

# INVESTIGATING CAUSALITY RELATIONSHIP OF BALANCED SCORECARD, BONUS, AND MANAGERS' TIME ALLOCATION: AN EXPERIMENTAL STUDY

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## Abstract

**How to cite this paper:** Dewi, F. G. (2024). Investigating causality relationship of balanced scorecard, bonus, and managers' time allocation: An experimental study. *Corporate Board: Role, Duties and Composition*, 20(2), 111–119. <https://doi.org/10.22495/cbv20i2art11>

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**ISSN Online:** 2312-2722  
**ISSN Print:** 1810-8601

**Received:** 09.03.2024  
**Accepted:** 10.09.2024

**JEL Classification:** M410, M400, M490  
**DOI:** 10.22495/cbv20i2art11

This study investigates the causal relationship between a comprehensive reporting system (balanced scorecard — BSC) and managerial time allocation when incentives are involved. The study examines whether managers adjust their time according to different performance areas when both financial and non-financial indicators are used for evaluation and reward. An experimental methodology was employed, involving managers from private and state-owned enterprises in Indonesia. The data were analyzed using analysis of variance (ANOVA). The findings indicate that managers do not spend more time on non-financial areas when a BSC is used, and do not spend less time on financial areas when bonuses are based on both financial and non-financial goals. These results challenge agency theory, which suggests that performance-based incentives align managerial behavior with organizational objectives. The study concludes that BSC and financial incentives do not significantly affect managerial time allocation as expected. Overall, the results of the research support Lipe and Salterio (2000), and Ullrich and Tuttle (2004), but the study also highlights that additional factors may need to be considered to fully understand how incentives and reporting systems influence managerial behavior. This paper contributes to the understanding of performance measurement and incentive systems in Indonesian enterprises by offering ideas for the design of effective management control systems.

**Keywords:** Balanced Scorecard, Bonus, Performance

**Authors' individual contribution:** The Author is responsible for all the contributions to the paper according to CRediT (Contributor Roles Taxonomy) standards.

**Declaration of conflicting interests:** The Author declares that there is no conflict of interest.

**Acknowledgments:** The Author would like to thank, Prof. Yuliansyah, S.E., M.S.A., Ph.D, Lampung University, for constructive suggestions which improved the quality and content of this article.

## 1. INTRODUCTION

The balanced scorecard (BSC) as comprehensive performance measurement is an interesting topic to study (Fernandes et al., 2006; Khalid et al., 2019). Ratnaningrum et al. (2020) stated that despite some academics being skeptical about the relationship between BSC and organizational performance, it is still widely used. Practitioner-oriented literature reports that it is valuable, especially in terms of improving organizational performance and strategic achievement (Frederico et al., 2021).

Chenhall and Langfield-Smith (1998) studied Australian companies and stated that there was a significant and positive correlation between the balanced management control system BSC and exceptional performance. Similarly, Hoque and James (2000) found that the use of BSC was positively associated with organizational performance. This is because it is more than just a simple performance measurement system used as a strategic management tool, capable of clarifying and translating the company's mission and policy, communication processes, tactical alignment and organizational learning (Frederico et al., 2021; Sarraf & Nejad, 2020). Benková et al. (2020) conducted a study on industry in Slovakia and reported that the use of BSC helps to measure company performance.

Organizational effectiveness is also related to the routine of the person who works in the company (Sarraf & Nejad, 2020). It is the overall performance of the managers and employees (Bedanand et al., 2014; Bedford et al., 2008; Kocakülâh & Austill, 2007). Burney and Widener (2007) conducted a study using a survey method and it was reported that a strategic performance measurement system has a positive effect on the routine of managers, moderated by job-related information and role ambiguity. However, Yongvanich and Guthrie (2009) descriptively analysed companies in Thailand and reported an entirely different result. Approximately 33% of the industries implementing BSC show no causal relationship. It was further stated that there is little relationship between the use of different types and the size of the firm. There is also no significant difference between the satisfaction and perceived benefits obtained from the use of diverse BSC. Similarly, factors related to its usage are insignificantly related to all performance variables.

Each business unit in the organization develops a BSC measure to reflect its goals and strategies. Furthermore, it can be categorized as a standard or unique measure. Common measures are usually for branches or units, while the extraordinary ones are for each business unit (Kaplan, 2009; Kaplan & Norton, 1992; Kaplan & Norton, 1996a, 1996b). Lipe and Salterio (2000) proved that *division 1* performs better than *division 2* in both common and unique measures. This was the first study to document the cognitive difficulties in using the BSC, and its results showed that senior managers did not seem to pay attention to unique measures in performance evaluations. According to Holmström and Milgrom (1991), assuming that this does not affect *ex-post* evaluations of subordinates' performance, junior managers are unlikely to use unique measures in *ex-ante* decision making.

Meanwhile, Otley (1999) stated the need to link performance measurement systems with rewards.

Managers are usually more satisfied with BSC when it is associated with incentives (Malina & Selto, 2001). Experimental study on management control systems showed the role of bonuses in terms of increasing managerial effort to achieve set goals (Bonner et al., 2000; Kershaw & Harrell, 1999; Sprinkle, 2000). Burney and Widener (2007) reported the existence of a relationship between job-relevant information, role ambiguity and conflict.

This study aims to examine the impact of rewards in terms of improving performance. The BSC, which provides comprehensive information on performance, encourages managers to pay attention to the factors reported. Ullrich and Tuttle (2004) proved that they spend more time on rewarded jobs rather than unmonitored tasks.

Based on empirical and practical gaps, the following research questions are developed:

*RQ1: Do managers pay more attention to non-financial areas when reports from comprehensive control systems compare to financial areas?*

*RQ2: Do managers spend less time on the financial area, when the comprehensive control system reports results regarding non-financial areas compared to when they are not reported?*

*RQ3: Do managers spend more time in non-financial areas when incentives are based on the achievement of financial and non-financial goals compared to realizing financial goals?*

*RQ4: Do managers spend less time in finance when incentives are based on performance in achieving financial and non-financial goals than on financial goals?*

In order to investigate the answer to the research question, this study used an experimental method. The effect of BSC application and bonuses on managers' performance using an experimental approach in the context of private and state-owned companies has not been conducted in Indonesia. These procedures have been widely used to measure performance evaluation in the country. Public companies often give their managers quite a high bonus, although there is no empirical evidence to support its effect on performance. These results are consistent with the study by Kaplan and Norton (2005) that BSC is used to influence the attention of managers. It is assumed that with increasing time, it affects the performance of managers in a positive direction.

The structure of this paper is as follows. Section 1 deals with the introduction. Section 2 is devoted to literature review and hypotheses development. Section 3 deals with the research method. Section 4 synthesizes the results and discussion. Finally, Section 5 offers the conclusion of the study.

## 2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

### 2.1. Agency theory

Johnsen (2001) stated that positive agency theory is relevant to the theoretical perspective of the BSC in business management. This is because it refers to the issues of implementation and administrative control. However, assuming BSC is applied to public management, then positive agency theory must be supplemented by political economy.

According to Baiman (1990) and Eisenhardt (1989), agency theory links information reporting to managerial effort. In circumstances, where there is imprecise information about agents' efforts, asymmetric claims are bound to exist. Agents have the opportunity to act in ways that are inconsistent with primary goals (negligence) without being detected by the leadership (Baiman, 1990). Feltham and Xie (1994) developed an analytical model that incorporates agency theory into the context of a manager (agent) who is responsible for multiple tasks. It was further stated that "a single performance measure without noise cannot be used to achieve best-first results unless they are perfectly congruent (with the most important objective)" (Feltham & Xie, 1994, p. 447). However, these can be realized with multiple performance measures without noise when given a period in the first-best direction (of effort) (Feltham & Xie, 1994).

Agency theory identified vital performance-based incentives because they motivate managers to behave in a manner consistent with their primary goals (Baiman, 1990). Therefore, such incentives are intended to influence managerial behavior that is consistent with organizational needs (Eisenhardt, 1989). Some agency models suggested that unless agents are offered performance-based incentives (e.g., bonuses), they may not use optimal effort to achieve primary goals or objectives (Baiman, 1990; Fama, 1980; Jensen & Meckling, 1976). Based on this perspective, performance reporting in non-financial areas tends to have little impact on optimal business processes (Lau & Sholihin, 2005; Yuliansyah, Bui, & Mohamed, 2016; Yuliansyah, Rammal, & Rose, 2016).

## 2.2. Balanced scorecard

The BSC is one of the most influential strategy implementation and control tools of the past 75 years, but the evidence regarding the impact of BSC on firm performance is mixed (Tawse & Tabesh, 2023). The BSC model is expected to realize the sustainability of a company's financial routine (Kaplan & Norton, 1992; 2006; 2005). The BSC measures four aspects, namely financial, customer, internal business process, as well as learning and growth perspectives (Ratnaningrum et al., 2020; Banker et al., 2004; Bedford et al., 2008; Kaplan et al., 2008; Lipe & Salterio, 2000).

Tsai et al. (2020) stated that BSC is a tool that provides managers with relevant information, thereby creating a conducive environment for organizational learning. Meanwhile, Hoque and James (2000), linked it to company performance, size, product-life cycle stages, and market position. The study was conducted on 66 manufacturing companies in Australia, and the results showed that the larger the establishment, the more BSC was used. It was discovered that firms with a higher proportion of new products tended to use related measures. The company's market position was not significantly associated with greater use of BSC. They also reported that increased use of BSC was associated with improved firm performance, although this relationship did not vary significantly with firm size, position, or product life cycle. Tawse and Tabesh (2023) suggest that BSC adoption has a positive effect on firm performance, but the strength of the relationship is moderate.

Van Veen-Dirks and Wijn (2002) analysed the relationship between the BSC and critical success factors. They conducted a six-year project in 15 companies in the Netherlands using an integrated method. Speckbacher et al. (2003) provided evidence of using BSC in Germany, Austria, and Switzerland. They developed three main types of use that reflect the successful phase of the evolution of the concept. The samples were taken from publicly listed companies in the three countries with a response rate of 87%. The analysis was carried out by classifying these firms using different types of BSC, ranging from the original BSC to an advanced one, which includes an integrated strategic management system describing the logical cause and effect strategy of the company with a reward system.

Kocakülâh and Austill (2007) discussed the theoretical and technical use of BSC in the healthcare sector. They argued that the model is appropriate to apply in hospitals and clinics as it helps to improve their profitability. Sixteen positive aspects were put forward, while only three obstacles were discovered in terms of applying BSC in this sector. These include the difficulty of identifying appropriate indicators for each expected performance and the need to train stakeholders to understand the information provided by the tool.

Previous studies reported that comprehensive control systems such as the BSC have stimulated attractive growth. For example, Lipe and Salterio (2000) stated that evaluators generally use this tool for more unique purposes, such as comparing opposite divisions. Ullrich and Tuttle (2004) stated that when structured incentives and the BSC were evaluated separately, problem areas received more attention than those with unachievable goals. While structured incentives provided satisfactory performance in all required areas, those with unachievable goals received the same attention as those with problems. The study does not directly indicate whether a comprehensive control system influences business direction.

Chenhall and Langfield-Smith (1998) surveyed 186 Australian companies and reported that a significant and positive correlation exists between a "balanced" management control system and high performance. Hoque and James (2000) also surveyed Australian companies and discovered that BSC has a positive relationship with organizational performance. The results of these two studies presented some initial facts that the use of a comprehensive control system improves organizational performance. However, the correlation design of both surveys does not provide clear conclusions regarding the cause-and-effect relationships. The two studies have not been able to determine whether the management control system triggers higher organizational performance or not.

Yuliansyah and Jermias (2018) developed comprehensive performance measurement systems based on the previous studies conducted by Chenhall (2005), Hall (2008), as well as Lau and Sholihin (2005). They tried to develop a BSC model in the organic food sector in India, using an integrated quantitative and qualitative approach. The findings of the semi-structured interviews conducted with directors, managers, and professional consultants formed the basis of this study. The outcome of this study indicated that

interpretive structural modelling (ISM) and analytic network process (ANP) are used to overcome several weaknesses related to the development of BSC. The formulated framework is complete for companies in the organic food sector. It simply implies that adoption an innovative approach to developing a performance measurement system is used to achieve the desired objectives.

Yongvanich and Guthrie (2009) examined the relationship between satisfaction and financial performance using BSC. They also tested whether the use of modified types resulted to high satisfaction and financial performance or not. Based on the acquired results, 33% of the companies that implemented BSC did not show a cause-and-effect relationship. It was also found that there is an insignificant relationship between the type of BSC used and the size of the firm. There is no significant difference between satisfaction and perceived benefits obtained from the use of various BSC types. Similarly, the factors related to using this tool do not significantly correlate with all performance variables.

Companies' accounting systems report financial performance information, whereas that of comprehensive control tends to include data on non-financial areas. This is expected to show the importance of these aspects as well as to control managers predicted to devote more time to achieving non-financial goals or objectives.

Therefore, the following hypotheses are formulated:

*H1a: Managers intend to spend more time on non-financial areas only when the outcome of a comprehensive control system report is compared to the financial aspects.*

*H1b: Managers intend to spend less time on financial objectives, especially when the comprehensive control system report outcomes concerning non-financial areas compared to when not reported.*

### 2.3. Rewards and bonuses

Soni and Singh (2020) provide evidence that directors' compensation in India has increased significantly and there is a strong correlation between compensation and firm performance. However, stronger governance mechanisms are needed to control excessive compensation. In line with this, a study by Aaen and Lueg (2022) shows that chief executive officer (CEO) base salary and bonuses are positively related to firm performance. However, their contribution is smaller compared to stock options and insider shareholding. The study found that for every US\$1,000 increase in shareholder wealth, CEO direct compensation increases by about US\$1.36. Firm performance is a reflection of the performance of its managers. It is still an interesting discussion whether the performance of managers can be encouraged because of the provision of rewards.

Many studies argued that the BSC needs to be linked to compensation (Alexandra Albertsen & Lueg, 2014; Bedford et al., 2008; Decoene & Bruggeman, 2006; Greiling, 2010; Kaplan & Norton, 2001), as well as the importance of performance measurement systems and rewards are recognized in several fields (Griffiths, 2003; Otley, 1999;

Soderberg et al., 2011). The study carried out on the use of this tool in a large manufacturing company (Malina & Selto, 2001) concluded that managers are more satisfied with the BSC when this system is associated with rewards. Lipe and Salterio (2000) used this measuring instrument only for performance assessment. Therefore, the contribution of these two studies is to investigate how knowledgeable decision makers use the usual and unique measures of the BSC in their assessment of bonus allocation.

Experimental study on management control systems portrayed the role of bonuses in increasing managerial effort to achieve set goals (Bonner et al., 2000; Kershaw & Harrell, 1999; Sprinkle, 2000). Several studies reported that managers occasionally employ certain efforts to earn bonuses, even when it is performed in ways contrary to the overall goals of the organization (Harrell & Harrison, 1994; Tuttle et al., 1997). These results indicated that increased information is a form of progress toward boosting managerial effort to achieve goals (Harrell & Harrison, 1994; Tuttle et al., 1997). Managers' bonus reductions are lower when employees' objective performance is higher. Conversely, bonus reductions are higher when employees' objective performance is lower (Maske et al., 2021).

Management control systems are used to explain the role of bonuses in terms of increasing managerial effort to achieve set goals or objectives (Bonner et al., 2000; Kershaw & Harrell, 1999; Sprinkle, 2000). However, Tuttle and Ullrich (2003) differentiated whether the role of bonuses depended on achieving performance satisfaction in all areas of the BSC or separately. They found no difference in planning time between two incentive structures that were easy to achieve and complex levels that made it difficult to achieve goals or objectives. Ullrich and Tuttle (2004) conducted an experiment that proved incentive affects managers' attention.

Therefore, the following hypotheses are formulated:

*H2a: Managers spend more time in non-financial areas, specifically when incentives are based on achieving both financial and nonfinancial goals compared to realizing financial goals.*

*H2b: Managers spend less time in the financial area, specifically when incentives are based on performance contingent in terms of achieving financial and non-financial goals than on financial goals.*

### 3. RESEARCH METHODOLOGY

This study replicates the model developed by Ullrich and Tuttle (2004). The difference is the use of a higher economic incentive scheme than that used in previous studies, and the use of managers and employees with sufficient work experience as subjects. In addition, this study also limits the amount of time that can be used for work to 40 hours per week. This method allows participants to distribute their working time according to the hours commonly used in Indonesia.

This study employed an experimental laboratory method because it aims to examine the causal relationship between the BSC performance measurement system and rewards. Moreover, testing conducted using experiments has

advantages such as better internal validity. It is also able to control the variables that can cause bias in experimental results, such as time and fatigue. The experimental method has a limitation in terms of low external validity. Therefore, it is recommended that the next study could use the survey method to obtain high validity.

### 3.1. Subject of the experiment

The subjects of the experiment were managers and employees of both public and private companies with a minimum educational qualification of a Bachelor's degree in accounting, management and law, and this amounted to a total of 40 people. In addition, participants who had a minimum of two years of work experience were selected. This was to ensure that they at least had sufficient knowledge and experience in the work field. These participants were recruited through Facebook advertisements, emails and bulletin boards of several private and public companies in Lampung Province. The experiment was conducted in a room prepared in Building G, Faculty of Economics, Lampung University, with a capacity of 20 people and a distance of about one meter between the tables. The essence is to reduce the possibility of

communication between the participants. Each cell was subjected to the experiment at different times using 20 participants randomly selected and used within a subject. In addition, the participants were introduced between subjects, while their responses and identities were kept confidential.

### 3.2. Experimental design

A  $2 \times 2$  full factorial experiment was conducted using the decision case methodology to examine whether the time allocated by managers of the four BSC areas was affected by the two independent variables. Meanwhile, the first independent variable is the information reported by the comprehensive control system. The second one is the incentives dependent on performance in the financial area, as well as both financial and non-financial, as shown in Table 1.

### 3.3. Study instruments

The survey instrument was adopted from Ullrich and Tuttle (2004), although some modifications were made.

Table 1. Experimental design

Independent variables	Bonuses based on achieving a goal in ...	
	Financial area only	All areas
Information reported for the financial area only	A-cell: N = 20	B-cell: N = 20
Information reported for the entire area	C-cell: N = 20	D-cell: N = 20

It was used to describe the case of Global Corporation, which had focused its strategies on four critical business areas and set goals for each to successfully implement its framework. These areas are customer, finance, internal business, learning, and growth, as taught in management accounting courses. In each aspect, a comprehensive set of performance measures was developed to assist the company measure progress towards its target. The experimental instrument uses the USM&R strategy (an oil company in America that has successfully implemented BSC), the four business areas and a set of performance indicators.

This research used the first page of Ullrich and Tuttle's (2004) instrument (scenario) to all experimental group, and all participants received similar information. They assumed the role of department managers in a large marketing company that developed new strategies, goals, and performance indicators.

The manipulation of the instruments was carried out in the section that explains the company's bonus planning and communication system. These two attributes are supposed to have triggered the participants' reactions. Respondents were asked to indicate how much time they planned to spend working on each of the four areas during the next phase of implementation.

In addition, questions were asked to check for manipulation of participants and attention to the task. The first question (Q1) asked participants to identify a statement that reflected the condition of the bonus received. The second question (Q2) asked them to identify the conditions under which

the information in the case was received. The third question (Q3) asked them to either agree or disagree with a statement regarding their bonus as stated in the case, which was conditional in terms of achieving all goals. Finally, they were asked to provide demographic information.

### 3.4. Variable measurement

#### 3.4.1. Dependent variable

In the decision-making condition, subjects were asked to indicate the time they would spend in the upcoming performance period on achieving the stated goals in all four areas. As a result, four responses were obtained from each subject. These included time spent on achieving goals or objectives in the areas of *Customers, Finance, Internal business processes, and Learning & growth*. The four responses were combined into two dependent variables to test the hypothesis. The first dependent variable is the sum of time spent on the three non-financial areas (*Customers, Internal business processes, Learning & Growing*). It is used to test *H1a* and *H2a* in non-financial areas. The second dependent variable is the time spent on the financial area and is used to test *H1b* and *H2b*.

Previous studies by Ullrich and Tuttle (2004), Tuttle and Harrell (2001), and Kershaw and Harrell (1999) were conducted using different time planning measures of 10%, 20%, and 30%. Ullrich and Tuttle (2004) commented on Naylor and Ilgen (1984), who believed that the amount of time employees devote

to a goal indicates their strength or level of commitment. It also implies a measure of the effort put into subsequently contributing to the goal. McAllister et al. (1979), as well as Ullrich and Tuttle (2004), stated that such individuals devote more time to specific activities.

Participants were explicitly informed that they could decide to allocate certain hours per week to the business areas they considered appropriate, for example, a total of 40 hours per week. The timeframe was not linked to the achievement of the four areas' goals, which were always held at 15 hours per week. This reflects the assumption that not all work is directly related to goals. The time allocated to work related to the company's goals was, therefore, 25 hours per week.

### 3.4.2. Independent variable

There are two independent variables namely *Bonus* and *Information* provided by the company. First, the reward-bonus is manipulated on two levels by offering salary plus a 40% bonus based on: 1) achieving only financial goals, or 2) achieving goals in all four areas simultaneously. Therefore, the bonus depends on the performance of the financial area under both conditions, although it is explicitly linked to the three non-financial areas (*Customers, Internal business processes, and Learning & Growing*). Second, the information reporting is manipulated at two levels by informing participants: 1) only about the financial area, or 2) about all four areas.

## 4. RESULT AND DISCUSSION

At the initial stage, randomization testing was conducted to ensure that there were no differences between the four demographic variables: *gender,*

*education, age, and work experience.* The demographic data of the participants were tested in different experimental conditions. The results of the Chi-square test showed that there were no significant differences in all categories of demographic variables in each cell. This simply means that the randomization process conducted in this study was adequate.

Manipulation checks were carried out to ensure the subjects understood the importance of the analyzed case. Only 34 participants were able to correctly identify similar conditions during bonus manipulation check to identify the reporting system information received. However, only six of them incorrectly identified the process, and this simply means that testing can be continued.

Finally, participants were asked to respond to the statement that achieving objectives in the four critical areas is necessary to implement the Indonesia division strategy successfully. A 6-point Likert scale was used, ranging from "Strongly disagree" (marked 1) to "Strongly agree" (marked 6). The number of responses that agree ( $\geq 4$ ) indicates that participants paid attention to the decision-making case. The mean response is 5.10 (above 4) with a standard deviation of 0.778. This means that participants paid attention to the four critical decision-making areas.

### 4.1. Hypotheses analysis

Table 2 shows the mean or average number of hours per week that a subject allocates to financial and nonfinancial areas, as well as the total number of hours per week in both cell categories. The agency theory predicts that reporting performance and bonuses that bind to all areas will cause managers to allocate more time to the non-financial areas.

Table 2. Average number of hours per week

Reported information	Bonuses based on achieving a goal in ...					
	Financial area only		All areas		Average	
Financial area only	Financial area	5.8	Financial area	5.7	Financial area	5.7
	Non-financial area	19.4	Non-financial area	19.5	Non-financial area	19.5
	Total	25.2	Total	25.2	Total	25.2
All areas	Financial area	5.4	Financial area	5.0	Financial area	5.2
	Non-financial area	20.6	Non-financial area	20	Non-financial area	20.3
	Total	26	Total	25	Total	25.5
Average	Financial area	5.6	Financial area	5.3		
	Non-financial area	20	Non-financial area	19.8		
	Total	25.6	Total	25.1		

### 4.2. ANOVA test

Table 3 shows the results of the ANOVA used to test *H1a* and *H2a*, with time allocated to the non-financial area as the dependent variable. The assessment of the F-model ( $F = 0.915$  with  $p > 0.05$ ), and its interaction with the independent variables are insignificant ( $F = 0.443$ ,  $p > 0.05$ ), and the main impact cannot be interpreted directly. The main effect of reporting information was also insignificant ( $F = 2.144$  with  $p > 0.05$ ). Table 2 shows

that participants allocated 20.3 hours per week and 19.45 hours per week to the non-financial and financial areas respectively. Although statistically, this cannot be proven, indicating *H1a* is rejected.

The ANOVA results are related to *H2a*, with time allocated to the non-financial area as the dependent variable, shown in Table 3. The main effect of bonus is not significant ( $F = 0.159$ ,  $p > 0.005$ ). The participants allocated 19.75 hours per week and 20 hours per week to non-financial and financial areas. Therefore, *H2a* is rejected.

**Table 3.** ANOVA — Distribution time/hour in non-financial area

Source	df	SS	F-values	p-value
Information reported by management control system	1	13.612	2.144	0.147
Bonus	1	1.012	0.159	0.691
Information × Bonus	1	2.813	0.443	0.508
Model	3	17.438	0.915	0.438

Note: Degrees of freedom (df); sum of squares (SS).

Table 4 shows the results of ANOVA used for testing *H1b* and *H2b* with time allocated to the financial area as the dependent variable. The assessment of the F-model ( $F = 0.729$ ,  $p > 0.05$ ), and its interaction with the independent variables are insignificant ( $F = 0.86$ ,  $p > 0.05$ ), and the main effect could not be interpreted directly. Table 3

shows that the major impact on reporting in *H1b* is insignificant ( $F = 1.821$ ,  $p > 0.05$ ), with 5.18 hours per week and 5.75 hours per week (see Table 2) allocated to the financial and non-financial area. Although, statistically, this cannot be proven, indicating *H1b* is also rejected.

**Table 4.** ANOVA — Distribution time/hour in financial area

Source	df	SS	F-values	p-value
Information reported by management control system	1	6.613	1.821	0.181
Bonus	1	1.012	0.279	0.599
Information × Bonus	1	0.313	0.86	0.770
Model	3	7.938	0.729	0.538

Note: Degrees of freedom (df); sum of squares (SS).

## 5. CONCLUSION

In conclusion, managers increased their work time in broader areas and fields with numerous rewards than unmonitored jobs (Ullrich & Tuttle, 2004). These results are consistent with Kaplan and Norton's (2005) statement that the BSC is used to influence managers' attention. The increased time they allocate to an area tends to affect its performance going forward.

The results indicated that managers do not spend more time in non-financial areas when a comprehensive control system reports their outcomes compared to the use of financial areas. Similarly, they do not spend less time in the financial field when bonuses were based on financial and non-financial areas than its sole dependence on the financial aspect.

These results were inconsistent with the studies by Kaplan and Norton (1996a) and Ullrich and Tuttle (2004), stating that the BSC changes the way managers spend their time. D-Cell in the experimental design represents a comprehensive control system in which the information relates to all areas of reported performance rewards. However, it turns out that managers do not spend quality in these cells.

This study could not provide a causal explanation for the use of a comprehensive control system such as BSC for higher performance. However, diverting the managers' attention to various areas needs further methodologically and practically investigation. It has not been proven whether a comprehensive reporting system and the incentives provided affect managers' attention, although this needs to be explored in further research. This can be caused by differences in culture and work climate. Lipe and Salterio (2000) found that when using BSC, raters tend to use a unique measure. Finally, using generic measures may also lead to managers losing focus. Further research is recommended to incorporate non-financial performance indicators in the reported

performance measurement system, according to the results of the study by Benková et al. (2020), who confirm the importance of using non-financial indicators and identify barriers to such use. The study contributed to the expansion of knowledge about the BSC concept, which we consider to be a modern management tool oriented towards the future, and supported its implementation in companies so that they can operate within the framework of sustainable development. Moreover, future study needs to investigate this by combining short-term and long-term incentives.

The practical implications of this study are that companies may need to reconsider the design of their management control systems. Although BSC and financial incentives are often considered as effective tools for enhancing managerial performance, the findings suggest that their impact may not be as effective as expected in directing managers' attention to non-financial areas. Therefore, further research is needed to explore other factors that might influence managers' time allocation and attention, and to develop more effective approaches to managing organizational performance. Overall, this study makes a significant contribution to understanding performance measurement and incentive systems in Indonesian enterprises and offers insights for designing more effective management control systems.

The study has several limitations, including the use of time allocation as the sole indicator of managerial behavior, which may not fully capture the quality of work. The controlled experimental setting limits the generalizability of the findings to real-world contexts and does not explore psychological factors such as motivation or risk perception. Additionally, the research relies on quantitative data without qualitative insights from managers, and it does not account for more complex variations in incentives or a longitudinal approach to observe long-term behavioral changes.

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