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Designing a model to improvecustomer loyaltyin chemicals tradingcompanywith servicequalityand structuralequation modeling method

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Abstract- Global competitiveness and the world economic crisis that hit the world these days have affected many organizations in such a way that an organization must produce very high quality goods or services to satisfy their customers and hence obtaining customers loyalty. Research method used is a model of Service Qualityand Structural Equation Modelingwere implemented in a chemical trading company. The determination of research obtained by conducting Focus Group Discussionwith 9 experts, then obtained 263 respondents.The results showed that all the factors on ServQual have produced negative gap values, which indicated that the company could not meet customer expectations. On the other hand, SEM results indicated that significant variables that affected customer satisfaction are people, situation and product, whereas the variables that affected customer loyalty are customer satisfaction, product, situation, people.

Keywords- *Customer Loyalty, CRM, Trading Company, ServQual, SEM*

1. Introduction

Industry development in Indonesia, particularly the chemical industry continues to increase. The fierce competition between local and global industries affects companies in a way that these companies have to implement the appropriate business model that can help these companies reach the competitive advantage, which therefore aid them in winning the local and global business competition.

Many studies have shown that the cost required to gain new customers is six times greater than the cost to retain customers (Alt, 2004). Therefore, a better alternative is to make efforts to maintain the market or existing customers. One of the concepts that support the creation of customer loyalty is customer relations, or the so-called CRM (Customer Relationship Management). The concept of CRM is to recognize, identify and explore what is expected of a customer or a customer of the company. CRM is a business strategy focused on customers that are designed to optimize profitability, revenue, and customer satisfaction (Hosseini, 2010).

This study aims to find the model of relationship betweensatisfaction and customer loyalty in chemical trading company.

2. Literature Review

2.1. Chemical Trading Industry

The chemical industry can be categorized into two segments; commodity and specialty. Commodity chemicals are produced (and consumed) in large quantities, withrelative price transparency and minimal variations between suppliers. On the other hand, specialty chemicals are produced in smaller quantities and in many cases come from a long research to produce a patent for certain products (Jung, 2014). Trading party (distributor) in every chemical industry is considered as an important part of the business process.

2.2. Customer Relationship Management

Since the early 1980s, the concept of customer relationship management in marketing, consists of four dimensions: customer identification, customer attraction, customer retention and customer development are things that are important to acknowledge. The difficulties in obtaining these data also contributes to thehigh level of difficulty in defining CRM. We can explain CRM as a comprehensive strategy and process, maintaining partnership with selected customers to create a better value for the customer and the company (Parvatiyar, 2001).

2.3. Service Quality

Service Quality in general is shortened to ServQual. This word originated in 1983 when the trio consisting of Valerie A. Zeithamal, Leonard L. Berry and A. Parasuraman did a research on how to maximize the quality of every service (Drummond, 2001). There are five dimensions of ServQual, i.e. Tangibles, Reliability, Resposiveness, Assurance, Empathy (Tan, 2001).

2.4. Structural Equation Modeling

Sewall Wright developed this concept in 1934. In the beginning, this concept was often known as path analysis and then narrowed in the form of analysis of Structural Equation Modeling (Siguaw, 1998). SEM (Structural Equation Modeling) is a statistical technique that is able to analyze the pattern of the relationship between latent constructs and indicators, latent constructs with one another, as well as measurement error directly. SEM allows analysis of multiple dependent and independent variables directly (Bigne, 2003).

3. Research Methodology

3.1. Collecting Data

Data collection was divided into three phases. The first phase was collecting secondary data of the company that aims to explore the problems that exist in the company. The second phase was conducting purposeful discussion forums with

experts to get an idea of what factors affect customer satisfaction and loyalty. The third phase was distributing questionnaires to all customers and conducting analysis of the data obtained to see if there were relationships between influencing factors.

3.2. Design of Questionnaire

Factors were selected based on the attributes of the journals that are used in applications in other industries. The selected factors are based on variables such as service, product, situational, people, and price.Determination of research factors can be done by doing focus group discussion (FGD). This is done to determine which attributes that can be used in chemical trading industry. Participants of the FGD are managers of the company, who are considered to represent the voice of the customer in assessing the quality of services and products used. The table below shows a list of participants of the FGD (Table 1.)

Table 1. List of Participants FGD

No. Participant	Position	Experience
1	Plant Manager	30 years
2	Technical Manager	23 years
3	Operational Manager	16 years
4	Financial Manager	12 years
5	Quality Management Representative	13 years
6	HSE-Management Representative	8 years
7	Sales and Marketing Manager	30 years
8	Business Unit Manager WT dan OG	10 years
9	Business Unit Manager Textile and Coating	8 years

Preparing and designing of the questionnaire was conducted after the results were obtained from the FGD. After a two-hour FGD, a design of questionnaire was created to obtain the research primary data. The questionnaire consists of three parts:

- The first part consists of questions related to respondent data.
- The second part is directly related to service quality, which consists of expectations and perceptions of the respondents on the attributes of the service.
- The third part is related to customer satisfaction and loyalty models in chemical trading industry.

In the questionnaire used, the researchers used a Likert scale questionnaire with a scale of 5. For the ServQual questionnaire, gap calculation between perception and expectation was searched using Geometric Mean, due to the better accuracy of Geometric Mean compared to the normal average, since in group response research, error of Geometric Mean is less than error of the normal average (Dachyar, 2015).The following is a list of factors that can be used to conduct a survey of satisfaction and customer loyalty.

Table 2. Variables and Attribute onQuestionnaires ServQual

Dimension	Atributte
Responsiveness	Handlers made the request in a short time
	Complaints responded well and completed as soon as possible
	Commitment in solving problems
	Have the knowledge to solve problems
	Responsive in every situation
Assurance	Warranty on the product are problematic
	Product specification is transmitted in accordance
	No damage to the packing of products delivered
	Analysis certificates reflect the quality of the product
	Shipping is done with complete documentation
	Delivery of defective products is not done
Tangibles	Barriers to the use of the product does not exist
	Quantity of products delivered in accordance with the Purchase Order (PO)
	The products are always labeled properly
	The products are always labeled alarm
Emphaty	The service provided is done by showing concern and seriousness fast
	Responding to consumer required info
	Gets information for both PDS and MSDS product easily
	Customer inquiries can always be answered
Reliability	Can explain the product sold
	Timely product delivery
	Gain knowledge about waste disposal methods
	The delivery time is flexible according to customer needs
	Cancellation of delivery can be performed with good reason
	Negotiating payment can be made according to the agreement of both parties
	Have good communication skills
	Good appearance
	Competitive product
	Payment terms are according to expectations

Table 3. Variables and Attribute used inSEMQuestionnaires		
Variable	Symbol	Atributte
Service	HANDOR	Handlers made the request in a short time
	HANDCOM	Complaints responded well and completed as soon as possible
	CARE	The service provided is done by showing concern and seriousness fast
	ASSU	Warranty on the product are problematic
	KNOW	Can explain the product sold
	CERTAIN	Timely product delivery
	SISINF	Responding to consumer required info
Product	PERFORM	Barriers to the use of the product does not exist
	SPEC	Product specification is transmitted in accordance
	QTY	Quantity of products delivered in accordance with the Purchase Order (PO)
	DISP	No damage to the packing of products delivered
	CONFIRM	Analysis certificates reflect the quality of the product
	DOCUM1	Shipping is done with complete documentation
	DOCUM2	Gets information for both PDS and MSDS product easily
	K3L1	Delivery of defective products is not done
	K3L2	The products are always labeled properly
	K3L3	The products are always labeled alarm
	K3L4	Gain knowledge about waste disposal methods
Situation	CUSTOR	The delivery time is flexible according to customer needs
	FLEX1	Cancellation of delivery can be performed with good reason
	FLEX2	Negotiating payment can be made according to the agreement of both parties
People	COMIT	Commitment in solving problems
	PROBSOL	Have the knowledge to solve problems
	COMMU	Have good communication skills
	SDM1	Customer inquiries can always be answered
	SDM2	Responsive in every situation
	SDM3	Good appearance
Price	RASPRI	Competitive product
	PAYTERM	Payment terms are according to expectations
Customer Satisfaction	SATIS1	I feel the products sold have a guarantee of quality
	SATIS2	I feel the company is already providing good service
Customer Loyalty	LOYAL1	I would say positive things about the products sold to my colleague
	LOYAL2	I will provide certainty for every need to purchase a product that I purchased before the stock runs out

(Table 2).

As for the SEM analysis, the analysis was conducted using IBM SPSS AMOS 21. Reliability, validity and normality tests were conducted for each of the returned questionnaire. The following table shows a list of attributes and variables used in the SEM questionnaire (Table 3).

4. Results and Discussion

Questionnaires obtained that would be used as primary data of this study came from 263 respondents.

3.3. SEM Result

From the initial testing of 33 items, the value of the *Cronbach's Alpha* obtain in general is 0.971 (which is greater than the default value, 0.6),thus this is showing the reliability of the questionnare (Radder, 2013). The Validity test was conducted using Kaiser-Meyer-Olkin (KMO) method. The pre-requisite that needed to be met was the *significant*value, which had to be less than 0.05 to indicate whether or not there is a correlation, and also a minimum KMO value of 0.5 to indicate that whether or not the correlation is strong. In this experiment from the validity of the test, the KMO value and the the Sig. value is 0.903 and 0.000, respectively. The SEM method which used"maximum likelihood" approach estimator requires data which is distributed normally, so that the parameters generated are absolutely correct. Data can be considered normal when its skewness value is between -1 to 1, and its kurtosisvalue is between -3 to 3. According to the descriptive statistics data table, the data obtained fulfilled the skewness and kurtosis conditions.Therefore, the data obtained can be considered to be normally distributed. SEM models can provide estimates the value of loading factor, model fit, the total effect, the direct effects or indirect effects, and resprective significance among the factors. Figure 1 shows the initial model used in this analysis.

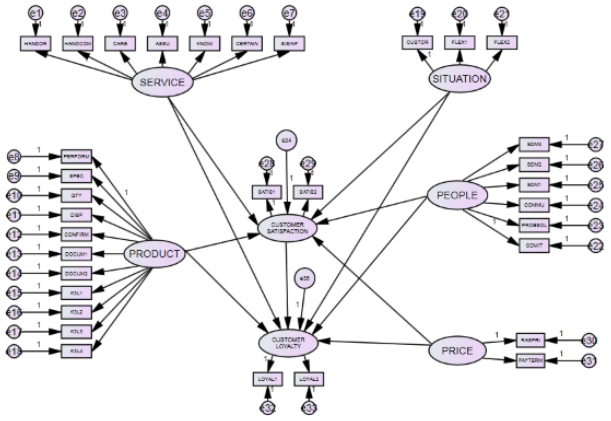

Fig 1. Initial Research Model.

The function of calculating the standard loading factors is to see whether themeasured variable has correctly explained the latent variables. If the value of the measured variable is less than 0.5, thus it is considered insignificant and will be removed from respresifikasi models. Form the loading factors value, it is observed that the value of CARE, KNOW, and K3L1 variables is below 0.5, thus those variables is categorized as insignificant and removed from the reprisifikasi model. While other variables which the loading factors value is higher than 0.5, will still be included in the SEM analysis.The structural model is given in Figure 1.

Test matches model aims to determine the level of compatibility between the proposed model with existing data. Fit Indices that will be used to assess the suitability of the model in this study include TLI, CFI and RMR (Radder, 2013) and CMIN / DF (Cater, 2009). Tests were done by the method of "maximum likelihood" approach estimation.In addition, two absolute fit indices (RMR and GFI) and two incremental fit indices (CFI and TLI)were selected for model assessment. Subject to cut-off values for RMR ≤ 0.05TLI value ≥ 0.90, CFI ≥ 0.90, RMR, CMIN / DF ≤ 5.00.

From the results of this path coefficient calculation, will be significant if the hypothetical path or not, to do the assessed significance of p-value, the path will be considered significant if it has a p-value ≤ 0.10.

Table 4 shows the relationship of the variables to either customer satisfication and customer royalty. Significant relationships have p-value ≤ 0:10 (sign *** indicates p-value less than 0.001). thus it can be concluded that,the product, situation and people have significant relationship to the customer satisfication, while the service and the price is not significantly associated with the customer satisfication. The same trend is also observed for the customer loyalty. Product, situation, people and customer satisfication is significantly affect to the customer loyalty, while the service and price are minorly affect to the customer loyalty. Figure 2 shows the final model of the relationship of customer satisfaction and customer loyalty with each variables.

Table 4. Path analysis, p-value, and hypothesis evaluation on a model that has Fit

			Estimate	S.E.	C.R.	P	Accept?
CUSTOMER_SATISFACTION	<---	SERVICE	1.822	1.161	1.570	.117	No
CUSTOMER_SATISFACTION	<---	PRODUCT	3.783	1.029	3.676	***	Yes
CUSTOMER_SATISFACTION	<---	SITUATION	1.065	.230	4.637	***	Yes
CUSTOMER_SATISFACTION	<---	PEOPLE	-7.810	1.513	-5.163	***	Yes
CUSTOMER_SATISFACTION	<---	PRICE	-.039	.108	-.364	.716	No
CUSTOMER_LOYALTY	<---	SERVICE	-3.958	3.567	-1.110	.267	No
CUSTOMER_LOYALTY	<---	PRODUCT	-9.458	5.394	-1.754	.080	Yes
CUSTOMER_LOYALTY	<---	CUSTOMER_SATISFACTION	2.535	1.225	2.069	.039	Yes
CUSTOMER_LOYALTY	<---	SITUATION	-2.953	1.431	-2.064	.039	Yes
CUSTOMER_LOYALTY	<---	PEOPLE	20.105	10.082	1.994	.046	Yes
CUSTOMER_LOYALTY	<---	PRICE	-.351	.274	-1.282	.200	No

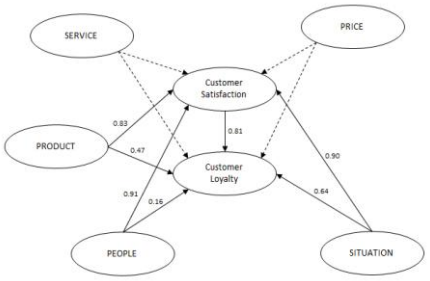

Fig 2. Path Diagram Latent Variable in Structural Model.

Table 5, Table 6, and Table 7 below shows the value of direct effect, indirect effect, and total effect of the model are obtained. This value will show the level of priority that the largest effects that affect customer satisfaction and customer loyalty.

Table5. Standarized Direct Effect Model

	Customer Satisfaction	Customer Loyalty
Service	0.856*	0.518*
Product	0.827	0.468
Situation	0.903	0.643
People	0.906	0.158
Price	-0.036*	0.504*
Customer Satisfaction	0.000	0.813
*not significant		

Table 6. Standarized Indirect Effect Model

	Customer Satisfaction	Customer Loyalty
Service	0.000	0.143
Product	0.000	0.272
Situation	0.000	0.031
People	0.000	0.149
Price	0.000	0.199

Table7. Standarized Total Effect Model

	Customer Satisfaction	Customer Loyalty
Service	0.856*	0.661*
Product	0.827	0.740
Situation	0.903	0.674
People	0.906	0.307
Price	-0.036*	0.653*
Customer Satisfaction	0.000	1.012
Customer Loyalty	0.000	0.000
*not significant		

It can be seen from Table 7, that 3 factors can give the largest total effect the Customer Satisfaction namely People (0.91),

Situation (0.90), Product (0.83). While most major factor affecting at Customer Loyalty are Customer Satisfaction (0.81), Product (0.74), Situation (0.67), People (0.31).

3.4. Interpretation of OverallResults

From the results of SEM and ServQual, then the company can prioritize to improve the quality of the above factors in the design of its CRM activity to be able to increase customer satisfaction and loyalty. Proposed strategies are based on input from the customer to the gap that occurs with direct interviews of some customers who have a large retention tehadap purchase. Results of the interview was brought to management and discuss directly to make improvement to enter a customer. In the table below are obtained proposals for the improvement of services for enterprise CRM activity. For the service and its price is only optional, this is because of the results obtained are not a significant factor influential, but this factor is not to be ignored, but it remains to be seen though not a priority.

Table 8. Proposed Service

Variable	Proposed Service Improvement
People	Provide training to all staff to adopt 5S
	Doing training for all sales in order to understand the product being sold
	Committed to solve customer problems
Product	The products are delivered to customers is done with strict supervision of QC
	Revised delivery procedures, the need for supervision to an examination of all the shipping documents
	Give a commitment to product safety and waste management, the cooperation with all the principal
Situational	Delivery of products made with the consent of both parties
	Doing things that are situational, not too rigid to pelaggan
Service	The response to the receipt of orders made up to 1 day after the PO is received
	The response to customer complaints made within a maximum of 2 days
	The addition of the fleet for delivery
	Scheduling deliveries later than 3 days after the PO is received
	Create a database of product information can be accessed directly by customers who have a user ID from the company website
Price	Reviewing the payment term to add to the existing customers with purchase in large numbers and repeatedly
	A review of the selling price of the product

5. Conclusion

As summary, based on the results of data processing and analysis, it can be concluded that the significant variables which affect the customer satisfaction are the people (0.91), situation (0.90), product (0.83), while the for the customer loyalty, the affecting variables are customer satisfaction (0.81), product (0.74), situation (0.67), and people (0.83). The gap service attributes value tested from the ServQual method is negative. This indicates that the customer has not reached the expected level of the services and products served by the company. However, that does not mean that other factors should be ignored. These factors should also be maintained and improved in order to increase the satisfaction and loyalty of the customer.

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