict

	1	2	3	4	5	6
Competitor's action						
Technology development in your company						
Product (or service) design						
Market demand						
Raw materials						
Price of raw materials						
Government regulation						
Employee's action						

TECHNOLOGY

Technology in an integrated workflow is measured using the statements below. Please answer the following statements according to the number from the following scale that best corresponds to your answer.

1	2	3	4	5	6
Extremely low	Low	Fairly low	Fairly High	High	Extremely High

	1	2	3	4	5	6
Equipment in our company is self-adjusting in nature.						
All equipment has specific functions.						
Activities are conducted in compliance with set procedures.						
Any initial steps of activities require inputs.						
There is no waiting time from one activity to another.						
There is no excessive inventory (in housing keeping section) and/ or incomplete services during operations.						
Breakdowns in operation often occur.						
Outputs of one department become the next department's inputs.						
Operations are evaluated based on an appropriate specified measurement technique.						

ORGANIZATION STRUCTURE

A. Integration

The following six-point scale is used for questions or statements related to the integration, formalization, and specialization components. Please answer each question according to the number from the following scale that best corresponds to your answer.

1	2	3	4	5	6
Extremely rare to use	Rare to use	Fairly rare to use	Fairly often to use	Often to use	Extremely often to use

To guarantee the consistency of decisions in one area with the decisions in other areas, to which extent does your company do or have the following?

- Interdepartmental committee enabling departments to coordinate in the decision making.

1	2	3	4	5	6

- Ad hoc committee, functioning to facilitate interdepartmental collaboration for specific project.

1	2	3	4	5	6

1	2	3	4	5	6
Extremely rare to use	Rare to use	Fairly rare to use	Fairly often to use	Often to use	Extremely often to use

3. Mediating personal, tasking to coordinate departments' interests in a project.

1	2	3	4	5	6

B. Formalization

Using the same scale, rate your company's performance in terms of the following factors relative to your company's competitors.

No.	Type of decision	1	2	3	4	5	6
1.	Functional costs (such as transportation, sales, and promotion costs)						
2.	Services for customer such as the order filling, customer satisfaction, product or service life cycle, and delivery in time)						
3.	Level of productivity						
4.	Operation						

Rate your company's performance in terms of the following factor compared to internal goals.

No.	Type of decision	1	2	3	4	5	6
1.	Functional costs such as transportation, sales, and promotional costs)						
2.	Services for customer such as the order filling, product or service life cycle, and delivery time)						
3.	Cost control based on variance analysis						
4.	Productivity analysis						
5.	Customer satisfaction and follow-up						
6.	Profitability						

1	2	3	4	5	6
Extremely rare to use	Rare to use	Fairly rare to use	Fairly often to use	Often to use	Extremely often to use

C. Specialization

Indicate if the following types of decisions are made by at least one specialist or expert.

High level of Decision

No.	Type of Decision	1	2	3	4	5	6
1.	Market research						
2.	Sales forecasting						
3.	Operation scheduling						
4.	Transportation scheduling						
5.	Quality control						
6.	Material handling						
7.	Equipment distribution						

Low Level of Decision

No.	Type of Decision	1	2	3	4	5	6
1.	Market research						
2.	Sales forecasting						
3.	Operation scheduling						
4.	Transportation scheduling						
5.	Quality control						
6.	Material handling						
7.	Equipment distribution						

D. Decentralization

Please answer each question according to the number from the following scale that best corresponds to your answer.

1	2	3	4	5	6
Decision made by Top Management					Decision made by individual under first level supervisor

What level of management performs the following decisions?

Strategy

No.	Area of Decision	1	2	3	4	5	6
1.	Level of operation						
2.	Supplier selection and raw material purchase from supplier						
3.	Level of service such as the rate of order filling						
4.	Product or service development						
5.	Equipment acquisition						
6.	Hiring and firing employees						
7.	Scheduling procedure						

Marketing

No.		1	2	3	4	5	6
1.	Pricing						
2.	Promotion strategy						
3.	Target market choice						

STRATEGY

Following are statements on how you position your company relative to the company's competitor. Please answer each statement according to the number from the following scale that best corresponds to your answer.

1	2	3	4	5	6
Extremely Low	Low	Fairly Low	Fairly High	High	Extremely High

No		1	2	3	4	5	6
1	Product pricing						
2	Research and Development cost						
3	Product quality						
4	Brand image						
5	Product feature						

CULTURE

Please answer each question according to the number from the following scale that best corresponds to your answer. For example, if you strongly agree with a particular statement, you would mark column “6”:

1	2	3	4	5	6
Strongly disagree	Disagree	Fairly Disagree	Fairly Agree	Agree	Strongly Agree

No.		1	2	3	4	5	6
1	It is important to have job requirements and instructions spelled out in detail so that employees always know what they are expected to do.						
2	Managers expect employees to closely follow instructions and procedures.						
3	Rules and regulations are important because they inform employees what the organization expects of them.						
4	Standard operating procedures are helpful to employees on the job.						
5	Instructions for operations are important for employees on the job.						
6	Group welfare is more important than individual rewards.						
7	Group success is more important than individual success.						
8	Being accepted by the members of your work group is important.						
9	Employees should not pursue their goals after considering the welfare of the group.						
10	Managers should encourage group loyalty even if individual goals suffer.						
11	Individuals may be expected to give up their goals in order to benefit group success.						
12	Managers should make most decision without consulting subordinates.						
13	It is frequently necessary for managers to use authority and power when dealing with subordinates.						
14	Managers should seldom ask the opinions of employees.						
15	Managers should avoid-off-the job social contact with employees.						
16	Employees should not disagree with management decisions.						
17	Managers should not delegate important tasks to employees.						
18	Managers should help employees with their family problems.						
19	Managers should see to it that workers are adequately clothed and fed.						
20	Managers should help employees solve their personal problems.						

21	Management should see that healthcare is provided to all employees.						
22	Management should see that employees have an adequate education.						
23	Management should provide legal assistance for employees who get in trouble with law.						
24	Management should take care of employees as they would take care of their children.						
25	Meetings are usually run more effectively when they are chaired by a man.						
26	It is more important for man to have a professional career than it is for a woman to have a professional career.						
27	Men usually solve problems through analysis; women usually solve problems with intuition.						
28	Solving organizational problems usually requires an active forcible approach, which is typical of men.						
29	It is preferable to have a man in a high level position rather than a woman.						

FINANCIAL PERFORMANCE

Please rate your company's performance in terms of profitability according to the number from the following scale that best corresponds to your answer.

1	2	3	4	5	6
Extremely below the industry average					Extremely above the industry average

No		1	2	3	4	5	6
1.	Average Return on Investment for the last three years						
2.	Average profit for the last three years						
3.	Growth of profit for the last three years						
4.	Return on sales for the last three year						

Comment and Suggestion

Comments and suggestions for future improvement are welcome.

Comments

Suggestions

Thank you for your participation.
