COMPETITIVE ADVANTAGES STRATEGY OF FERTILIZER INDUSTRY IN JAVA, INDONESIA

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ABSTRACT

Fertilizer Industry in Indonesia is important as it serves Agriculture sectors of the country. While some major government-owned companies had been taken market advantages for some decades through natural monopoly, the recent regulation on the fertilizer market allows other sellers enter into the industry. Therefore, the state-owned companies should re-identify their strengths as well as weaknesses to ensure their ability to stay in the market.

This paper attempts to identify some determinant factors of competitive advantage strategy of the fertilizer industry, by using the case of a state-owned company which distributes most of the fertilizer product in Java, Indonesia. Using a Partial Least Square of the Structural Equation Modelling and 115 samples collected from Fertilizer Distributors in Java Indonesia, this paper identify the determinant factors of market attractiveness, customer's business requirements and company reputation towards competitive advantage strategy of the industry and its impact to the customer share.

The result reveals that customer's business requirement has the strongest contributed factors to the strategic competitive advantages of the fertilizer industry, followed by company reputation and market attractiveness. Following the increased competition in fertilizer markets, the result suggests fertilizer company should prioritize in fulfilling customer expectation among other determinant factors in order to maintain its customer share.

Keywords: Competitive Advantages Strategy, Customer Share, Market Attractiveness, Company Reputation, Business Customer's Request.

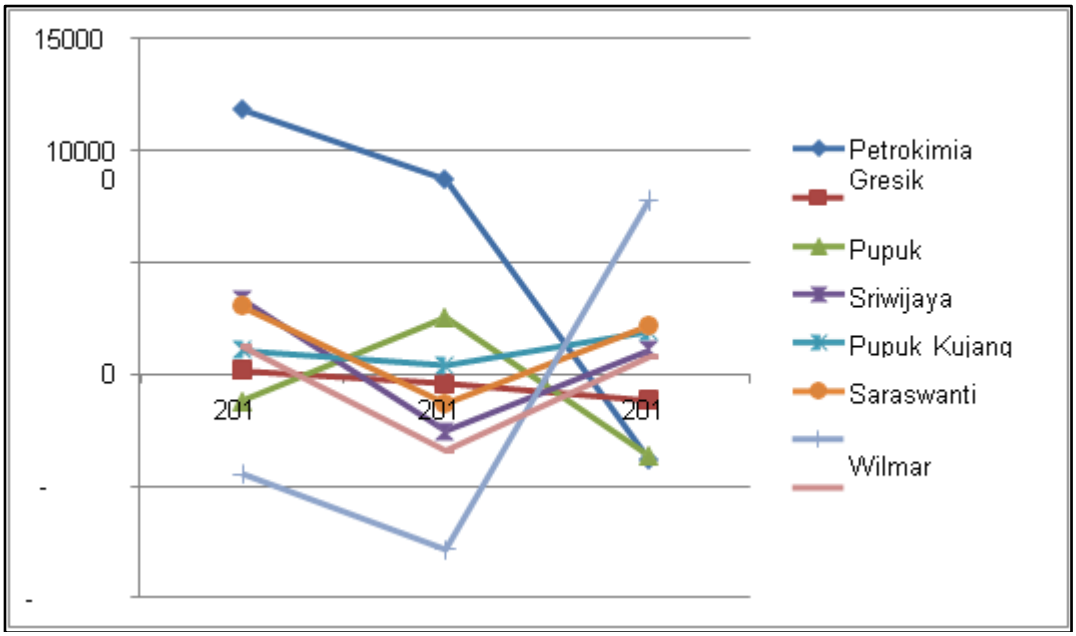
INTRODUCTION

Fertilizer Industry in Indonesia has an important role in supporting economic development of Indonesia. It supplies mainly agricultural sectors which have been contributing 13% to Indonesian Economy and accommodates over a quarter (26%) the workforce of the people in Indonesia. Following the expansion needs of the growth in agricultural sectors, it is expected that the market for fertilizer will be increased by 27% between 2020 and 2024. For a particular NPK fertilizer, which is mainly consists of Nitrogen (N), Phosphorus (P) and Pottasium Chloride (K), the demand is expected to increase by 17% between 2020 and 2024 (Germany Trade and Investment, n.d.).

Before year 1999, Indonesia's fertilizer production is dominated by five state-owned companies (PT Pupuk Sriwidjaya Palembang, PT Petrokimia Gresik, PT Pupuk Kalimantan Timur, PT Pupuk Iskadar Muda, and PT Pupuk Kujang). The companies had been utilized subsidies from the Indonesian government since 1971 and enjoyed their revenues for several decades. Following the Indonesian Law No 5 Year 1999 about Anti-Monopoly, the companies cannot maintain its

domination in supplying fertilizer in Indonesia. Since 2012, PT Pupuk Sriwidjaya became the PT Pupuk Indonesia Holding Company (PIHC) and merged with the other state-owned companies, with a total of 10 companies joined the holding. Since then, PIHC has been supplied fertilizer almost 98% (2018) and produced almost 47% of the NPK fertilizer in Indonesia (2018).

Although PIHC has been dominating the fertilizer production in Indonesia, however, the implementation of anti-monopoly law allows other producers entering the fertilizer industry in Indonesia. This would decline the market shares of PIHC in the long-run. Although PIHC is still dominating the fertilizer industry, however, the market growth has been dynamically change since it allows private and foreign fertilizer companies to enter the market. In 2016, Wilmar Group, a private company in Indonesia, was ranked as the first in market growth for NPK product, measured by its trading volumes, followed by other private companies, i.e. PT Agrifert Malaysia, PT Saraswanti, etc. as depicted in the following Figure 1.



Source: Putra (2018)

FIGURE 1
TRADING VOLUMES OF NPK FERTILIZER IN INDONESIA 2014-2016

Although still dominating in total of the trading volumes, each of the state-owned companies, i.e. Pupuk Sriwidjaya, Pupuk Kujang, Petrokimia Gresik, and Pupuk Kaltim was behind some private companies in terms of its market growth. This fact challenges the competitiveness of the stated-owned companies in the fertilizer industry. In this context, there is a need by the stated-owned companies to identify the dynamics in its customer shares and its determinant factors to maintain its competitiveness in the industry. The company needs to identify its competitive advantage strategy and its determinant factors to maintain its customer share. In this context, the work by Weerawardena (2003) has highlighted the importance of marketing capabilities to sustain company's competitiveness. Therefore, several factors related to marketing capabilities, i.e. market attractiveness, company reputation, as well as market positioning through its customer share, need to be addressed.

For instance, there are several factors determine Customer Share. According to Kenney & Khanfar (2011), costumer shares were influenced by market attractiveness while Du et al. (2007) concluded that Customer Share was determined by Customer Business Requirements. In addition to that, the study by Gleißner et al. (2013) and Jommy & Minghetti (2015) found there is a linear relationship between market attractiveness and customer business requirements. Furthermore, the study by Hwang (2011) and Teo & Pian (2003) concluded that customer share was influenced by corporate reputation and competitive advantage strategy consecutively. Nevertheless, the study by Clow et al. (2011) found that market attractiveness determines corporate reputation while Reidenbach & Goeke (2007) concluded that customer business requirement influences competitive advantage strategy.

Other researches by Wang et al. (2012) found a linear relationship between corporate reputation and competitive advantage strategy while the study by Aryska (2017) concluded that corporate reputation was influenced by customer's business requirement. Finally, a study by Palapothu & Evans (2013) also found that competitive advantage strategy was determined by market attractiveness.

Those previous studies bring into a research framework which is constructed in this paper as seen in the following Figure 2. Competitive Advantage Strategy (CAS) is determined by three exogenous variables: 1) market attractiveness; 2) Customer Request; 3) Company Reputation. CAS itself influences company in maintaining its Customer Share.

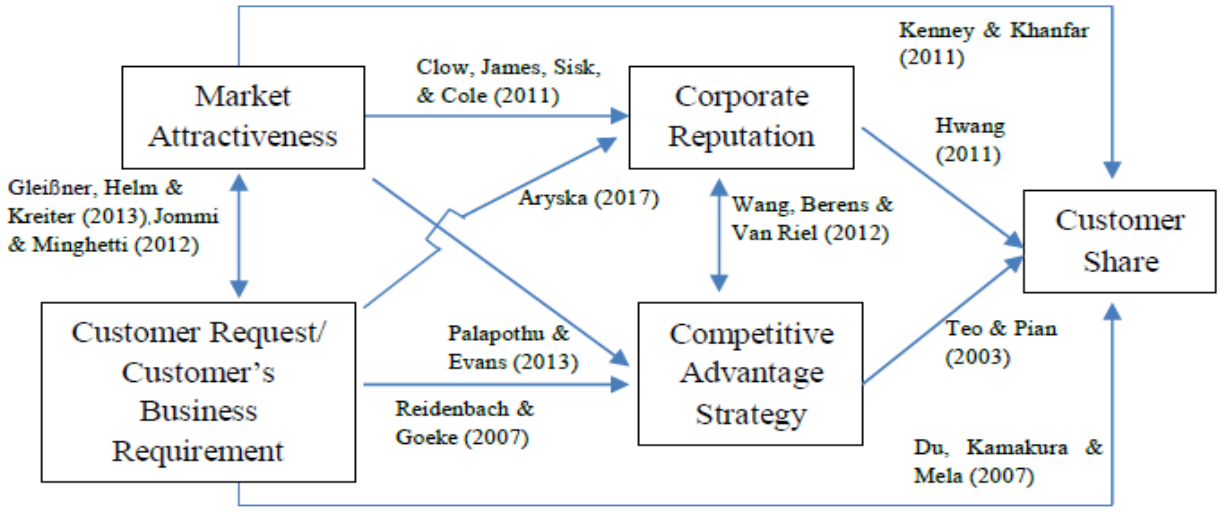


FIGURE 2
RESEARCH FRAMEWORK: CUSTOMER SHARE & ITS DETERMINANT FACTORS

This paper attempts to identify some determinant factors of competitive advantage strategy (CAS) of the fertilizer industry, by using a case of a state-owned company which distributes most of the fertilizer product in Java, Indonesia. In detail, this paper would like to identify the determinant factors of market attractiveness, customer's business requirements and company reputation towards competitive advantage strategy of the fertilizer industry and its impact to customer share. The identification of competitive advantage strategy is needed for a fertilizer company which faces a transformation from non-competitive market to competitive market. The implementation of Indonesian Law no 5 Year 1999 brings significant impact to this change of market structure in fertilizer industry in Indonesia.

METHODOLOGY

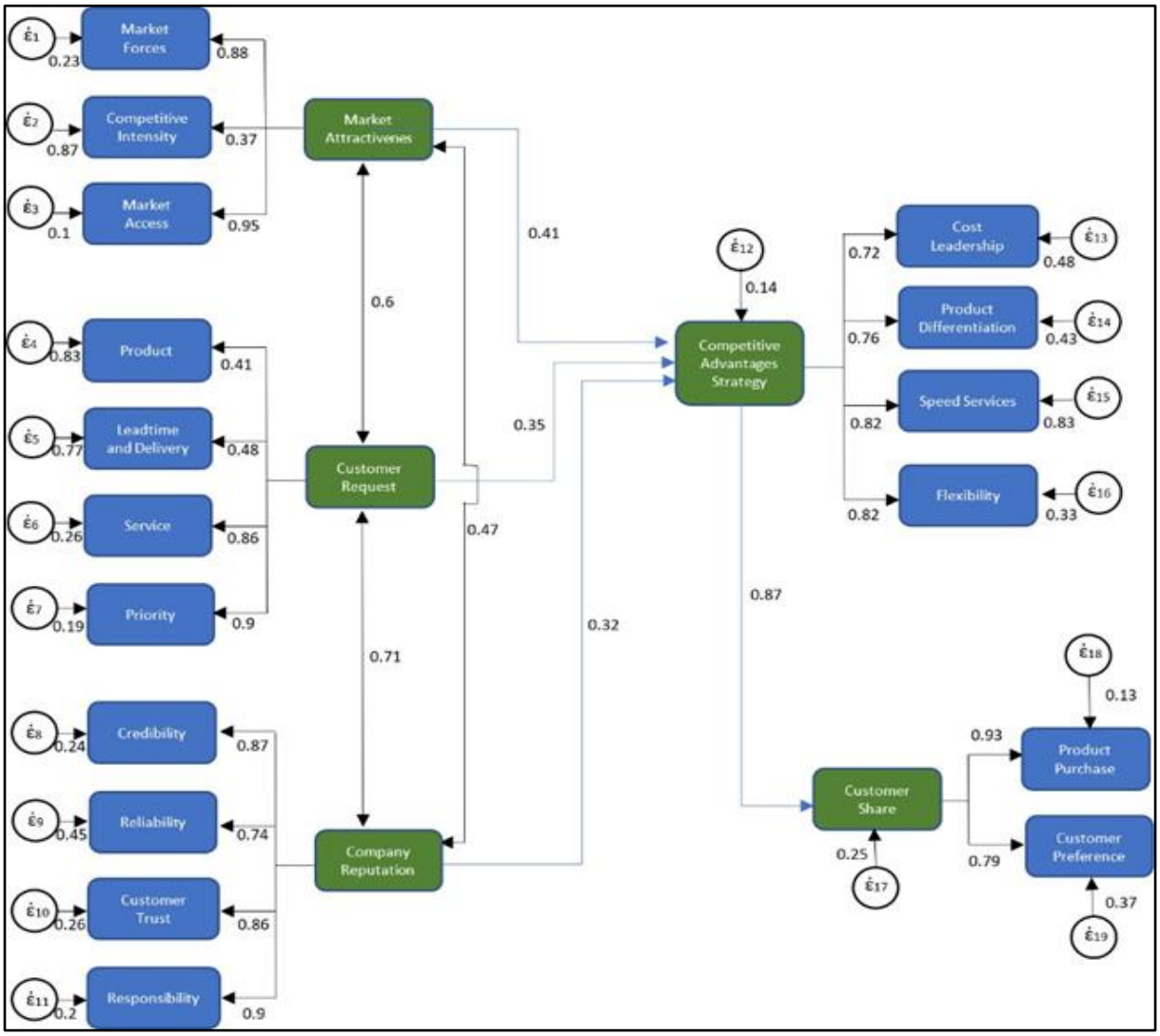
Our research focuses on the competitive advantage strategy of a state-owned fertilizer company which has been distributing fertilizer to various sectors in Indonesia. We use a sample from one of the largest NPK fertilizer producers in Java, Indonesia: PT Petrokimia Gresik (PTPG). We collected samples of 115 distributors which were supplied by PTPG, using cluster random sampling, representing samples from all geographic areas in Java Island where the distributors are operating its business. A constructed research questionnaire was constructed to estimate the relationships among variables as constructed in Figure 2, mainly to identify the determinant factors toward competitive advantage strategy and its impact to customer share of a stated-own fertilizer company in Java, Indonesia. The questionnaire consists of several questions for each of the variables: market attractiveness (13 questions); customer request or customer's business requirements (17 questions); corporate reputation (9 questions); strategic competitive advantages (7 questions); and customer share (2 questions). The data was collected from the fertilizer distributors in 18 municipalities in Java Island, Indonesia, between September to December 2019. The instrument has been tested for its validity and reliability with 30 number of samples in its pilot study prior to the data collection. All items of the questionnaires were valid with the Pearson's correlation were above 0.30 according to Sugiyono (2016), except two questions of the market attractiveness variable: number of competitor (question 5-Pearson's correlation of 0.249) and competitor price (question 6 – Pearson's correlation of 0.0117). Those questions were skipped in the further analysis of this paper. Using both Cronbach Alpha's and Guttman Split-Half Coefficient approaches of reliability tests, the instrument was tested as a reliable instrument as the Cronbach's Alpha was 0.897 and Guttman Split-Half Coefficient was 0.877. Following the criteria by Sugiyono (2016) the instrument was reliable as both coefficients were above 0.7.

To answer the relationship among variables, particularly in answering the determinant factors towards competitive advantage strategy of the fertilizer company, we use a Partial Least Square (PLS) based of Structural Equation Modelling. The use of PLS is necessary for a structural equation modelling with small number of samples, according to Hair et al. (2014). We use both STATA/MP v.13 and WarpPLS v.5.0 to estimate the relationship among variables.

RESULTS

To estimate the relationship among variables, first we estimate the Structural Equation Modelling, using confirmatory factor analysis (CFA). The following Figure 3 represents the estimation results of the structural equation model (SEM) of the research model, using the samples which we used in this paper. The following number in parentheses represents contribution level among variables, as shown under the lines in Figure 3. Based on the estimation results, we can conclude that Competitive Advantage Strategy (CAS) of a fertilizer company was mainly contributed by four factors: cost leadership (0.72), product differentiation (0.76), speed of services (0.82) and business flexibility (0.82). SCA is determined by Market Attractiveness (0.41), Customer Request (0.38) and Company Reputation (0.32). In this context, Market Attractiveness is contributed by Market Forces (0.88), Competitive Intensity (0.37) and Market Access (0.95), while Customer Request or Customer's Business Requirement is contributed by Product (0.41), Leadtime & Delivery (0.48), Service (0.86), and Priority (0.90). Nevertheless, Company Reputation is contributed by several factors, i.e. Credibility of the company (0.87), Reliability (0.74), Customer Trust (0.86), and Company's responsibility towards its customer (0.90). Finally, the Competitive Advantage Strategy affects Customer Share by 0.87, assuming other factors remain constant. The

customer share of a fertilizer company itself is contributed mainly by two factors: product purchase (0.93) and customer preference (0.73).



Source: Primary Data Collection by Authors, (2019).
Note: all coefficients are significant at α = 5%

FIGURE 3
STRUCTURAL EQUATION MODEL OF THE COMPETITIVE ADVANTAGE STRATEGY OF A FERTILIZER COMPANY IN JAVA, INDONESIA

Although the estimated coefficients in the SEM are statistically significant at α=5 %, however, it has a problem in terms its goodness of fit. The following Table 1 depicts the goodness of fit of the SEM. Using the *chi-square (chi^2) fit indices* or CFI, where the value of Chi^2 ms (109) is 291.046 and the value of *p>chi^2* is 0.000, the model can be concluded not fit according to Latan (2013). Similarly, with the value of *chi^2 bs* (136) at 1566.618 and *p > chi^2* is also 0.000. The problem of goodness of fit usually deals with small sample number. Thus, we also evaluated other measurement of its goodness of fit, using root mean square of approximation (rmsea), Akaike's Information Criterion (AIC), Bayesian Information Criterion (BIC), Standardized root mean

squared residual (srmsr), including Coefficient of Determination (CD).

These other evaluation approaches are necessary to avoid the problem of type-II error where model can be concluded as not fit (Latan, 2013). With the rmsea at 0.121 and still below 1.00, we concluded that the model is fit using the criteria of Schumacker & Lomax (2010) and Williams (2011). With the value of AIC at 2450.428 and the value of BIC at 2617.869, both values are above its saturated score, therefore we concluded that the model is not fit using the criteria. By using Coefficient of Determination, the model can be concluded as fit as it has CD value at 0.99 or closes to 1.

Table 1
GOODNESS OF FIT OF THE STRUCTURAL EQUATION MODEL

Fit Statistic	Value	Description
Chi^2 ms (109)	291.046	Model vs Saturated
$p > chi^2$	0.0000	
Chi^2 bs (136)	1566.618	Baseline vs Saturated
$p > Chi^2$	0.0000	
Population error		
RMSEA	0.121	Root mean squared error of Approximation
90% CI, lower bound	0.104	
upper bound	0.137	
pclose	0.000	Probability RMSEA <= 0.05
Information Criteria		
AIC	2450.428	Akaike's information criterion
BIC	2617.869	Bayesian information criterion
Baseline Comparison		
CFI	0.873	Comparative Fit-Index
TLI	0.841	Tucker-Lewis Index
Size of Residuals	0.075	Standardized root mean squared residual
CD	0.999	Coefficient of Determination

Source: Primary Data Collection by Authors (2019)

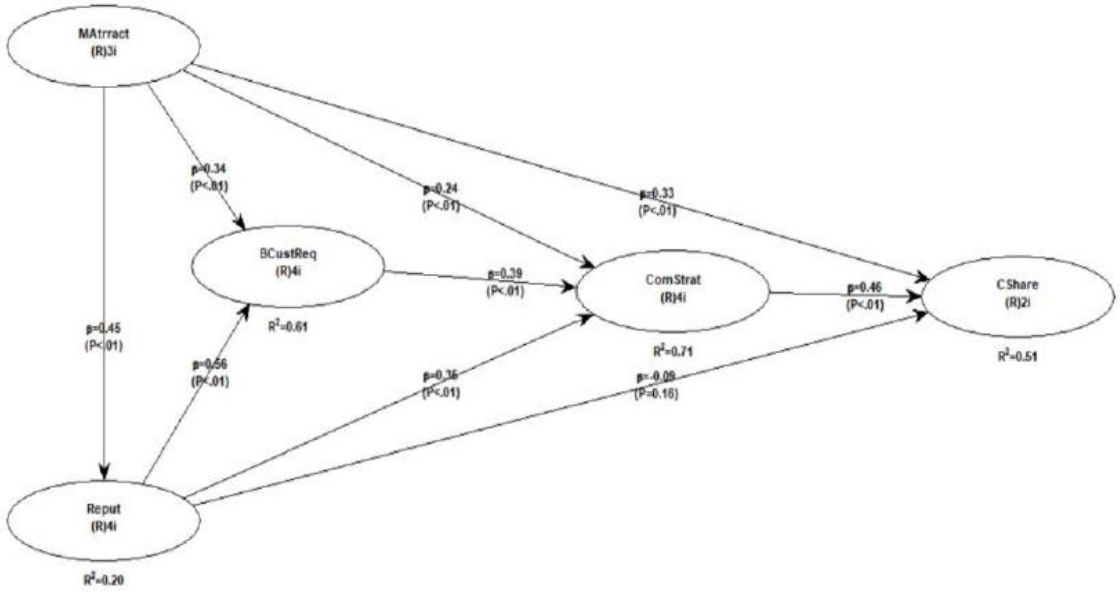
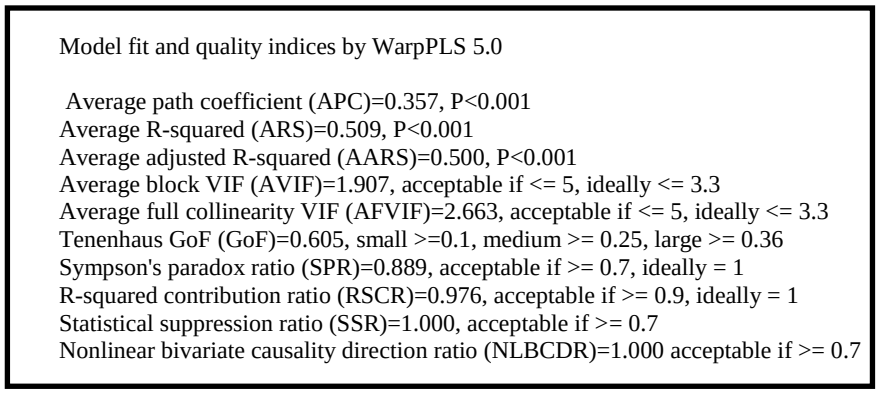


FIGURE 4
ESTIMATION RESULT USING PARTIAL LEAST SQUARE

Since there are some different results in terms its goodness of fit, Hair et al. (2014) indicated that the small number of samples might be the cause of this problem. Following the suggestion by Kock & Lynn (2012) and Kock (2015) for SEM with small number of samples, we re-estimate the model using Partial Least Square-based of the SEM. The following Figure 4 and Figure 5 reveal the results from the Partial Least Square estimation and the goodness of fit.



Source: Primary Data Collection by Authors (2019)

FIGURE 5
GOODNESS OF FIT FOR THE PARTIAL LEAST-SQUARE MODEL

The model can be concluded as fit as passed all the quality indices as shown in Figure 5. The model has a power to be predicted as the average path coefficients (APC) is different from zero (Kock, 2015 & Garcia-Alcaraz et al., 2014). The model is also fit, as the p-value of the average path coefficient (APC), average r-square (ARS) and average adjusted r-squared (AARS) below 0.001. Similarly with other measurements of the goodness of fit as depicts in Figure 5, the estimation of the partial-least square model has passed the minimum criteria. Following Fornell & Larcker (1981), Garcia-Alcaraz et al. (2014) & Kock (2015), the model can be analyzed further.

Following the PLS estimation result as shown in Figure 4, we concluded the causal relationship among variables as shown in Table 2.

Table 2
CAUSAL RELATIONSHIPS USING PARTIAL LEAST SQUARES ESTIMATION

Variable	Market Attractiveness	Business's Customer Request	Company Reputation	Competitive Advantages Strategy	Customer Share
Market Attractiveness	-	0.34*	0.45*	0.24*	0.33
Business's Customer Request	-	-	-	0.39*	-
Company Reputation	-	0.56*	-	0.36*	0.09**
Competitiveness Advantages Strategy	-	-	-	-	0.87*
R^2	Market Attractiveness & Company Reputation to BussCustRequest = 0.61				
	Market Attractiveness, Buss Cost Request & Company Reputation to Competitive Advantage Strategy = 0.71				
	Competitive Advantages Strategy to Customer Share = 0.51				

Source: Primary Data Collection by Authors (2019)

*all the path coefficients are significant at α= 1 % atau p-value < 0.01; **statistically insignificant with p-value = 0.16

Following the above estimation result, we could interpret the model as follows:

1. Market attractiveness influences business customer's request with the estimated coefficient at 0.34. An increase of market attractiveness by NPK fertilizer supplier in Java, Indonesia by 1% would increase business customer's request by 0.34%, assuming other factors remain constant.
2. Market attractiveness influences company reputation by 0.45. It means that an increase of market attractiveness by NPK fertilizer supplier in Java, Indonesia by 1% would increase company reputation by 0.45%, assuming other factors remain constant.
3. Market attractiveness affects competitive advantages strategy by 0.24. Assuming other factors remain constant, an increase of market attractiveness by 1% would increase competitive advantages strategy of NPK fertilizer supplier in Java, Indonesia by 0.24%.
4. Company reputation influences business customer's request by 0.56. It means that an increase of company reputation by 1% would increase business customer's request of NPK fertilizer supplier in Java, Indonesia by 0.56%, assuming other factors remain constant.
5. Company reputation affects competitive advantages strategy by 0.36. It means that an increase of company reputation by 1%, would increase competitive advantages strategy of NPK fertilizer supplier in Java, Indonesia by 0.36%, assuming other factors remain constant.
6. Company reputation affects customer share by 0.09. It means that an increase of company reputation by 1% would increase customer share of NPK fertilizer supplier in Java Indonesia by 0.09%, assuming other factors remain constant. However, this causal relationship is statistically insignificant.
7. Business customer's request affects competitive advantages strategy by 0.39. It means that an increase of business customer's request by 1%, would increase competitive advantages strategy of NPK fertilizer supplier by 0.39%, assuming other factors remain constant.
8. Competitive advantages strategy influences customer share by 0.87. It means that an increase of competitive advantages strategy of NPK fertilizer supplier by 1% would increase its customer share by 0.87%, assuming other factors remain constant.
9. With an R2 of 0.61, it means that business customer's request of NPK fertilizer supplier in Java, Indonesia, can be explained 61% by the influence of market attractiveness and company reputation while the other factors influence business customer's request by 39%.
10. With an R2 of 0.71, it means that competitive advantages strategy of NPK fertilizer supplier in Java, Indonesia, can be explained 71% by the influence of market attractiveness, business customer's request and company reputation. Other factors influence competitive advantages strategy of NPK fertilizer supplier by 29%.
11. With an R2 of 0.51, it means that customer share of NPK fertilizer supplier can be explained 51% by the influences of competitive advantages strategy, while the other factors affect customer share by 49%.

CONCLUSION

Following the estimation results using the Partial Least Square – SEM estimation, we concluded that the fertilizer industry in Java, Indonesia can be explained by its competitive advantages strategy. The competitive advantages strategy of NPK fertilizer supplier in this context, are influenced by market attractiveness, business customer's request and company reputation. Among the three exogenous variables, business customer's request influences most of the competitive advantage strategy. The overall result of this research supports earlier researches as represented in Figure 2. This gives a consequence that NPK fertilizer supplier should focus mostly on the request of its customer to sustain their competitiveness in the fertilizer industry. This would significantly affect its customer share. Similarly, company reputation among customers would also affect its customer share.

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