Influence of Information Technology Application to Organizational Performance Mediated by Warehouse Management and Customer Relationship Management

Olivia Gisena Santoso[1] and Hotlan Siagian[2*]
[1,2,] Faculty of Business and Economics, Petra Christian University
Jl. Siwalankerto 121-131, Surabaya 60236, Indonesia
*Corresponding author, e-mail: hotlan.siagian@petra.ac.id

Abstract

In this thesis discuss the effect of Information Technology Application to Organizational Performance through Warehouse Management and Customer Relationship Management on company. In this study using primary data with a population of 109 companies and 52 samples of companies using data collection methods, namely 5 points Likert scale in the form of questionnaires distributed in companies that are groups on third-party logistics companies in Surabaya and Sidoarjo. This study uses Structural Equation Modeling analysis techniques, also called path modeling with SmartPLS tools. The questionnaire collected was 53 questionnaires. The result showed that the effect of Information Technology Application on Organizational Performance were positive and significant. In addition, the results also showed that the effect of Information Technology Application on Warehouse Management were positive and significant, the result showed that the effect of Information Technology Application on Customer Relationship Management were positive and significant, the result also showed that the effect of Warehouse Management on Organizational Performance were positive and significant, and the result showed that the effect of Customer Relationship Management on Organizational Performance were positive and significant in 3PL companies in Surabaya and Sidoarjo.

Keywords: Information Technology Application, Warehouse Management, Customer Relationship Management, Organizational Performance.

1. Introduction

Facing the era of globalization, companies must improve their performance in order to compete with other companies. The company strives to be the best company in their respective fields. Business competition in the logistics area is one of the competitive competition. Referring to the Indonesian Logistic Association (ALI)'s data, the logistics business growth to be 10% annually. Facing competitive competition between companies, it is necessary to improve organization performance, by means of companies able to measure performance aspects in detail and measurably (Gomes, Yasin, & Lisboa, 2004). To assess organization performance is not easy, first have to understand what is measured and how to measure it, both financially and non-financially. Financial can measure by ROI, profitability, and others. Whereas in the non-financial field it can be measured through its operational performance (Rasi, Rakiman, & Ahmad, 2015; Vachon & Klassen, 2008).

Organization performance can be improved by investing in information technology. Companies that use information technology will have superior performance than companies that do not use information technology (Bharadwaj, 2000). Organization performance can also be improved by controlling the ware-house. Warehousing is one of the crucial activity in a company that can affect organizational performance. According to Faber, Koster, & Velde (2002), warehousing is one of the critical activity in supply chain. Organization performance can be improved by building strong relationship with customers. According to Krasnikov, Jayachandran, & Kumar (2009), companies will get more benefit by implementing customer relationship management.

Based on the explanation above, this research will examine the effect of information technology performance to organizational performance through warehouse management and customer relationship management.

2. Literature Review

Supply chain management is the integration of key business processes from end user through original suppliers that provides products, services, and information that add value for customers and other stakeholders (Lambert & Cooper, 2000). Supply chain management includes all activities related to the flow and change of an item from the raw material stage to the end user (Seuring & Müller, 2008). The keyword of the supply chain process is customer relationship management, customer service management, demand

management, order fulfillment, manufacturing flow management, procurement, product development and commercialization, and returns.

Third Party Logistic is the relationship between freight forwarders and third parties, where there are long-term and mutually beneficial relationships (Marasco, 2008). According to Jayaram & Tan (2010), the factors that influence a company's valuation of a 3PL service provider company are as follows, namely the timeliness of delivery, the speed of responding to time in an emergency, when there is a problem, or when there is a special request, service level, flexibility to respond to unexpected changes in demand, communication capabilities and systems, and the correct quantity.

2.1 Information technology application

Information technology is a collective term used for various technologies involved processing and transferring information (Nyamboga & Kemparaju, 2002). Technology allows people to work quickly and assist in making a decision by considering more data. According to Pérez-López & Alegre (2012), information technology competencies divided into three dimensions, IT knowledge, IT operations, and IT infrastructure. IT knowledge explain about the extent to which the organization understands the capabilities of information technology that exists and emerges. IT operations explain about the extent to which companies use information technology to improve effectiveness and decision making. IT infrastructure which includes elements such as hardware, software, and support staff.

2.2 Warehouse management

According to Berg & Zijm (1999), warehouse or warehousing refers to material handling activities that take place in warehouses, receiving and shipping areas, namely, receiving goods, storage, order taking, accumulation and sorting, and shipping. Warehouse Management (WM) is an important part of the supply chain and aims to control the movement and storage of materials in stock and also activities relating processing, including ordering, receiving, storing and retrieving goods (Novák & Krajčovič, 2011). Indicators in inventory control are, the accuracy of records regarding the quantity of finished products, the accuracy of records regarding the location of goods in the warehouse, the time needed to update the records of finished goods inventory, the overall quality of goods control in the warehouse, make maximum control to increase revenue. The company has intelligent inventory management will reduce warehousing costs.

2.3 Customer relationship management

Customer relationship management (CRM) is a strategic approach related by creating better value for shareholders through developing the relationship that are appropriate with main customers and from the customer segment (Payne & Frow, 2005). CRM helps companies to divide customer into the group based on customer value from time to time and increase customer loyalty by providing customized products and services. CRM can be divided into two, that is understanding customer preference and providing customized services. Understanding customer preference means the company must understand what kind of product or service that customer like, and the type of method that customers like. While providing customized services means the company must identify and obtain the right customers effectively and classify customers to provide customized products and services to target customers.

2.4 Organizational performance

Organizational performance is a broad concept that covers various dimensions of operational, management, and the company's competitive advantage and activities. Organizational performance is the level where the company has superior performance than its competitor (Rai, Patnayakuni, & Seth, 2006). Organizational performance can also be defined as how a company achieves its goals. Organizational performance is generally measured using four dimensions, namely quality, delivery, flexibility, and cost (Rasi et al., 2015; Vachon & Klassen, 2008). Quality is the product or service that is produced can meet the demand and satisfaction of the customers. Delivery is talk about how much time is needed until the goods received to the customer. Delivery usually measured by the speed of delivery, reduction of lead time, and also regarding the timeliness of arriving at the customer. Flexibility is talk about the extent to which a company can react to the number of orders, types, and characteristics of the product produced. Cost is talk about how much the company must spend to produce products, including the productivity of workers, the cost of production, and reduction of inventory.

Information technology helps companies to survive from competition and make it easy to keep up with developments (Chen & Zhu, 2004). The success of the company is supported by the existence of information technology. With the capabilities of information technology, competitors will be difficult to imitate the company. Investments made in corporate information technology are considered important for

the company's progress (Pérez-López & Alegre, 2012).

2.5   Framework for research concepts and hypotheses
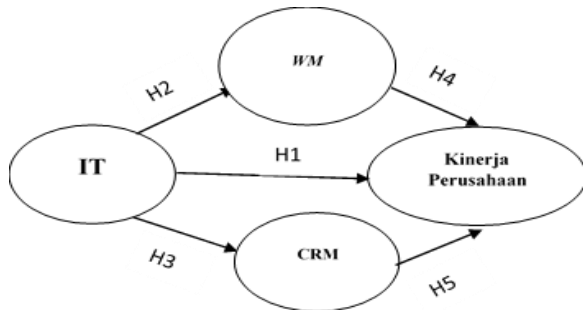
The superior information technology owned by company will help shorten the time and work will be more effective. Bharadwaj (2000), in his research, stated that companies that use information technology have superior performance compared to companies that do not use information technology. In the study, Bharadwaj found that companies with superior information technology have higher earnings ratio compared to its competitors. This shows that companies that superior in information technology do not need to have a focus on costs but must use information technology to generate higher income.

Supporting the research, Dibrell, Davis, & Craig (2009) doing research in America, and the results found that the use of information technology will lead company to improve their performance. Using information technology will add value to a company. These studies show that information technology will shorten the time and increase the company's profits. In short, information technology will affect organizational performance. In this study, researchers will only examine the effect of information technology on organizational performance in 3PL companies.

H1: There is a significant effect between information technology application with organizational performance

The big problem that exists in the warehouse management is about its inventory (Pokharel, 2005). In warehousing, information about incoming and outgoing flows, the weight and volume of products stored by type and cost of inventory is very necessary. With the existence of technology, this information can be recorded and helped in controlling warehouse, including facilitating loading and unloading in warehouses. Integrated information technology will be useful for managing inventory within the company. Information technology makes the company reduce

potential inaccuracies and errors in inventory (Hellstrom & Wiberg, 2010).

Information technology such as RFID will greatly help to improve inventory, such as assembly automation, tracking and tracing systems, product availability, security, and so forth. The level of accuracy will increase if the company uses appropriate technology. Manthou & Vlachopoulou (2001) said that advanced technology will help in managing inventory and reduce inventory costs. In this case studies, the technology used is a barcode system. Barcodes provide more accurate control of inventory. Barcodes can connect data systems and encourage information sharing. Thus using a barcode can increase the competitive advantage of a company.

H2: There is a significant effect between information technology application and warehouse management.

Information technology used in the company will support the running of CRM. Information technology is one of the keys to CRM's success. The technology used will support marketing and sales and support other divisions to analyze data, and help companies manage data effectively and efficiently (Josiassen, Assaf, & Cvelbar, 2014). With the existence of information technology helps companies improve their services to customers. Research conducted by Jayachandran, Sharma, Kaufman, & Raman (2005) said that information technology helps companies to run CRM. In his research proved that the existence of information technology helps companies to manage information provided by customers to the company. In establishing and maintaining corporate relationships with customers, information has an important role. The use of technology can have a negative effect on CRM performance when the right information obtained is not implemented. When interviewing respondents, it was found that the company can communicate better with customers with the existence of technology, and helped customers manage their own needs. To strengthen CRM capabilities, companies must consider technology, customer orientation, and customer-oriented organizational system (Wang & Feng, 2012).

H3: There is a significant effect between information technology application and customer relationship management.

The main problem of planning in warehousing is regarding its inventory. Companies should have smart inventory management so that it will reduce costs, such as warehousing costs so that the company's performance will also increase. Good inventory mana-

gement will make the company work more efficiently. A study says the effect of inventory management on company performance depends on the size of the company (Isaksson & Seifert, 2014). The larger the size of the company, the more complex the company's inventory settings ultimately affect the company's performance. Lwiki, Ojera, Mugenda, & Wachira (2013) say that the company's financial performance will deteriorate if inventory is excessive. The result is that there is a correlation between inventory management and the company's financial performance. According to that research, if the inventory is getting leaner, the company's financial performance will increase. A lean inventory system is characterized by agreement with suppliers to shorten the delivery cycle, predictions regarding arrival dates are more accurate, goods delivered are also accurate, and there are no or almost no safety stocks.

H4: There is a significant effect between warehouse management and company performance.

Customer Relationship Management can improve overall organization performance. Companies will get more benefit from implementing CRM (Krasnikov et al., 2009). In the study it was said that the presence of CRM can reduce cost efficiency, but overall it will improve organization performance, corporate profits will increase with the presence of CRM. If a company implements CRM, the company will create and maintain profitable customers by identifying valuable customers and ensuring better communication, and adjusting the products and services provided to customers according to their individual needs, so that customers will like and maintain relationships with the company and buy goods more often, and prefer to leave competitors. So that profits will increase and operations to be more efficient.

Other research conducted by Thomas & Sullivan (2005) also proves that CRM is an important factor of superior organizational performance. In his research said that CRM is one way to help companies make more money. By allowing companies to identify the best customers and then meet their needs, customers will remain loyal to the company.

Other research said that CRM has a potential advantage for the company (Josiassen et al., 2014). In this study, it was found that it was important to develop CRM capabilities, especially if it could produce customer information, so that company can respond quickly, and the company's performance will also increase, then if the company collects information from customers it will increase customer satisfaction and loyalty. Whereas if the company can disseminate information about customers it will increase knowledge about customers.

H5: There is a significant effect on Customer Relationship Management and organizational performance

3. Research Methodology

Unit of analysis in logistic companies that have a population of 109 3PL companies in Surabaya and Sidoarjo, a sample of 52 company samples was obtained from Slovin formula theory.

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

4. Analysis and Discussion

This study obtained a sample of 53 3PL companies in Surabaya and Sidoarjo, and this study used Partial Least Square (PLS) analysis.

Questionnaires shared offline and online, offline means that they are directly sent to the company, and online means the questionnaires distributed via e-mail. The respondents who filled is someone who understands the company's policies and understands the operations of their company (such as IT, Warehouse, and regarding customers). Researchers look for target companies through the website of Indonesian Logistics & Forwarders Association (ILFA). The researcher took approximately 4 weeks to get the questionnaires filled and continue to process the data.

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 value of outer loading and cross loading produced by the SmartPLS software.

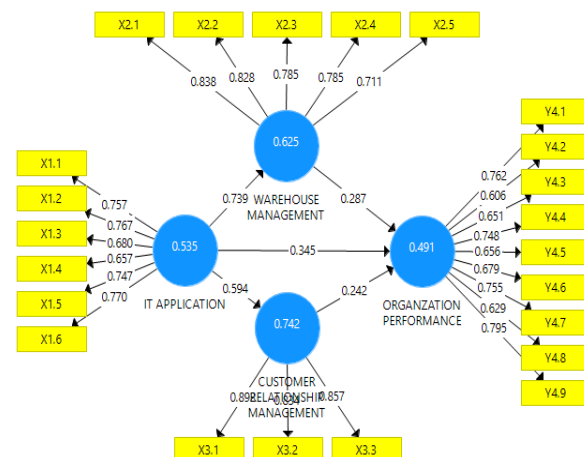### 4.2 Structural Model and Factor Loading

Table 1 is a loading factor and cross-loading for each variable. The first variable is the information technology application (IT) which has the highest loading factor value on X1.6 that is, each company department is connected to a computer network. The second variable is warehouse management (WM) which has the highest loading factor value on X2.1 that is the company has an accurate record of the quantity of goods in the warehouse. In the third variable, customer relationship management (CRM) which has the highest loading factor value on X3.1 that is, the company understands the services that customers want. On the fourth variable is organizational performance (OP) which has the highest loading factor value at Y4.9 that is company can increase worker productivity. All indicators in this second variable above have an outer loading above 0.5 so that it can be said that in this variable all indicators meet convergent validity.

Way to measure cross loading in Table 1 is by looking at each of the latent variables must be greater than the indicator of other variables.

Table 1. Nilai *Outer Loading* dan *Cross Loading*

	CRM	IT	OP	WM
X1.1	0.416	**0.757**	0.576	0.571
X1.2	0.556	**0.767**	0.549	0.551
X1.3	0.428	**0.68**	0.488	0.446
X1.4	0.242	**0.657**	0.469	0.548
X1.5	0.361	**0.747**	0.507	0.493
X1.6	0.552	**0.77**	0.483	0.619
X2.1	0.424	0.634	0.512	**0.838**
X2.2	0.523	0.661	0.573	**0.828**
X2.3	0.331	0.569	0.561	**0.785**
X2.4	0.241	0.453	0.43	**0.785**
X2.5	0.262	0.568	0.486	**0.711**
X3.1	**0.892**	0.601	0.575	0.459
X3.2	**0.834**	0.418	0.428	0.353
X3.3	**0.857**	0.489	0.476	0.369
Y4.1	0.475	0.454	**0.762**	0.493
Y4.2	0.405	0.349	**0.606**	0.447
Y4.3	0.343	0.472	**0.651**	0.568
Y4.4	0.67	0.62	**0.748**	0.474
Y4.5	0.326	0.537	**0.656**	0.425
Y4.6	0.267	0.506	**0.679**	0.383
Y4.7	0.46	0.524	**0.755**	0.427
Y4.8	0.211	0.377	**0.629**	0.389
Y4.9	0.367	0.521	**0.795**	0.499

The information technology application variable is compared with the cross loading value of the indicators in other latent variables so that the six information technology application indicators can be used and more suitable for measuring information technology application variables. The warehouse management variable is compared with the cross loading value of the indicators in other latent variables so that the five warehouse management indicators can be used and are more suitable for measuring warehouse management variables. The customer relationship management variable is compared with the cross loading value of the indicators in the other latent variables so that the customer relationship management indicators can be used and more suitable for measuring customer relationship management variables. The organizational performance variables are compared with the cross loading value of the indicators in other latent variables so that the nine organizational performance indicators can be used and more suitable for measuring the variable performance of the organization. This means that the indicators used in this study have met discriminant validity.

4.3 Reliability test

Reliability testing uses three methods, namely Cronbach Alpha, composite reliability, and R-square, which can be seen in table 2.

Table 2. Cronbach's Alpha, Composite Reliability dan R^2

	Cronbach's Alpha	Composite Reliability	R^2
CRM	0,828	0,896	0,352
IT	0,825	0,873	
OP	0,869	0,896	0,570
WM	0,849	0,892	0,545

Table 2 explains the results of CRM that have Cronbach's alpha worth 0.828, Cronbach's alpha in CRM 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 0.896, composite reliability in CRM can be said to be reliable because the composite reliability value exceeds 0.6. In the results of IT application (IT) which has Cronbach's alpha worth 0.825, Cronbach's alpha in IT application 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 0.896, composite reliability in IT applications can be said to be reliable because the composite reliability value exceeds 0.6. On the results of the company's performance that has

Cronbach's alpha worth 0.869, Cronbach's alpha on organization 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 0.896 can be said to be reliable because the composite reliability value exceeds 0.6. On the results of the warehouse management (WM) which has Cronbach's alpha worth 0.849. Cronbach's alpha in warehouse management can be said to be reliable because the value of Cronbach's alpha exceeds 0.6, while the value composite reliability has a value of 0.892, the composite reliability in warehouse management can be said to be reliable due to the reliability of composite score exceeds 0.6.

4.4 Inner Model Evaluation

The structural model or inner model aims to predict the relationship between latent variables hypothesized. The structural model in PLS is evaluated by 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 PLS R-Square show the amount of variance from the construct described by the model. The greater the R-Square value the greater the percentage variance that can be explained (Ghozali & Latan, 2015).

Obtained from the R-Square results can be seen in table 2, all variables have an R-Square value of more than 0 for the warehouse management variable of 0.545, which means that the percentage of warehouse management that can be explained by IT Application is 54.5%. Customer relationship management variable is 0.352, it means that the percentage of customer relationship management that can be explained by IT Application is 35.2%.

The organizational performance variable is 0.570, which means that the percentage of company performance that can be explained by IT applications, warehouse management, and customer relationship management is 57%. The remaining 43% is explained or affected by other variables, such as logistic service quality as in the study of Thomas (2017), Panayides & So (2005), Ho et al., (2012), quality management as Anderson & Germany (1998), information sharing as in the study of Prajogo & Olhager (2012), Lin et al. (2002), Yu et al., (2001), and so on.

Q-Square value greater than 0 indicates that the model has predictive relevance. Suitability of structural model can be seen from Q-Square. With the values of R-Square from Table 2, it can indicate the level of conformity of this model through:

$$Q\text{-Square} = 1 - [(1 - r_1^2) \times (1 - r_2^2) \times (1 - r_3^2)]$$

$$= 1 - [(1 - 0.545) \times (1 - 0.352) \times (1 - 0.570)]$$
$$= 0.584$$

The Q-Square value obtained on this model is 0.584. The result of this number is greater than 0 so that the model has predictive relevance. This also shows that the exogenous latent variables have sufficient predictive value of relevance to endogenous latent variables.

4.5 Hypothesis Testing

Path coefficient scores are indicated by T-statistics. The hypothesis testing is significant if the T-statistic value is more than 1.96 with a significant level of 5%.

Through testing hypotheses using structural equation models (PLS), the results of the study show that all proposed hypotheses are acceptable, that is, there is a significant effect between information technology application and organization performance, there is a significant effect between information technology application and warehouse management, there is a significant effect between information technology application with Customer relationship management, there is a significant effect between warehouse management and organization performance, there is a significant effect between Customer Relationship Management and organization performance.

Table 3. Path Coefficient

	Original Sample	T Statistics	P Values
H1	0.345	2.123	0.034
H2	0.739	14.946	0
H3	0.594	5.075	0
H4	0.287	2.008	0.045
H5	0.242	1.978	0.048

It can be concluded that there is a significant positive effect between IT application on organizational performance (H1) in 3PL companies in the study sample. This means that an increase in the IT application will significantly increase the organization's performance in the 3PL company, the research sample with a significant level of 0.05.

It can be concluded that there is a significant positive effect between the IT application on the warehouse management (H2) in the research sample manufacturing companies. This means that an increase in the IT application will significantly increase the warehouse management of the research sample 3PL companies with a significant level of 0.05.

It can be concluded that there is a significant positive effect between IT application on customer

relationship management (H3) in research sample 3PL companies. This means that an increase in the IT application will significantly improve customer relationship management in a research sample manufacturing company with a significant level of 0.05.

It can be concluded that there is a significant positive effect between the warehouse management on organization performance (H4) in the research sample 3PL companies. This means that an increase in warehouse management will significantly increase the company's performance in research samples with a significant level of 0.05.

It can be concluded that there is a significant positive effect between CRM on organization per-formance (H5) in 3PL research sample companies. This means that the increase in CRM will signi-ficantly improve the company's performance in research samples with a significant level of 0.05.

Table 4 is the result of the PLS program which shows the direct effect of IT application on organization performance which has a value of 0.345 that the IT application has a direct effect on organi-zation performance.

Table 4. Direct and Indirect Effect

Direct Effect	
	Original Sample
ITA -> OP	0.345
Indirect Effect	
ITA -> WM -> OP	0,212
ITA -> CRM -> OP	0,144
Total Effect	
	Original Sample
ITA -> OP	0,701

Whereas IT application can affect organization performance through the mediation role indirectly through the warehouse management which has a value of 0.212, that means companies that are able to use information technology will be able to make accurate records of the quantity and location of goods in the warehouse. If the company has accurate records, the company will work more easy and fast, so that worker productivity will increase. The direct effect of IT application on organization performance is greater than its indirect effect because without the role of warehouse management, IT applications are important for companies to be more effective and efficient. This means that it is important for com-panies to connect departments through a computer network will increase work productivity even without an accurate record of the quantity of goods in the warehouse.

From table 4, also seen that the indirect effect of IT Application on organizational performance through customer relationship management is 0.144. That means that the IT application of a company will improve the organization's performance supported by the existence of customer relationship management. Companies that use information technology when managing their relationships with customers will be able to understand the services customers want, understand what marketing styles their customers want. Companies that use information technology such as accessing information outside the database with computer networks help companies know customer desires. The company will be able to meet the demands of its customers quickly and will increase the productivity of its employees. The direct effect of information technology on organization performance is higher than the indirect effect of information technology on organization performance through customer relationship management. This means that without the role of customer relationship management, IT application is still important to be implemented in the company. Without the company's ability to understand the services their customers want, the company's ability to access information outside the database is also very useful to increase the productivity of its employees.

The indirect effect of IT applications on organization performance through warehouse mana-gement has greater value than IT applications on organization performance through customer relation-ship management. 3PL is more important to use technology to make accurate records of the location and number of items in the warehouse to find out what customers want.

5. Conclusion and Suggestion

Information Technology Application has a direct effect on organization performance in 3PL com-panies. It can be said that the use of information technology in the activity process will be useful to improve organization performance.

Information Technology Application has a direct effect on warehouse management in 3PL companies. It can be said that when a computer network is used it will be useful in managing warehouse.

Information Technology Application has a direct effect on customer relationship management. It can be said that the application of information technology will be useful in managing its relationships with customers.

Warehouse management has a direct effect on organization performance. It can be said that by

implementing warehousing management in 3PL companies will help improve organizational performance.

Customer relationship management has a direct effect on organization performance. Companies that can manage their relationships with customers will improve organization performance.

Information Technology Application has an indirect effect on organization performance through warehouse management. Companies that use information technology in managing their warehouses will improve their organization's performance.

Information Technology Application has an indirect effect on organization performance through customer relationship management. Companies that use information technology in managing their relationships with customers will improve the organization's performance.

5.1 Suggestion

Companies need to increase the use of computers to access information from outside the database because the company will get information about customers, the company will be able to segment it easily so that it can provide appropriate services to its customers.

In 3PL companies, especially in managing their warehouses, companies must be more careful with records of the quantity and location of goods so that the company can be able to meet customer demands quickly.

In 3PL companies, companies must be better at segmenting the market, so companies will provide products and services that are suitable for each market segment easier. Companies that more easily to serve their customers will meet the demands of its customers quickly.

References

Berg, J. P. V. Den, & Zijm, W. H. M. (1999). Models for warehouse management: Classification and examples. *International Journal of Production Economics*. https://doi.org/10.1016/S0925-5273(98)00114-5

Bharadwaj, A. S. (2000). A Resource-Based Perspective on Information Technology Capability and Firm Performance: An Empirical Investigation. *MIS Quarterly*, *24*(1), 169. https://doi.org/10.2307/3250983

Chen, Y., & Zhu, J. (2004). Measuring Information Technology's Indirect Impact. *Information Technology and Management*, *5*, 9–22. https://doi.org/10.1023/B:ITEM.0000008075.43543.97

Dibrell, C., Davis, P. S., & Craig, J. B. (2009). The performance implications of temporal orientation and information technology in organization environment synergy. *Journal of Strategy and Management*, *2*(2), 145–162. https://doi.org/10.1108/17554250910965308

Faber, N., Koster, R. (Marinus) B. M. de, & Velde, S. L. Van de. (2002). Linking warehouse complexity to warehouse planning and control structure An exploratory study of the use of systems, *32*(5), 381–395. https://doi.org/10.1108/09600030210434161

Ghozali, I., & Latan, H. (2015). Partial least squares: Konsep, teknik dan aplikasi menggunakan program SmartPLS 3.0 untuk penelitian empiris. *Semarang: Badan Penerbit UNDIP*.

Gomes, C. F., Yasin, M. M., & Lisboa, J. V. (2004). A literature review of manufacturing performance measures and measurement in an organizational context: a framework and direction for future research. *Journal of Manufacturing Technology Management*, *15*(6), 511–530. https://doi.org/10.1108/17410380410547906

Isaksson, O. H. D., & Seifert, R. W. (2014). Inventory leanness and the financial performance of firms. *Production Planning and Control*, *25*(12), 999–1014. https://doi.org/10.1080/09537287.2013.797123

Jayachandran, S., Sharma, S., Kaufman, P., & Raman, P. (2005). The Role of Relational Information Processes and Technology Use in Customer Relationship Management. *Journal of Marketing*, *69*(4), 177–192. https://doi.org/10.1509/jmkg.2005.69.4.177

Jayaram, J., & Tan, K. C. (2010). Supply chain integration with third-party logistics providers. *International Journal of Production Economics*, *125*(2), 262–271. https://doi.org/10.1016/j.ijpe.2010.02.014

Josiassen, A., Assaf, A. G., & Cvelbar, L. K. (2014). CRM and the bottom line: Do all CRM dimensions affect firm performance? *International Journal of Hospitality Management*, *36*, 130–136. https://doi.org/10.1016/j.ijhm.2013.08.005

Krasnikov, A., Jayachandran, S., & Kumar, V. (2009). The Impact of Customer Implementation on Cost and Profit Efficiencies : Evidence from the U . S . Commercial Banking Industry. *Journal of Marketing*, *73*(November), 61–76. https://doi.org/10.1509/jmkg.73.6.61

Lambert, D. M., & Cooper, M. C. (2000). Issues in Supply Chain Management. *Industrial Marketing Management*, *29*(1), 65–83. https://doi.org/10.1016/S0019-8501(99)00113-3

Lwiki, T., Ojera, P. B., Mugenda, N. G., & Wachira, V. K. (2013). The Impact of Inventory Management Practices on Financial Performance of Sugar Manufacturing Firms in Kenya Timothy Lwiki Lecturer in Accounting & Finance Sigalagala National Polytechnic P. O Box 2966-50100, Kakamega Kenya Patrick Boniface Ojera, Phd S. *International Jounal of Business, Humanities and Technology*, *3*(5), 75–85.

Manthou, V., & Vlachopoulou, M. (2001). Bar-code technology for inventory and marketing management systems: A model for its development and implementation. *International Journal of Production Economics*, *71*(1–3), 157–164. https://doi.org/10.1016/S0925-5273(00)00115-8

Marasco, A. (2008). Third-party logistics: A literature review. *International Journal of Production Economics*, *113*(1), 127–147. https://doi.org/10.1016/j.ijpe.2007.05.017.

Novák, V., & Krajčovič, M. (2011). Warehouse Management System. In *Transcom, 9th European conference of young research and scientific workers 26-27* (pp. 23–26). Retrieved from http://www.transcom-conference.com/uploads/archive/2011/S02_2011_Proceedings_part2.pdf#page=23.

Nyamboga, C. M., & Kemparaju, T. . (2002). Information Technology in University Libraries in Karnataka. *Information Development*, *18*(4), 257–265. https://doi.org/10.1177/026666602321036650.

Payne, A., & Frow, P. (2005). A Strategic Framework for Customer. *Journal of Marketing*, *69*, 167–176. https://doi.org/10.1509/jmkg.2005.69.4.167

Pérez López, S., & Alegre, J. (2012). Information technology competency, knowledge processes and firm performance. *Industrial Management & Data Systems*, *112*(4), 644–662. https://doi.org/10.1108/02635571211225521.

Pokharel, S. (2005). Perception on information and communication technology perspectives in logistics. *Journal of Enterprise Information Management*, *18*(2), 136–149. https://doi.org/10.1108/17410390510579882.

Rai, A., Patnayakuni, R., & Seth, N. (2006). Firm performance impacts of digitally enabled supply chain integration capabilities. *MIS Q.*, *30*(2), 225–246. https://doi.org/10.2307/25148729.

Rasi, R. Z. R. M., Rakiman, U. S., & Ahmad, M. F. Bin. (2015). Relationship Between Lean Production and Operational Performance in the Manufacturing Industry. *IOP Conference Series: Materials Science and Engineering*, *83*, 012016. https://doi.org/10.1088/1757-899X/83/1/012016.

Seuring, S., & Müller, M. (2008). From a literature review to a conceptual framework for sustainable supply chain management. *Journal of Cleaner Production*, *16*(15), 1699–1710. https://doi.org/10.1016/j.jclepro.2008.04.020.

Thomas, J. S., & Sullivan, U. Y. (2005). Managing Marketing Communications with Multichannel Customers. *Journal of Marketing*, *69*(4), 239–251. https://doi.org/10.1509/jmkg.2005.69.4.239

Vachon, S., & Klassen, R. D. (2008). Environmental management and manufacturing performance: The role of collaboration in the supply chain. *International Journal of Production Economics*, *111*(2), 299–315. https://doi.org/10.1016/j.ijpe.2006.11.030.

Wang, Y., & Feng, H. (2012). Customer relationship management capabilities. *Management Decision*, *50*(1), 115–129. https://doi.org/10.1108/00251741211194903.