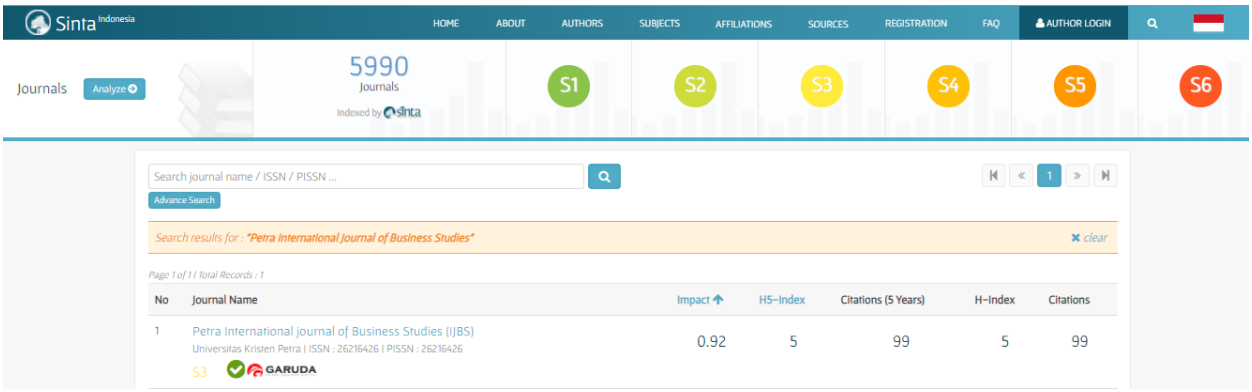
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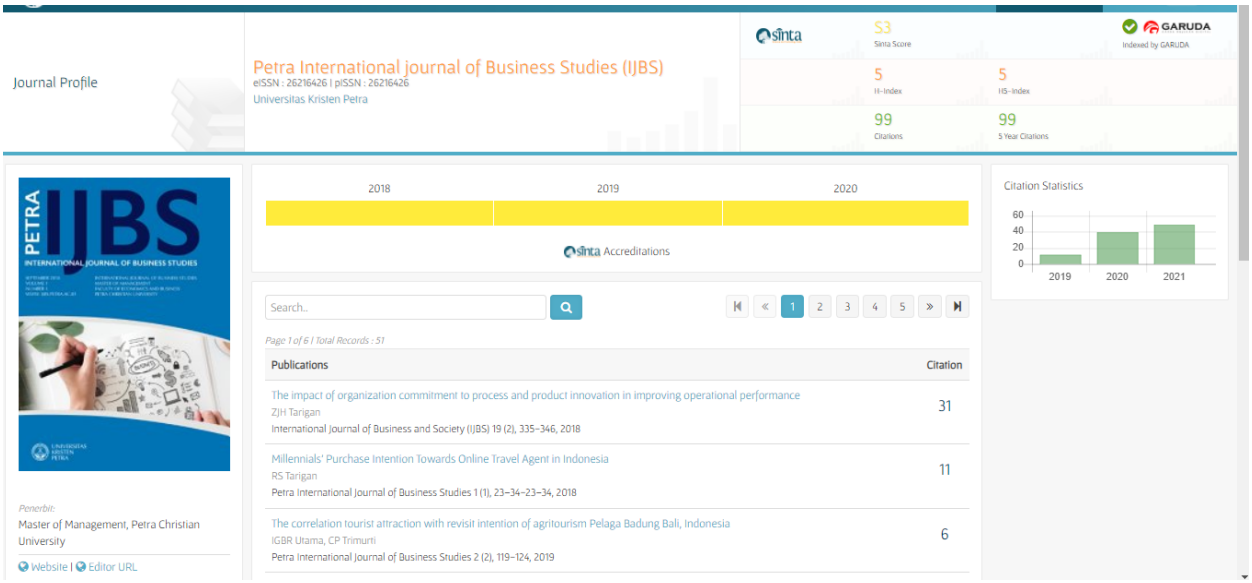
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ARTICLES

The Effect of Information Technology Application on Organizational Performance Through Cross Functional Team and Total Quality Management Implementation

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The Effect of Information Technology Application on Organizational Performance Through Cross Functional Team and Total Quality Management Implementation

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Abstract

In this thesis discuss the effect of Information Technology Application on Organizational Performance through Cross Functional Team and Total Quality Management Implementation on the company. In this study using primary data with 102 population and 50 samples of manufacturing companies using data collection methods, namely 5 points Likert scale in the form of questionnaires distributed in companies that are open or closed that have large and medium industrial groups on firm manufacturing in East Java. This study uses Structural Equation Modeling analysis techniques, also called path modeling with SmartPLS tools. The questionnaire collected was 57 questionnaires. The result showed that the effect of Information Technology Application on Organizational Performance was significant. The results showed that Information Technology Application affects Cross Functional Team. Information Technology Application influence Total Quality Management Implementation. Cross-Functional Team affects Organizational Performance. Cross-Functional Team affects Total Quality Management Implementation. Total Quality Management Implementation influences Organizational Performance.

Keywords: Information Technology Application; Total Quality Management Implementation; Cross Functional Team; Organizational Performance.

1. Introduction

Today's business rivalry inflict in manufacturing companies attempted to win the global competition by increasing profits, market share, the number of products sold, product quality, customer demand met and customer satisfaction. Today's business rivalry refers to the efficient and effective movement of goods starting from the movement of material from suppliers to companies and the productivity of manufacturing or service companies than to the distributor stage and finally to the customers.

Manufacturing companies that develop products improve product quality and companies have good organizational performance in serving customers quickly can improve organizational performance and can excel in business competition (Koufteros, Edwin Cheng, & Lai, 2007). While companies that have poor organizational performance can reduce product quality and customer service and can increase the costs needed and lead time production of goods until delivery will be extended.

The development of the industrial manufacturing sector in the third quarter of 2017 experienced a decline in operational performance to 50.51 percent, and in the fourth quarter of 2017, it dropped to 49.93 on operational performance (www.menara62.com). Poor organizational performance can be influenced, among others according to Suwandej, (2015) the lack of training provided by the company so that the ability possessed is not following the quality of the product that has been set by the company. According to Foster & Gallup, (2002), there is a lack of cross-functional communication so that there is not enough information about the products produced by the production division so that the quality control division cannot check properly and the product is exposed to complaints from customers. According to Vitale, (2002) the existing software system is not well integrated so that the collection of information provided cannot be appropriately received so that it can add operational lead time. According to Gaspersz, (2001) a lack of quality improvement support from managers.

Based on the explanation above this study will examine the effect of information technology application on organizational performance through a cross-functional team and total quality management implementation.

2. Literature Review

Information technology can be defined as technology that provides information collection, information processing, information storage and perform sharing information and making information and analysis of information that can be achieved if needed

so that information technology collects information needed so that administrators can decide, process, store and report data accurately and quickly (Kalkan, Erdil, & Çetinkaya, 2011). The information technology application is divided into four parts, among others first, the availability of information technology application components needed by the company. Second, information technology applications are easy to understand and easy to use by users. Third, accurate information technology applications in managing information data and can share information data quickly and precisely. Fourth, the information technology application has application standards so that information technology application can be integrated with either.

2.1 Total quality management implementation

The definition of total quality management implementation is a management approach to an organization that is quality-centered that involves all employees to achieve their stated goals (David N. Burt, Sheila D.Petcavage, 2010). To improve the total quality management implementation among others, first, it takes the involvement of top management that supports the total quality management function (Hermano & Martín-Cruz, 2016). Second, the company conducts employee training regarding the repairment of product and service quality. Third, the company applies the total quality management implementation concept namely plan, do, check, act (Prashar, 2017).

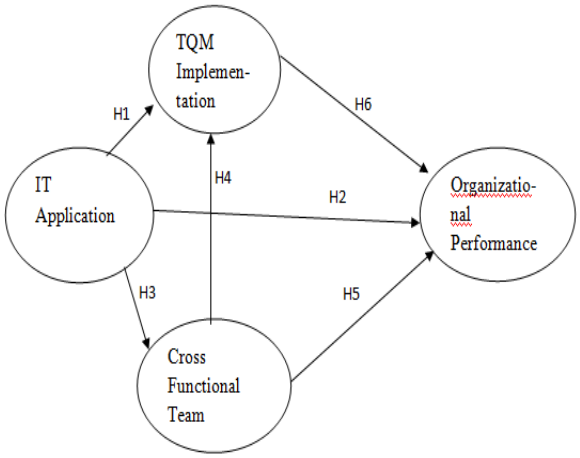
2.2 Cross-functional team

The cross-functional team is the involvement of one department with other departments to support activities the company's manufacturing operations. To implement the cross-functional team is divided into three among others: first, existence inter-departmental involvement in improving quality (Bai, Feng, Yue, & Feng, 2017). Second, existence information and knowledge openness between team members, so that information and knowledge received can improve product quality (Foster & Gallup, 2002; Ishak & Jusang, 2005). Third, the company can coordinate the team (Pawar & Sharifi, 2000; Trent, 2003).

2.3 Organizational performance

The success of the company's performance in satisfying customers depends on the performance of the organization in the company, the performance of the organization can implement strategies effectively to achieve customer satisfaction (Randeree & Al Youha, 2009). In improving organizational performance among others, first, companies can prevent product failures and product damage (Bo Bergman and Bengt Klefsjo, 2007; Sila, 2007). Second, the company can reduce the time of production work (Bo Bergman and Bengt Klefsjo, 2007; Kaynak, 2003; Sila, 2007). Third, the company can deliver goods quickly and precisely (Bo Bergman and Bengt Klefsjo, 2007; Kaynak, 2003; Sila, 2007).

2.4 Framework research concepts and hypotheses



Bessen, (2002) research in manufacturing companies that invest information technology so that manufacturing companies can reduce costs and increase productivity and can affect total quality management implementation. By using information technology application that aims to analyze the information needed, store information and provide information quickly and accurately in order to increase the total quality management implementation among others continuous improvement and product development (Bessen, 2002). Results obtained Bessen, (2002) by using information technology application can significantly influence the total quality management implementation.

Application of information technology can support the total quality management implementation such as decision making by the top management. Also, it provides data for he top management in enhancing customer relationship. In the end, it will improve customer satisfaction. Supplier relationships that aim to provide information on raw materials to suppliers, relationships between employees that aim to provide information quickly and accurately, quality data and reports that aims to provide information accurately (Martínez-Lorente, Sánchez-Rodríguez, & Dewhurst, 2004). The results of the research that conducted Martínez-Lorente, Sánchez-Rodríguez, & Dewhurst, (2004) using information technology

application can have a significant effect on total quality management implementation.

H1: Information Technology Application affects Total Quality Management Implementation.

The concept applied to improve organizational performance by using information technology applications, among other organizations equipped with information technology applications to store and share information and have work information reports, production data reports, purchase data reports, sales data reports and official documents between departments, can analyze data, can quickly find information needed by customers of information technology application, can find out what customer needs are needed and can search and access information needed (Huang, Wu, Lu, & Lin, 2016). The results of the research conducted Huang, Wu, Lu, & Lin, (2016) the relationship of information technology application can have a significant impact on organizational performance, among others, can provide solutions to problems experienced by organizations.

H2: Information Technology Application affects Organizational Performance.

By utilizing Information technology application as information data collection, information data management, information data storage, communication between teams, sharing information data to teams, analyzing data information needed in cross-functional teams and cross-functional teams can make decisions using information technology application and a cross-functional team can coordinate quickly (Chen, 2007). The results of the research conducted by Chen, (2007) regarding information technology applied to the cross-functional team it produces significant results.

Information technology application is the collection of information data, management of information data, can analyze the data needed, store information data and accelerate the delivery of information to other departments in the company and can provide information to customers (Kalkan et al., 2011). The results of the research conducted by Kalkan et al., (2011) is an information technology application significant to the cross-functional team.

H3: Information Technology Application affects Cross Functional Team Implementation.

By involving the cross-functional team on the total quality management implementation, it can improve the success of continuous improvements, reduce workplace accidents, reduce costs and can improve product quality. The involvement of a cross-functional team can share information and knowledge and understand the abilities of each member in their respective fields (Papke-Shields & Malhotra, 2001). The result obtained Papke-Shields & Malhotra, (2001) is the relationship between the cross-functional team towards a significant total quality management implementation. Therefore Papke-Shields & Malhotra, (2001) suggesting that involving the cross-functional team operationally, among others involved in the decision-making process, sharing information and knowledge (Papke-Shields & Malhotra, 2001).

H4: Cross Functional Team affects Total Quality Management Implementation.

According to research conducted Nguyen, Ngo, Bucic, & Phong, (2017) said the cross-functional team's involvement in organizational performance can improve relationships between cross-functional team members and organizations, can improve organizational formalization, can increase trust and knowledge among cross-functional team members and organizations, can share knowledge between cross-functional team members, improve innovation and performance organization. Formalization refers to the extent to which policies, regulations, job descriptions, and procedures are recorded in the organization as a standard routine (Nguyen et al., 2017). The results of the research conducted by Nguyen, Ngo, Bucic, & Phong, (2017) is the cross-functional relationship of the team to organizational performance has a significant relationship. Nguyen, Ngo, Bucic, & Phong, (2017) said the ability of leaders in teams to know and detail the abilities of team members so that they can bring innovation and quality improvements to improve organizational performance.

H5: Cross Functional Team affects Organizational Performance.

Karia & Hasmi Abu Hassan Asaari, (2006) said by using total quality management implementation, among others plan customer needs, make improvements to product problems experienced, make continuous improvements, conduct employee training, the involvement of top management, companies have quality product quality in order to improve organizational performance. The results of the research conducted Karia & Hasmi Abu Hassan Asaari, (2006) said the relationship of total quality management implementation significantly affects organizational performance.

H6: Total Quality Management Implementation affects Organizational Performance.

3. Research Methodology

The unit of analysis on East Java manufacturing companies that has a population of 102 manufac-

turing companies and 50 company samples obtained from Slovin formula theory.

In this study, the method used in data collection is by using a 5 point Likert scale and data analysis method using Structural Equation Modeling and using the Partial Least Square program and using the SmartPLS version 3 software.

4. Analysis and Discussion

This study obtained a sample of 57 manufacturing companies in East Java, and this study used Partial Least Square (PLS) analysis.

4.1 Evaluation of Outer Models

The measurement model or outer model with reflective indicators is evaluated by convergent validity and discriminant validity from the indicator and composite reliability for the indicator block. Table 1 is the external loading and cross loading value generated by the SmartPLS software.

Table 1. Outer Loading and Cross Loading Value

	CFT	ITA	OP	TQMI
X11	0,171	**0,583**	0,366	0,370
X12	0,292	**0,650**	0,411	0,431
X13	0,166	**0,674**	0,342	0,283
X14	0,576	**0,604**	0,544	0,559
X15	0,520	**0,683**	0,517	0,480
X16	0,298	**0,709**	0,463	0,402
X17	0,245	**0,558**	0,325	0,375
X18	0,479	**0,746**	0,475	0,435
X21	0,669	0,496	0,505	**0,773**
X22	0,476	0,470	0,371	**0,800**
X23	0,580	0,568	0,571	**0,802**
X24	0,587	0,536	0,516	**0,774**
X25	0,467	0,545	0,508	**0,742**
X26	0,344	0,446	0,639	**0,749**
X31	**0,877**	0,519	0,565	0,576
X32	**0,851**	0,353	0,439	0,526
X33	**0,797**	0,410	0,394	0,505
X34	**0,824**	0,594	0,641	0,564
X35	**0,740**	0,441	0,507	0,600
X41	0,623	0,458	**0,745**	0,571
X42	0,448	0,399	**0,658**	0,414
X43	0,226	0,393	**0,610**	0,409
X44	0,336	0,557	**0,648**	0,426
X45	0,443	0,501	**0,624**	0,363
X46	0,334	0,354	**0,622**	0,444

Table 1 is a loading factor and cross-loading for each variable. In the first variable namely information technology application (ITA) which has the highest loading factor value on X18, the company can solve information technology application problems. In the second variable, the total quality management implementation (TQMI) which has the highest loading factor value on X23, top management supports the total quality management function. In the third variable namely cross-functional team (CFT) which has the highest loading factor value on X31, each department is involved in improving quality. In the fourth variable, namely organizational performance (OP) which has the highest loading factor value on X41 the company can prevent product damage.

The way to measure cross loading on Table 1 is to see each latent variable must be greater compared to the indicator of other variables. The information technology application variable is compared to the cross loading value of the indicators in other latent variables so that the eight information technology application indicators can be used and more suitable for measuring information technology application variables. The total quality management implementation variable is compared with the cross loading value of the indicators other latent variables so that the six total quality management implementation indicators can be used and are more suitable for measuring the total variable quality management implementation. The cross-functional team variable is compared with the cross loading value of the indicators other latent variables so that the five cross-functional team indicators can be used and are more suitable for measuring the cross-functional team variables. On organizational performance variables compared to the value of cross loading of indicators other latent variables so that the six indicators of organizational performance can be used and more appropriate to measure the variable organizational performance. This means that the indicators used in this study have met discriminant validity.

4.2 Reliability Test

Reliability test uses three methods, namely Cronbach's alpha, composite reliability and R-Square which can be seen in table 2.

Table 2. Cronbach's Alpha, Composite Reliability and R-Square

	Cronbach's Alpha	Composite Reliability	R^2
CFT	0,877	0,911	0,334
ITA	0,810	0,855	
OP	0,730	0,816	0,585
TQMI	0,866	0,899	0,572

Table 2 explains the results of the cross-functional team (CFT) which has Cronbach's alpha worth 0.877, Cronbach's alpha on the cross-functional team can be said to be reliable because the value of

Cronbach's alpha exceeds 0.6, while the composite reliability value has 0.911, composite reliability on the cross-functional team can be said to be reliable because the composite reliability value exceeds 0.6. In the IT application (ITA) results which have Cronbach's alpha worth 0.810, Cronbach's alpha in IT applications can be said to be reliable because the value of Cronbach's alpha exceeds 0.6, while the composite reliability value has a value of 0.855, composite reliability in IT applications can be said to be reliable due to composite reliability value exceeds 0.6. In the results of organizational performance (OP) which has Cronbach's alpha worth 0.730, Cronbach's alpha on organizational performance can be said to be reliable because the value of Cronbach's alpha exceeds 0.6 while the composite reliability value has a value of 0.816 can be said to be reliable because the composite reliability value exceeds 0.6. The TQM implementation (TQMI) results which have Cronbach's alpha worth 0.866 Cronbach's alpha on TQM implementation can be said to be reliable because the Cronbach's alpha value exceeds 0.6, while the composite reliability value has 0.899, the composite reliability on TQM implementation is reliable due to composite reliability values exceeding 0.6.

4.3 Evaluasi Inner Model

The structural model or inner model aims to predict the relationship between latent variables hypothesized. The structural model in PLS is evaluated using a coefficient of determination for independent variables, while the significance between variables is assessed by the path coefficient on the t-statistical value. The results of the PLS R-Square show the amount of variance from the construct described by the model. The higher the R-Square value, the higher the percentage variance that can be explained (Ghozali & Latan, 2015).

Table 2 describes the value of R-Square for the cross-functional team of 0.334 which means that the percentage of the cross-functional team can be explained by information technology application which is 33.4%. The value of R-Square for organizational performance is 0.585 which means that the percentage of organizational performance can be explained by information technology application, TQM implementation and the cross-functional team is 58.5% The R-Square TQM implementation value is 0.572 means that the TQM implementation percentage can be explained by information technology application and cross-functional team is 57.2%.

The q-square value greater than 0 indicates that the model has predictive relevance. Suitability of fundamental modes can be seen from Q-Square. With the results of the R-Square value from Table 2, it can show the level of suitability of this model through:

$$\begin{aligned} \text{Q-Square} &= 1 - [(1 - r_1^2) \times (1 - r_2^2) \times (1 - r_3^2)] \\ &= 1 - [(1 - 0{,}334) \times (1 - 0{,}585) \times (1 - 0{,}572)] \\ &= 1 - [0{,}393] \\ &= 0{,}607 \end{aligned}$$

The Q-Square value obtained in this model is 0.607, the result of this number is greater than 0 so that the model has predictive relevance. This shows that exogenous latent variables have sufficient predictive value of relevance to endogenous latent variables.

4.4 Hypothesis testing

T-statistics indicate path coefficient scores if the hypothesis testing is significant if the T-statistic value is more than 1.96 with a significant level of 5%.

Table 3. Path Coefficient

	Original Sample	Standard Deviation	T Statistics
H1	0,405	0,128	3,167
H2	0,368	0,111	3,308
H3	0,578	0,064	9,031
H4	0,446	0,103	4,342
H5	0,239	0,110	2,165
H6	0,270	0,118	2,282

It can be concluded that there is significant positive influence between the IT application on TQM Implementation (H1) in the research sample manufacturing companies. This means that an increase in IT applications will significantly improve TQM Implementation in a research sample manufacturing company with a significant level of 0.05.

It can be concluded that there is significant positive influence between the IT application on organizational performance (H2) in the research sample manufacturing companies. This means that an increase in IT application will significantly improve organizational performance in manufacturing companies with a significant level of 0.05.

It can be concluded that there is a significant positive effect between IT application on the cross-functional team (H3) in the research sample manufacturing companies. This means that an increase in the IT application will significantly improve the cross-functional team in manufacturing companies with a significant level of 0.05.

It can be concluded that there is significant positive influence between the cross-functional team on TQM Implementation (H4) in the research sample manufacturing companies. This means that the increase in the cross-functional team will significantly

improve TQM Implementation in the manufacturing company with a significant level of 0.05.

It can be concluded that there is a significant positive effect between the cross-functional team on organizational performance (H5) in the research sample manufacturing companies. This means that the increase in the cross-functional team will significantly improve organizational performance in the manufacturing company with a significant level of 0.05.

It can be concluded that there is a significant positive effect between TQM Implementation on organizational performance (H6) in the research sample manufacturing companies. This means that an increase in TQM Implementation will significantly improve organizational performance in a manufacturing company with a significant level of 0.05.

Table 4. Direct effects and Indirect effects

Direct Effect		
	Original Sample	T Statistics
ITA -> OP	0,368	3,308
Indirect Effect		
ITA -> CFT -> OP	0,138	1,96
ITA -> CFT -> TQMI -> OP	0,069	1,98
ITA -> TQMI -> OP	0,109	1,723
Total Effect		
	Original Sample	T Statistics
ITA -> OP	0,684	9,826

Table 4 is the result of the PLS program which shows the direct effect of IT application on organizational performance which has a value of 0.368 and has and a T-statistic value of 3.308 that the direct effect of IT application on organizational performance is more influential than using other variables.

Whereas IT application can influence organizational performance through mediating role indirectly through the cross-functional team which has a value of 0.138 and a T-statistic value of 1.96.

However, IT application cannot influence organizational performance through indirect mediation roles through total quality management implementation which has a value of 0.109 and t-statistic value 1.723. So that IT application can affect organizational performance with mediating roles indirectly through total quality management implementation must involve a cross-functional team that has a relationship between IT application to the cross-functional team to total quality management implementation to organizational performance which has a value of 0.069 and has a T-value statistic 1.98.

So that the IT application on organizational performance has a total effect that has a value of 0.684 and a T-statistic value of 9.826. That the total effect of IT application on organizational performance is significant because the value of t-statistics exceeds 1.96.

5. Conclusions and Suggestion

The information technology division has provided the necessary information technology applications so that it can increase the potency of information analysis to implement total quality management and the company can improve product quality and service to customers.

The information technology division has provided the necessary information technology applications because it can get information quickly on the production side so that it can reduce the time of production work and make it easier to share information needed by customers.

The information technology division has provided the necessary information technology applications to facilitate the sharing of information between departments and can improve the potency of information analysis in each department in improving quality.

Companies that have involved each department in improving quality so that top management can make decisions and support implementing the total quality management function in order to have the quality of products needed by customers.

Companies that have involved each department in improving quality so that the company can prevent product damage and failure and improve service to customers quickly.

Top management that supports the total quality management implementation function so that companies can deliver goods accurately and increase customer satisfaction.

The total effect of information technology application, cross-functional team and total quality management implementation on organizational performance have a coefficient value of 0.684. It implies that in improving the company performance more optimally, the company focus not only on the information technology application but companies cross-functional teams and total quality management implementation as well.

5.1 Suggestion

To get the accuracy of information data, information data can be sent quickly, integrated information data in each department and data information is easy to understand, companies must implement information technology applications and computer networks including Enterprise Resource Planning

(ERP), System Analysis and Program Development (SAP) and Warehouse Management System.

Important companies implement total quality management implementation among others. First, companies involving top management fully support the total quality management function by implementing policies to improve quality and set standards for quality management system procedures. Second, the company provides training for employees among others training in international Organizational for Standardization (ISO) and Standard Nasional Indonesia (SNI). Third, the company implements plans, do, check, and act in order to produce quality products for customers.

The prestigious company applies the cross-functional team among others the first; the company must involve each department in improving quality. Second, the team must share information and knowledge between team members. Third, the company coordinates the team in improving product quality and organizational performance.

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