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**THE ATTITUDINAL AND BEHAVIORAL EFFECTS OF  
NONFINANCIAL MEASURES**

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**Abstract**

*The initiation and implementation of nonfinancial measures in management control system is currently an alternative to overcome the limited capabilities of the traditional performance measurement, nonfinancial measures. A recent study by Lau and Moser (2008) found that the use of nonfinancial measures for managerial performance evaluation is positively associated with managerial performance through procedural fairness and organizational commitment. It is remain unclear, however, whether the findings are generalizable to other contexts. Using a very different samples which based on 94 Indonesian managers' answered-questionnaires, the objectives of this study are to reexamine and to extent Lau and Moser's model. As this paper only able to partially support the model suggested by Lau and Moser (2008), our findings indicate that nonfinancial performance measures are identified to poorly generate high quality of managerial performance. Possess a design to fit the contexts of performance measurement system especially in Indonesia, this paper brings a suggested management control systems.*

**Key words:** interpersonal trust, managerial performance, nonfinancial measures, organizational commitment, procedural fairness,

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**Introduction**

This paper aims to examine the attitudinal and behavioral consequences of the use of nonfinancial measures in managerial performance evaluation. Whilst the literature suggests that companies should implement nonfinancial measures to complement financial measures (e.g. Kaplan and Norton, 1996), there is a lack of empirical confidence on the effect of nonfinancial measures on subordinate managers' attitudes and behavior.<sup>1</sup> Among the rare studies is the one conducted by Lau and Moser (2008)-hereafter refer to as L & M.

L & M examined whether the use of nonfinancial measures affects managerial performance and whether such effect is mediated by procedural fairness and organizational commitment. Their model is depicted in figure 1. Using samples of senior managers of manufacturing companies in the UK, they found that the use of nonfinancial measures positively affect managerial performance via procedural fairness and organizational commitment.

Whilst the study of L & M has advanced our understanding on the attitudinal and behavioral effects of nonfinancial measures, there are some issues merits for investigation which will be addressed by this paper. First, whilst L & M use senior managers' of manufacturing companies in the UK, it is not clear whether their findings are generalizable into other contexts such as different country and managerial levels. The first objective of this paper is to replicate and to test the external validity of their study using very different

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<sup>1</sup> In contrast, there are a lot of studies devoted to the effects of financial (accounting) performance measures on subordinate managers' attitudes and behavior (for review, see for example, Briers and Hirst (1990), Hartmann (2000), and Noeverman et al. (2005)).



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samples. In doing so, this current study uses samples derived from Indonesian managers in lower and medium managerial level. This type of studies is important as emphasized by Lindsay and Ehrenberg (1993), “It (replication) is needed not merely to validate one’s findings, but more importantly, to establish the increasing range of radically different conditions under which the findings hold, and the predictable exceptions” (p. 217, parentheses added). Particular to the role of procedural justice<sup>2</sup>, Leung (2005) calls for researchers to examine procedural fairness development in various contexts and notes that “a universal concern of justice.... does not mean that all justice effects are necessarily generalizable ...” (p. 557).

Secondly, in analyzing their structural model, with 149 samples L&M have used AMOS. Bacon (1997) stated that to properly utilizing AMOS, a study has to have 200 samples at the minimum. Consequently, we reexamine L & M’s model using *Partial Least Square* (PLS) with SmartPLS version. 2.0 software. We used PLS as this approach is able to handle small samples (Wold, 1982; Wold *et al.*, 1987).

Thirdly, since previous accounting studies (e.g. Lau and Sholihin, 2005) found that nonfinancial measures is associated with trust and trust is associated with organizational commitment (Sholihin and Pike, 2009) and with managerial performance (Sholihin et al., 2004), this study examines if trust mediates: (1) the relationship between nonfinancial measures and managerial performance; and (2) the relationship between organizational

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<sup>2</sup> We use the terms procedural justice and procedural fairness interchangeably.



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commitment and managerial performance. Hence, this study does not merely replicate L & M study, but it also extends their study. The model for our study is portrayed in figure 2.

Our study partially supports L & M because we do not find the positive association between nonfinancial measures and procedural fairness. Using the extended model, we do not find a positive association between nonfinancial measures and trust.

The rest of the paper is organized as follows. The next section will discuss the literature review and hypotheses development. This will be followed by a presentation of the research method, research findings, conclusions, limitations, and suggestions for future research.

### **Literature Review and Hypotheses Development**

#### **Nonfinancial Measures and Procedural Fairness**

The implementation of performance measurement systems, argued by Ittner and Larcker (1998), substantially support organization in committing strategic plans, evaluating goals attainment, and formulating managerial compensation plans. Merchant (2006) emphasizes that performance measures play a key role in rising up managers' motivation to meet organization goals by combining goals attainment and various incentives in managerial performance evaluation systems.

Aware of the financial measures limitations, Kaplan (1996) and some other researchers promote the implementation of nonfinancial measures such as product innovation, product leadership, and customer loyalty. These relatively new measures are



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believed to be better indicating organization future profitability than annual profit. Vaivio (1999) contends that “Non-financial measures could provide more penetrating control, going beyond the limits of aggregated financial measurements” (p. 410). Furthermore, Kaplan and Norton (1996a) mention that nonfinancial measures may perform as primary indicators towards organization’s future performance and create a synergy among long-term organizational objectives. In addition, Ittner and Larcker (2000) suggest nonfinancial measures may also provide indirect quantitative information on company’s intangible assets, improve managers’ performance through a transparent evaluation systems and in particular present significant indicators related to organization future financial performance

This paper argues that the use of nonfinancial measures on managerial organization performance evaluation enables superior to evaluate subordinates by using multiple diverse perspectives that may enhance subordinates perception of procedural fairness. Refers to Viavio’s (1999) contention; we may conclude that the use of nonfinancial measures in evaluating managerial performance may be perceived as a fair process compared to the use of financial measures. For example, due to the process and nature of the research and development department that mostly take some time to show a desirable progress which often cannot be well accepted under financial terms, if subordinates are evaluated using financial measures they will perceive such evaluation process is unfair. In contrast, performance evaluation systems that are implemented by considering the nature and process at the research and development department will make subordinates think that the evaluation process is fair. Empirically, Lau and Sholihin (2005) and L&M found the implementation of



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nonfinancial measures is positively associated with procedural fairness. Therefore, the following hypothesis to be tested:

Ha1: The use of nonfinancial measures in performance evaluation is positively associated with procedural fairness.

### **Procedural Fairness and Managerial Performance**

The term procedural fairness is commonly associated with Thibaut and Walker's (1975) study on procedural justice. On their work, they put different evaluation systems approach specifically on the process control and outcome. Based on Thibaut and Walker (1975) work, Lind and Tyler (1988) observe that there are three significant findings of Thibaut and Walker (1975): (1) perceptions of procedural justice result in increased satisfaction; (2) procedural justice is the most important determinants of procedural preferences; and (3) high process control procedures lead to high procedural justice judgments. In this regard, by comparing the term of procedural justice and fairness, we believe that besides there are significant concept similarities between procedural justice and fairness, procedural fairness itself may have been sounded triggered by the innovation of procedural justice. Therefore, we next maintain the usage of the term procedural justice into procedural fairness in order to not mislead and extend the term of procedural justice itself.

As the term procedural fairness may cover a wide range of concepts here in this study, we focus procedural fairness to managers' perception with respect to all aspects of fairness on the organizational processes that are used by superior to evaluate managers performance, communicate performance feedback and determine their rewards such as promotion and pay



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increases (Folger and Konovsky, 1989). Expectancy theory suggests that better subordinates' performance may be driven by their belief that the measurement evaluation procedures are fair (Vroom, 1964; Porter and Lawler, 1968). Additionally, since previous studies found that procedural fairness affects managerial performance in various contexts (Lind and Tyler, 1988; Libby, 1999; Libby, 2001; Wentzel, 2002; Little et al., 2002), thus, we propose that procedural fairness is positively associated with managerial performance that in many ways may motivate subordinates to improve their working performances. Therefore, the following hypothesis to be tested:

Ha2: Procedural fairness is positively associated with managerial performance

### **Nonfinancial Measures and Organizational Commitment**

Porter et al. (1974, p. 604) define organizational commitment as "the relative strength of an individual's identification with and involvement in a particular organization". Mathieu and Zajac (1990) view organizational commitment as the bond that links an individual to his/her organization. Some reviews (e.g. Mathieu and Zajac, 1990; Randall, 1990) mentioned that organizational commitment may be conceptualized in various ways. Meyer et al., (1990) identified two types of organizational commitment: affective commitment and continuance commitment. Affective commitment is characterized by a strong belief in and acceptance to organizational goals and values, and a willingness to exert considerable effort on behalf of the organization (Porter et al., 1974; Angle and Perry, 1981); while continuance commitment refers to the perceived costs associated with leaving the organization, such as loss of benefits and seniority (Becker, 1960). Consistent with previous accounting studies (e.g. Nouri and





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Parker, 1994, 1996, 1998; Chong and Eggleton, 2007) we conceptualize organizational commitment as affective organizational commitment.

Following L & M, we hypothesize that the use of nonfinancial measures is positively associated with organizational commitment. This is because the nature of nonfinancial measures is capable of capturing managers' performance from various and wide range of perspectives. "Managers evaluated by such measures are likely to harbor favorable organizational attitudes, including their commitment to the organization which uses such measures" (L & M, p. 58). Therefore we hypothesize as follows:

Ha3: Nonfinancial measures use is positively associated with organizational commitment.

### **Organizational Commitment and Managerial Performance**

As previously stated, we specify organizational commitment in this study as affective organizational commitment. Established by emotional attachment towards the organization, affective commitment may escort employees' willingness to not only remain in the organization but also to accelerate their working performance (Demir *et al.*, 2009). To be better indicating the rising emotional attachment towards the organization, Mowday *et al.* (1982) suggested three characteristics of organizational commitment: identification (belief in and the acceptance of organizational goals and values), involvement (willingness to exert effort on behalf of the organization), and loyalty (strong desire to maintain membership in the organization). By having those characteristics, managers with strong organizational





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commitment will show active involvement and contribution on the organization. Driven by their emotional attachment, managers will also indicate the intention to work beyond what they supposed to. Supported by a number of empirical studies in the accounting literature (e.g. Nouri and Parker, 1998; Chong and Eggleton, 2007) that found organizational commitment is associated with managerial performance, this study hypothesizes that:

Ha4: Organizational commitment is positively associated with performance

### **Nonfinancial Measures and Trust**

As the concept of trust is widely varied, we based our study on previous accounting studies (e.g. Hopwood, 1972; Otley, 1978; Ross, 1994; Lau and Sholihin, 2005) by focusing trust as interpersonal trust. According to Read (1962), subordinates' interpersonal trust is "subordinate's trust or confidence in the superior's motives and intentions with respect to matters relevant to the subordinate's career and status in the organization." Whitener et al. (1998) argue that both performance evaluation and incentive systems can affect managerial attitude that may influential to subordinates' trust towards their superiors. At this stage, Zand (1997) supports Whitener et al. (1998) only if the incentive system is collaborative, integrative and benefit both parties. Therefore, it is significant for organizations to design their performance evaluation systems that able to facilitate the enhancement of subordinates' trust towards their superiors.

Moreover, the capability of nonfinancial measures in reviewing subordinates from a wide range of perspectives are believed to exert performance evaluation system in enhancing subordinates' trust on their superiors for reasons as follows. First, realizing the possibility of



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the presence of a particular unsatisfying *short term* financial, quantitative measures during the employment of a performance evaluation system, Kaplan (1983), Johnson and Kaplan (1991) suggested the utilization of *a long-term* qualitative, nonfinancial measures. It is believed that the qualitative measures capable to trigger a desirable subordinates' performance that may assist the success of the organization. Once the qualitative measures precisely evaluated and reflect the nature of the organization or to be specific the unit or department subordinates involved, subordinates will likely put more reliance to their superiors. Secondly, evaluating subordinates based on short-term financial, quantitative measures may decipherable as the inability of management in conceiving the various aspects of both subordinate and organization properly. On the other hand, superiors who based her/his evaluation on long-term, nonfinancial perspectives tend to receive higher subordinates' respect and trust regarding her/his acceptable understanding in carrying out performance evaluation systems. Thus, subordinates may view superiors to have reliable managerial attitude (Mayer et al., 1995). Thirdly, indicates by the utilization of multiple nonfinancial measures, subordinates may label superiors as having a profound interest on the organization and subordinates since the exertion of varied nonfinancial measures may "...reflect the complexities of the work environment and (consider) the variety of contributions that employees make" (Atkinson et al., 2001, p. 407) (parenthesis added). Therefore, it enables a subordinate to not only being labeled as a poor or good performer based on one indicator that used on a pro rata basis, but they may beneficially evaluated based on multiple factors, which in apart may indicate their various target achievement (Lipe



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and Salterio, 2002). In turn, such condition may reduce subordinates career insecurity. In addition, subordinates are likely to view their superiors as performing *benevolence* attitude in evaluating subordinates' performance. Referring to Whitener et al. (1998), together with the rising subordinates' perception of benevolence subordinates' awareness on superiors' reliability will also rising. The more reliable the superiors to their subordinates, simultaneously, the more subordinates have propensity to trust their superiors (Mayer et al., 1995). Empirically, supported by Lau and Sholihin (2005) and L & M who argue that the use of nonfinancial performance measures in evaluating managers is positively associated with trust. We therefore expect that the use of nonfinancial performance measures will be positively associated with trust in superiors. The following hypothesis therefore to be tested:

Ha5: The use of nonfinancial measures is associated with interpersonal trust.

### **Trust and Managerial Performance**

Trust may be classified into individual beliefs and interpersonal trust. Whilst the individual beliefs focus on the competence, responsibility, reliability, and dependability of the trustees, interpersonal trusts focus on reciprocated interpersonal care and concern. However, as first put concern, we conceptualize trust in this study as interpersonal trust. According to McAllister (1995) there are two principal forms of interpersonal trust: (1) cognition-based trust; and (2) affective-based trust. Defining trust as cognition based, it concerns on "we choose whom we will trust, in which respects, and under what circumstances, and we base the choice on what we take to be 'good reasons', constituting evidence of trustworthiness" (Lewis and Wiegert, 1985, p. 970). Consolidation between



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emotional bonds among individuals is affective-based trust defined (Lewis and Wiegert, 1985). McAllister (1995) add that the emotional bonds between individuals may base the formation of trust.

Lippit (1982) further argues that trust among people may increase problem solving capability and improve performance. Supporting Lippit (1982), Zand (1997) give additional suggestions, which in his point of view, trust that is successfully build among two people will highly capable of effectively putting problems into completion, assisting others, contributing performance on team work, and enhancing the quality and implementation capacities of a decision. It is likely that the level of decision quality will be followed by the rate of working performance. Reina and Reina (1999, p. 8) states that ‘directly or indirectly trust is related to individual, group, and organisational performance’. This gives rise to the hypothesis:

Ha6 Trust is positively associated with performance

### **Trust and Organizational Commitment**

Drawing on the findings of Ketchand and Strawser (2001), Lau et al. (2008) argue that since subordinates mostly identify organization through their supervisors’ attitudes, trust in supervisor may be associated with organizational commitment. Thus, subordinates will dedicate similar feelings towards both their superiors and organization, either positive or negative. Put simply, once subordinates act positively (or negatively) towards their superiors, who act on behalf of the organization, they at the same time are also likely to indicate positive (or negative) attitudes and feelings towards their organization. It means that the level of trust in superiors could possibly help to determine subordinates’ attitude towards the



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organization. “This may lead to the subordinates bonding with the organization, and hence, high organizational commitment” (Lau et al., 2008: p. 126). Consistent with empirical evidences shown by Lau et al. (2008) and Sholihin and Pike (2009) trust in supervisors is positively associated with organizational commitment. We therefore, hypothesize:

Ha7: Trust in superior is positively related to organizational commitment.

### **Procedural Fairness and Organizational Commitment**

In 2001, Colquitt et al. produced a meta-analytic review of justice empirical studies that supports the positive association between procedural justice and organizational commitment which also supported by empirical accounting literatures. Such example is given by Magner and Welker (1994) who found that the fairness of organizational budgeting procedures associates with subordinates’ general attitude including organizational commitment. To be further researched Magner et al. (1995) enhance budgeting systems on organizations, which in this study particularly draw the term of fairness, by involving subordinates participation factor on establishing the systems. Later, they found that fairness in budgeting systems on subordinates is further simply translated as their capability of understanding and involving towards the organization. In this case, the more they participate on the budgeting systems and ,in contrast, the less they get desirable budgets, surprisingly, psychologically in turn, the more they attach to their superiors and organization.. Therefore, based on their findings we may conclude that fairness for subordinates even may vary between one another, however, it will sticks on one common sense which is participation.



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Through participating on the systems, subordinates may help themselves in understanding and compromising with their superiors and the most important, their organization. Moreover, their findings also advocate the argument that procedural fairness is a significant factor on the appearance of trust and organizational commitment. Using a sample of managers from UK manufacturing organizations, L & M found that procedural fairness is positively associated with organizational commitment. We therefore expect that procedural fairness will be positively associated with organizational commitment. Therefore we hypothesize:

Ha8: Procedural justice is positively associated with organizational commitment

### **Research Method**

#### **Data and Sample**

To test the hypotheses, we use data gathered by means of questionnaire survey. Our samples are managers who are currently taking his/her master degree in Master of Management (MM) program, Faculty of Economics and Business (FEB), Universitas Gadjah Mada (UGM). We distributed the questionnaires and requested them to complete when they were in the class of business research method.

Descriptive statistics reveals that our samples are managers at the average age of 30, have been experiencing 4 years at his/her current area of responsibilities, and 3 years at his/her current position, ranging from top level management (9 people), middle level management (35 people), and lower level management (49 people). They have, on the average, 374 employees below their scope of responsibilities. From the kind of industries, 54



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respondents belong to service industries, while the rest are manufacturing, commerce, mining industries, and others. From the area of responsibilities, most respondents are from marketing department.

### **Variables and their measurement**

#### *Nonfinancial measures*

Whilst L&M used 15-item, we used 17-item of questionnaire as previously used Lau and Sholihin (2005). The items are originally developed by Hoque, *et al.* (2001) which was derived from Kaplan and Norton's (1992) three dimensions of nonfinancial measures in Balanced Scorecard. As the instrument was originally made to measure organizational performance, we use the instruction of Hopwood (1972) since we try to measure managerial performance. We employed the one previously used by Lau and Sholihin (2005) because the instrument was successfully used in Indonesian context. The 17-item nonfinancial measures items can be seen in table 1.

Factor analysis was performed to examine whether the 17 nonfinancial items are still consistent with the three nonfinancial measures dimensions suggested by Kaplan and Norton's (1992). The results reveal there are three factors that have eigenvalue of greater than one, which all items are loaded satisfactorily into each expected perspective (factor loadings of greater than 0.50) as presented in table 1. The cronbach's alpha coefficient for the 17 nonfinancial items was 0.934. This indicates the high internal consistency of the 17 items.





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***Managerial performance***

This variable is measured using an instrument developed by Mahoney *et al.* (1963). The instrument consists of 9-item 7-point Likert scale and asked respondents to rate the degree of their performance in the area of planning, coordinating, evaluating, investigating, supervising, staffing, negotiating, representing, and overall performance in their organization. This managerial performance measurement instrument is also the one used by L & M.

Consistent with L & M, in our analysis we use the overall performance dimension. However, in order to assure that overall performance is capable of representing the eight dimensions of managerial performance, we regressed the eight dimensions to overall performance. This technique is consistent with prior study by Brownell (1982), Kren (1992), and Lau *et al.* (1995) as mentioned in L&M. The results show the eight dimensions are capable of explaining 67% variance of overall performance. This result is beyond the 55% benchmark suggested by Mahoney *et al.* (1963) (L&M, 2008) and prior study by L&M that only results 57.7%.

***Perceive of procedural fairness***

This variable is measured using an instrument developed by McFarlin and Sweeney (1992) and previously used by Lau and Sholihin (2005), L&M, and Sholihin and Pike (2009). This 4-item 5-point Likert scale asked respondents to rate the fairness of procedures used to (1) evaluate employee performance; (2) determine promotions; (3) communicate performance feedback; (4) determine pay increases. The rotated factor loadings for the four items of procedural fairness range from 0.832 to 0.877 and load on a single factor with eigenvalue of



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2.925 that explains 73.136 percent of the variance. The four items have cronbach's alpha of 0.877. The mean score is 13.09 with standard deviation 3.085.

***Organizational commitment***

This variable is captured using an instrument developed by Mowday *et al.* (1974). In this 9-item 7-point Likert scale, respondents are required to rate their agreement on various statements, such as: (1) I talk up this organization to my friends as a great organization to work for; (2) I am proud to tell others that I am part of this organization; and (3) This job is my ideal job.

Factor analysis indicates all nine organizational commitment items are loaded satisfactorily on one factor with eigenvalue of 6.228 that explains 69.203 percent of the variance. Factor items loadings range from 0.775 to 0.898. The mean is 46.04 with standard deviation of 10.058. Cronbach's alpha captured at 0.943.

***Interpersonal Trust***

This variable is measured using an instrument developed by Read (1962) and used by Lau and Sholihin (2005) and Sholihin and Pike (2009). This 4-item 5-point Likert scale instrument asked respondents to assess the intensity of (1) their supervisors' actions in taking opportunities that may advance their interest; (2) their freedom to have discussions with their supervisors without worrying their positions; (3) feeling confidence that their supervisors keep them fully and frankly updated concerning issues that may attracts their concerns; and



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(4) respondents' trust concerning their supervisors justifiable manner in taking decisions that against their interests.

A factor analysis was undertaken to assure the unidimensional nature of the variable trust in supervisors. The results indicate that only one factor with eigenvalue of greater than one was extracted (eigenvalue= 2.804; total variance explained= 70.112%). Factor loadings for trust in supervisors loaded satisfactorily from 0.803 to 0.865. Cronbach's alpha captures at 0.856 with mean 13.32 and standard deviation 3.146.

### **Results and Discussion**

To test the hypotheses, this study utilizes *Structural Equation Modeling* (SEM) using SmartPLS version 2.0. PLS is chosen because of its alternative offer in the estimation approach to traditional SEM as well as its ability in examining small sample of data and does not require normality assumptions (Wold, 1982; Wold *et al.*, 1987). Further, by utilizing *Partial Least Square* (PLS), "researcher may enable to represent the constructs of their model as composites based on factor analysis results, with no attempt to create covariance among measured items" (Hair *et al.*, 2006:844). Utilizing SmartPLS 2.0, this study assumes no particular estimated parameters distribution, thus it is based on a non-parametric measurement prediction (Chin, 1998).

Using PLS we are able to measure both measurement and structural model. Measurement model is used to evaluate the validity and reliability of the instrument. Validity is evaluated by examining convergent and discriminant validity from each of the indicators,



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whereas reliability is examined through evaluating *Cronbach's Alpha* and *composite reliability*. Structural model is used to evaluate the goodness of fit of the model. In PLS approach, it is evaluated by examining the variance percentage explained by the  $R^2$  value of independent latent variable. The stability of this estimation is evaluated using *t test* with *bootstrapping* process.

### **Measurement Model**

#### **Validity**

The results of measurement model test are shown in table 2 and 3. Table 2 reveals that all indicators have AVE value higher than 0.50 and factor loadings greater than 0.70 except NF3, NF4, NF6, NF9, NF11, NF12, NF13, and NF15 that have slightly poor factor loadings. However, since they still ranged between 0.50 – 0.70 and have AVE value of bigger than 0.50 we retain those items in our further analysis (See Hair et al., 2006 and Hulland, 2009). Table 3 shows the factor loading as well as the cross loading of the variables studied. The results indicate the tendency that all items fall in the defined variable. Overall, this can be concluded that the measures are valid both in terms of convergent and discriminant validity.

#### **Reliability**

As can be seen in Table 2 the composite reliability and *Cronbach's Alpha* for all the variables are greater than 0.70. This means that the instruments used in this study are considerably reliable.



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### **Structural Model**

Recall that the first objective of our study is to test the generalizability of L & M findings. Therefore, firstly we retest L & M's model using our sample. The results are presented in table 4. The table shows that the use of nonfinancial measures is positively associated with organizational commitment ( $r = 0.220$ ;  $p < 0.05$ ). However, the use of nonfinancial measures is not associated with procedural fairness nor managerial performance. This is in contrast with the results of L & M's results. Further, the table indicates that procedural fairness is associated organizational commitment ( $r = 0.500$ ;  $p < 0.01$ ) and managerial performance ( $r = 0.448$ ;  $p < 0.01$ ). Overall, our study partially supports L & M's study.

Having seen that our study partially supports L & M's study, we then examine our model which is the extension of L & M's model. Recall, our model include trust as the potential mediating variable on the relationship between: (1) nonfinancial measures and managerial performance; and (2) organizational commitment and managerial performance. The results are depicted in table 5. The table shows that nonfinancial measures are positively associated with organizational commitment and organizational commitment is positively associated with managerial performance. The use of nonfinancial measures, however, is not associated with procedural fairness and trust. The table also indicates that procedural fairness is associated with organizational commitment and managerial performance. Further, it reveals that trust is associated with organizational commitment but not with managerial performance.



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$R^2$  of our overall model with managerial performance as the ultimate dependent variable is 0.301.

**Conclusion, limitations, and suggestion for future research**

The objectives of this study are: (1) to examine the generalizability of L & M's study; and (2) to extend the L & M's model. L & M's model argue that the use of nonfinancial measures in managerial performance evaluation will result in functional attitudes and behavior. They found that the use of nonfinancial measures is positively associated with procedural fairness and organizational commitment which in turn positively affect managerial performance. Using UK senior managers as their sample, their findings support their hypotheses. Our study, using Indonesian managers majority from medium and lower managerial levels, reveals that nonfinancial measures usage is positively associated with organizational commitment but not with procedural fairness. Whilst our study unable to support all L & M's findings, our results are consistent with organizational justice literature that, "a universal concern of justice.... does not mean that all justice effects are necessarily generalisable ..." (Leung, 2005; p. 557). Moreover, Colquitt and Jackson (2006) have shown that fairness judgement is dependent upon context.

Using the extended model which include trusts as the potential mediating variables on the relationship between: (1) nonfinancial measures use and managerial performance; (2) organizational commitment and managerial performance. Our results, however, does not support the proposed mediating roles of trust.



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The study, however, should be interpreted cautiously due the limitations associated with the study. First, as this study uses survey approach, various inherent limitations associated with such approach should be acknowledged. Future study should examine the topic using other approach, such as experimental study. The second limitation is related to the sampling method. Whilst our study uses convenience sampling approach, future study can use random sampling approach.

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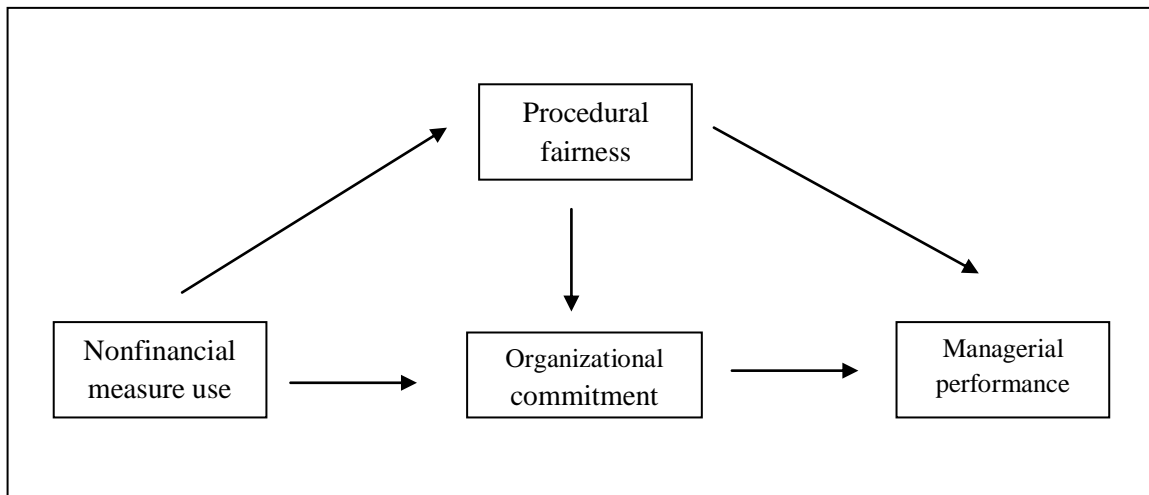
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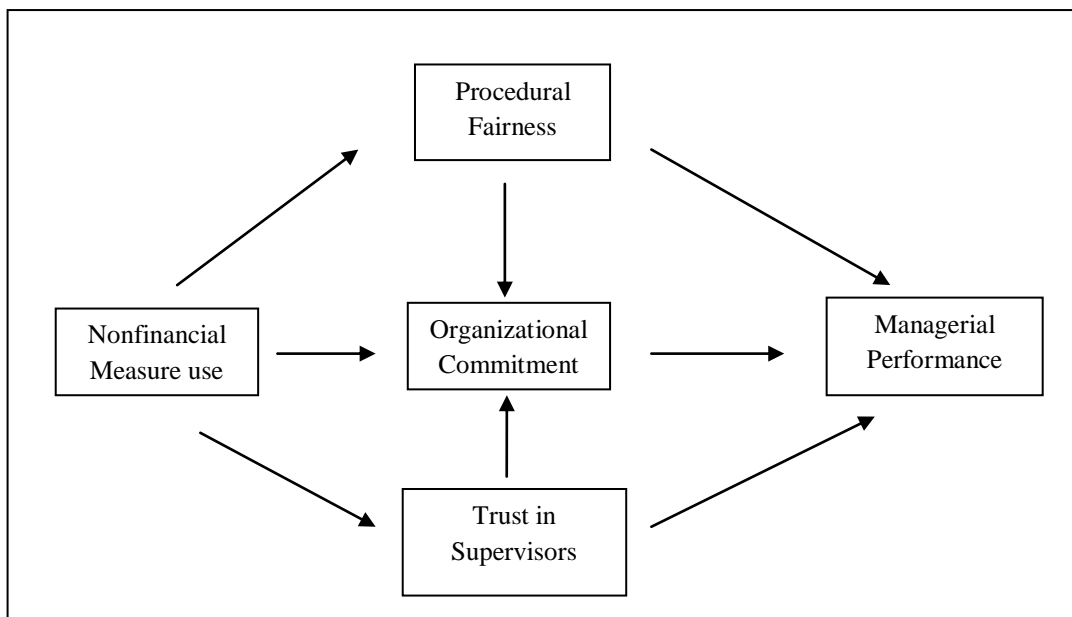
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**APPENDIX**

**Figure 1.** Lau and Moser's (2008) model



**Figure 2.** Model of our study





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**Table 1.** Factor Loadings for Nonfinancial Measures Items

Items	Internal Business Process	Customer	Learning and Growth
Manufacturing lead time.	0.736		
Rate of material scrap loss.	0.774		
Percent defective products shipped.	0.792		
Ratio of good output to total output.	0.601		
Number of new patents.	0.759		
Number of new product launches.	0.755		
Time-to-market new products.	0.715		
Market share.	0.713		
On-time delivery.	0.680		

Survey of customer satisfaction.	0.635		
Warranty repair cost.	0.832		
Customer response time.	0.704		
Cycle time from order to delivery.	0.745		
Percent shipments returned due to poor quality.	0.853		
Labour efficiency variance.		0.757	
Material efficiency variance.		0.619	
Number of customer complaint.			0.644
Eigenvalue	8.599	1.634	1.272
% variance explained	50.581	9.612	7.480

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**Table 2. Summary of Measurement Model**

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		Outer Loading	AVE	Cronbach's Alpha	Composite Reliability
Procedural Fairness	PF1	0.8377	0.7299	0.8773	0.9153
	PF2	0.8741			
	PF3	0.8397			
	PF4	0.8651			
Trust	T1	0.8145	0.6987	0.8576	0.9025
	T2	0.8683			
	T3	0.8826			
	T4	0.7738			
Managerial Performance	MP9	1.0000	1.0000	1.0000	1.0000
Organizational Commitment	OC1	0.8076	0.6914	0.9439	0.9526
	OC2	0.8017			
	OC3	0.7959			
	OC4	0.8352			
	OC5	0.8601			
	OC6	0.9035			
	OC7	0.7676			
	OC8	0.8243			

	OC9	0.8784			
Nonfinancial	NF1	0.7432	0.5005	0.9372	0.9438
Measures	NF2	0.7717			
	NF3	0.5582			
	NF4	0.6436			
	NF5	0.8002			
	NF6	0.6140			
	NF7	0.7603			
	NF8	0.7228			
	NF9	0.6777			
	NF10	0.7079			
	NF11	0.6504			
	NF12	0.5791			
	NF13	0.6300			
	NF14	0.8247			
	NF15	0.6684			
	NF16	0.7434			
	NF17	0.8494			

**Table 3. Cross Loadings**

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	MP	NF	OC	PF	T
MP9	1	0.1774	0.4966	0.4545	0.3683
NF1	0.0964	0.7432	0.1902	0.1564	0.1065
NF2	0.0442	0.7717	0.1975	0.0533	0.0384
NF3	0.1565	0.5582	0.1772	0.2068	0.1331
NF4	0.0856	0.6436	0.1724	0.2004	0.1349
NF5	0.1191	0.8002	0.2004	0.1517	0.1747
NF6	0.0955	0.614	0.1013	0.0624	0.0366
NF7	0.1041	0.7603	0.2086	0.1065	0.1593
NF8	0.0328	0.7228	0.0914	-0.0171	0.1044
NF9	0.0599	0.6777	0.1478	-0.0751	0.0936
NF10	0.1893	0.7079	0.2076	0.1115	0.2099
NF11	0.1167	0.6504	0.1638	-0.0159	0.1177
NF12	0.1641	0.5791	0.0781	0.0312	0.0544
NF13	0.1657	0.63	0.13	0.2124	0.1906
NF14	0.1668	0.8247	0.1752	0.1778	0.1292
NF15	0.2243	0.6684	0.1297	-0.0388	-0.0932
NF16	0.1353	0.7434	0.1783	0.1526	0.137
NF17	0.1558	0.8494	0.1958	0.1278	0.1928
OC1	0.408	0.1511	0.8076	0.3358	0.3859



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OC2	0.4207	0.213	0.8017	0.4198	0.4025
OC3	0.3957	0.2309	0.7959	0.5464	0.4606
OC4	0.3304	0.2441	0.8352	0.3434	0.3712
OC5	0.4102	0.1516	0.8601	0.4078	0.4091
OC6	0.502	0.2234	0.9035	0.5555	0.536
OC7	0.397	0.1534	0.7676	0.3046	0.313
OC8	0.3872	0.1918	0.8243	0.4893	0.4985
OC9	0.4381	0.2485	0.8784	0.415	0.3624
PF1	0.365	0.1453	0.4478	0.8377	0.4901
PF2	0.3583	0.0884	0.4216	0.8741	0.5951
PF3	0.339	0.1804	0.3863	0.8397	0.4473
PF4	0.4691	0.1849	0.5071	0.8651	0.4533
T1	0.1996	0.2243	0.4111	0.455	0.8145
T2	0.3625	0.0633	0.432	0.4505	0.8683
T3	0.4097	0.2329	0.4951	0.5753	0.8826
T4	0.2062	0.1106	0.3277	0.4263	0.7738

**Table 4. The results of PLS using L & M's model**

<b>Path</b>	<b>Coefficient</b>	<b>t-statistics</b>	<b>p-values</b>
NF --> OC	0.22	1.6858	0.0467
NF --> PF	0.1424	0.6833	0.2476
PF -->OC	0.5002	6.4899	0.0000
PF --> MP	0.4475	3.7165	0.0001
OC --> MP	0.3555	3.2635	0.0006
NF --> MP	0.1166	1.2289	0.1103

**Table 5. The results of structural model using our model**

<b>Hypotheses</b>	<b>Path</b>	<b>Coefficient</b>	<b>t-statistics</b>	<b>p-values</b>	<b>Result</b>
Ha1	NF -> PF	0.1776	1.1981	0,1162	Unsupported
Ha2	PF -> MP	0.2460	2.9378	0,0018	Supported
Ha3	NF -> OC	0.1278	2.4691	0,0072	Supported
Ha4	OC -> MP	0.3416	3.1436	0,0010	Supported
Ha5	NF -> T	0.1943	1.5874	0,0570	Unsupported
Ha6	T -> OC	0.2923	2.6184	0,0048	Supported
Ha7	T -> MP	0.0528	1.3621	0,0874	Unsupported
Ha8	PF -> OC	0.3296	2.9120	0,0020	Supported



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**SURAT PERNYATAAN**

Saya yang bertandatangan di bawah ini:

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Tempat/Tgl. Lahir : Yogyakarta, 5 April 1988

Universitas Asal : Universitas Gadjah Mada

Menyatakan dengan ini bahwa artikel ilmiah yang saya tulis bersama dengan Bapak Mahfud Sholihin, Ph.D. berjudul,

**THE ATTITUDINAL AND BEHAVIORAL EFFECTS OF  
NONFINANCIAL MEASURES**

belum pernah kami publikasikan pada jurnal ilmiah manapun.

TTD

Putri Paramita Agritansia, S.E.