

# Sensitivity Analysis of Consumer Response Towards Lni Extension of Sampoerna Products With Hoe and CSI Approaches

Olivia Cindy Pramita\*  
 Industrial Engineering Department,  
 Faculty of Engineering  
 UPN "Veteran Jawa Timur  
 East Java, Indonesia  
[cindypramita48@gmail.com](mailto:cindypramita48@gmail.com)

Minto Waluyo  
 Industrial Engineering Department,  
 Faculty of Engineering  
 UPN "Veteran Jawa Timur  
 East Java, Indonesia  
[mintow.ti@upnjatim.ac.id](mailto:mintow.ti@upnjatim.ac.id)

**Abstract**— X Cigarette is the result of lini extension by PT. HM Sampoerna Tbk of old products, namely XA. This extension must be affected the consumer. The consumer or even the market would give their interest, trust or probably purchase for XA cigarette. This research is intended to know how sensitive will the consumer responds to this extension. The variable responses are Awareness, Knowledge, Liking, Preference, conviction, and Purchase. The respondent from this research is the user who use X cigarette and XA cigarette for at least once. This research is using Hierarchy of Effects and Consumer Satisfaction index methods processed by using SPSS software. The results showed the sensitivity value consumer response to the line extension Sampoerna products is 2,63 and the value of the Customer Satisfaction Index (CSI) is 0,78 which means it has to be improved in order to get a maximum value

**Keywords:** *Sensitivity, Costumer Response, Line extension, Hierarchy of Effects, Consumer Satisfaction Index*

## I. INTRODUCTION

Competition in the world of business to be able to maintain a share of the market has very tight [2]. Various ways companies do in seizing the market and also expand the market (Dharmayanti, 2006), one of them is line extension (Albab et al., 2018). The line extension occurs when companies introduce additional types of goods (Kotler et al., 2016) in the categories of products specified by using the brand together (Tjiptono et al., 2017), such as aroma, shape, color, material additional or size of packaging (Kotler and Keller. 2012). On October 2019 Sampoerna trying to develop a share of the market by applying the concept of PT.X and create XA variants of lemon and watermelon yield low (Low Tart Low Nicotine) so that the launch of the product is expected to take market segment, besides it can prevent people to quit smoking and if still, they will smoke with safe levels.

The Line extension of X to XA of course give effect to the response of consumers. Consumers or even the market as a whole will give attention, interest, desire, confidence and maybe even a purchase of XA cigarettes (Son and Rendy Yonelananda., 2015). There are so many external stimuli that can shape and influence consumer responses to a product (Ardelia et al., 2016). In the frame of this extension

of products carried by Sampoerna, Management Sampoerna in need of information about how the response of consumers of new product that has been launch. Then the answer of above problems can be done by measuring the sensitivity of consumer responses. According that the sensitivity of the response is the level of response changes as a result of changes in stimuli that occur in a product (Simamora, Bilson., 2003)

The Measurement of consumer response sensitivity uses the Hierarchy of Effects method which starts from the awareness, knowledge, preferences, beliefs and purchases stages then continues with the Customer Satisfaction Index (CSI) method to find out more detail about the consumer satisfaction index towards the line extension of XA cigarette (Amanah, et al. 2019)

## II. METHOD

### A. Response

According to the response is the consumer's reaction to stimuli, both from internal and external factors. The response is the result of individual activity as a reaction to the stimulus (Simamora, Bilson., 2003). Stimuli or stimulus is any form of physical, visual (Sangadji, et al 2013) or verbal communication that can affect individual responses (Damiati, et al. 2017)

### B. Line Extension

Line extension occurs when companies introduce additional types of goods in the categories of products specified by using the brand together, such as aroma, shape, color, material additional or size of packaging new (Tjiptono et al., 2016). Line extension is one of the strategies to introduce a brand that already exist in the product in one variant or new size (Sudaryono, 2016)

### C. Consumer Sensitivity Response

Response sensitivity is the rate of change in response as a result of changes in stimuli (Simamora, Bilson., 2003). The rate of change is calculated by the percentage of change in stimuli. The above sentence can be written with the following formula:

$$\begin{aligned} Sr &= \Delta R / \Delta S \times S0 / R0 \\ \Delta R &= R1 - R0 \\ \Delta S &= S1 - S0 \end{aligned}$$

Which:

Sr = Sensitivity of Response

$\Delta R$  = Change of Response

$\Delta S$  = Change of Stimuli

R1 = Finale Response

R0 = Previous Response

S1 = Finale Stimuli

S0 = Previous Stimuli

**D. Hierarchy Of Effects**

There are many models that explain the impact of communication on one's response (Simamora, Bilson., 2003). Analysis of sensitivity and direction of the response of consumers to the phenomenon of line extension used models of analysis of hierarchy-of-effects which include six stages of response, namely: consciousness (awareness), knowledge (knowledge), A (liking), tendency (preference), conviction (conviction), and purchase (purchase) (Kotler, Philip., 2001).

**E. Customer Satisfaction Index**

The Customer Satisfaction Index (CSI) is an index to determine the whole level of satisfaction of customers with approaches that take into consideration the level of interest of the attributes of a product or service that is measured (Amanah et al., 2019). The Criteria of customer Satisfaction is 81% - 100% (Very Satisfied), 66% - 80.99% (Satisfied), 51% - 65.99% (Satisfy Enough), 35% - 50.99% (Less Satisfy), 0% - 34.99% (Non Satisfy) (Gama, et al. 2016)

The method used in this study is the Hierarchy of Effects model and the Customer Satisfaction Index which using purposive sampling method (Musbahuddin and Iqbal Hassan., 2013) includes several including:

- Calculation of consumer response and stimuli
- Calculation of sensitivity values
- Calculation of the level of reality and the level of consumer expectations
- Calculation of the Consumer Satisfaction Index

**III. RESULT AND DISCUSSION**

**A. The Calculation of consumer response**

Table 1. The Result Of Respon Change

Items	Stage Of Response	R0	R1	$\Delta R$ ( R1 - R0)	$\Delta R$ %
1	Awareness	700	726	26	3,7
2	Knowledge	671	681	10	1,5
3	Liking	678	680	2	0,2
4	Preferences	653	660	7	1,1
5	Conviction	672	680	8	1,1
6	Purchase	677	679	2	0,3
Total		4051	4106	55	7,8

Information: Finale Response (R1) // Previous Response (R0)

Based on the table above the results of the total that is positive 55 shows that scores the answers on cigarattes XA is higher or larger compared with the products of cigarettes X. It is significant that the expansion of the brand which is done by Sampoerna responded well by consumers, especially the respondents of Sampoerna Products

**B. The Calculation Stimuli of consumer**

Table 2. Change of Stimuli

1 tem	2 Stages in the Model	3 0	4 1	5 S (S1 - S0)	6 Chang e
7 Awareness					
8	9 Easy to remember the brand	10 61	11 20	12 41	13 5.4
14	15 Easy to recognize both the logo and the packaging	16 50	17 21	18 29	19 3.9
20	21 There are lots of advertisements	22 84	23 35	24 49	25 7.2
26 Knowledge					
27	28 Product variations	29 46	30 13	31 7	32 0.4
33	34 The composition of the Innovative	35 64	36 90	37 6	38 ,9
39	40 Made from ingredients Selection	42 71	43 94	44 3	45 ,4
46 Passions					
47	48 Design packaging that is attractive	49 10	50 28	51 8	52 ,5
53	54 Available in several packaging options	55 67	56 83	57 6	58 ,4
59	60 Has a distinctive taste	61 02	62 41	63 9	64 ,6
65 Trend					
66 0	67 There where only	68 52	69 07	70 45	71 6.0
72 1	73 Meet the needs when smoking	74 06	75 98	76 8	77 1.1
78 Confidence					
79 2	80 High quality	81 02	82 16	83 4	84 ,0
85 3	86 Can be consumed every day	87 66	88 78	89 2	90 ,8
91 Purchase					
92 4	93 Appropriate quality is expected	94 97	95 03	96	97 ,9
98 5	99 Competitive prices	100 62	101 91	102 9	103 ,4
104 Total		105 77	106 827	107 9	108 3.7

Stimuli XA (S1) // Stimuli X (S0)

The result of the total that is positive 49 shows on a table that scores the product XA is higher or larger compared with the products of cigarettes X. It means stimulus given by Sampoerna through the launch of new products XA can be accepted by consumers, but there are stimuli negative at the stage of Awareness and Preferences

**C. Calculation of Sensitivity Value**

Response sensitivity is the level of response change as a result of changes in stimuli. The rate of change is calculated by the percentage of change in stimuli. Declared sensitive if it has value sensitivity 1 and otherwise not sensitive if it has a value of sensitivity is less than 1. The sensitivity of the

response to the expansion of the line of products Cigarettes X to XA can be obtained by calculation as follows:

$$R0 = 4051 / R1 = 4106 / S0 = 2436 / S1 = 2227$$

$$\Delta R = R1 - R0 \quad \Delta S = S1 - S0$$

$$\Delta R = 4106 - 4051 \quad \Delta S = 9827 - 9778$$

$$\Delta R = 55 \quad \Delta S = 49$$

Sensitivity of Consumer Response:

$$Sr = \Delta R / \Delta S \times S0 / R0$$

$$Sr = 55 / 49 \times 9778 / 4051$$

$$Sr = 1,12 \times 2,41$$

$$Sr = 2,61$$

Based on the calculations in the above it can be known the sensitivity of the response from X to XA of Sampoerna is 2.69 and the amount of the sensitivity of the more than 1 then it can be classified as sensitive. These results support research (Fachriza et al., 2017) that Sampoerna has always succeeded in producing any product.

**D. Calculating the Consumer Satisfaction Index**

Skor (S) = Value Of Reality (I) x Value of Expectations (P) [8]

N o.	Attribute	Expectancy Value (P)	Value of Perception (I)	Score (S = I x P)
1	Easy to remember the brand	4.08	4,1	16.73
2	Easy to recognize both the logo and the packaging	4.01	4.07	16.32
3	There are lots of advertisements	3.83	3.77	14.44
4	Product variations	3.83	3.93	15.05
5	The composition of the Innovative	3.81	3.92	14.94
6	Made from materials selection	3.74	3.79	14,17
7	Design packaging that is attractive	3.87	3.94	15.25
8	Available in several packaging options	3.73	3.78	14,10
9	Has a distinctive taste	3.93	4.02	15.80
10	There where only	3.99	3.93	15.68
11	Meet the needs when smoking	3.84	3.83	14.71
12	High quality	3.79	3.86	14.63
N o.	Attribute	Expectancy Value (P)	Value of Perception (I)	Score (S = I x P)
13	Can be consumed every day	3.79	3.81	14.44
14	Appropriate quality is expected	3.79	3.83	14.52
15	Competitive Prices	3.71	3.67	13.62
Total Score	57.74	Total (P) = (Y) 57.74	Total (S) = (T) 224.38	Total Score

IKP is obtained from calculations (T / 5Y) x 100%. A score of 5 (on 5Y) is the value of the maximum that is used

on a scale of measurement. IKP is calculated by using the following formula:

$$IKP = T / 5Y \times 100\%$$

Which :

$$IKP = 224,38 \times 100\%$$

$$(5 \times 57,74)$$

$$= 0,78 \approx 78\%$$

The calculation of the value of IKP above shows that the quality of the products that are given by XA amounting to 0.78. Based on the table of criteria satisfaction of customer value that shows that the quality of service that is given is said to satisfied for being in the range of values from 0.66 to 0.80. Although the calculation of the value of IKP product non XA of 0.78 which means that good but still there is the need to be improved. The result of Hierarchy of Effects and Customer Satisfaction Index methods, has been known attributes or criteria where only the less to be improved in order to correspond the expectations of consumers Criteria that must be improved quality of service that is as follows:

Awareness, the results stimuli given by the consumer at the stage of awareness is still worth the negatives that there are 5.4% of consumers are not aware of the existence of product X Splash. It's because consumers are distracted by the X cigarette new packaging design that was updated at the same time as the launch of XA so that loyal X users are more aware of changes in the packaging design of Sampoerna A. What needs to be done is by adding advertisements - advertising or promotion that is more attractive (eye-catching) (Irawan, Billy., 2015) and put it in a place that is easily seen by the consumer.

Preferences, the results stimuli given by the consumer at the stage of the preferences still negative is there is 3.6% of consumers who tend to choose other than the product XA. It is caused due to the changing habits and introduce the products are new of course only requires a process that is not instant because it is in essentially difficult to change a habit of a person. Things must be done is the management focus on the promotion of the A Splash by re-inform the product (Tjiptono, et al., 2016)

**IV. CONCLUSION**

The measurement results of sensitivity value of the line extension cigarette XA using the Hierarchy of Effects is 2.69 are included as sensitive and the results using the Customer Satisfaction Index method of 78% which means consumers are satisfied with what is given by XA cigarrates. Respon and stimulus shows results positive which means the extension of the product line of XA have already managed to lure consumers only in the period of time of 8 months. This result is supported by research [9] that Sampoerna has always succeeded in

**REFERENCES**

[1] Albab, M. Ulil and Ignatius Soni Kurniawan. 2018. "Analysis Sensitivity Response Market to Change Design Bicycle Motor Beat (Study Case on Student

- UST and UTY who use Honda Beat)". Dewantara Management Journal Vol 2 No. 1, 46 - 54.  
<http://jurnal.ustjogja.ac.id/index.php/manajemendewantara/article/view/2750/1561>
- [2] Amanah, Dita, Ratih Hurriyati, Disman et al. 2019. "Lazada's Quality Service Towards Customer Satisfaction Based on Importance Performance Analysis Methods and Customer Satisfaction Index". Science and Technology Publications.  
[https://www.researchgate.net/profile/Dedy\\_Harahap/publication/337560706service\\_Quality\\_towards\\_Lazada's\\_Customer\\_Satisfaction\\_based\\_on\\_Importance\\_Performance\\_Analysis\\_Methods](https://www.researchgate.net/profile/Dedy_Harahap/publication/337560706service_Quality_towards_Lazada's_Customer_Satisfaction_based_on_Importance_Performance_Analysis_Methods)
- [3] Ardelia, Herlia, et al. 2016. " Analysis Sensitivity Response Consumers Against Expansion of Brand By Products cimory In Semarang". Industrial Engineering Study Program, Faculty of Engineering, Diponegoro University.  
<https://ejournal3.undip.ac.id/index.php/ieoj/article/view/13092>
- [4] Damiati, et al. 2017. Consumer Behavior. Depok: PT. RajaGrafindo Persada.
- [5] Dharmayanti, Diah. 2006. "SENSITIVITY ANALYSIS OF RESPONSES TO CUSTOMER EXTENSIFICATION BRAND (BRAND EXTENSION) IN BRAND Filma margarine IN SURABAYA". Journal of Marketing Management, vol. 1 No. 2  
<http://jurnalpemasar.petra.ac.id/index.php/mar/article/view/16535>
- [6] Fachriza, Fazza Ilham and Nadya Moeliono. 2017. " Effect Mix Marketing Against Decision Purchase Cigarettes Mild (Study Case in Cigarettes X Mild)". Jurnal Ecodemica, Vol. 1 No.2  
<https://ejournal.bsi.ac.id/ejurnal/index.php/ecodemica/article/view/1332>
- [7] Gama, et al. 2016. " Analysis of Satisfaction of Farmers Against Use of Fertilizer Organic at Plant Rice". Agro Economic Journal Vol. 34 No. 2
- [8] Irawan, Billy. 2015. " The Impact of Innovation Products of Performance Marketing (Study Case At Launch Products New In Industry Cigarette)". AGORA Vol. 3, No. 1
- [9] Kotler, Philip. 2001. Marketing Management: Analysis, Planning, Implementation and Control. Jakarta: PT. Prenhallindo.
- [10] Kotler and Keller. 2012. Marketing Management Edition 14 Global Edition. New Jersey: Pearson Education
- [11] Kotler, Philip and Kevin Lane Keller, 2016. Marketing Management 15th Edition. New Jersey: Pearson Education, Inc.
- [12] Musbahuddin and Iqbal Hassan. 2013. Analysis of Data Research with Statistics Edition to - 2. Jakarta: PT Bumi Literacy.
- [13] Son, Rendy Yonelananda. 2015. "Analysis Sensitivity Response Consumers Against Expansion of Line (Line Extension) In the Cup Noodle brand Pop Mie in Pekanbaru". JOM FEKOM VOL.2 NO.2
- [14] Sangadji, Etta Mamang and Sopiah. 2013. "Consumer Behavior: A Practical Approach Accompanied by a Research Journal Association ". Yogyakarta: ANDI
- [15] Simamora, Bilson. 2003. Dismantling the Consumer Black Box. Jakarta: PT. Gramedia Reader.
- [16] Sudaryono. 2016. " Marketing Management: Theory and Implementation ". Yogyakarta: ANDI.
- [17] Tjiptono, Fandy and Gregorius Chandra. 2016. "Service Quality and Satifaction 4th Edition ". Yogyakarta: ANDI.
- [18] Tjiptono, Fandy and Gregorius Chandra. 2017. " Strategic Marketing Edition 3". Yogyakarta: ANDI.
- [19] Widodo, Sanusi Mulyo and Joko Sutopo. 2018. " The Customer Satisfaction Index (CSI) Method