JBF EM Journal of Business and Finance in Emerging Markets

RELATIVE EFFECTS OF UPSTREAM AND DOWNSTREAM LINKAGE ON MODERN RETAILERS DISTRIBUTION PERFORMANCE IN JABODETABEK

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ABSTRACT

The research aims to study and observe directly about relative effects and relationship between upstream and downstream linkage on retailer distribution performance. Both distribution channels as important as its performance particularly in retail sector had becoming an interesting field to be explored recently. Observation took place at twenty major retailers located in capital city Jakarta. Structured questionnaire and SPSS software tools analysis were utilized by researcher to obtain a comprehensive result that showed significant relationship and effects between both upstream and downstream linkage on retailer distribution performance. This significant result would become a main reference for further and extended research on how downstream linkage were set during implementation of government regulation about retailer paid plastic shopping bag.

Keywords**:** upstream linkage, downstream linkage, retailer distribution performance

Introduction

Competition among modern retailers is expanding with the involvement of suppliers. An event that appeared to be an attention was that suppliers asked the government to immediately supervise the implementation of the Minister of Trade Regulation No. 53/2008 concerning Guidelines for the Arrangement and Development of Traditional Markets. Because, there are modern retailers who set a fixed price rebate (fixed rebate) of 8 percent of the maximum 1 percent provision. This illustrates the existence of a vulnerable point of relationship between modern retailers and suppliers, which in the next stage triggers competition between suppliers. Modern Stores are shops with a self service system, selling various types of goods in retail in the form of Minimarkets, Supermarkets, Department Stores, Hypermarkets or wholesalers in the form of Grocery. Retail Organizations, the types are: corporate chain stores; voluntary chain; cooperative retailer (cooperative retailer); consumer cooperative (consumer cooperative); franchise organization; and merchandising conglomerates. Five forces that shape the nature and degree of competition in an industry, namely: the threat of newcomers, the bargaining power of customers, the bargaining power of suppliers, the threat of substitute products, and threats from similar competitors or rivalry. A threat of entry, new arrivals in an industry usually bring and add new capacity, desire to gain market share, and also new resources. The severity of the threat of newcomers depends on the barriers to entry and the reactions of existing competitors where new entrants will enter the industry or market. Supplier power (powerful of suppliers). Suppliers provide and offer inputs needed to produce goods or provide services by industry or companies. Organizations in an industry compete with each other to obtain inputs such as labor, raw materials and capital. Suppliers who are able to control the company in terms of providing input while the industry does not have the ability to control suppliers so that the bargaining position of the industry becomes weak and conversely the bargaining position of suppliers becomes stronger. The power of buyers / customers (power of buyers). The buyer or customer here consists of individual customers and organizational customers.

Literature review

Fundamentally supply chain management is defined as the process of integrating material and service procurement activities, converting into semi-finished products and end products as well as shipping to customers. In fact, supply chains are all about speed and efficiency (Evans, 2007). A series of approaches are carried out to effectively integrate suppliers, producers, warehouses and shops so that inventory can be produced and distributed in the right amount to the right location and at the right time so that the overall system costs and are minimized while trying to meet consumer expectations (Levi, 2015). The principle and main objective of supply chain management is to build a supplier chain that focuses attention to maximize value for customers. The key to effective supply chain management is to make suppliers as partners in the company's strategy to meet the ever-changing market (Heizer, 2008). The priority in the upstream supply chain is procurement. Internal supply chains include all inhouse activities and processes that are used in realizing input or input from suppliers into the outputs or results of the company. At this stage, quality is a huge issue. High quality of goods and services can provide an organization with a competitive edge (Besterfield, 2014). In this internal supply chain, the priority is production management, fabrication and inventory control (Bulent, 2008). Downstream supply chains include all activities that involve sending products to end customers. In the downstream supply chain, the main attention, focus and priority are directed at distribution, transportation, warehousing and after sales service (Hiller and Lieberman, 2015). The main problems in the supply chain are related to determining the right level of outsourcing, managing purchases / procurement of goods, managing suppliers, managing relationships with customers, identifying problems and responding to problems quickly and

managing risks (Stevenson and Chuong, 2014). SCOR Model is a process, metrics and best practices developed by the Supply Chain Council. In the SCOR Model there are five parts, namely Plan (planning activities for supply and demand), Source (purchasing activities), Make (production activities), Delivery (distribution activities) and Return (closed-loop supply chain activities). The company uses the SCOR Model to identify, measure, reorganize and improve the supply chain process, as illustrated in Figure 1 below:

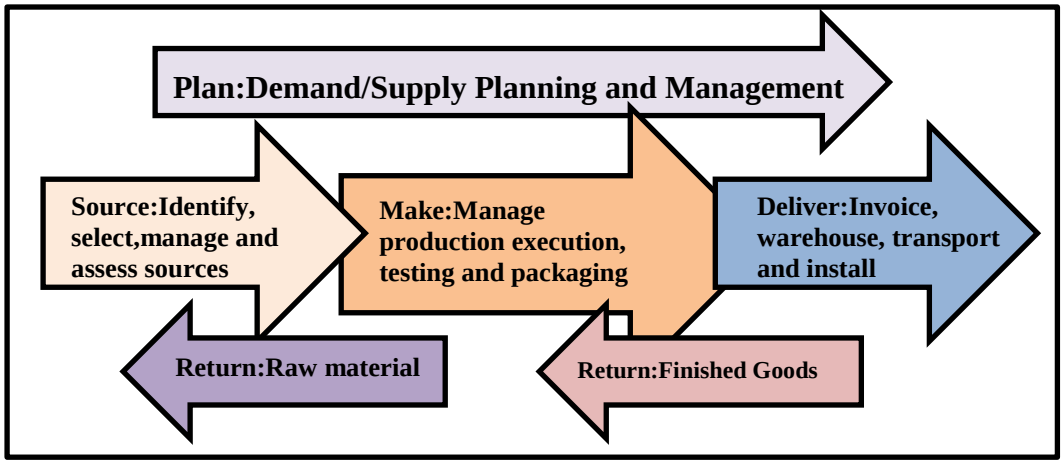

Figure 1. The SCOR Model (Heizer, 2008)

Internal linkages produce three different types of interrelations such as reciprocal relationships within the same unit in the company, reciprocal relationships within the company and reciprocal relationships between different units within the company (Bulent, 2008). A reciprocal relationship within a unit can occur when the activity in question occurs in a unit value chain carried out by one unit. These reciprocal relationships result from linkages in a value chain. Reciprocal relationships within a company can occur when the activities referred to in the one-unit value chain are provided by other units within the same company. This linkage produces material in one direction (Gitlow et al, 2005). This is quite different from the reciprocal relationships between units that use a two-way sharing system that can occur between two units within the same company. Meanwhile reciprocal relationships between units can occur when the sharing process takes place between two different units within the same company (Hamister, 2011). Sharing activities or skills can occur between two value chains. In addition to internal linkage or internal linkages, external linkage or external linkages are also the basis of research theory. External links or external linkage describe a reciprocal relationship between one unit and another company or an outside party (Sandberg and Abrahamsson, 2010). External linkages produce two linkages, namely the inter-corporation linkage and network linkage. Inter-corporation linkage can occur when an activity that is needed in a one-unit value chain is provided by an outside source of the company. This external linkage is between one unit's value chain and another company's value chain. Network linkage or network linkage is a reciprocal relationship between one company or unit with another (external) or more (Subramanian and Wang, 2010). These reciprocal linkages are designed to create a new value chain provided by all companies. Reciprocal linkages of networks will result in different alliance organizations or other organizational networks.

Linkage and retailer distribution performance

The cooperative relationship with suppliers is very instrumental in determining the performance of a modern retailer business in the context of the relationship between consumer goods companies and suppliers (Kocoglu et al., 2011). Achieving good performance through

collaboration, good relations between the two parties are not needed. To build a good quality of cooperative relationship, the honesty factor is an important consideration. The indicator of the strength of the relationship between suppliers and retailers is the level of trust, adaptation, communication and collaboration that exists between partners in a particular product supply chain (Ibrahim and Ogunyemi, 2011). The market characteristics of the companies that operate, determining the optimal strength of relations between partners in the supply chain will provide a competitive advantage in addition to the strong relationship that will also produce innovative products. Based on the theoretical foundation and previous research, the researcher describes the conceptual framework as shown in Figure 2.

Several ways are used by modern retailers to maintain mutually beneficial relationships with suppliers, mutual relations for the advancement of joint efforts between modern retailers and their suppliers (Muthu, 2013). One way that is used is to organize supplier relationship management which is the whole activity of an inclusive approach to managing problems and interactions with organizations or companies that provide goods and services for a modern retailer (Joakim, 2014). This includes communication, business practices, negotiation, collaborative methods, cooperation contracts and software that is used for the efficiency of time between the two parties so as to obtain the benefits of lower operating costs, better product quality and foreseeable prospects for further collaboration and relations still mutually beneficial (Muthu, 2011). In addition to supplier management relationships, a customer relationship management program is also provided that provides an integrated approach to all aspects of retailers and suppliers in relation to customer relations which includes marketing, sales and supporting departments as illustrated in Figure 3.

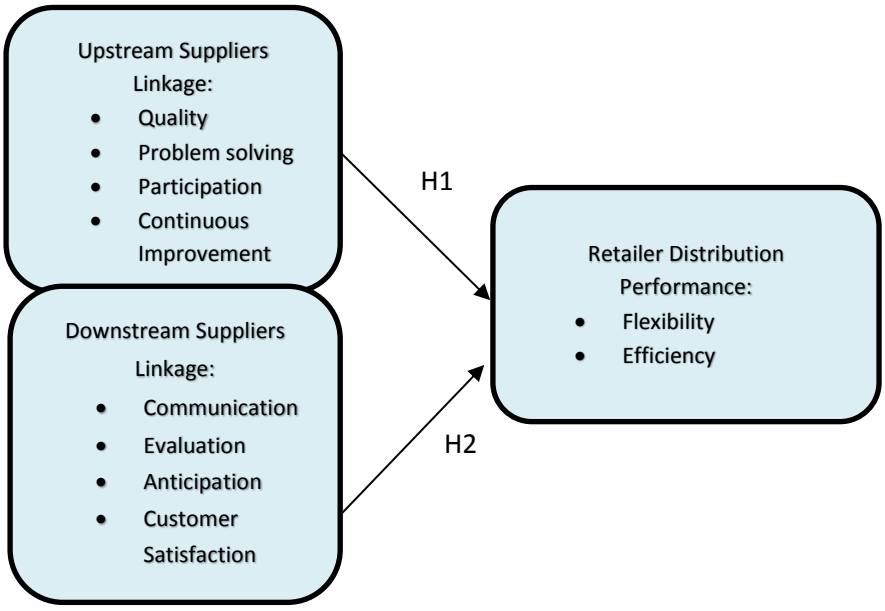

Figure 2. Research Model (Ibrahim and Ogunyemi, 2011)

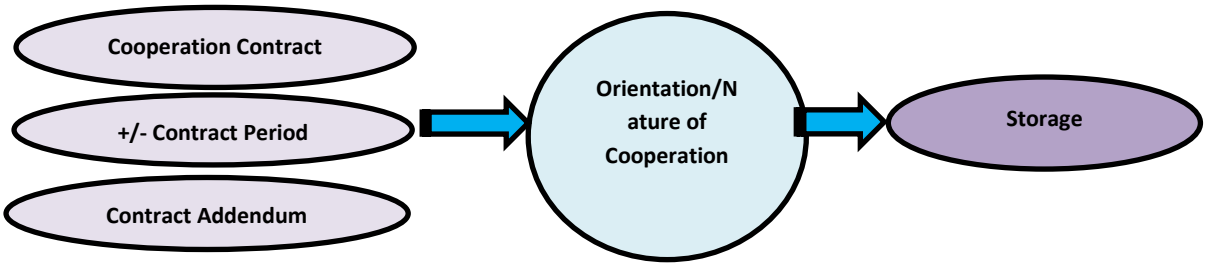

Figure 3. Shopping Bag Purchase Cooperation Model

With consideration of efficiency and practical reasons, vendors who work with retailers will use third parties or subcontractors to make plastic shopping bags or recycle them when distributing them to retailers (Li et al., 2010). Under these conditions, two types of cooperation contracts will be made, namely the contract of cooperation with retailers and vendors, and the contract of cooperation with third parties (Muthu et al., 2012).

Methodology

The following analysis used in this study is a multiple linear regression analysis that is used to determine how much influence the independent and dependent variables which are Upstream Linkage (X_1) and Downstream Linkage (X_2) on Retail Distribution (Y) (Cooper, 2014). Dependent variable relationship model with the independent variable arranged in a mathematical function or equation (equation) $Y = a + b_1X_1 + b_2X_2 + ... + b_nX_n + e$, where a is a constant, Y is the dependent variable, bn is the coefficient of variable X, X_n is the independent variable and e is an error or confounding variable, so the mathematical formula in the multiple linear regression equation used in this study is $Y = b_1X_1 + b_1X_2 + e$ with the explanation that Y is retail distribution, X_1 is Upstream Linkage, X_2 is Downstream Linkage, and b_1, b_2 and b_3 is the regression coefficient and e is an error (Sekaran, 2013). Another test that is carried out is a significant test of individual parameters (statistical test t) which actually shows how far the influence of an independent variable (free) individually in explaining the variation of the dependent variable (bound). The decision making steps include the basis for decision making if the t count is less than the table, then H_o is accepted and H_a is rejected. If t counts more than t table then H_o is rejected and H_a is accepted, for H_o decision-making criteria is accepted if sig> $\alpha = 0.05$ and H_o is rejected if sig $<\alpha = 0.05$. In this study also measured the coefficient of determination (R_2) which is used to measure how far the ability of the model in explaining the variation of the dependent variable (bound). The value of the coefficient of determination is between zero (0) and one (1). A small R^2 value means the ability of independent variables (free) to explain the variation of the dependent variable (bound) is very limited. A value that approaches one (1) means that the independent variable (free) provides almost all the information needed to predict the variation of the dependent variable (bound). In reality the adjusted R^2 value can be negative even though the desired value must be positive. If the empirical test obtained a negative adjusted R^2 value, the value of R^2 is considered to be zero (0). Mathematically the value $R^2 = 1$, then adjusted $R^2 = R^2 + 1$, whereas if the value $R^2 = 0$ then adjusted $R^2 = (1-k) / (n-k)$, if k> 1 then adjusted R^2 will be negative. Testing the hypothesis in this study using partial testing (t test) which is done to know partially independent variables (free) have a significant effect or not on the dependent variable (bound). The testing criteria used are H_o accepted and H_a rejected if sig t> 0.05, meaning that the independent variable (free) does not significantly influence the dependent variable (bound). H_o is accepted and H_a is rejected if sig t <0.05 means that the independent variable (free) has a significant effect on the dependent variable (bound).

Result and discussion

Validity test is done to determine a question description worthy of use or not, then the significance test is done by comparing the calculated r value with r table for degree of freedom (df) = n-2, in this case n is the number of samples used in this study. In this study the number of samples (n) = 55 and the amount of df can be calculated 55-2 = 53 and alpha 0.05 obtained r table = 0.2656 (at df = 53 with a two-way test). So, the description that has a correlation coefficient value below 0.2656 is considered invalid. As stated in Table 1 below:

Table 1. Validity Test Rank Spearman Variable X_1 (Upstream Linkage)

Desc	Corr Coeff	Sig 2tailed	Criteria		N	Desc
			(r)	Sig		
Q_1	,372**	,019	> 0,2656	≤ 0,05	55	valid
Q_2	,813**	,000	> 0,2656	≤ 0,05	55	valid
Q_3	,654**	,000	> 0,2656	≤ 0,05	55	valid
Q_4	,537**	,000	> 0,2656	≤ 0,05	55	valid

Table 2. Validity Test Rank Spearman Variable X_2 (Downstream Linkage)

Desc	Corr Coeff	Sig 2tailed	Criteria		N	Desc
			(r)	Sig		
Q_1	,633**	,000	> 0,2656	≤ 0,05	55	valid
Q_2	,754**	,000	> 0,2656	≤ 0,05	55	valid
Q_3	,561**	,000	> 0,2656	≤ 0,05	55	valid
Q_4	,414**	,005	> 0,2656	≤ 0,05	55	valid

Table 3. Validity Test Rank Spearman Variable X_2 (Retail Distribution)

Desc	Corr Coeff	Sig 2tailed	Criteria		N	Desc
			(r)	Sig		
Q_1	,897**	,000	> 0,2656	≤ 0,05	55	valid
Q_2	,693**	,000	> 0,2656	≤ 0,05	55	valid

Reliability testing is also used to indicate the extent to which a measurement can be trusted and shows the consistency of the instrument used. Reliability testing is done by comparing the alpha value of the output. A construct or variable is declared reliable if it gives the Cronbach Alpha value> 0.60, as stated in the following Table 4:

Table 4. Reliability Test Variable X_1

Variable	r value table	Cronbach Alpha	N of items
X_1 – Upstream Linkage	> 0,60	0,783	4
X_2 – Downstream Linkage	> 0,60	0,894	4
Y – Retail Distribution	> 0,60	0,803	2

The overall alpha value is above the value 0.60 so it can be concluded that all statements contained in the questionnaire can be declared reliable. To strengthen the test results, the Kolmogorv-Smirnov test is used as in Table 5 below:

Table 5. Kolmogorov-Smirnov Test – One Sample Test

		Standardized residual
N		55
Normal Parameters	Mean	,0000000
	Std	3,53122557
Deviation		,106
Most Extreme		,109
Absolute		-,091
Differences	Positive	,106
		,189[c,d]
Negative		
Kolmogorov-Smirnov Z		
Asymp.Sig.(2-tailed)		

The results of the Kolmogorov-Smirnov test revealed that the asympg.sig result was 0.189. This value is greater than 0.05, which means the data is normally distributed. Next is the results of the multicollinearity test which aims to test whether the regression model found a correlation between independent variables (independent). A good regression model cannot have a correlation between the independent variables. Multicollinearity testing was carried out by looking at the tolerance value by using variance inflation factors (VIF) from the results of the analysis using SPSS. Multicollinearity does not occur if the VIF value is less than 10 or the tolerance value is more than 0.10. Test results are listed in the following Table 6:

Table 6. Multikolinearity Test Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	11,253	2,758		3,454	,000		
Total_X1	,235	,132	,275	1,587	,185	,389	3,185
Total_X2	,186	,112	,154	,773	,528	,389	3,185

a. Dependent variable: TOTAL_Y

The results of the multicollinearity test above show a tolerance value of 0.389 where the value is greater than 0.10 and the VIF value is less than 10, which is 3.185 so that it can be concluded that there is no correlation between the independent variables in the research model. Heteroscedasticity testing is also carried out and getting results as listed in Table 7 below:

Table 7. Heteroskedaticity Test Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	Std.Error	Beta		
1 (Constant)	1,464	2,138		,654	,529
Total_X1	,035	,101	,067	,258	,833
Total_X2	,031	,098	,067	,253	,841

a. Dependent variable:abs_res1

From the output table above it can be seen that the significance value of the total X_1 (Upstream Linkage) is equal to 0.833 and the total X_2 (Downstream Linkage) is equal to 0.841 more than

0.05. Thus it can be concluded that there is no heteroscedasticity in the regression model. The next test is an autocorrelation test which aims to find out whether there is a correlation between members of a series of observation data that are described by time (time series) and cross-section. Autocorrelation tests can be detected by serial correlation testing with the Durbin-Watson method as listed in Table 8 below:

Table 8. Autocorrelation Test Model Summary[b]

Model	R	R Square	Adjusted R Square	Std.Error of Estimate	DW
1	,627[a]	,393	,237	2,90536	1,962

a. Predictors☺constant), TOTAL_X_2, TOTAL_X_1
b. Dependent Variable:TOTAL_Y

Based on the results of the autocorrelation test analysis above shows that the DW value is 1.962 and is known through the DW table that dL = 1.4093 and dU = 1.6406, if 4 - dU then 4 -1.6406 = 2.3594. Thus dL up to 4 - dU or 1,6406 <1,962 <2,3594 so it can be concluded that there are no autocorrelation symptoms in the research model. Multiple linear regression analysis is used to determine the relationship between the independent variable and the dependent variable. The relationship between variables is expressed in the form of equations so that the value of variable Y can be determined or predicted if the value of variable X is known. The results of multiple linear regression calculations as listed in Table 9 below:

Table 9. Multiple Regression Analysis Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	Std.Error	Beta		
1 (Constant)	11,253	2,758		3,454	,000
Total_X1	,235	,132	,275	1,587	,185
Total_X2	,186	,112	,154	,773	,528

a. Dependent variable: TOTAL_Y

Based on the table above can be obtained the regression equation as follows: $Y = a + b_1X_1 + b_2X_2 + e$ so that Y = 11.253 + 0.235X1 + 0.186X2 + e, by referring to the regression equation obtained then the regression model can be interpreted that the constant coefficient (a) amounting to 11.253 where this means that if the values of X_1 and X_2 are zero then the level or magnitude of Y is 11.253. The value of the β1 coefficient is 0.235 meaning that if X_1 increases by 1x while the other independent variables remain then the distribution performance of the retailer will experience an increase of 0.235 and vice versa if X_1 decreases by 1x while the other independent variables remain then the distribution performance of retailers will decrease by 0.235. The coefficient value β2 is 0.186 which means that if there is an increase in X_2 of 1x while the other independent variables remain, the distribution performance of retailers will increase by 0.186 and vice versa if there is a decrease in X_2 then the distribution performance of retailers will also decrease by 0.186. Multiple linear regression analysis is also carried out on each component of the upstream linkage and downstream linkage variables, the analysis of which can be seen in Table 10 below:

Table 10. Multiple Regression Analysis Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	Std.Error	Beta		
1 (Constant)	10,861	3,368		3,024	,005
TOT_X1_Q_UL	,044	,232	,165	,287	,795
TOT_X1_PSOL_UL	,513	,362	,154	,773	,228
TOT_X1_PART_UL	,617	,255	,018	1,274	,447
TOT_X1_CONT_UL	,524	,298	,269	,635	,965
TOT_X2_COMM_DL	,216	,214	,322	,522	,817
TOT_X2_EV_DL	,368	,276	,254	,514	,883
TOT_X2_ANT_DL	,089	,201	,036	,785	,475
TOT_X2_CUST_DL	,189	,233	,058	,087	,873

a. Dependent variable: TOTAL_Y

Based on the table above, we can get the regression equation $Y = a + b_1X_1a + b_2X_{1b} + b_3X_{1c} + b_4X_{1d} + b_5X_{2a} + b_6X_{2b} + b_7X_{2c} + b_8X_{2d} + e$, then Y = 10.861 + 0.044Q + 0.513PSOL + 0.617PART + 0.524CONT + 0.216COMM + 0.368EV + 0.089ANT + 0.189CUST + e, thus it can be interpreted that the value of the constant coefficient (a) is 10.861 which indicates that if the value of another independent variable is zero then the level of performance will increase by 10.861. The coefficient value b_1 to b_8 will also determine the improvement of retailer distribution performance by assuming the value of other independent variables remains. This condition applies the opposite if the independent variable decreases with the value of coefficient b then the performance of the retailer distribution will also decrease by the value of b. The t test is done to determine the level of significance of the relationship and or the effect of the independent variable on the dependent variable and to determine whether the working hypothesis is accepted or rejected is to compare tcount with ttable and see the significance value. The upstream linkage hypothesis affects the distribution performance of retailers as shown in Table 11 below:

Table 11. Partial Hypothesis Test 1 Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	Std.Error	Beta		
1 (Constant)	10,942	2,829		3,783	,002
Total_X1	,276	,102	,479	2,196	,023

a. Dependent variable: TOTAL_Y

Based on the above statistical test, the t-count value for the upstream linkage variable (total X_1) is 2.196 while the t-table is at the 5 percent probability level with df = 55-2 = 53 which is 1.67412. These results indicate that the value of t count is greater than the value of t table (2.196> 1.67412) and sig <0.05 (0.023 <0.05) then H_o is rejected. In other words, H_1 is accepted, that is, upstream linkage affects the distribution performance of modern retailers. Then hypothesis testing is conducted whether the downstream linkage affects the distribution performance of the retailer whose results are listed in Table 12 below:

Table 12. Partial Hypothesis Test 2 Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	Std.Error	Beta		
1 (Constant)	12,363	2,359		4,118	,000
Total_X2	,298	,109	,426	2,477	,029

a. Dependent variable: TOTAL_Y

Based on the above statistical test, the t count value for the downstream linkage variable (total X_2) is 2.477 while the t table is at the probability level of 5 percent with df = 55-2 = 53 which is 1.67412. These results indicate that the value of t count is greater than the value of t table (2.477> 1.67412) and sig <0.05 (0.029 <0.05) then H_o is rejected. In other words, H_1 is accepted, downstream linkage affects the distribution performance of modern retailers. To show the percentage variation or fluctuations in the value of the dependent variable can be explained or explained by variations in fluctuations in the value of the independent variables. This is indicated by the results of the analysis of the coefficient of determination in the following Table 13:

Table 13. Determination Coefficients Model Summary

Model	R	R Square	Adj R Square	Std Error of the est
1	,627	,393	,237	2,90536

From the table above it can be seen that the value of R is equal to 0.627 which indicates that the linkage of both upstream (X_1) and downstream (X_2) has a fairly strong relationship of 62.7 percent. While the R square value of 0.393 indicates that the linkage of both upstream (X_1) and downstream (X_2) has an effect of 39.3 percent on the distribution performance of modern retailers, the remaining 60.7 percent is influenced by other factors not addressed in this study.

Conclusion and Recommendation

Researcher states that there is a strong and close relationship between upstream linkage in which there are aspects of quality improvement, problem solving, participation, continuous improvement and downstream linkage which consists of communication aspects. (communication), evaluation (evaluation), anticipation, customer satisfaction on the performance of the distribution of modern retailers that are measured by the level of flexibility and efficiency. Modern retailers should continue to take concrete steps to foster mutually beneficial relationships with suppliers and constantly evaluate the distribution performance of products to reach consumers with efficient time and cost. Subsequent research can be conducted to find out more in detail other factors that affect the distribution performance of modern retailers in Jabodetabek including consumer consumption patterns and consumer behavior in the use of plastic shopping bags that are still used by modern retailers particularly in Jabodetabek region.

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