

The mediation role of supply chain agility on supply chain orientation-supply chain performance link

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ABSTRACT

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This study aims to analyze the supply chain performance mediation on the relationship between supplier flexibility, supply agility, and company performance. The population in this study were 100 broilers in the districts / cities in Banten Province. The data to be used in this study are primary data, through sending questionnaires. Development of theoretical models with five hypotheses processed in the analysis using SmartPLS Software version 3.0.m3. The results showed that supplier flexibility and supply agility have a positive and significant effect on company performance, supplier flexibility and supply agility have a positive and significant effect on supply chain performance and supply chain performance has a positive and significant effect as an intervening variable to the company performance. Supply chain mediation has an important role in integrating production processes from upstream to downstream, including establishing good relations between businesses involved in supply chain management to improve the company's performance.

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1. Introduction

In Indonesia the poultry business (purebred chicken) has become an industry that has complete components from the upstream to downstream sectors where the development of this business makes a real contribution to agricultural development and has strategic value, especially in fulfilling the needs of domestic animal protein and has a role in utilizing job opportunities. The poultry industry in Indonesia has been developing in accordance with the progress of global poultry, which is aimed at achieving an optimal level of business efficiency, however, efforts to develop the poultry industry are still facing global challenges including product competitiveness readiness especially if it is related to the weak performance of the supply of feed raw materials, which reaches 60-70% of the production cost because most of it is still very dependent on imports (Department of Agriculture, 2011). As stated by Ahiale et al. (2019) that the efficiency of poultry farming is very important so that the quality of poultry products can compete in the free market, and efforts that must be made include substitution of feed ingredients, improving product quality, increasing livestock productivity. The problem of food in terms of fulfilling nutrition is still a problem that has not been fully resolved, especially in rural areas, this will be obvious because of the low economic conditions. (Jappelli & Pistaferrri, 2010). The main source of food can come from animal sources, besides that there are also from vegetable sources. Therefore, the availability of food in quantity, quality, time, place and affordable prices is required. The average consumption of animal protein in developed and developing countries is more than 20 kg per capita per year. Singapore and Malaysia itself have an average consumption of 28 kg of meat and 36 kg per capita per year, far from Indonesia, where the consumption of meat is 5.566 kg per capita per year (Rondhi et al., 2020). One of the types of livestock which is the main source of meat production is broilers, where the maintenance and consumption has spread throughout Indonesia. Some of the advantages possessed by broilers as a consumption material

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have led to a high preference of the public for broiler meat (Benalywa et al., 2019). There are two or more actors of socio-economic interaction in the broiler supply chain institutions that include things that are agreed on and are followed by the results of the analysis of the interactions that occur vertically. (Ronaldo, 2020). The vertical interactions within the institution include marketing, processing, product distribution, and actors in both conventional and modern markets. All actors involved in the supply chain process, either directly or indirectly, from producers to customers (Ahmad Shabudin Ariffin, 2014). The problem is that there is economic dualism in the development of the national breed chicken farming industry, namely the growth of large companies that integrate vertically. On the other hand, small-scale farming businesses that initially acted as jobs and sources of income, existence and role are decreasing. The weak competitiveness of small-scale livestock businesses is partly due to low business efficiency and weak application of biosecurity. In fact, consumer demands for quality production are getting higher and global market competition in the future is increasingly open. Consolidation of the breed chicken industry by paying attention to the existence of small-scale businesses is expected to increase competition while maintaining the existence of small businesses. One form of consolidation is to improve the supply chain of the breed chicken industry. Based on that, economic information related to the performance of supply chain management of various breed chicken business patterns involving small-scale breeders is required.

Banten, one of the provinces in Indonesia, is a place for broiler chicken development which has quite potential in fulfilling the need for animal protein and increasing people's income. The population of broilers in Banten based on 2019 BPS data reached 201,162,025 birds and 223 250.35 tons. The high demand is due to the increasing demand of the population due to the increasing population and public awareness of the importance of nutritional value, especially animal protein. For this reason, the development of broiler-based farming is needed at this time. There are still differences in research results about supplier flexibility to company performance (De Angelis et al., 2018; Hong et al., 2019; Chu et al., 2012), and researchers found that Supplier flexibility has a positive and significant effect on company performance while Gligor and Holcomb (2012) argued that supplier flexibility had no effect directly on company performance. Likewise, there are still differences in research results about supply agility to company performance (Swafford et al., 2008; Nagham, 2012; Degroote & Marx, 2013), Supply agility improves company performance, significantly. Meanwhile, Sabir and Irfan (2014) and Al Humdan et al. (2020) declare that supply agility has no positive effect.

2. Literature Review

2.1 Supply Chain Performance

Performance is all the process of transformation flow from upstream to downstream, i.e., from suppliers to customers as well as vice versa and information flow (Mukhsin, 2020). The success of supply chain performance is related to the high quality value of strong relationships between members of the supplier network (McKone-Sweet & Lee, 2009). Pujawan defines Supply chain performance as a performance measurement system with a measuring tool used to observe supply chain performance jointly between an organization and another (Yousuf et al., 2020). Definition of Supply chain performance refers to the results of the supply chain's ability to meet end consumer desires and convey consumer desires efficiently (Hong et al., 2019).

2.2 Supplier Flexibility

Supplier flexibility refers to a supplier's ability to manage production resources and uncertainty to increase flexibility in meeting buyer demands (Chu et al., 2012). Supplier flexibility has the meaning of responsive capabilities using capabilities from suppliers (De Angelis et al., 2018). Jalight suppliers need to always be managed and improved, including managing the supply chain to maintain inventories to ensure the smooth operation of the process. Flexibility in network members can be done. the company to achieve performance in several ways at once, for example speed or response and cost. This performance can be achieved, for example, using new science and technology and reading market changes to create and deliver value to consumers (De Angelis et al., 2018).

2.3 Supply Agility

Supply agility is an operational strategy that focuses on driving speed and flexibility in the supply chain (Balaji et al., 2015). Supply agility is the ability of a supply chain to respond to market changes to maintain competitiveness (Dhaigude & Kapoor, 2017). Supply agility is needed to anticipate changes in both demand and supply, companies must remain competitive and have a shorter life cycle so that they are able to continue to develop themselves and create new products and services (Dubey et al., 2018).

2.3 Company Performance

According to Selvam et al. (2016), whether an organization is effective or not running its business can be shown from the company's performance and it is a key measure in determining the value of success, or possibility to survive in an organization. Company performance is something that the company produces in a certain period by referring to predetermined standards. Company performance refers to how much the company is oriented towards the market and profit

goals (Palandeng et al., 2018). Company performance is an indicator that states the extent to which a company does business, and is an important measurement used to estimate the success or likelihood of a company's survival (Yousuf et al., 2019).

2.4. Research Model

The research model that will be developed is as in the picture below:

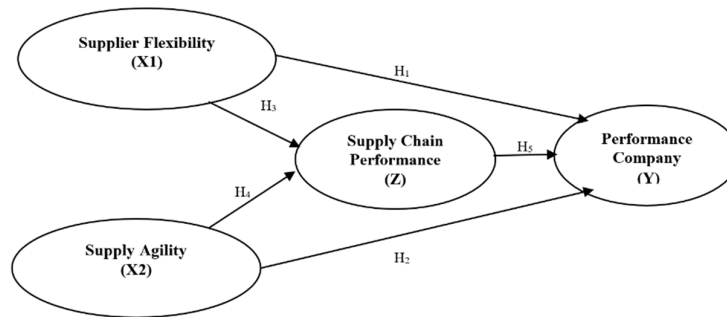


Fig. 1. Research Model

3. Methodology

This study aims to illustrate the relationship between supplier flexibility variables, supply agility, company performance, and supply chain performance. The population in this study is breeding chicken businesses scattered in districts and cities in Banten Province. This study sampled as many as 100 respondents. The most questionnaires are in Tangerang Regency with a total of 44, amounting to 44%. In Serang District with a total 21 questionnaires, by 21%, Pandeglang District as many as 14 questionnaires, by 14%, Serang city as many as 11 questionnaires by 11%, Lebak District as many as 10 questionnaires, by 10%. out of a total of 100 questionnaires distributed. Collecting data using the Structural Equation Model (SEM) approach with SmartPLS software. PLS is a variance-based structural equation model (SEM) and an alternative approach that shifts from a covariance-based to variance-based SEM approach. (UA Muazu, 2019).

3.1 Variable Measurement

Indicator supplier flexibility adopted and adapted from some studies (Palandeng et al., 2018; De Angelis et al., 2018), consists of four indicators, namely coordination with multiple suppliers (Supflex1), total supplier capacity (Supflex2), ease of running a scheduling system (Supflex3), flexible quantity shipments (Supflex4). Supply agility indicators were adopted and adapted from other studies (Gligor & Holcomb, 2012; Tan et al., 2017) and consists of four indicators, namely cycle time (SupAg1), lead time (SupAg2), customer service level (SupAg3), market responsiveness (SupAg4). Supply chain performance indicators were adopted and adapted from research Panayides and Venus Lun (2009) and Mukhsin (2020), consists of four indicators, namely speed (SCP1), reliability (SCP2), cost (SCP3), assets (SCP4). Company performance indicators were adopted and adapted from other studies (Shao, 2019; Jandaghi et al., 2015; MH Muazu & Tasmin, 2019; Suryanto & Mukhsin, 2020) and consists of six indicators, namely percentage sales revenue (CP1), production costs (CP2), company productivity (CP3), market share (CP4), product quality (CP5), 6. Consumer satisfaction (CP6).

4. Result and Discussion

4.1 Results

Discriminant validity is performed to ensure that each concept of each latent variable is different from other variables. The model has a good discriminant validity if each loading value of each indicator of a latent variable has the largest loading value with another loading value against another latent variable.

Table 1
Discriminant validity

Construct	Original Sample	Sample Mean	Standard Deviation	T-Statistic	P-Values
Supply Agility	0.489	0.500	0.041	11.916	0.000
Company Performance	0.704	0.706	0.045	15.543	0.000
Supplier Flexibility	0.697	0.697	0.049	14.286	0.000
Supply Chain Performance	0.601	0.602	0.052	11.629	0.000

4.1.2 Reliability test

Data reliability testing in this study using SmartPLS software with Composite reliability test criteria. A data is said to be reliable if composite reliability is greater than 0.7.

Table 2
Composite Reliability

Construct	Original Sample	Sample Mean	Standard Deviation	T-Statistic	P-Values
Supply Agility	0.868	0.682	0.061	11.342	0.000
Company Performance	0.904	0.904	0.020	46.201	0.000
Supplier Flexibility	0.873	0.871	0.027	32.419	0.000
Supply Chain Performance	0.819	0.817	0.033	24.872	0.000

From Table 2, internal consistency of exogen variables (Supplier flexibility, and supply network flexibility), and endogenous variables (Company performance) with intervening variables (Supply chain performance) had good reliability.

4.1.3 Data Analysis

Assess the Outer model (Measurement Model)

Convergent validity of the measurement model with reflexive indicators is assessed based on the correlation between the item score / component score estimated by the SmartPLS software. Individual reflexive measures are said to be high if they correlate more than 0.7 with the construct (latent variable) being measured. However, according to Lin (2017) For research in the early stages of development, a loading value measurement scale of 0.5 to 0.6 is considered sufficient.

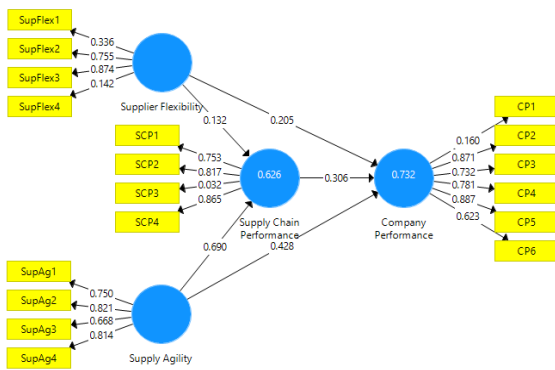


Fig. 2. Measurement output model

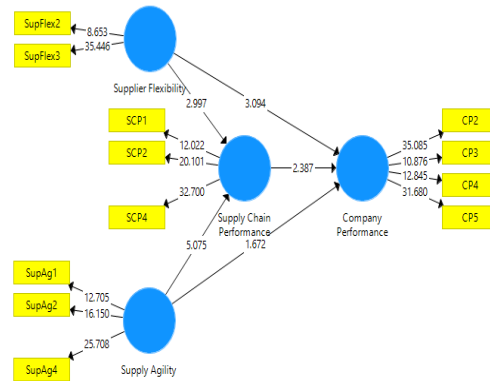


Fig. 3. Second model measurement output

In the following, the overall correlation of each variable in Fig. 2 is a picture that states the influence of exogen variables (supplier flexibility, supply agility), intervening variables (supply chain performance) and endogenous variables (company performance).

4.1.4 Outer Model Variable Supplier Flexibility

The variable, supplier flexibility, described by 4 statement indicators consisting of SupFlex1 through SupFlex4 is shown in Fig. 2. The indicator is considered reliable if it has a correlation value above 0.7. However, in the development stage the correlation 0.5 is still acceptable (Lin, 2017). The results of processing using SmartPLS can be seen in Fig. 2, where the value of the outer loadings of the variable indicator supplier flexibility there is a value less than 0.7, namely SupFlex1 and SupFlex4, As for the SupFlex2, the SupFlex3 is larger than the t-table with a significance level of =1.96 and n sample=100, so variable supplier flexibility is eligible for model adequacy

4.1.5 Outer Model Variable Supply Agility

The supply agility variable is explained by 4 indicators consisting of SupAg1 to SupAg4 shown in Figure 2. The test for outer loading aims to see the correlation between the item score or indicator and the construct score. An indicator is considered reliable if it has a correlation value above 0.7. However, in the development stage the correlation 0.5 is still acceptable (Lin, 2017).The results of processing using SmartPLS can be seen in Fig. 2, where the outer loadings value of the indicator, there are 4 indicators of supply agility variables, there is one indicator, namely SupAg3, whose value is less than 0.7, while the three indicators SupAg1, SupAg2 and SupAg4 are larger than the t-table, variable supply agility indicates the adequacy of the model.

4.1.6 Outer Model Variable Supply Chain Performance

The supply chain performance variable is described by 4 indicators consisting of SCP1 to SCP4 shown in Fig. 2. The test on outer loading aims to see the correlation between the item score or indicator and the construct score. An indicator is considered reliable if it has a correlation value above 0.7. However, in the development stage the correlation 0.5 is still acceptable(Lin, 2017). The results of processing using SmartPLS can be seen in Fig. 2, where the outer loadings value of the indicator, there are 4 indicators of supply chain performance variables, there is one indicator, namely SCP3, which is less than 0.7, while the three indicators show the value of the outer model or the correlation with the overall variable has met Convergent validity. It

can also be seen in Figure 2 that the t-statistical value of indicators SCP1, SCP2 and SCP4 is greater than the t-table (with sig = 1.96 and n samples = 100). Supply chain performance variable indicates discriminant validity

4.1.7 Outer Model Variable Company Performance

The company performance variable is explained by 6 statement indicators consisting of CP1 to CP6 shown in Fig. 2. The test on outer loading aims to see the correlation between the item score or indicator with the construct score. An indicator is considered reliable if it has a correlation value above 0.7. However, in the development stage the correlation 0.5 is still acceptable (Lin, 2017). The results of processing using SmartPLS can be seen in Fig. 2, where the outer loadings value of the indicator, there are 6 indicators of company performance variables, there are two indicators, namely CP1 and CP6 whose values are less than 0.7, while the four indicators show the value of the outer model or the correlation with the overall variable has met Convergent validity. It can also be seen in Figure 2 that the t-statistic value of the CP2, CP3, CP4 and CP5 indicators is greater than the t-table (with sig = 1.96 and n samples = 100). Thus, the company performance variable has qualified from the adequacy of the model.

4.1.8 Hypothesis Testing Through The Inner Model

Inner model according to Lin (2017) is a description of the relationship between latent variables based on the substantive theory. Inner model which is sometimes called the inner relation, structural model and substantive theory structural model tests are performed to see the interrelationships between construction, significance values and the R-square of the research model. The inner model in this study is as follows:

Table 3
Result for Inner Weight

Construct	Original Sample	Sample Mean	Standard Deviation	T-Statistic	P-Values	Result
Supplier Flexibility → Company Performance	0.274	0.275	0.077	3.565	0.000	Accepted
Supplier Flexibility → Supply Chain Performance	0.295	0.300	0.109	2.709	0.007	Accepted
Supply Agility → Company Performance	0.284	0.286	0.136	2.084	0.038	Accepted
Supply Agility → Supply Chain Performance	0.529	0.533	0.109	4.876	0.000	Accepted
Supply Chain Performance → Company Performance	0.368	0.371	0.135	2.724	0.007	Accepted

In assessing the model with PLS, it starts by looking at the R-Square for each dependent latent variable shown in Table 4.

Table 4
R-Square

Construct	Original Sample	Sample Mean	Standard Deviation	T-Statistic	P-Values
Company Performance	0.654	0.683	0.064	10.163	0.000
Supply Chain Performance	0.553	0.578	0.075	7.338	0.000

Table 4 shows that the company's performance variable has an R-square value of 0.654 which means 64.5% variance supplier flexibility, supply agility, and supply chain performance can be explained by the company's performance variables while the rest is explained by other variables outside the research model. Supply chain performance Variable has an R-square value of 0.553 which means 55.3% supplier flexibility, supply agility can be explained by the variable supply chain performance while the rest is explained by other variables outside the research model.

4.2 Discussion

4.2.1 Supplier flexibility has a positive effect on company performance

The results of hypothesis testing on the direction of the influence of supplier flexibility on company performance are 0.274 as shown by the path coefficient. Judging from the t-statistic value of 3.565 is greater than the t-table of 1.96 and the probability value of 0.000 sig is smaller than the probability value of 0.05, means significant positive. This means that there is a positive and significant influence on the supplier flexibility variable on company performance. These results, in accordance with the results of the research conducted, conclude that supplier flexibility is needed to help companies improve their performance, maintain resources, and manage markets, flexibility in the supply chain can achieve company performance. Dynamic capabilities are developed to adapt to changing environmental conditions and maintain a reasonable level of performance (Dhaigude & Kapoor, 2017). concluded that, supplying flexibility helps companies gain a competitive advantage by switching to one of the alternative configurations to help companies maintain their performance. Supplier flexibility as a dynamic capability that can maintain company performance, and supplier flexibility has a positive influence on the operational and relational performance of a company (Gligor & Holcomb, 2012).

4.2.2 Supply agility positive effect on company performance

The results of hypothesis testing on the direction of the influence of supply agility on company performance are 0.284 as shown by the path coefficient. Judging from the t-statistic value of 2.084 is greater than the t-table of 1.96 and the probability

value of 0.038 sig is smaller than the probability value of 0.05, means significant positive. This means that there is a positive and significant effect of the supply agility variable on company performance. These results are consistent with the results of the research conducted. These results are consistent with the results of the research by Swafford et al. (2008), supply agility has a positive influence on company performance. Organizations can achieve a higher level of agility in the supply chain and ultimately have higher performance. According to Şahin et al. (2017), supply agility has a positive and significant effect on company performance. Research shows a direct relationship between supply agility and firm performance (Gligor & Holcomb, 2012; Yusuf et al., 2014).

4.2.3 Supplier flexibility has a positive effect on supply chain performance

The results of hypothesis testing on the direction of the influence of supplier flexibility on supply chain performance are 0.295 as shown by the path coefficient. Judging from the t-statistic value of 2.709 is greater than the t-table of 1.96 and the probability value of sig 0.007 is smaller than the probability value of 0.05, means significant positive. These results are in accordance with the research results (De Angelis et al., 2018), supplier flexibility is one of the variables that affect supply chain performance in the face of a very fast changing environment. Flexible suppliers have the advantage of easy coordination in conveying ideas, product designs, and collaboration well and profitably. In research by Hong et al. (2019), flexibility suppliers play a very important role in this serious environmental uncertainty. The producer teams with suppliers to build long-term, cooperative relationships to build a sustainable and competitive supply chain (Chu et al., 2012).

4.2.4 Supply agility positive effect on supply chain performance

The results of hypothesis testing on the direction of the influence of supply agility on company performance are 0.529 as shown by the path coefficient. Judging from the t-statistic value of 4.876 is greater than the t-table of 1.96 and the probability value of sig 0.000 is smaller than the probability value of 0.05, means significant positive. This means that there is a positive and significant effect of the supply agility variable on company performance. These results are in accordance with the results of the research conducted (Bel, 2006) shows that supply agility has a positive effect on supply chain performance directly with several factors that influence it. According to Tan et al., (2017), there is a positive effect of supply agility on supply chain performance. Supply agility is a dynamic capability that stems from a firm's ability to reconfigure company-level and supply chain resources (Gligor & Holcomb, 2012).

4.2.5 Supply chain performance positive effect on company performance

The results of hypothesis testing on the direction of the influence of supply chain performance on company performance are 0.368 as indicated by the path coefficient. Judging from the t-statistic value of 2,724 is greater than the t-table of 1.96 and the probability value of sig 0.007 is smaller than the probability value of 0.05, means significant positive. This means that there is a positive and significant influence of the supply chain performance variable on company performance. These results are in accordance with the results of the research conducted (Shufang et al., 2016; Mayaka, 2011; Mensah et al., 2014).

4.2.6 Influence Analysis

To see if the supply chain performance gives the influence of mediation to the company performance, then the analysis of influence / mediation is carried out. The indirect effect testing can be seen in Table 5 as follows,

Table 5
Direct, Indirect Effects

Construct	Original Sample	Sample Mean	Standard Deviation	T-Statistic	P-Values
Supply Agility → Company Performance	0.109	0.111	0.059	1.831	0.068
Supplier Flexibility → Company Performance	0.195	0.197	0.085	2.299	0.022

Table 5 above, shows that, supplier flexibility to company performance through supply chain performance has a coefficient of 0.109 which means supply chain performance can support supplier flexibility relationship to company performance by 10.09%. The t-statistic (2.299) < t table (1.960) and P-value (0.022) > sig. (0.05) shows that supply chain performance is proven to be intervening between supplier flexibility to company performance. Supply agility to company performance through supply chain performance has coefficient 0.195 which means supply chain performance can support supply agility relationship to company performance by 19.5%. The t-statistic (1.831) > t table (1.74) and P-value (0.068) < sig. (0.10) this shows that supply chain performance proved able to be intervening between supply agility to company performance.

5. Conclusion

The better supplier flexibility among supply chain members such as coordination between partners, total capacity of suppliers, ease of running the system, scheduling and delivery as well as flexible quantity can encourage on the better company performance, good supplier flexibility can encourage on the better supply chain performance, Variable supplier flexibility also has a significant influence on company performance through supply chain performance. Indirect effect of variable supplier flexibility through supply chain performance is greater than the direct effect in improving company performance.

The better supply agility among supply chain members is cycle time, lead time, customer service level, market responsiveness can push on the better company performance, good supply agility can encourage on the better supply chain performance, Variable supply agility also has a significant influence on company performance through supply chain performance. Indirect effect of variable supply agility through supply chain performance is greater than the direct effect in improving company performance. The company's performance approach through supply chain performance can be done while maintaining speed, and cost efficiency, in the production process, the company's performance through the performance of the supply chain information flow can move effectively, the movement of product flows from upstream to downstream will be efficient in generating maximum satisfaction for consumers. Through the performance of the supply chain there are opportunities to develop businesses that are mutually reinforcing in the sense that both livestock companies and farmers must have commitments, moral responsibilities and business ethics, so as to strengthen their respective positions in improving the competitiveness of their businesses. This will maintain the stability of the growth of breed chicken production while providing job opportunities and business opportunities widely.

6. Implication and limitation of research

The results of this study may have implications for the role of management which is very important to maintain flexibility supplier, supply agility and supply chain performance in company performance. Enhancement supply chain performance will be characterized by the more flexible, faster, and more reliable the company in meeting customer demands. The results of this study cannot always be applied to the condition of businesses outside this object, because this study is based on data on broiler chicken businesses in Banten Province. In this study, the authors only revealed two exogenous variables namely supplier flexibility, and supply agility to supply chain performance as intervening variables and company performance as endogenous variables, may be clearer and more accurate when added other variables.

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