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THE IMPLEMENTATION OF LEAN WITH INVENTORY CONTROL SYSTEM IN ORDER TO INCREASE CUSTOMER SATISFICATION DURING POST PANDEMIC COVID-19 (CASE STUDY OF PT SUCOFINDO JAKARTA WAREHOUSING FOR THE 2021 PERIOD)

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Abstract: PT. Sucofindo (Persero) is one of the companies engaged in logistics services. This study aims to identify factors that cause a lack of assessment of customer satisfaction, such as the accuracy of service at the time of loading and unloading goods, what improvements needed in the workplace area, and the inventory control system to support the suitability of the number of goods in the warehouse. The method used in this study was lean which meant to improve the quality of business strategies that did not produce products or services that was unsatisfactory. Bootstrapping method was used to analyze the data. The result shows that R-Square value was 0.909 which can be explained that all exogenous latent constructs affected Y by 0.909 or 90.9% in this study.

Keywords: *Lean, Inventory Control System, Customer Satisfaction, Warehouse*

Introduction (Including Literature Review)

Sucofindo (Persero) is one of the companies engaged in logistics services. PT Supertending Company Of Indonesia (hereinafter abbreviated as SUCOFINDO) was established on October 22, 1956. PT. Sucofindo (Persero) carries out planning and strategies for storing goods to achieve the objectives of storage effectiveness and efficiency by using technology that supports storage activities. The use of this technology is expected to increase customer satisfaction.(Firdaus, M., Rasyid, F. A. A., & Gultom, 2018)

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1.1 PDPLB workflow at PT. Sucofindo

PDPLB workflow :

1. Customs Clearance permit process for the release of goods from the port to the PLB warehouse, after SPPB BC 1.6
2. Trucking & GPS:Transportation activities or moving goods from the Port to the PLB warehouse monitor using GPS installed by e-seal
3. Inventory Management is the process of recording the entry and expenditure of goods in the PLB warehouse
4. Stripping: It is an activity after the transfer of goods from the port to the PLB warehouse. It refers to unloading or commonly called stripping for conformity with the quantity and type of goods in the document.
5. Stuffing document: loading goods after getting a response to SPPB BC 2.8 and carried out by the number and type of goods in SPPB BC 2.8.

Figure 1.2 PLB workflow at PT. Sucofindo

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Figure 1.3 IT Inventory PLB dan PDPLB criteria

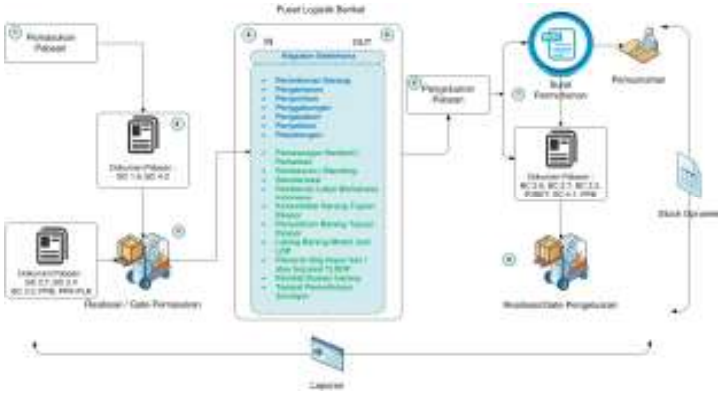

Figure 1.4 Flow Diagram of Bonded Logistics Center with IT Inventory

IT Inventory's Workflow :

1. Customs document 1.6: The IT Inventory process requires a backup file in the form of excel document to be uploaded into the IT inventory.
2. Realization / Gate income: Activities after the file is uploaded followed by realization activities by entering the real-time arrival of goods from the port to the warehouse.
3. Realization/gate of expenditure is the activity of filling in the real-time of goods expenditure from the PLB warehouse.
4. Stock-taking is usually carried out once every 1 year and the results will be reported to the Directorate General of Customs and Excise. The report ensures that the goods in the warehouse with those in the IT Inventory are appropriate.

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IT Inventory System

In carrying out business, PT. Sucofindo uses 2 (two) Inventory Control Systems in carrying out logistics management. The systemsare the internal Inventory Control System and the external Inventory Control System (Suwandaru, 2017).(Subagyo et al., 2022) Based on the definition inventory control refers to a condition in which the inventory is neither in excess or shortage state to avoid inhibition of production activities that cause opportunity costs as well as avoiding high storage costs and idle inventory.(Firdaus, M., Rasyid, F. A. A., & Gultom, 2018)

Lean

Lean refers to an understanding of the flow of value contained in the work process of a business to increase customer satisfaction. A good understanding of the entire business process can maximize profits for business entities (Kumar, Dhingra, & Singh, 2018). Lean examines the flow of works or tasks from design to products received by consumers, so that they can run smoothly and the goods are not returned due to defects or damaged (Muhsin et al, 2016).

Customer Satisfication

Customer Satisfaction According to Richard Oliver (in Zeithaml., et al: 2018) is the response of fulfillment from the customer to a product or service itself that has met the needs and expectations of the customer. Meanwhile, according to Pasuraman, Zeithmal, and Berry, it is stated that customer satisfaction is the customer's feeling for the type of service he gets (Firmansyah: 2018).

Method

Descriptive Quantitative Research Method was applied to meet the objectives of the research and to obtain a complete picture of a subject from the point of view of the person being studied. Quantitative is data expressed in numbers (Sugiyono, 2018). In addition, this research used literature studies. The secondary data was company profile documentation.

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Discussion and Result.

1. Validity Test

Validity test is used to measure if an indicator is valid. The way to conduct this validity test is by correlating pearson correlation scores and critical r (Sugiyono, 2018). The value of the correlation coefficient for each of the indicator was compared with the critical r value for which in this case it is determined to be 0.30. If the correlation coefficient (r-count) is greater than the critical r value (0.30), and it is positive, then the item is valid, and vice versa. (Sugiyono, 2018).

Variabel	Indicator	*Outer Loading*
Lean (X_1	X1_1	0.849
	X1_2	0.850
	X1_3	0.887
	X1_4	0.592
	X1_5	0.823

Tabel 1. Outer Loading Lean (First Model)

Variabel	Indicator	*Outer Loading*
Inventory Control System (X_2)	X2_1	0.812
	X2_2	0.897
	X2_3	0.902
	X2_4	0.940
	X2_5	0.845

Tabel 2. Outer Loading Inventory Control System (First Model)

Variabel	Indicator	*Outer Loading*
Costumer satisfaction (Y)	Y1	0.899
	Y2	0.926
	Y3	0.971
	Y4	0.923

Tabel 3. Outer Loading Customer Satisfication (First Model)

From the test results, all the loading values of each reflex construct resulted in a loading >0.30, thus this model has met the criteria of good convergent validity. All indicators for lean variables: inventory control systems; and customer satisfaction already have a loading factor value above 0.30. Thus, lean construct-forming indicators, inventory control systems, and customer satisfaction are categorized as valid. Here are the outcome of outer model test that shows the outer loading value using the SmartPLS analysis tool version 4.0

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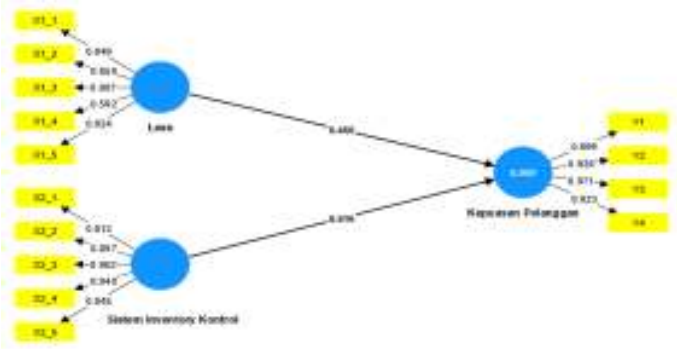


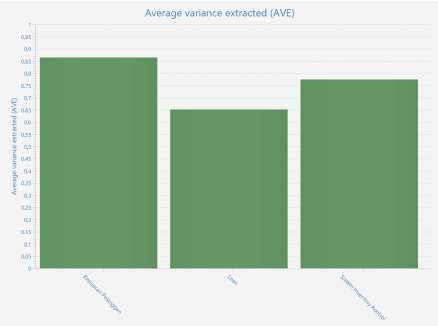
Source: Processed by SmartPLS versi 4.0, 2022

Figure 1. X1, X2, and Y Variable Model Outer Test Results

The result obtained in figure 1, shows14 indicators of all variable indicators,.1 indicators has a value below 0.8, and 13 indicators have a value of more than 0.7. In addition, the values of convergent validity and discriminant validity can also be determined by other methods, which is by looking at the average variance extracted value (AVE) for each indicator, which must be > 0.5 to be determined as a good model.

Variabel	Average variance extracted (AVE)
Lean (X_1)	0.865
IT Inventory Control System(X_2)	0.652
Customer Satisfaction (Y)	0.775

Tabel 4. Analysis *Average Variance Extracted Result* (AVE)



Source : Data is processed by SmartPLS version 4.0, 2022

Figure 2. Grafik AVE

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Based on the AVE table and figure, it is seen that the AVE value of the lean variable is>0.5 or 0.652, the control inventory system variable is >0.5 or 0.775, and the customer satisfaction variable is >0.5 or 0.865. This indicates that each variable already has good convergent validity.

Discriminant Validity

Results Measurement of discriminant validity was done by using cross-loading values. Discriminant validity is used to determine that each concept of each latent variable is distinct from the others. A model with good discriminant validity is if each cross-loading value of each indicator of one latent variable has the largest cross-loading value with another cross-loading value relative to the other latent variables. Cross-loading value can be seen in table 5 as follows :

-	Customer Satisfaction	Lean	IT Inventory Control system
X1_1	0.729	0.849	0.725
X1_2	0.753	0.850	0.812
X1_3	0.926	0.887	0.868
X1_4	0.583	0.592	0.546
X1_5	0.724	0.823	0.739
X2_1	0.753	0.850	0.812
X2_2	0.926	0.839	0.897
X2_3	0.885	0.835	0.902
X2_4	0.806	0.820	0.940
X2_5	0.729	0.722	0.845
Y1	0.899	0.845	0.832
Y2	0.926	0.839	0.897
Y3	0.971	0.914	0.924
Y4	0.923	0.872	0.832

Sumber: Data is processed by SmartPLS version 4.0, 2022

Tabel 5. Discriminant Validity Result (Cross Loadings)

Based on table 5 for the cross-loading values of variables for lean,the five measurement indicators are X1_1 = 0.849, X1_2 = 0.850, X1_3 = 0.887, X1_4 = 0.592, X1_5 = 0.823. The variable value of the inventory control system with five measurement indicators is X2_1 = 0.725, X2_2 = 0.812,

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X2_3 = 0.868, X2_4 = 0.546, X2_5 = 0.739. The variable value of customer satisfaction with four measurement indicators is Y1 = 0.899, Y2 = 0.926, Y3 = 0.971, Y4 = 0.923. All indicators for lean variables, which are inventory control systems, and customer satisfaction, already have cross-loading values above 0.70. This means that each latent variable already has a good discriminant validity, meaning that the latent variable has a measuring instrument that is highly correlated with other constructs or the validity of the discriminant at the indicator level is met.

Reliability Test

The reliability test shows respondents' consistency in answering the questions.. There are 2 ways used in this study:

Cronbach's Alpha

Results of The reliability test can be strengthened by using the value of cronbach's alpha variable assessment criteria. If the value of cronbach's alpha of each variable is >0.7 then it is reliable. Here is a table of 6 results of cronbach's alpha values of each variable:

table 6 results in the value of cronbach's alpha of each variable :

Variable	*Cronbach's Alpha*
Lean	0.861
Inventory control system	0.927
Customer Satisfaction	0.948

Source : processed by the authors, 2022

Tabel 6. Analysis Result of *Cronbach's Alpha*

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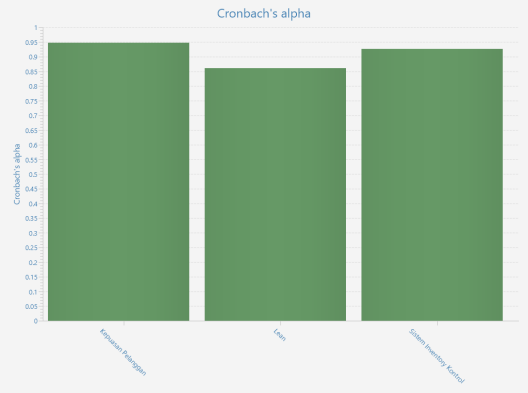

Source: SmartPLS processed data version 4.0, 2022

Figure 3. Cronbach's Alpha Chart

Based on the table and graph of results from Cronbach's alpha variable, lean is >0.7 which is 0.861, the inventory control system is >0.7 which is 0.927, customer satisfaction is >0.7 which is 0.948. Thus these outcome show that each variable has met the requirements of cronbach's alpha value, so generally all variables has a high level of reliability.

Composite Reliability

Composite Reliability results is a fragment used to show reliability value of a variable indicator. Avariable is reliable if the composite reliabilty rate is > 0.7 even though 0.6 is still acceptable.:

Variable	*Composite Reliability*
Lean	0.902
Inventory Control System	0.945
Customer Satisfication	0.962

Source : Data is processed by SmartPLS version 4.0, 2022

Table 7 Composite Reliability Analysis Results

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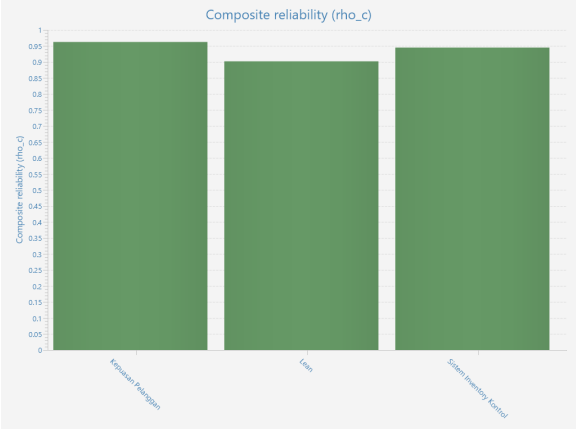

Figure 4 Composite Reliability Chart

The composite reliability value generated in each lean variable, inventory control system, and customer satisfaction are >0.7, the composite reliability value of the lean variable is 0.902. Inventory system is >0.7, which is 0.945, and customer satisfaction is >0.7, which is 0.962. Since the composite reliabilty value of each individual variable is >0.7, it shows that the three variables are reliable.

Inner model

Inner models show the strength of estimation between latent or construct variables. This researach will explain the results of the R-Square value, F test, Path coefficient, and hypothesis test. Structural models were analyzed using SmartPLS:

1. R-Square Results

R-Square measurement describes the correlation between latent variables in order to determine the predictive power of the model. Tests on the inner of this model are known with R-Square. This R-Square test was used to measure predictive accuracy. Below are the results of the R-Square test on each construct:

Variabel	R-square
Customer satisfication	0.909

Table 8 R-Square Analysis Results

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Based on the output of the analysis results using the bootstrapping method, the result of the R-Square value is 0.909 which means that all exogenous latent constructs affect Y by 0.909 or 90.9%.

Path Coefficients

Indicator s	IT INVENTORY CONTROL	CUSTOMER SATISFACTION	LEAN
IT INVENTORY CONTROL		0.516	
CUSTOMER SATISFACTION			
LEAN		0.455	

Source : Data is processed by Smart PLS 4.0 2022

It can be seen that path coefficient obtained a result value of 0.455, and IT inventory control got 0.516 which states that lean variables have a positive influence on customer satisfaction.

Conclusion :

Based on the results of research that has been carried out at PT. Sucofindo, TBK regarding The Implementation of Lean With Inventory Control System In Order To Increase Customer Satisfaction During Post Pandemic Covid-19 (Case study pt. Sucofindo, TBK 2022) then the conclusions are the followings:

1. The Lean Variable (X1) has an effect on customer satisfaction (Y), where the lean variable is >0.5 (0.652) and in alpha is >0.7, which is 0.861 which proves this variable is reliable. Therefore, it can be concluded that there is a remarkable effect between the effect of lean and customer satisfaction.
2. The inventory control system variable (X1) has an effect on customer satisfaction (Y), where the control inventory system variable is >0.5 (0.652) and in alpha is >0.7 which is 0.927 which proves this variable is reliable. Therefore, it can be concluded that there is a significant effect between the influence of the control inventory system and customer satisfaction.

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3. In the Lean Implementation Variable (X1) with the inventory control system (X2) to increase customer satisfaction (Y) which has an influential correlation on customer satisfaction (Y), Based on the output of the analysis results with the bootsrapping method, the result of the R-Square value is 0.909 which means that all exogenous latent constructs affect Y by 0.909 or 90.9%, alpha is >0.7 which is 0.948. The results shows that the research entitled The Implementation of Lean With Inventory Control System In Order To Increase Customer Satisfication During Post Pandemic Covid-19 (Case study pt. Sucofindo, TBK 2022) is proven to have a significant effect to increase customer satisfaction.

References

Firdaus, M., Rasyid, F. A. A., & Gultom, S. (2018). Pengaruh Sistem Pencatatan Barang Terhadap Kinerja Gudang Pada Pt. Hunter Douglas Indonesia Di Cikarang. *Jurnal Manajemen Bisnis Transportasi Dan Logistik (JMBTL)*, *5*(1), 93–100.

Subagyo, H., Adnyana, K. R., Mudjiardjo, M., & Setiawan, E. B. (2022). Pengaruh Implementasi Sap Dan Pengelolaan Persediaan Terhadap Kelancaran Operasional Kapal Melalui Kinerja Pembelian. *Jurnal Bisnis, Ekonomi, Manajemen, Dan Kewirausahaan*, *2*(1), 1–9. https://doi.org/10.52909/jbemk.v2i1.71