

## **Application of Total Quality Management Effectiveness Increasing the Managerial Performance Measurement System and System Performance Awards as Moderating Variable(empirical Study in Plantation in Northern Sumatera)**

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**Abstract:** This study aims to find empirical evidence of the effect of performance measurement systems and system award of the effectiveness of the application of TQM improves the performance of managers in plantations in North Sumatra. The primary data of the study sample of 180 managers who work on plantations in North Sumatra produced empirical evidence that total quality management influence on managerial performance. System performance measurement and reward systems significantly influence TQM relationship with managerial performance. For upcoming research should examine other moderating variables such as organizational culture, technology implementation and organizational commitment. In addition, research will come is expected to increase the response rate by using the technique of direct interviews as a data collection technique, although the technique requires a longer time for data collection but more secure level of data accuracy.

**Key words:** TQM, managerial performance, performance measurement system, award system, accuracy

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### **INTRODUCTION**

Increasingly business competition will have an impact on the tight selection companies survive or win the competition. A shift in market power from producers to consumers, mislead consumers have the power to determine how to meet their needs. Companies should be aware that the actual revenue (sales) is obtained as a result of its ability in providing customer satisfaction.

For manufacturers, creating high-quality products at competitive prices is no longer an option because the quality improvement program has become the main issue to maintain the viability of the company. Quality has been the basis of competition in the contemporary business. Emphasis quality is the most important due to two reasons. First, the increasing customer awareness of the importance of the quality of the products and services they choose. Second, quality improvement lead to improvements and benefits associated with it. Good qualities will increase sales.

In such a situation a sharp economic competition like this, the approach Total Quality Management (TQM) philosophy is increasingly being used to achieve advantages of the various aspects of business operations to achieve competitive advantage or businesses in total TQM provide answers to the organization or company to global challenges increasingly difficult, complex and rapidly changing.

TQM directing the company to continuous improvement can realize total customer satisfaction and continuous. Process this consumer-oriented incorporates basic management practices with improvement efforts that are often used as well as the equipment and techniques reliable. TQM can be applied to any corporate giants and small companies, manufacturing or service industries and public or private organizations.

Some companies that have implemented TQM anyone has successfully improve its performance but there also has-been unable to improve the performance they are, however, very little empirical evidence to examine the reasons or factors cause of inconsistency is the result of the application of TQM techniques (Powell, 1995). This fact suggests that there is no universal management system always appropriate to be applied to all organizations in all circumstances but the system the management also depends on factors that exist in the conditional the organization concerned.

Some researchers claim that the performance of the business areas of the company low due to the dependence on the company's management system which failed in the determination of appropriate target, performance measures and reward system (Kaplan and Johnson, 1987; Banker *et al.*, 1993). Another researcher test to look at the factors that cause lack of effective implementation of TQM for example, Wruck and Jensen (1994), states that the effectiveness of implementation of TQM requires fundamental changes in the organizational

infrastructure, include: system of decision-making research, system of allocation, performance measurement systems, system of rewards and punishment or punishment. Nevertheless Ittner and Larcker (1995) found no evidence that organizations that practice TQM and management accounting system can achieve high performance. Other researchers are Khim and Larry, Retno in his research found no effect Interactive (shared) between the implementation of TQM practices in the design of the accounting management with performance.

Economic environment faced by many companies today have demands the development of management practices and innovative relevant. Lately the pressure of global competition has changed the economic environment which forced many companies in the United States to change dramatically the way they operate the business. These changes led to the creation of the environment new management of business organizations, at least for a large number of organizations because the environment changes, the traditional management are not used again. For some companies, the benefits of contemporary management systems can charging presenting a more detailed and accurate exceed the costs. Key factors of this change is as follows: orientation customer, functional perspective, global competition, Integrated Quality Management (TQM), time as a competitive element, advances in information technology, advances manufacturing environment, growth and deregulation in the service industry management based activities (Mowen and Hansen, 2000).

Contemporary management system developed as a reaction to changes significantly on the business environment facing both service companies, as well as manufacturing companies. The overall objective of contemporary management system is to improve quality, satisfaction, relevance and timing information and costs (Mowen and Hansen, 2000). TQM practices and/or JIT effectively requires a change in management accounting systems, an important component management accounting systems in these changes include new information collection, dissemination of information across organizational hierarchy and changes in reward systems, performance goals, job size.

Retno examine whether TQM manufacturing practices and systems management accounting managerial interactions affect performance. Which distinguishes this study with previous studies is: Ittner and Larcker (1995) only focuses on TQM, the three main components of the accounting system management, among other things: performance objectives, performance measurement systems and systems award at the organizational level as well as performance based on quality and finance. Khim

and Larry focus on TQM/JIT, the three components of the system management accounting together with Ittner and Larcker applied at a rate of production operations. Retno focuses on manufacturing TQM, components management accounting systems used include: performance measurement system and rewards system employees and applied to manufacturing companies in Indonesia.

As Retno suggestion that still need to be investigated factors influence conditional that affect the effectiveness of the implementation of TQM which is applied to the manager of corporate services which respondents came from a relatively homogeneous functional, this study therefore wanted to test again whether the performance measurement system influence and appreciation of the relationship of TQM systems with performance manager.

Most of the research that has been done is the implementation of TQM the company manufactures; little is doing research on the company plantation. In the global competition where there is development of modern technology, economic deregulation and the free market so that manufacturing companies need to do improving the quality and undertake continuous improvement, especially company's plantation. A unique characteristic of the company's product-oriented plantation international market, the management company very closely with the standard quality, the need for understanding and beliefs shared by all components organizations about the need to maintain quality standards. Therefore all companies plantation requires the application of Total Quality Management (TQM).

To reconcile the inconsistent results of these studies require. Further, studies to determine whether the interaction of the application of practices TQM with contingency variables affect the performance. This study using analysis unit manager who worked on plantations in North Sumatera on the grounds that it has the potential plantation affect the production of the national plantation so that the implementation of TQM as device to win the competition becomes very important to note. Viewed of the acreage, production plantations in North Sumatra is also very large, reached 14,235 million tons per year with a land area reached 71.6 Km<sup>2</sup>, the area estates located in 33 districts/cities in North Sumatra. Results of North Sumatra's plantations also contribute heavily in national farm production contributed a great income for the country the number of plantation companies according to BPS data is as much as 303 company.

According Zulham implementation of TQM companies were ideal incrementally where the company is doing the build quality gradually and

incrementally. Implementation of TQM in this way because the essentially a process approach towards quality work culture change. Based on the description above, the main problems to be studied can be formulated as follows:

- Is the application of TQM effect on managerial performance
- Is the performance measurement system affects the application of the relationship TQM and managerial performance
- Is the reward system affects the relationship of TQM implementation and managerial performance

### **Theoretical concept and hypotheses**

**Concept of total quality management:** Many research have tried to discuss about understanding each Total Quality Management (TQM). But each researchers has a framework itself in formulating the definition of TQM. For example, Dipeitro (1993) defines the concept of TQM as a source of continued improvement carried constantly which involves all employees at every level of the organization to achieve excellent quality in all aspects of the organization through the management process. Khim and Larry explains that total quality management is a philosophy the emphasis on improving the manufacturing process on an ongoing basis with eliminate waste, improve quality, develop skills and reduce production costs. According to Kaplan and Johnson (1987), aspects of TQM include; the simplicity of the product design, interaction with suppliers and maintenance of equipment sustainable production. Young *et al.* (1988) refers to such aspects as the regulatory process, an approach in which the quality of a product is determined by the employee who worked in the factory. By being aware of the various opinions on definition TQM, TQM in this study used a definition taken from Dorothea (1999) who explains that TQM is a philosophy, a concept with a set of guiding principles which form the basis for an organization who wants to continually make improvements and improvements in the operation of the service to consumers for business services.

Empirical research conducted by Banker *et al.* (1993) regarding adoption of new manufacturing practices (TQM, JIT and Teamwork) gives picture that the manufacturing practices in TQM emphasizes employee solve problems, work in teamwork and generate innovative approaches to improve production. According to their employees are asked to identify ways to improve manufacturing process, reduce damage and ensure that the company's operations run efficiently. Previous Voss and Retno who did research on plants components automobile and some other industries, provides a

description of the practice traditional manufacturing tends to depend on the function or process of the engine, separate line personnel with their coworkers, employees become experts in their field because the work that is done repeatedly in a large number of with the same material. The resulting products are issued through the system quality control performed by the quality control department at the end of production.

TQM is more emphasis on the product and the customer (customer) instead of mass production; employees are responsible for the increase in the plant's ability organizes a variety of activities but the responsibility for detecting changes that do not conform to the quality control department an researchersity line personnel.

TQM philosophy to make each employee is responsible for quality control and stop production when a problem occurs in the plant, Monden, Khim and Larry. Employees are encouraged to identify ways to improve the quality of products and processes (Siegel *et al.*, 1997), it is important for managers to researchsize employees to actively participate in taking the initiative in the hope of engagement the employee can improve the production process (Ichniowski *et al.*, 1997).

Recent work emphasizes management practices on employee engagement, the employees working while studying, thus the ability to handle problems will increase. Productivity and quality of information reports will provide for employee feedback to improve learning ability and production (Banker *et al.*, 1993).

Furthermore, management accounting system is often used as a mechanism to motivate and influence the behavior of employees in a variety of ways that will maximize the welfare of the organization and the employee (Alles *et al.*, 1995).

TQM approach done by six basic concepts, Budi I such: a management who are committed and fully engaged to provide support the organization from the top down, a continuous focus to consumers internal and external, engage and empower the entire HR organization effectively, continuous improvement of all business processes and production processes, involve suppliers (suppliers) as a partner, determine the system measurements for all processes.

TQM system is determined by the CEO/top management must be involved and responsible for the implementation as the organization's CEO and senior managers companies determine the business strategy, production, what services will be produced and determine the consumer market that will use the product or service. That is to say wisdom is that the application of TQM system is fundamentally determined in board directors

and not the workers of employees. With thus it is clear that the strategy of achieving the goal of TQM is fundamentally since the beginning should implemented with full commitment by the CEO and top management, then after all the middle management level and management operations.

**Application TQM at plantation company:** Roth and Morse suggests special attention to the quality based by the fact that the quality increases will ultimately increase profits company because it will be accompanied by a quality improvement costs continue to decline and increase in market share. The decrease in costs is not solely cost reduction production but also the reduction of the excess activities, without compromising quality of the resulting product. Quality improvement is believed to be a very effectively carried out a manager to increase market share and the company which has a cost advantage and large market share, then the manager will gather high achievement.

Plantation companies initially did not make the products defects (which can cause accidents, damage and pollution) are important the company can produce in large quantities. With developments and the competition is so tight now companies plantation should be able to produce quality products.

Implementation of TQM is the ideal plantation companies are incremental where the company conducts a gradual process of building quality and regularly. Implementation of TQM in this way because essentially approach to the process of cultural change quality work. In generally speaking, the process TQM implementation in plantation companies includes:

Top management must make TQM as a top priority of the organization, clear vision and achievable, aggressive set goals for the organization and each unit of production and foremost demonstrate commitment to TQM through their activities. Organizational culture should be changed so that everyone and every process to include the concept of TQM.

The organization must be changed paradigm, focusing on the consumer, everything Working aligned to meet consumer expectations.

Small groups developed on the entire organization to understand quality, identification of consumer desires and measure the progress and quality. Every group is responsible for achieving their goals as part of the overall organizational goals.

Changes and continuous improvement must be implemented, monitored and adjusted on the basis of the results of the analysis of the measurement.

## **MATERIALS AND MEHTODS**

**TQM and managerial performance:** Performance is a work that can be accomplished by one or group of people in an organization in accordance with the researchesity and responsibility, respectively in an effort to achieve the goals of the organization does not violate the jurisdiction and in accordance with the moral and ethical. Managerial performance is one factor that can increase the effectiveness of organization. Managerial performance is the performance of the individual members of the organization in managerial activities such as: planning, investigation, coordination, supervision, staffing arrangements, negotiation and representation

A person who holds a managerial position is expected to produce a managerial performance in contrast to the performance of employees who are generally concrete, managerial performance is abstract and complex. Managers produced a performance by directing talents and abilities as well as several others that business is in the area of researchesity.

The company's goal is to produce quality products to achieve customer satisfaction (customer satisfaction) is characterized by reduced complaints from customers that show the performance of companies that increased. Honey of research and Kuei showed that there is a relationship between the constructs of quality and performance organizational. Important for companies to understand the critical indicators of quality dimensions that affect the performance of the organization.

Tersziovski and Samson (1999) which examines the elements of TQM which is used as a quality reward system to test the relationship between TQM elements selected factors on performance factors, they concluded the factors affecting the performance of TQM elements.

**Performance measurement system:** In traditional management, performance measure commonly used is financial measure, because the measurement of financial size easy to do. Performance measurement is done by specifying certain actions that explicitly expected to be carried out by personnel and conduct performance measurements to ensure that personnel act as expected, there is strictly controlled information flow (e.g., with a monthly report manager). In this way the performance measurement system to try to control the behavior of personnel through performance measures, workers do not have the freedom to choose what to do and how to do it.

Appropriate performance measurement systems used in contemporary management is performance measurement systems that utilize extensively and

intensively in the information technology business. In the era of information technology is no longer determine what is to be done by workers and how to do it but the information technology provides the freedom for workers to carry out what to do and how to do it.

TQM practices and/or JIT encourage a continuous flow of information to employees who carry out the task in question for example, research conducted by Banker *et al.* (1993) provides empirical evidence that the frequency of reporting manufacturing performance measures on employees, associated correctly with implements just in time, teamwork and practice of TQM. Daniel and Reitsperger (1991) provide evidence empirical indicates that Japanese car companies and electronics using a continuous improvement strategy also give more feedback often to improve performance. Of the learning process, reporting performance measures manufacturing is more frequently to employees will help them develop effective task strategies faster resulting in improved performance.

Charles stated in a review of research on the system performance in the hotel that when the quality of training given employees with the tools needed to identify and solve quality problems, employees should also be given the opportunity to use new skills and appreciated and be rewarded when they do.

Unlike traditional manufacturing environment in which the flow of information tightly controlled (e.g., a special monthly report manager), TQM practices and/or JIT, encourage continuous flow of information to the employees who carry out the task. Research conducted by Banker *et al.* (1993) provide empirical evidence that frequency of reporting on employee manufacturing performance measures, related to the true with the implementation of just-in-time, teamwork and practice of TQM.

Several other researchers state that quality improvement programs such as TQM individually can be effective if the company has implemented ways to continuously improve the quality, compared to organizations competitors who entered with no improvement using TQM techniques. Milgrom and Roberts (1990) provide a theoretical framework that attempts shows the issue of how the relationship between manufacturing systems. They affect the performance of states that organizations often experience simultaneous changes in the competitive strategies with design elements organizational change when they are out of manufacturing traditional emphasis on mass production to the implementation of TQM, the next complements or

complementary roles influence is often increased the group of elements which can improve overall performance. The point framework Milgrom and Roberts (1990) states that the success of implementation of new manufacturing techniques require complements management accounting system that can be in interaction with production systems for produce higher performance than what would be achieved by system the product itself.

Further, studies support the existence of complements among others found that the quality improvement process will increase when sharing information stated in the job section. Chenhall (1997) provide evidence that performance measurement gives feedback in the form of strategic control which encourage managers to evaluate and re- examine how the program complements TQM adequate increase profitability. Daniel and Reitsperger (1991) provide empirical evidence that shows that the car companies and electronics Japan that use continuous improvement strategies also provide feedback turning performance more frequently to improve its performance. From the perspective of learning, performance measurement reporting frequency to help employees develop effective strategic work faster and can improve its performance (Locke and Latham, 1988). In addition the frequency of feedback turning performance and rate of learning will increase employee if the employee receive non-financial performance measurement.

Because the conventional financial accounting system (like the rest of the cost report goods or scrap every month) often fail to provide the information needed based on the application of TQM (information directly from the percentage of damage to the goods). Thus it would be better if performance measurement linked with quality; therefore the employee is required to ensure that the quality in the manufacturing process remains in control and can continuously improved the results (Chenhall, 1997). As the practitioner literature review states that accountants management are becoming increasingly interested in extending the application of the measurement system new manufacturing performance. While some areas of accounting practitioners also began to recognize that they must increase a horizon and realize the change in manufacturing if they want to maintain its position as the main source of performance reporting within the organization. Increased attention to the need for improvement in the reporting of the company's operations controller based performance measurements indicate that the management accounting system, not a new task for accountants (Kaplan and Johnson, 1987).

## **MATERIALS AND METHODS**

Time needed for the implementation of this study is 6 months starting September 2010 until February 2011. The study population was all managers on plantations in North Sumatra with a number that is not known for certain. Elements of the population this study is the manager of the plantation companies in North Sumatera return the questionnaires this study. The samples by using a sample frame listed in Biro Pusat Statistik (BPS) in 2005 were 303 plantation companies. Because managers are there in the plantation company is not known for certain amount, then by considering the response rate in Indonesia maximum rate of 20% while the Hair *et al.* (1995) asserted for an unknown number of populations for certain minimum sample data collected minimum 100 of data is considered good, then the number of questionnaires distributed 600 copies with the assumption that each firm will be sent 2 questionnaires.

Sampling methods in the study belong to the Non Probable sampling with purposive sampling technique. Purposive sampling is sample selection techniques are based on certain considerations are based on the research objectives. The sample in this study is managers who worked on plantations in North Sumatra. Who have worked a minimum of 5 years so that the answers given to the manager describe the objective conditions. Total population is not known, the size of the sample (sampling size) minimally used in this study of 100 people with the assumption that the data obtained are considered adequate for large samples (Hair *et al.*, 1995).

Sources of data used in this study is primary data because the data are collected and processed by researchers with the type of subjective data perception managers who worked on plantations in North Sumatra. Data were collected by sending questionnaires by mail to the manager who lead department on plantations in North Sumatra. This study uses the dependent variable is the independent variable of managerial performance with TQM, performance measurement systems and reward systems (rewards).

**Total Quality Management (TQM):** TQM variables measured in this study by including the main elements of quality management is process oriented, human element, a culture of quality, each item written questionnaire called the 12 principles of TQM are: Leadership, focus on customer, employee empowerment, continuous improvement, basic facts in decision-making, training and development, rewards and recognition, flexibility, tools and techniques, strategic planning, team work, involvement of suppliers. Questionnaire using a scale of

10 points which is the development of instruments that TQM use by Deborah.B and Pricilla.B (1998), respondents were asked to indicate whether they agreed with the statement that each of the principles of quality management system incorporated in them from strongly disagree (points 1) low TQM means to strongly agree (10 points) means high TQM.

**Managerial performance:** Managerial performance are referred to in this study is the performance of individuals in managerial activities. Managerial performance variables were measured using self- rating instrument developed. In this study, each respondent was asked to measure their own performance compared to the average performance of co- respondents, by choosing a scale of one to ten, managerial performance measured includes eight dimensions: planning, investigation, coordination, evaluation, supervision, negotiation and representation as well as the dimensional measurement of overall performance. Performance scale comprised of points (1) to a below-average performance (low) and points (10) for above-average performance (high).

Critics of the weakness of managerial performance variables measuring instrument is that the respondents in the self-ratings tend to give low score for yourself (leniency bias), compared with the performance measurement performed by subordinates or superiors sugrcrior rating models, although self- rating can avoid the possibility of measuring performance by unrepresentative respondents.

**Performance measurement system:** Performance measurement system that is meant here is the provision of information the manager of the organizational unit that led the quality of the activity the company's operation. This variable is measured with an instrument that is used by Daniel and Reitsperger (1992). Retno and developed by Researchers use low scale (1) to show low performance and scale high (10) to demonstrate high performance measurement.

**System award:** System awards referred to in this research is on manager compensation consists of a fixed payment only and payment of the amount specified variable based on performance. Respondents to choose the applicable compensation system in the company where they work, then they are asked to vote. This variable is measured with an instrument that is used by Khim and Larry and was developed by the researchers. This variable was measured with a scale of 10.

Further systematic identification will be displayed variables used in this study, can be seen in Table 1 below:

Table 1: Summary of response questioner

Variables	Values
Number of questioner	600
Questioner response	180
Questioner non-response	420
Response rate questioner	(180/600×100%) 30%
Data processed Premier, 2011	

In this study the researchers used method analysis is a quantitative method. Perception of respondents is qualitative data that will be measured with a scale so the results are shaped figure (quantitative). Furthermore, numbers or scores are processed with statistical methods. The use of this method is to facilitate the process of data analysis. Of a wide range of analysis tools researchers determined some analytical tools that fit the needs for testing hypothesis. Technique processed using existing data analysis SPSS Verston 18 statistical software include non-response bias test

## RESULTS AND DISCUSSION

Data were collected by sending 600 questionnaires via postal services (mail survey) to the functional manager plantation in North Sumatera. Shipping questionnaire was conducted on January 19, 2011 and is expected to back on the date March 30, 2011 but the reality questionnaires to the right time only 180 questionnaires. Summary of delivery and return of the questionnaire in this study shown in Table 1.

From Table 2 above, it appears that the majority of respondents who participated are as many as 145 men (80.6%), respondents over the age of 30-39 years is 69.5% and 41.7% of respondents have a service life of >10 years as manager.

**Test results of non-response bias (t-test):** Non-response bias testing was conducted to see whether characteristics of respondents who return the questionnaire to the respondent answers not return the questionnaire (non-response) different. If it can happen, it will affect the results of the data analysis is the analysis of data with nonresponsive different possibilities with the analysis of data without non-response. It will be a serious problem if the rate of return (response rate) is very low. Given the limited information obtained by investigators to the identity individuals who did not send a reply, the respondents in this test returns the answer past the allotted time is considered to represent answers from respondents who non-response.

Test methods for non-response bias is done by grouping responses received after reexamination researchers completeness answers and then put into 2 groups performed different test t-test. Testing for

Table 2: Profile respondent (n=180)

Factor	Total	Percentage
<b>Gender</b>		
Female	35	19.4
Male	145	80.6
<b>Age</b>		
20-29	9	5.0
30-39	88	49.0
>40	83	46.0
<b>Education</b>		
SMA	0	0.0
Diploma/Sarjana Muda	10	4.0
Sarjana (S1)	125	69.5
Sarjana (S2)	45	26.5
<b>Working periods</b>		
<5	10	5.0
5-10	95	52.7
>10	75	41.7

Table 3: Testing non-response bias

Variables	Before N = 90		After N = 90		t-values	Sig.
	Mean	SD	Mean	SD		
TQM	95.63	9.97	97.13	11.82	0.605	0.547
SPK	66.43	8.21	65.97	7.48	-0.251	0.802
SP	65.30	7.56	62.45	7.10	-0.341	0.745
KM	64.35	6.82	63.07	6.94	-0.804	0.424

Table 4: Descriptive statistics research variable

Variable	Theoretical range	Actual range	Mean	SD
Total quality management	12-120	68-115	95.79	10.574
Performance measurement system	8-80	47-78	65.74	8.227
Award system	3-30	12-29	24.31	3.379
managerial Performance	8-80	52-76	63.93	6.803

non-response bias test performed by t-test because the data normal distribution and the number of samples slightly. Based for decision by looking at the significance level of  $p > 0.05$ . If the test results in research indicates probability level of significance above 0.05, meaning that answers given by both groups of respondents no difference answers, so that the data used in this study were able to explain conclusion of the study. The test results of non-response bias shown in Table 3.

**Statistics descriptive:** Descriptive statistics are used to provide an overview of the variables research (total quality management, performance measurement system, the system awards and managerial performance) that shows the range of numbers and the theoretical actual range, average standard deviations are presented in Table 4.

Based on the table above, for measurement instruments total quality management in the range of 12-120 theoretical and actual range between 68-115 with an average of 95.79 and a standard deviation 10, 574; performance measurement system for instruments with a

Table 5: Resultes reliabiliti

Variable	Cronbach's alpha	Status
Total quality management	0.758	Reliable
Performance measurement system	0.756	Reliable
Award system	0.856	Reliable
Managerial Performance	0.775	Reliable

Table 6: Variance inflection factor

Model	Tolerance	VIF
TQM	0.11	929.84
SPK	0.12	842.57
RWD	0.15	677.85

Dependent variable Km

theoretical range between 8-80 and the actual range 47-78, mean 66.74 and standard deviation of 8.227. Instrument systems awards with a theoretical range 3-30 and actual range of 12-29 with an average score of 24.31 and a standard deviation of 3.379 while for managerial performance instrument with a theoretical range between 8-80 and the actual range 52-76, median 63.93, a standard deviation of 6.803.

**Data quality test results:** Test data quality can be done through test reliability and validity. The test of each to determine the consistency and accuracy of data collected from the use of the instrument. There are two procedures performed in this research to measure the reliability and validity of the data, namely: to see test reliability coefficient (Cronbach) alpha test the validity of the notice Pearson correlation between the score of each item with the total score. Seen the value of Cronbach alpha reliability of each research instrument (>0.60 are considered reliable) as required by Nunally in Imam G while the value in this study extend the validity of the correlation coefficient between each instrument research and between each instrument with a total score with a minimum correlation coefficient of 0.50. Reliability and validity of test results can be seen in Table 5.

**Classical assumption test results:** Regression model is that both have a normal or near-normal distribution. Testing normal distribution is done by looking at the histogram comparing observational data with near- normal distribution. Besides, use of normal probability graphs comparing the cumulative distribution plate of real data with the cumulative distribution of a normal distribution. If a normal distribution, then the line that describes the real data will form a line to follow the diagonal line. Under normal display and plot graphs in the appendix can be concluded that the histogram gives the distribution patterns close to normal, whereas in a normal graph plots dots spread around the diagonal line and its distribution follows the direction of the diagonal line. The second graph shows that the regression model fit for use due to

Table 7: Result auto correlation test

Test model	Value D-W
$KM = \beta_0 + \beta_1 \times TQM + \beta_2 \times SPK + \beta_3 \times RWD + e$	2286.00

Table 8: Result hypothesis test

Hypothesis	Coefficient	t-values	Sig.
Constanta ( $\beta_0$ )	15.830	0.488	0.626
TQM ( $\beta_1$ ) H1	0.324	0.971	0.033
SPK ( $\beta_2$ )	-0.768	-1.849	0.066
SPH ( $\beta_3$ )	2.876	3.172	0.002
TQMSPK ( $\beta_4$ ) H2	0.010	2.177	0.031
TQMSPH ( $\beta_5$ ) H3	0.027	2.819	0.005

$R^2 = 0.479$ ;  $F = 31.968$ ; Sig.  $F = 0.000$

meet the assumptions of normality. Multicollonieritas test aims to test whether the regression model found a correlation between the independent variables (independent). Good regression models should not happen correlation between independent variables. Detection of the presence or absence of multicollonieritas in this study by looking at the value of tolerance and the variance inflation factor value, a regression model that is free of problems multicollonieritas if tolerance values have more than 0.10 or 10 % and the value of Variance Inflection Factor (VIF) is >95%.

From Table 6 shows the results of the calculation of tolerance is also no free variable that has a tolerance value of >10% which means there is no correlation between the independent variable whose value is <95%. The results of the calculation of Variance Inflection Factor (VIF) also show the same thing, no independent variables have VIF values over 95%. So, it can be concluded there is no inter variable multicollonieritas free in the regression model

Autocorrelation test aims to test whether there is a correlation between the regression model errors in period t with an error in period t-1 (previous). Regression model is a good model that is free from autocorrelation. In this study the autocorrelation test is done by looking at the value of Durbin Watson (DW), when the value of DW is located between the upper limit or upper bound (du) and (-du) or ( $du < DW < 4-du$ ), then the autocorrelation coefficients equal to zero, means that there is no autocorrelation. It is known from the Durbin Watson table that the upper limit value (du) 1.56, the sample size 19 and the number of independent variables 3, at the 5% significance level in Table 7 shows the DW value of 2.286 means that the data of this study proved to be free of autocorrelation  $1.56 < 2.286 < 2.44$  ( $du < DW < 4-du$ ).

**Hypothesis testing results:** Hypothesis 1 stated that the application of total quality management has a positive effect on managerial performance. From Table 8, it appears that TQM has a significant influence on managerial performance is shown with  $p = 0.033$  (<0.05). Positive regression coefficient, t-test = 0.488, meaning that if the



application of TQM managerial increases, performance increases. This means that the hypothesis is accepted. Hypothesis 2 examines the effect of the interaction of total quality management and systems measurement of performance on managerial performance with the formulation of the hypothesis that presented in this study as follows:

- $H_2$ : There is a significant positive influence on the relationship between performance measurement system implementation of TQM and managerial performance

From Table 8 looks 0.4 values: 0.010 and 2.177 by t-test with a significant probability of 0.031 ( $<0.05$ ), meaning that the interaction between TQM performance measurement system has an influence on managerial performance. This shows that the two hypotheses can be accepted. Hypothesis 3 examines the effect of the interaction of total quality management and rewards systems on managerial performance hypothesis as follows:

- $H_3$ : Interaction of total quality management and the positive rewards systems on managerial performance

From Table 8 looks value  $ps = 0.027$  and the value of t-count of 2,819 with a probability of 0.005 is smaller than 0.05. The results of this test to see the effect of appreciation of the relationship of TQM systems and managerial performance,  $ps$  interaction coefficient is positive and significant, indicating that the hypothesis three is accepted, meaning interaction with the TQM affect managerial performance reward system or can be said to have moderating effects of reward system the relationship between TQM and managerial performance.

From the testing of three hypotheses proposed in this study all the research hypothesis is accepted. Hypothesis 1 states that affect the application of TQM acceptable performance shown by the coefficient  $PO > 0$  and a probability of 0.000 ( $p < 0.05$ ). These results support the hypothesis of the research conducted of Honey and Kuei concluded that the relationship between the constructs of quality and performance organizational, because it is important for companies to understand the critical indicators of quality dimensions that affect the performance of the organization. The results also support the hypothesis Tersziovski and Damy (1999) which examines the elements of TQM are used as a quality reward system, test the relationship between TQM elements selected factors on the performance factor. They concluded the factors affecting the performance of TQM elements.

Successful implementation of TQM is strongly influenced by the involvement and commitment of the CEO and the managers in the implementation of TQM. TQM means wisdom application system is fundamentally determined in the boardroom (boardroom). With full involvement, sense of responsibility manager here then of course it will affect the increase in managerial performance.

From the results of hypothesis testing, it was concluded that hypothesis 2 can be accepted means of interaction with the TQM implementation of performance measurement systems affect managerial performance. The results of this research do not support research (Itter and Larcker, 1995). Khim and Larry who found no evidence that the practice of TQM organizational and interactive systems management measurement can achieve financial performance, customer and good quality. However, this finding supports the findings Retno which concludes the influence of TQM manufacturing interaction with performance measurement systems on managerial performance.

The difference hypothesis test results of this study with the findings by Ittner and Larcker (1995), likely due to differences in objects of different companies with research Itter and Larcker where the object of research is a manufacturing company whereas this study is the estate services firm, another possibility could be due to different organizational cultures in tune with what was said Budi Ibrahim embed TQM culture within an organization is not easy because of the heterogeneity of member organizational background in terms of education, experience, culture and values as well. Therefore, planting TQM culture need patience and perseverance because it requires quite a long time. However, this is a goal that must be achieved in order to improve quality, productivity and competitiveness of the organization to be able to survive in the era of the local competition and global regional.

Hypothesis 3 which states that the interaction with the system implementation of TQM Awards positive effect on managerial performance acceptable. These results support the hypothesis of the research conducted by Khim and Larry as well as findings Retno they found a positive effect between TQM and manufacturing interactive system performance appraisals manager but in contrast to research Itter and Larcker which not find evidence that organizational who practice TQM and interactive systems management measurement can achieve financial performance and good quality (high). Support of 3 is consistent with the hypothesis put forward by Mulyadi and Johnny, awards may draw the attention of the employee and inform or remind them of the importance of something that they are rewarded

compared to the others, the award also increase the motivation of employees to measure performance, thus helping employees how they allocate their time and effort. Performance-based awards to encourage employees to change their tendency to fulfill the spirit of self-interest into a passion to meet organizational goals. Performance-based awards provide two benefits: member information and provide motivation

### CONCLUSION

Based on the analysis of data in this study showed acceptable test all hypotheses. Hypothesis 1 which states the application of TQM affect the performance is acceptable. This is consistent with the stated Budi I, Successful implementation of TQM is % rongly influenced by the involvement and commitment of the CEO and the managers in the implementation of TQM. With full involvement, sense of responsibility of the manager will certainly affect the increase in managerial performance.

These results support the hypothesis of the research conducted by Madu *et al.* (1995) concluded that the relationship between quality and performance organizational constructs, the results also support the hypothesis Terziovski and Danny (1999) which examines the elements of TQM are used as a reward system quality which to test the relationship between TQM elements selected factors on the performance factor. They concluded the factors affecting the performance of TQM elements. From the results of hypothesis testing, it was concluded that hypothesis 2 can be accepted means of interaction with the TQM implementation of performance measurement systems affect managerial performance. The results of this research do not support research (Itter and Larcker, 1995) as well as research and Locke and Latham (1988) who found no evidence that TQM practice organization and management of interactive measurement system can achieve financial performance, customer and good quality. This finding supports the findings Retno, there is an interaction effect with the TQM manufacturing performance measurement systems on managerial performance.

Hypothesis 3 which states that the interaction with the system implementation of TQM Awards positive effect on managerial performance acceptable. These results support the hypothesis of the research conducted by Khim and Larry, serla Retno findings, they found a positive effect adaaya between TQM and manufacturing interactive system performance appraisals manajero but contrary to research Itter and Larcker (1995) which does not found evidence that organizations that practice

TQM and interactive systems management measurement can achieve financial performance and good quality (high). Performance-based awards to encourage employees to change their tendency to fulfill the spirit of self-interest into a passion to meet organizational goals. Performance-based awards provide two benefits: giving information and provide motivation.

### RECOMMENDATIONS

As described Zulham Effendi that the implementation of TQM in the plantation company is the company's transformation process: beginning of operations in new ways, develop new culture also involves the redesign of other systems. TQM is essentially the human resource management system which may work in a redesign of the implementation of an independent working group. Performance appraisal and compensation system may be converted into awards based on the performance of the group and training for managers, assistants, foremen, operators and employees is needed. Lembaga Pendidikan Perkebunan (LPP) as a center of knowledge continues to carry out its roles and functions to help prepare human resources plantation and continue to do the transfer of knowledge to the estates in order to implement TQM Plantation Company well.

For upcoming research should examine other moderating variables such as organizational culture, technology implementation and organizational commitment. In addition, research will come is expected to increase the response rate by using techniques interviews as data collection techniques such techniques needs although with a longer time in data collection but the degree of accuracy of the data more secure.

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