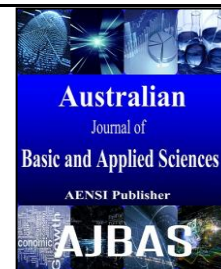




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The relationship between the core facility practice to increase business performance at manufacturing firms in Makassar - Indonesia

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ABSTRACT

This study aim is determine whether there is a significant effect of core facilities practice, operational performance and customer satisfaction to improve business performance business. This research was done to 108 people who come from 40 manufacturing industries in Makassar-Indonesia using questionnaire. Explanatory research is used to assess reliability and validity model measurement. Variable latent relationship is tested by Path Analysis. Research results show that manufacturing company's management should give emphasis on consistency in core quality management practices, especially practical aspect of core manufacturing company. Manufacturing company should increase operational performance, customer satisfaction in a hope to increase business performance. They should give more attention to core facility practice simultaneously, systematic and sustainable. This research limitation is only involves aspects of core practice facilities in quality management practices and samples only manufacturing companies in Makassar-Indonesia. Therefore, these findings may not be generalizable to other companies.

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INTRODUCTION

In continuous global market change, in addition to speed of delivery, quality of product is also one important element for company to be able to compete. According to Sila (2007), total quality management (TQM) plays a very important role to increase the strength of company's competitiveness. TQM is an approach that should be carried out organizations to improve the products quality, reducing production costs and improving productivity. Companies that pursuit TQM best practice can achieve higher profits and shareholder value through bigger cash flow. Demirbag *et al* (2006) conduct empirical studies to identify critical factors for TQM success in small and medium businesses at Turki. It concluded there are seven CSF of TQM practices, namely the data and reporting quality, role of top management, employee relations, supplier quality management, training, and quality policy and management process. Prayogo (2005) conducted research at 130 manufacturing of R & D units in Korea. They found that TQM implementation has a significant effect on performance. Salaheldin (2009) also found that TQM

implementation practices affect on overall company performance.

It is time for Indonesia companies to evaluate the quality development concept of quality management practices. It is important for companies to enter global competition, especially for the world market-oriented company. The more important, manufacturing companies that have international market segment it will compete with companies from other countries (Murdifin, 2007). Therefore, it is necessary to establish a strategic position and trade industry in Indonesia to address the changing business environment that more increasingly complex and dynamic that contain uncertainty and full of surprises and turbulence events, through quality management practice approach to improve business performance. Performance appraisal is intended to determine whether management has been working in accordance with a predetermined plan. Lee *et al* (2010) suggests that the driving factors of TQM must be balanced between social driving factors (leaders and employees) and technical driving factor (resources and processes) in order to achieve high effectiveness. Lakhali *et al* (2006) makes proxy of quality management practices with three construct

namely management practices (with indicator of support and commitment of top managers), infrastructure practice (with indicator of organization quality, employee training, employee participation, supplier quality management, customer focus, continuous support), and core facilities practice (with indicators of quality system improvement, analysis and information, statistics techniques usage to measure quality). However, success of company quality management practices can be determined by measuring overall company's performance. Company performance measurement in quality management practices can be measured by three performance measures namely financial performance, product quality and operational performance (Lakhal *et al*, 2006). Researches on application of TQM practices in operational performance or TQM practice with other consequences variables are still very limited. Therefore, it is still very important to conduct in-depth study of TQM practices and its effect on business performance. It need further research with different context. Makassar is an emerging industry location Indonesia, but the understanding of quality management concepts application is still very low. There are many cause factors, such as low level of knowledge, low quality products and customer still needs higher quality than low prices. This products need to be anticipated, since this condition is slowly starting to shift along with globalization of world markets.

Based description above, this research aims are:

1. Analyzing and testing the relationship consistency between core facility practice of manufacturing company in Makassar City on business performance
2. How to understand employees in order can obtain a higher motivation and become more productive.

Theoretical Review:

Management quality can be seen as a philosophy or approach to develop a set of principles which mutually support each other, and each section is supported by a set of techniques and implementation. Hackman and Wageman (1995) distinguish validity attributes of quality management; philosophy practices are different between one company and another to improve performance. It is supported by several studies about the effect of quality management practices on performance, among others, by Saraph *et al* (1989); Flynn *et al* (1994); Ahire *et al* (1996); Najmi and Kehoe (2000); Zhang *et al* (2000); the Sun (2000); Sila and Ebrahimpour (2002). Many studies of quality management practices examine the effect of total quality management (TQM) on organizational performance. Anderson *et al* (1999); Terziovski and Samson (1999) suggests that there is a positive relationship between quality management practices on

organizational performance, but this study did not consider the possibility of a causal relationship to quality management practices. TQM is a system consisting of several quality management practices that are collectively and connected each other (interlinked) which has a relationship with organizational performance. Research conducted of Sousa and Voss (2002), Kaynak (2003), Lakhal *et al* (2006) have emphasized the importance to understand the causal relationship between quality management practices. Quality management practices is proxied by three construct, namely management practices (with indicators of support and commitment of top managers), practice of infrastructure (with indicator of organization quality, employee training, employee participation, supplier quality management, customer focus, continuous support), as well as the practice of core facilities (with indicators of quality system improvement, analysis and information, statistical techniques usage to measure quality) (Lakhal *et al*, 2006). Performance is proxied with business performance (with indicator of ROI, ROA, sales growth), quality of product (with indicators of reliability, durability, tenacity, regularity), and operational performance (with indicator of waste level, productivity, cycle time).

Management practices above are the most dominant in management science. This level focuses on artifact made by management to be able to adjust to mission and goals of organization. Management practice is proxied through several indicators simultaneously. It is believed that to improve management practices must performance be adapted to quality objectives requirements and company performance.

Core facility practice is one of quality management practices. It is measurement tool that can be used by company to support the product quality produced. Hackman and Wageman (1995) state Core facility practice is a framework to identify and to know the problems and desires of customer associated with product quality to evaluate process changes to company concerned. This opinion is strengthened by Mehra *et al* (2008) that TQM can substantially improve customer satisfaction across the industry but with different culture. Customer satisfaction is an important construct and became one of main goals of company. Different with Hasan and Kerr (2003) which suggests that TQM practice has no effect on satisfaction. Man (1994) also said that control system does not affect on company performance. Contradictory findings the effect of TQM practices on customer satisfaction is related to limited dimensions used to measure the TQM practice. Brah and Lim (2006) stated that in order to measure the operational performance, it can use two indicators namely cost and flexibility and quality. These two performance measures reflect the

wider scope in operational performance and financial quality of company.

Research Hypothesis:

Some previous studies identify that key success of quality management practices; (Anderson *et al.*, 1999; Flynn *et al.*, 1994; Terziovski and Samson, 1999) has a positive relationship with organization. TQM performance generally is perceived as a system that consists of several quality management practices. It is collective and connected each other (interlinked) where they have a relationship with organization performance. This study was followed up by Lakhal *et al.* (2006), quality management practices is proxied by three construct namely management practices, infrastructure practice, and core facility practice. Core facility practice (with indicators of quality system improvement, analysis and information) uses statistical techniques for measure company products quality. It can support the product quality produced. Hackman and Wageman (1995) states that core facility practice becomes framework to identify and know the problems and desires of customers related to products quality that can give the test way to consider and to evaluate the change process of company product and examining the company change. But there is research contradiction. Forza (1995) found that TQM practice has a positive effect on customer satisfaction. Adversely, Hasan and Kerr (2003) argued that TQM practice has no effect on customer satisfaction. We suspect that the apparent contradiction is related to limited dimensions used to measure the TQM. Therefore, this research will involve a dimension of core facility practice, operational performance and customer satisfaction simultaneously to see the business performance behavior of manufacturing company.

Relations of Core Facility Practice on Operation Performance, Business Performance and Customer Satisfaction:

Core facility practice is proxied by quality system improvement, information and analysis, statistical techniques that can be used to identify and solve the problems faced by customers as high product price, duration and inflexible delivery (delivery and flexibility quality). Two things are a dimension to measure operational performance (Brah and Lim, 2006). Operational performance is suitability and performance evaluation process in terms of internal operations of business, or to meet the requirements in terms of cost, customer service, delivery of goods to customers, quality, flexibility and products quality /services. Thus, operational performance as an indicator of problems faced by customers will increase if company has adequate

core facility practice and to be able to solve these problems. These notions will be able to bring a positive impact on business performance. Business performance as a result of operations and financial success will bring logical consequences on better fundamental activities of company's operations (Kaplan and Norton, 1992). According to Lakhal *et al.* (2006), there are three indicators of business performance affected by investment of capital project fund namely return on investment, return on assets and sales growth. In addition, core facility practice can also be used to identify and solve product quality problems. Conceptually, Crosby (1984) states that product quality is the specification of products to meet customer needs in accordance with request, relevance of all the criteria within product dimension. Man and Kahoe (1994) stated that customer satisfaction is all the characteristics in products and services, which can provide a greater value to customer. Therefore, a product must be created with perform various calculations and right analysis by listening to customer requests. To capture customer needs signals of desired item, management must have the proper and appropriate core facility practice.

Relationships of Operational Performance and Customer Satisfaction on Business Performance:

When companies can optimize profit, as an indicator of operation performance, it can be concluded that company ability to choose the right process to assess and evaluate the performance quality will affect on business performance. There are several empirical studies related to organization operational effectiveness on financial and market performance. Bayazir (2003) shows strong correlation between the products or services quality and financial indicators. Curkovic *et al.* (1999) also found that quality has a positive effect to measures of financial performance and market performance such as market share, ROI and ROA. While Hasan and Kerr (2003) stated that business performance will increase when the operational company performance become stronger through improvements in four dimensions: quality, cost, delivery and flexibility. In addition, some previous studies have also examined the relationship between customer satisfaction as main measurement of customer performance and financial performance and market performance. Man *et al.* (1994) shows a positive relationship between customer satisfaction and business performance. Voss (2002) also said that there is a positive relationship between customer satisfaction and business performance, although not very strong.

Based on above description, the conceptual framework of study is shown in Figure 1 and hypothesis as follows:

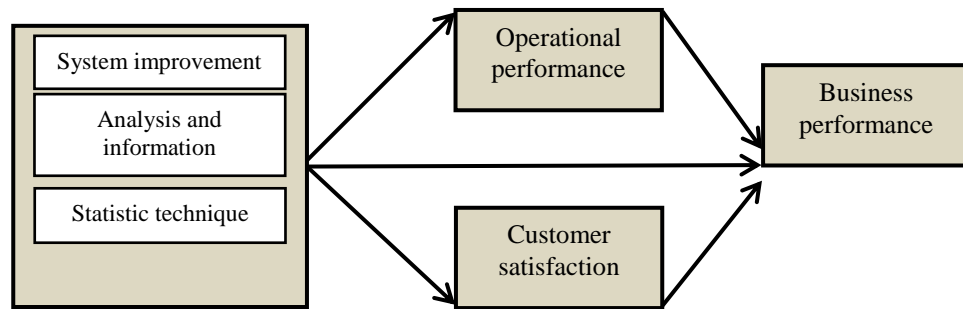


Fig. 1: Research Conceptual Model

H1: Core facility practice has positive effect on operation performance, business performance and customer satisfaction

H2: Operational performance and customer satisfaction has positive effect on business performance

Methodology:

Data Collection:

Data is obtained through questionnaires and interviews with respondents, managers and employees in manufacturing industrial in Makassar-Indonesia. Questions are based on core variables of this study to make respondents easier to understand. From 120 questionnaires were distributed randomly in 40 manufacturing companies, 108 were returned. Based Ferdinand (2002), 100-200 samples is required for maximum likelihood estimation technique. Table 1 shows the technical characteristics of study.

Table 1: Specification of technical research data

Samples location	Managers and employees at manufacturing companies
Samples type	Samples are 108 respondent from 40 following industry: food, beverages, tobacco (22); textiles, apparel, leather (5); household appliances (5); paper goods (2); chemicals goods, petroleum, coal, rubber, plastic (2), mineral products, other than petroleum and coal (1); base metal (1); metal goods, machinery and equipment (1); Other processing industry (1).
Sampling error	0.396
Confidence level	95 percent
Data collection	Direct visit + mail
Date of fieldwork	September 2013-December 2013

Instruments Measurement:

Statements are measured by Likert scale five point (Likert, 1961), from points "1" means "strongly disagree" until "5" means "strongly agree". Indicators are developed by adopting some research and relevant references. Prior data collection, pre-test is done to get feedback on content, format, comprehensibility and accuracy. Although the instruments used is adopted from various references, but still can be considered as new proposal measurement. Technical specifications of measurements are in Table 2.

Instrument Validation And Reliability:

Figure 1 show that there are two intervening variables that will be analyzed. Path analysis is used to explore the relationship between variables in model. It can explain direct and indirect effect on set of variables causes (exogenous variables) and variable effect (endogenous variable). Assumptions of path analysis on relationship between variables are linear, causal and additives, as well as a valid and reliable measurement instruments. Homogeneity test is conducted to test the validity using Pearson Product Moment correlation > 0.4 (Singgih, 2000). Reliability is measured by Cronbach alpha > 0.6, using SPSS version 16.0. Table 3 shows that measurement instruments are valid and reliable because it exceeds the minimum value required.

Table 2: Instrument measurement (main characteristics)

Measurement	Indicator items	Concept	Adapted from
Core facility practice (X)	Quality system improvement (X1.1)	Implementation of appropriate quality management in according with organizational structure, procedures, processes and resources needed	Zhang, et al (2000); Ahire, et al(1996);
	Internal quality information usage (X1.2)	Company's ability to analyze and use information in order to control the products quality on internal production process.	
	Quality statistic techniques (X1.3)	Statistical methods usage to measure and detect quality problems of company products	
Operational performance	Cost (Y1.1), quality (Y1.2), flexibility (Y1.3),	Costs to distribute products to customers, as well as the ability of company distribute products to customers in	Anderson, et al (1999); Brah and Lim(2006);

(Y1)	speed of delivery (Y1.4)	accordance with when customers need it. Anderson, <i>et al</i> (1999);	
Customer satisfaction (Y2)	Customer complaints (Y2.1), Repetition buying (Y2.2), Company retention (Y1.3)	Product quality ability when compared to other products Ability to immediately repair or mitigate them properly Price within affordable categories than other brands	Han <i>et al</i> (2007)
Business performance (Z)	Return on Investment - ROI (Z1.1) Return on asset – ROA (Z1.2) Sales growth (Z1.3) Market share (Z1.4)	Company's ability to earn a return on investment. Company's ability to earn a return on assets and used for operation. Product sales growth rate from year to year Market control	Lakhaal, <i>et al</i> (2006); Sila (2007);Han <i>et al</i> (2003)

Confirmatory Factor Analysis:

Model fit to data is tested by structural equation modeling (SEM) and statistical software AMOS 16, and applying the maximum likelihood method (Anderson and Gerbing, 1988). Psychometric properties of instruments such as reliability,

dimensional, convergent and discriminant validity were tested. Confirmatory factor analysis showed good model fit based on following criteria: Chi-square = 2,241; p = 0.326; Cmin/df = 1,120; RMSEA = 0.034; GFI = 0.989; AGFI = 0.947; TLI = 0.995; CFI = 0.998.

Table 3: Validity & reliability measurement

Estimator						Description
Core facility practice (X)	Indicator	X1.1	X1.2	X1.3		
	Loading factor	0.706	0.701	0.909		Valid
	Reliability	0.826	0.903	0.829		Reliable
Operational performance (Y1)	Indicator	Y1.1	Y1.2	Y1.3	Y1.4	
	Loading factor	0.808	0.610	0.678	0.809	Valid
	Reliability	0.829	0.759	0.810	0.815	Reliable
Customer satisfaction (Y2)	Indicator	Y2.1	Y2.2	Y2.3		
	Loading factor	0.628	0.620	0.783		Valid
	Reliability	0.824	0.759	0.806		Reliable
Business performance (Z)	Indicator	Z1.1	Z1.2	Z1.3	Z1.4	
	Loading factor	0.739	0.810	0.847	0.824	Valid
	Reliability	0.843	0.878	0.859	0.851	Reliable

Furthermore, construct validity test is done to see whether the indicators is part of or can explain the construct. As shown in Table 4, most of factor loadings are above 0.70. These results provide support for the dimensions, convergent and discriminant validity (Anderson and Gerbing, 1988). In addition, if the variance extracted values > 0.5 it means that there is close relationship between the constructs (Table 4).

Research Results:

Hypotheses were tested using AMOS 16. Table 5 and Figure 2 shows that a significant majority relations at 95% significance level. Data show that, as decided in models, core facility practice has

positive and significant effect on operation performance, customer satisfaction and business performance business. Customer satisfaction also significantly affect on business performance. Adversely, operational performance does not affect significantly on business performance. Referring to table 6, structural model in relation with business performance show that almost 95% variance is explained by core facility practice and customer satisfaction. It confirm conceptual model that core facility practice and customer satisfaction affect on business performance. Operational performance has indirect effect as an intervening variable of core facility practice.

Table 5: Significance test the relationship between variables (hypothesis testing)

Independent variables	Dependent variables	Direct effect		Description
		Standardize	P-value	
Core facility practice (X)	Operational performance (Y1)	0.530	0.000	Significant
Core facility practice (X)	Business performance (Z)	0.346	0.017	Significant
Core facility practice (X)	Customer satisfaction (Y2)	0.296	0.001	Significant
Operational performance (Y1)	Business performance (Z)	0.035	0.783	Insignificant
Customer satisfaction (Y2)	Business performance (Z)	0.244	0.008	Significant

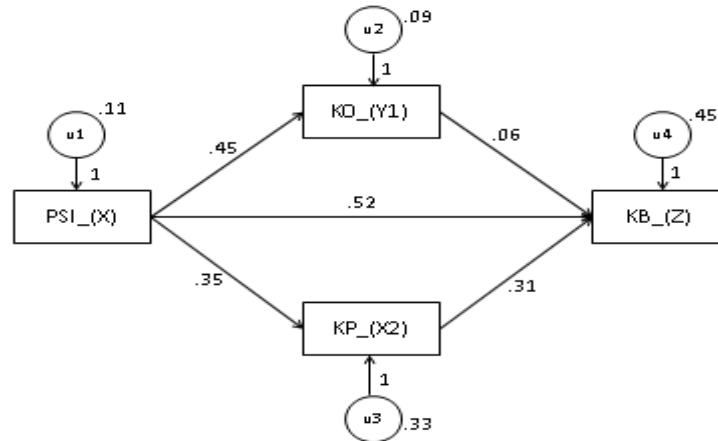


Fig. 2: Model overalls

Table 6: Standardized of direct effects, indirect effects and total effects of research variables

Independent variables	Dependent variables	Direct effect		
		Direct	Indirect	Total
Core facility practice (X)	Operational performance (Y1)	0.530		0.530
Core facility practice (X)	Business performance (Z)	0.346	0.259	0.605
Core facility practice (X)	Customer satisfaction (Y2)	0.296		0.296
Operational performance (Y1)	Business performance (Z)	0.035		0.035
Customer satisfaction (Y2)	Business performance (Z)	0.244		0.244

performance. Better core facility practice would cause better operational performance, at vise versa. From three core facility practice (quality improvement system (X1.1), internal quality information (X1.2), statistical quality techniques usage (X1.3)), internal quality information has lowest loading of 0,701. It means that skills mastery and human resource technology at manufacturing companies in Makassar become most important factors in core facility practice of quality management. Referring to Baird *et al* (2011), it must be considered and enhanced by company as it relates to demand and needs of community. In other words, selection of core facility practices must be adapted to abilities and skills of company human resources that will operate the core facility practice to accommodate complaints from public.

Effect of Core facility practice on Business performance:

Descriptive analysis result of core facility practice on business performance shows that statistic quality technique usage is dominant with loading factor 0909. Hypothesis testing results show that effect of core facility practice on business performance is positive and significant with p value of 0.000 (<0.05), and coefficient of 0,346. It indicates that core facility practice would improve the business performance, either directly or indirectly. The indirect effect is through operational performance. Relationship of customer satisfaction and operational performance is relevant to research of Pannirselvam and Ferguson (2001) that statistically there is a significant positive relationship of customer satisfaction and operational

Discussion:

It is time for Indonesia companies to evaluate the quality development concept of quality management practices. It is important for companies to enter global competition, especially for the world market-oriented company. Therefore, it is necessary to establish a strategic position through quality management practice approach to improve business performance. Performance appraisal is intended to determine whether management has been working in accordance with a predetermined plan. But the success of quality management practices on company can be determined by measuring overall companies performance. Company performance measurement in quality management practices can be measured by three measures namely financial performance, quality products, and operational performance (Lakhali *et al*, 2006). This research contributes to literature on how core facility practice, as part of quality management practices, is carried out simultaneously, systematic and sustainable to improve business performance. Factor analysis is done to 14 indicators related to core facility practice, operational performance, customer satisfaction and business performance. This analysis produces a solution that can explain significance relationship between factors, as shown in Table 6.

Effect of Core Facility Practice on Operation Performance:

Test result show that core facility practice affects on operational performance with coefficient of 0.530 at significance level of p = 0.000 (<0.05). This indicates that core facility practice has positive and significant effect on operational

et al (1994) which recognizes that many problems of manufacturing companies such as lack of delivery and quality problems, as well as higher costs are come from low integration of ineffective supply input financing both internal and external.

Effect of Customer Satisfaction on Business Performance:

Company ability to identify, meet and satisfy the customers needs rightly is a strategy to become superior than other competitors. Loyal customer will be difficult to maintain, but can be achieved if company able to focus on high satisfaction that perceived by customers. According to Kotler (2002), satisfaction is happy or upset feeling of someone who emerged after comparing the perception/impression of services performance with their hope. Descriptive analysis result for customer satisfaction indicators (number of complaints, repetition buying and company retention) shows that company retention is the main indicator to shape and reflecting customer satisfaction. It shown by average value 0.783 with loading factor higher than others. This result proves that customer satisfaction has significant positive effect on business performance. In other word, business performance will be achieved if company able to provide better satisfaction to customers. These results also support the findings of Lee *et al* (2010), and Sila (2007) who found that customer satisfaction is able to produce more and better business performance.

Conclusions:

This study results have practical implications for management of manufacturing companies to give emphasis on consistency in quality management practices, especially in aspect of core facility practice. Manufacturing companies are suggested to further improve operational performance and customer satisfaction where ultimately will improve business performance. They should provide more attention to core facility practice in systematic and sustainable way.

This study limitation was only involved in core facility practice aspects of quality management practices and samples only at manufacturing companies in Makassar-Indonesia. Therefore, these findings may not be generalizable to other companies. Future study is recommended to fill the gap by involving other aspects of quality management practices, including to make comparisons with other companies to add further insight.

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performance. This research result also consistent with several previous studies that core facility practice relates to financial performance indicators (Easton, 1993; Anderson and Sohal, 1999; Terziovski and Samson, 1999; Najmi and Kehoe, 2000). Core facility practice effect on business performance is mediated by higher customer satisfaction. Strategy right of core facility practice will affect on business performance when company is able to meet customer expectations.

Effect of Core facility practice on Customer satisfaction:

Basic philosophy of TQM stated that purpose of quality management practice is to satisfy customer. Therefore, most quality award models also concern to effect of customer perception as a significant effect of quality management practices. Deming (1986) suggests that satisfaction customer is the most important effect of this TQM practice. Mehra *et al* (2008) found that quality management practices have a strong effect on customer satisfaction. Research result Mehra *et al* (2008) support this research, but specifically more emphasis on practical aspects of core facility practice based indicators of quality improvement systems, internal quality information and statistic quality technique usage. Confirmatory factor analysis shows that statistic quality technique usage is most significant. It is shown by mean value of loading factor of 0.909, above the other variables. If indicator loading value is associated with customer retention indicator, it is a key indicator that reflects customer satisfaction. This situation illustrates that manufacturing industry in Makassar emphasis on statistic quality technique usage for core facility practice.

Effect of Operation performance on Business performance:

Test results shows that operational performance does not have significant effect on business performance. However, based descriptive analysis on operational performance (with indicators of cost, quality, flexibility levels and delivery), it indicate that speed of delivery speed become main concern based on respondents assessment to shape and reflecting operational performance. It is seen from average value of factor loading of 0.809 or higher than other operational performance indicators. It illustrates that manufacturing companies must rely heavily on speed of delivery to improve the performance of other business. Other indicator to reflect Operational performance is flexibility with loading factor of 0.678, it indicate a need to concern at diversity market demands. This research findings was supported by results of research Voss *et al* (2002), which states that operational performance refers to measurable aspects of organization process results, such as reliability, production cycle time and supply turnover. This findings consistent with Flynn

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