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Effect of Quality Management on Knowledge Management and Company Performance at PT XYZ

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Abstract: This study aims to determine the effect of (1) the implementation of quality management on company performance, (2) the application of quality management to knowledge management, (3) knowledge management on the performance and (4) direct effect, indirect effect and total effect of quality management on company performance of PT XYZ in this case, namely the steel manufacturing company. Analysis of the effect of applying quality management is based on the clauses listed in ISO 9001: 2015 and the application of company knowledge management. Analysis of the data to be discussed is limited only to the application of company quality management in 2018. By using data collection methods in the form of questionnaires to 150 respondents. The method of data analysis in this study uses Structural Equation Modeling (SEM). The results showed that quality management had a significant and positive effect on the performance of the company with the strongest relationship of variables explained by the indicators of company sales performance and knowledge management with the strongest relationship of variables explained by the indicator products provided in accordance with customer requirements. And knowledge management has a significant and positive effect on the performance of companies with the strongest relationship of variables explained by the indicator the application of innovation work in work.From the results of the study also mentioned that the direct effect has a greater effect than the indirect effect of quality management on company performance.
Keywords: AMOS, Company Performance, Knowledge Management, Structure Equation Modeling,Quality Management

I. Introduction

The development of the construction industry lately is developing very rapidly. Construction of infrastructure, housing, offices, and other facilities and infrastructure is very easy to find in various regions in Indonesia. The great opportunity in this sector, makes the construction service industry players compete to get as many projects as possible, so that the company's revenue and profits increase in the future. The role of the quality management system for each company becomes increasingly important, along with the increasing demands of the community for quality products. Therefore, the presence of quality management is expected to help management in a company to continue to improve the quality of its performance so that it can improve efficiency and productivity. Thus, the company can provide quality assurance on its products consistently in accordance with customer expectations and also indirectly can strengthen competitiveness between companies. On the user side, as the recipient of the work of construction service providers, of course always demand high-quality construction results, low prices, and also a faster development process. This spurred construction service industry players to improve the quality of construction products in order to meet the expectations of their users.

In order to improve the company's ability to support customer needs, development and improvement of its facilities is needed. The development and improvement of facilities requires a good coordination in terms of funding, implementation, and handover in order to get the best results in accordance with the basic functions of the facility. To get the best results, the development and improvement of a facility requires quality management, so that the costs that have been used provide satisfactory results, both in terms of function, aesthetics, and durability. Successful implementation of Quality Management does not entirely depend on policy settings and document maintenance. If there is no proper monitoring and control, ISO certification is only a marketing tool rather than a QMS implementation tool. Each project has a specific quality plan. Quality audits, progress reports, and schedules are used to control the quality of its products. Customer feedback is received and advice is needed by the company in terms of improving the quality of the company in the future. Although Quality Management has set standards, procedures and policies always change in each project based on the requirements that apply in that place [1].

Quality Management implementation is also considered as one of the factors that can improve the company's internal operations. This will improve the quality of construction results due to the creation of work procedures and control of human resources [2]. The company implements and evaluates further from several quality procedures that have not been implemented in the company so that the quality procedures that have been designed will function optimally for the company and benefit in the long term of the company [3]. PT XYZ has implemented quality management since 1999. With the change in the business direction of the company which is now also in the construction business, it will be a challenge for PT XYZ to continue to run and implement a quality management system effectively and efficiently. Based on this problem, the writer made a research on "The Effect of Quality Management Implementation on Knowledge Management and Company Performance at PT XYZ"

The results of the QMSL (Quality Management System Level) form show that there are still many findings related to the disobedience of the management system at PT XYZ. With the most findings found in the QA / QC (Quality Assurance / Quality Control) section. In the assessment chart of the achievement of the implementation of quality management on the annual target, it is found that there are still some functions that have sub-standard values (70% standard value), including QA / QC, production and engineering. This shows the need for improvements to the existing system, because this part is the main activity of PT XYZ's manufacturing production. The application of knowledge management shows that there have been many efforts by company management in creating knowledge management to be able to improve work systems and increase innovation continuously so that the target efficiency and productivity are met. However, the company's performance in the last 5 years shows a decline in the value of production efficiency in 2018 which was originally 14% in 2017 to 9%. This is the focus of this research problem. The company PT XYZ has periodically evaluated the implementation of quality management and one of its applications is knowledge management, so that a large number of innovation themes are collected, but all these things can not contribute significantly to the company's performance.

II. Study of Literature

Definition of quality is the improvement and measurement of quality continuously to eliminate variations by using statistical tools [4]. The general definition of quality implies the degree (degree) of excellence of a product (work / effort) in the form of goods or services; both tangible and intangible. In the context of education understanding of quality refers to the educational process and educational outcomes. "Quality Educational Process" involves various inputs, (school management, administrative support, teaching materials for school facilities, infrastructure and other resources as well as creating a conducive atmosphere). While quality in the context of tangible "Educational Outcomes" is school achievement in the form of student achievement (a test of academic ability) or student achievement in a particular field, even school performance that is intangible, for example the atmosphere of discipline, intimacy, cleanliness, etc.)

Quality Management System (SMM) is an order that ensures the achievement of planned goals and quality objectives. However, the definition of management standards will be more specific if it becomes a quality management standard, to support standardization of each product quality produced by the company. The International Organization for Standardization (ISO) comes into play as an international standard setting body consisting of representative's national standardization bodies of each country. The quality management system divides the Quality Management System into two types, namely the informal quality management system and the formal quality management system [3]. ISO Quality Management Systems can be grouped into three frameworks: (1) ISO certification planning, (2) organizational or company commitment to quality, and (3) application of standard procedures has been established [5]. ISO 9001 is a quality assurance system model in the design / development, production, installation, and service or often referred to as the ISO 9001 Quality Management System (QMS). ISO 9001 is an international standard governing the Quality Management System. Based on this understanding, it can be concluded that ISO 9001 is one of the ISO 9000 series that regulates the Quality Management System, so that ISO 9001 is often referred to as the ISO 9001 Quality Management System (QMS).

Knowledge management is a process to identify capture, organize and disseminate intellectual knowledge that is very important for the company's performance in the long run. Knowledge management plays a role in transforming tacit knowledge into explicit knowledge, meaning that knowledge possessed by a particular person is transformed into documented knowledge so that it can be learned. Knowledge management (knowledge management) is divided into two main types, namely tacit knowledge and explicit knowledge [6]. Tacit knowledge is something that is stored in the human brain, while explicit knowledge is something that is contained in documents or files that have been documented.

According to the Oxford Dictionary, performance is an action, process and or way of acting or performing a function. Performance is a construct, where many experts still have different points of view in defining performance. The inability to define performance will result in performance that cannot be measured or managed.

Performance management (performance management) is an effort to obtain the best results from organizations, groups and individual individuals through understanding and explaining performance in a framework of planned goals, standards and requirements of attributes or competencies that are concerted. There are three main factors that affect performance, namely the individual (ability to work), work effort (desire to work) and organizational support (opportunity to work) [7].The performance management system seeks to identify, encourage, measure, evaluate, improve and reward employee performance.The definition of performance appraisal is a periodic determination of the operational effectiveness of an organization's and employees' operations based on predetermined targets, standards and criteria. Performance is a combination of the ability to do work and motivate achievement. The selection of assessment indicators as a proxy for measuring a company's financial performance is a very important factor to consider because it involves the accuracy of the results in the study. To evaluate company performance can be seen through 2 points of view [8], namely:

1. Financial perspective:
   Is a measurement of performance from the financial aspects of the company such as sales and company profits.
2. Non-financial perspective:
   Is a measurement of performance from non-financial aspects of the company such as factory productivity and production quality.

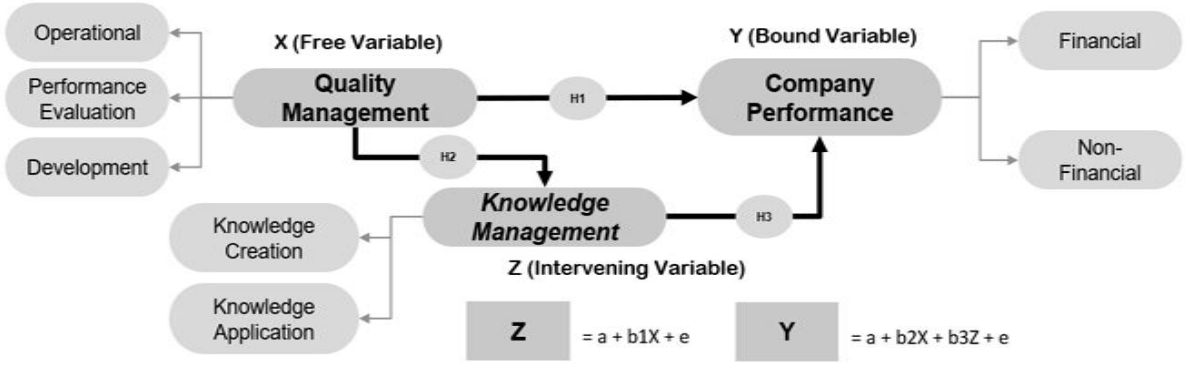

Fig.1 Framework Model

The hypothesis is a temporary answer to the formulation of research problems, therefore the formulation of research problems is usually arranged in the form of question sentences [9]. Based on the theoretical foundation and the phenomena that occur, the researcher formulates the hypothesis as follows:

Hypothesis 1: Quality management has a positive effect on company performance
Hypothesis 2: Quality management has a positive effect on knowledge management
Hypothesis 3: Knowledge management has a positive effect on company performance

III. Results Methods

Associative clausal research aims to test hypotheses that state causal relationships between two or more variables [9]. Experiments are the most appropriate research method. Based on these groupings, this study includes associative clausal research because this study intends to find a relationship between two or more variables. Based on the hypothesis proposed, the variables that will be used in this study are divided into:

1. Dependent variable (dependent), which is a variable whose value is influenced by independent variables. In this study, the dependent variable is company performance (Y)
2. Independent variable in this research is quality management (X)
3. Intervening variables in this study are knowledge management (Z)

In this study, the analysis was carried out at PT XYZ which has 2 steel fabrication branches in Bogor and Tangerang. The number of employees in the Bogor Steel Fabrication is 105 people and in the Tangerang Steel Fabrication there are 57 people. Therefore, if combined between Bogor Steel Fabrication and Tangerang Steel Fabrication, the total population is 162 people. Determination of the number of representative samples is

dependent on the number of indicators multiplied by 5 to 10 [10]. Then, the samples number in this study is 15 x 10 = 150 respondents.

SEM (Structural Equation Modeling) is an analytical technique that allows testing of a series of relationships simultaneously. This relationship is built between one or several independent variables with one or several dependent variables [10]. SEM analysis combines two models, namely:

1. Structural model, which consisting of exogenous latent variables (exogenous) and endogenous latent variables (endogenous).
2. Measurement model, which is an indicator of exogenous and endogenous latent variables.

Test the validity of the data in research, often only emphasized on the validity and reliability tests. Validity is the degree of determination between the data that occurs in the object of research with the power that can be reported by researchers [11]. Before processing the data, it is necessary to test the data on these variables. Validity test shows the extent to which the measuring instrument can measure the variables to be measured. Reliability is a measure of the internal consistency of the indicators of a variable which shows the degree to which each indicator indicates a construct or a common latent factor. Instrument reliability testing aims to determine the consistency of a measuring instrument. The next step is to calculate the loadings and assess the statistical significance of each indicator. If it proves to be insignificant, then the indicator must be discarded or transform it into a fit for the latent variable [12]. To apply SEM, the data must be normally distributed. Data normality can be seen by comparing the value of z (z-score) with the value of the critical ratio (c.r.) of the data obtained. Z-score is the result of reducing the average value of data from raw which is then divided by the standard deviation. The level of confidence that is often used in SEM analysis is 99% (significance level = 0.1). At this level of significance, the z value obtained from the z table is ± 2.58. Data is normally distributed if the value of c.r. of these data are between -2.58 to +2.58.

IV. Results and Disussion

Questionnaire results obtained by respondents based on gender dominated by men by 94% and then women by 6%. The majority of respondents in this study were aged 25 - <30 years by 28%, then aged 20 - <25 years by 26%, 30 - <35 years by 24%, ≥ 35 years by 18% and the smallest respondents were aged <20 years by 4%. Based on the position shows that the majority of respondents served as Staff by 55%, then Supervisor by 28%, then Assistant Manager by 10%, then Project Manager by 5% and Plant Manager by 2%. Based on the work unit illustrates that the majority of respondents work in the Production unit by 25%, then the Commercial unit by 15%, then the Engineering unit by 15%, then the Quality Assurance unit by 14%, then the Finance & Administration unit by 13%, then the Procurement unit by 7%, then the Equipment unit is 6% and the K3 unit is 5%. Whereas based on years of service shows that most respondents have 5 - <10 years of service by 26%, then <5 years by 24%, then 10 - <15 years by 18%, then 15 - <20 years by 17% and ≥ 20 years at 15%.

Table 1. CFA Output Quality Management Variable

	Estimate	S.E.	C.R.	P	Label	Std.Estimate
QM6 <--- QM	.696	.100	6.930	***	par_1	.665
QM5 <--- QM	.935	.122	7.665	***	par_2	.717
QM4 <--- QM	.952	.120	7.931	***	par_3	.737
QM3 <--- QM	1.078	.130	8.268	***	par_4	.816
QM2 <--- QM	.817	.131	6.262	***	par_5	.574
QM7 <--- QM	.714	.111	6.459	***	par_6	.611
QM1 <--- QM	1.0000					.675

The regression weight results in Table 4.2 show that the probability value of all indicators is 0.001 (***). Then all indicators and dimensions are declared valid. The loading values are standardized estimate indicators QM1 (0.675), QM2 (0.574), QM3 (0.816), QM4 (0.737), QM5 (0.717), QM6 (0.665), QM7 (0.611) for quality management variables having values above 0.5. This shows that all indicators can explain quality management variables [13]. CFA test results for knowledge management variables can be seen in Table 1.

Table 2. CFA Output Knowledge Management Variable

	Estimate	S.E.	C.R.	P	Label	Std.Estimate
KM4 <--- KM	1.026	.177	5.798	***	par_1	.680
KM3 <--- KM	1.419	.270	5.265	***	par_2	.876
KM2 <--- KM	1.138	.220	5.180	***	par_3	.652
KM1 <--- KM	1.000					.527

The regression weight results in Table 4.3 show that the probability value of all indicators is 0.001 (***). Then all indicators and dimensions are declared valid. Standardized loading values estimate indicators KM1 (0.527), KM2 (0.652), KM3 (0.876), KM4 (0.680) to the knowledge management variable having values above 0.5. This shows that all indicators can explain the knowledge management variable [13]. CFA test results of company performance variables can be seen in Table 2.

Table 3. CFA Output Company Performance Variable

	Estimate	S.E.	C.R.	P	Label	Std.Estimate
CP1 <--- CP	1.000					.650
CP2 <--- CP	1.194	.177	6.759	***	par_1	.663
CP3 <--- CP	1.239	.171	7.251	***	par_2	.890
CP4 <--- CP	.767	.130	5.881	***	par_3	.559

The regression weight results in Table 4.4 show that the probability value of all indicators is 0.001 (***). Then all indicators and dimensions are declared valid. The value of loading standardized estimate indicators CP1 (0.650), CP2 (0.663), CP3 (0.890), CP4 (0.559) to the company's performance variables having values above 0.5. This shows that all indicators can explain the variables of company performance [13]. CFA test results for knowledge management variables can be seen in Table 3.

The reliability test is a test to measure the internal consistency of the indicators of a formation variable that shows the degree to which each indicator indicates a common formation variable [13]. There are two test methods that can be used, namely construct reliability (CR) and variance extracted (VE), the cut-off value of construct reliability is a minimum of 0.7 while the extracted variance is at least 0.5 [13]. Reliability test results show that the value (CR & VE) of the quality management variable (QM) is (0.862 & 0.750); knowledge management (KM) variables are (0.783 & 0.644); company performance variable (CP) is (0.790 & 0.655). All indicators of the research construct have the value of the construct reliability test results of more than 0.7 and the variance extracted more than 0.5 means that all indicators in this study are valid and reliable.

Analysis of multivariate normality in AMOS was carried out using the criterion (c.r.) of Multivariate on the Courtois. If the value of cr is in the range between ± 2.58 it means that the data is normally distributed multivariate [13]. Normality test results show that the value of c.r. for multivariate of 18,847> 2.58. This means that the overall (multivariate) distribution of data is not normal. To fulfill the normality assumption, it is necessary to do an outlier test by removing the outlier data. The assumption is that there are outliers if the values of p1 and p2 <5%. In the table outlier values are known that the respondents 143, 20, 65, 148, 92, 27 and 48 have p1 and p2 values of <5%. This outlier will affect data abnormally. So, it is necessary to erase the data of the 7 respondents. After removing the outliers, the normality test is then performed again. So that the normality test output obtained shows multivariate normal with a value of -0.71 <-2.58. So that the data is normally distributed multivariate.

Table 4. Goodness of Fit

Goodness of Fit	Cut-off Value	Results	Status
CMIN/DF	≤ 2.00	1.417	Good Fit
GFI	≥ 0.90	0.937	Good Fit
AGFI	≥ 0.90	0.864	Marginal Fit
NFI	≥ 0.90	0.938	Good Fit
RFI	≥ 0.90	0.881	Marginal Fit
IFI	≥ 0.90	0.981	Good Fit
TLI	≥ 0.90	0.962	Good Fit
CFI	≥ 0.90	0.980	Good Fit
RMSEA	≤ 0.08	0.053	Good Fit

In cases with large sample sizes with many indicators it must be equipped with other test equipment such as goodness of fit (GFI), adjusted goodness of fit index (AGFI), and root mean residual (RMR). The GFI test results obtained value 0.937 and AGFI of 0.864. GFI and AGFI figures range from 0 to 1, with the guidelines getting closer to number 1 the better the model will be in explaining existing data. So with that number approaching number 1 shows that the model can already be considered fit. The RMR test aims to calculate the residual or difference of the sample covariance with an estimated covariance, so that the results of the RMR test get a value of 0.043. The smaller the RMR results the better indicates the closer the sample number to the estimation. So with the acquisition of a very small RMR number approaching 0 indicates the model can already be considered fit. RMSEA obtained 0.053 below 0.08 then the model can be considered fit.
Incremental Fit Indices is a test to compare certain models with null models (baseline models) which is a model that has the assumption that all indicators do not correlate with one another. The NFI, CFI, IFI and TLI measurement tools have a range of values between 0 to 1, where in general above 0.9 indicates the model is fit. NFI obtained a value of 0.938. CFI obtained a value of 0.98. IFI obtained a value of 0.981 and TLI obtained a value of 0.962. With a high figure close to 1 and above all 0.9, the incremental fit indices of the model can be considered fit.

At Parsimony Fit Indices is a test that compares complex models with simple models. The model is considered fit if the numbers PRATIO, PNFI, PCFI are in the range of saturated models and independence models. PRATIO obtained a value of 0.524. PNFI obtained a value of 0.491 and PCFI obtained a value of 0.513. From these results the model is considered to be fit because it is in the range of values from 0 to 1. If one of the Goodness of Fit (GoF) criteria has been met then the model can already be considered feasible. Overall Goodness of Fit can be assessed based on a minimum of 5 (five) criteria that are met [14]. The use of 4-5 GoF was considered to be sufficient to assess the feasibility of a model, with the condition that each criterion from GoF namely Absolute Fit Indices, Incremental Fit Indices and Parsimony Fit Indices represented [13]. So it can be concluded that the whole model can be considered feasible and can be followed by hypothesis testing to find out how much influence between variables in the model.

Table 5. Hypothesis Result

	Estimate	S.E.	C.R.	P	Label
KM<--- QM	1.895	.236	4.778	***	par_14
CP<--- QM	.765	.204	4.972	***	par_12
CP<--- KM	.094	.038	.880	***	par_13
QM6<--- QM	.722	.225	5.594	***	par_1
QM5<--- QM	.673	.216	5.547	***	par_2
QM4<--- QM	.582	.172	5.984	***	par_3
QM3<--- QM	.879	.216	6.056	***	par_4
QM2<--- QM	.506	.206	4.841	***	par_5
KM4<--- KM	2.197	.117	7.806	***	par_6
KM3<--- KM	2.362	.144	7.217	***	par_7
KM2<--- KM	1.895	.144	6.255	***	par_8
KM1<--- KM	1.305				

CP1<--- CP	.813				
CP2<--- CP	.546	.119	6.570	***	par_9
CP3<--- CP	.707	.090	8,790	***	par_10
CP4<--- CP	.632	.102	6.807	***	par_11
QM7<--- QM	.711	.221	5.175	***	par_15
QM1<--- QM	.493				

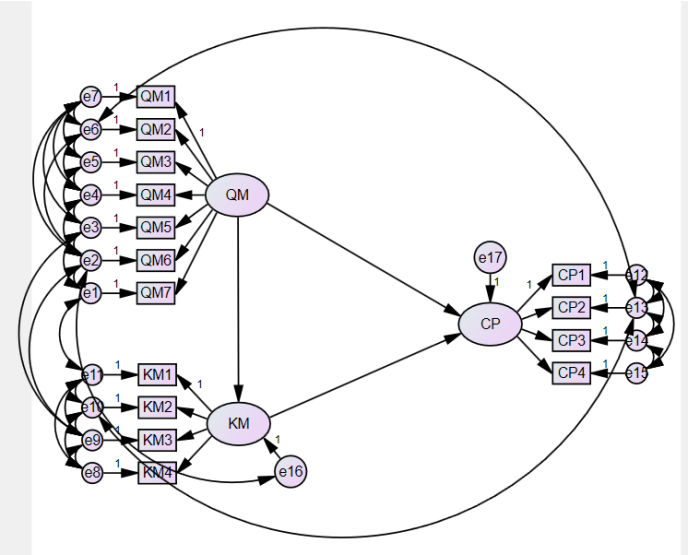

Fig.2 Modification Model Result

Based on data from the data processing results obtained P value (probability) 0.000 <0.05. This value shows the results that meet the requirements of less than 0.05 for P so that it can be concluded that H1 in this study can be accepted. The estimated parameter value of 0.765 shows that quality management has a positive and significant effect on company performance. Based on the results of confirmatory factor analysis "company sales performance" has the greatest coefficient so that it becomes a major consideration for companies to improve company performance. The indirect effect of quality management on company performance is (1.895 x 0.094) = 0.178. This explains that quality management has a significant and indirect positive effect on company performance. So, the direct effect is greater than the indirect effect on quality management on company performance. Obtained the indicators that most affect the company's performance, namely "company sales performance" with the financial dimension. Therefore, in order to improve company performance, PT XYZ needs to implement quality management in the company properly. Quality clinic activities previously carried out once a year, it is advisable to hold a quality clinic every 6 months in the future. That way the application of quality management in PT XYZ can be controlled and directed because in the QMSL form the company can find out which functions are lacking in implementing quality management properly. After that, a Follow Up Plan is made on the findings that have been collected previously to plan the improvement and development of the production work system.

Based on data from the data processing results obtained P value (probability) 0,000 <0.05. This value shows the results that meet the requirements of less than 0.05 for P so that it can be concluded that H2 in this study can be accepted. The estimated parameter value of 1.895 shows that quality management has a positive and significant effect on knowledge management. Based on the results of confirmatory factor analysis "Products provided in accordance with customer requirements" have the greatest coefficient value so that it becomes a major consideration for companies to improve the application of quality management. From the results of the analysis of the effect of quality management on knowledge management, the most influential indicator is obtained, "The product is given according to customer requirements". This means that companies must be able to produce and deliver good products and services to customers in accordance with their requests. Currently PT XYZ already has a customer satisfaction form as an effort to improve its services. However, after the form is filled out at this time there has been no concrete follow up from the company. Therefore, it is necessary to have a form related to the follow-up form of customer satisfaction that has been filled. Because all this time the company was limited to submitting customer satisfaction forms to the management and after that the

management will suggest a new production work system as an improvement. This is considered to be less than optimal, because the one who understands the situation in the factory and in the project is the related team that directly handles the activity. Therefore, follow-up efforts on the customer satisfaction form in the future can be filled in advance by the factory team and the project team before submitting them to management if there are additional input and suggestions.

Based on data from the data processing results obtained P value (probability) 0,000 <0.05. This value shows the results that meet the requirements of less than 0.05 for P so that it can be concluded that H3 in this study can be accepted. The estimated parameter value of 0.094 indicates that knowledge management has a positive and significant effect on company performance. Based on the results of confirmatory factor analysis "the application of innovation in the work" has the greatest coefficient so that it becomes a major consideration for companies to improve knowledge management. The application of knowledge management at PT XYZ is quite good and can be said to be the most when compared to its application in other subsidiaries. From the results of the analysis of the influence of knowledge management on company performance obtained indicators that greatly affect the "implementation of innovation in the work" which will be the focus of advice in this study. Innovation work in this case has become a corporate culture to develop and improve the production work system continuously in order to maximize production efficiency and maximize the quality of the product itself. But what is happening right now is that the work of innovation that has been done is still not optimal in its application in the factory. Therefore, there is a need for monitoring efforts as a function of control over the innovation work that has been presented.

V. Conclusions

Based on the results of data analysis, this study can be concluded as follows: (1) Quality management has a significant and positive effect on company performance. Every increase of one quality management unit can increase company performance by 0,765. The strongest relationship of company performance variables is explained by indicators of company sales performance, with a loading factor of 0,813. (2) Quality management has a significant and positive effect on knowledge management. Every increase of one quality management unit can increase knowledge management by 1,895. The strongest relationship of quality management variables is explained by the product indicators given in accordance with customer requirements, with a loading factor value of 0.879. (3) Knowledge management has a significant and positive effect on company performance. Every increase of one unit of knowledge management can improve company performance by 0.094. The strongest relationship of knowledge management variables is explained by indicators of the application of innovation in work, with a loading factor value of 2.362.

Suggestions that the author can convey in connection with the results of research that has been done are as follows: (1) The company needs to implement more quality management implementation evaluations in a year to identify implementation problems and also formulate follow-up on the findings. Because what is happening right now, the evaluation of the implementation of quality management is only done once a year and it is considered to be less than optimal to be able to produce satisfactory company performance or in this case the company's sales performance. Therefore, the authors advise the company on the quality clinic schedule that needs to be done by companies that are divided into internal clinics, joint clinics and quality evaluations that have been divided over a period of a year. That way, non-compliance with the application of quality management can be identified early and direct action taken. (2) Companies need to improve the application of quality management through evaluating the results of customer satisfaction surveys on products that have been given in an effort to increase company sales. With the follow-up form customer satisfaction is expected in the future the company will be easier to identify problems and also follow-up on customer dissatisfaction that has been submitted. (3) The company needs to implement the innovations that have been made and also carry out control functions periodically to see the performance of the implementation of knowledge management that is being carried out in the field. As part of implementing quality management, knowledge management should have an important role in achieving optimal company performance going forward. Therefore, there is a need for efforts to monitoring the work of innovation that has been done by the company. That way all the collected innovation works can be implemented and in accordance with what is expected in order to improve production efficiency and product quality. (4) Because the influence of knowledge management variables on company performance is very small, the next researcher can replace the knowledge management variable with another variable, namely the competitive advantage variable.

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