THE CONJOINT ANALYSIS OF PRODUCT ATTRIBUTE AS MAIN CONSIDERATION FOR BUYING DECISION OF HOMECARE WIPE DETERGENT

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ABSTRACT

The *homecare detergent* industry has now been dominated by some brands only and thus has made this industry a very interesting one to penetrate. Women's perceptions on the products in this industry are also challenging to be studied since they are influenced by difference of needs, experiences, and understandings. This study aims to investigate the buying decision of housewives in Surabaya in choosing homecare detergent product, in order to determine appropriate production strategy and marketing strategy for end-user.

The populations were all 25-64 years old productive housewives in Surabaya. The samples were selected by conducting *proportionate stratified random sampling*. Isaac and Michael's formula was used to select the samples of 96 housewives.

This study uses conjoint analysis, where there were four attributes of homecare detergent product became the variables, namely product effectiveness, thickness, foam and package or wrapping. The data obtained through questionnaire distributed to all respondents, by asking them to order the combination of stimuli given to them based on their preferences. The findings showed that the most prioritized attribute was effectiveness factor with *importance value* 35.943%, followed by wrapping factor 27.845%, foam factor 23.925%, and lastly by thickness factor 12.288%. The effectiveness factor has become the most prioritized attribute for the respondents in buying homecare detergent product.

INTRODUCTION

Detergent is one of the cleaners that are used widely, and its demands have grown due to increasing population and clean lifestyle. Total market value for industry segment for homecare detergent was about 2 billion rupiahs in 2011 and was estimated to reach 2.5 billion rupiahs in 2015.

Although *homecare detergent* industry has big value, for about 2 trillion rupiahs per year, this market segment has only been dominated by several famous brands. So Klin, Superpel, Wipol, and SOS have received 80% market share in the segment of floor cleaner and the segment of toilet cleaner is dominated by Harpic, Domestos, Vixal, WPC, Porstex, SOS carbol cleaner and Bebek. By vast growth every year (6% CAGR), supported by the industry value growth of liquid detergent that has reached 40%, and the minimum competition, the market of liquid homecare detergent is a very interesting target. WIPE cleaner is a company founded in the mid-2014 and located in Surabaya. This company produces innovated product of multifunction liquid homecare detergent.

In its development, Small Medium Enteprises (SME) industry is required to keep inovating to compete with other industries and even larger industries with larger capacity and better quality. Therefore, if a SME industry wants to survive, especially in this era of globalization, SME is required to improve their quality persistently, stability, and improve the short comings of production process in order to survive in industry competition. During the existence of this home manufacture company, WIPE, there are four confusing attributes that influence buying decision, which are: (1) effective, (2) thickness, (3) foam, and (4) package.

These four attributes are chosen based on feedbacks and complaints from the agents of WIPE who are located in Surabaya and Malang. Each consumer has different perceptions about products they prefer, therefore through their feedbacks and product complain, manager will understand what kinds of attributes that most people favor.

LITERATURE REVIEW
Buying Decision
According to Kotler and Armstrong (2010:177), the phases of consumers' buying decision are as follows:

Figure 1. Steps of Consumers' Buying Decision
Source: Kotler and Armstrong (2010)

Perception

According to Hawkins and Mothersbaugh (2010:278), perception is a process that is begun by consumers' description to pay attention on the certain stimuli and ended with certain interpretation or perception.
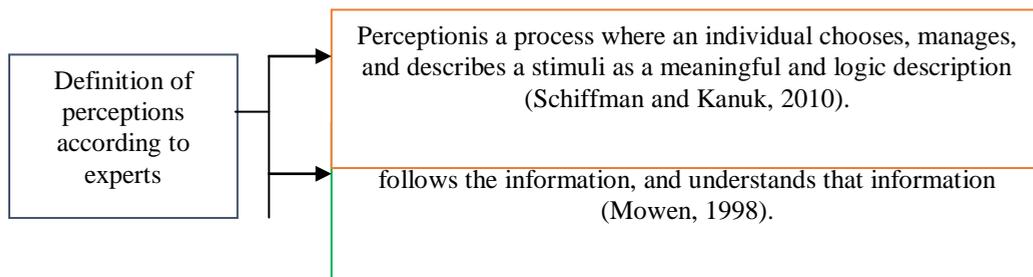

Figure 2. Definition of Perception according to Experts
Source : Sumarwan (2011)

Product

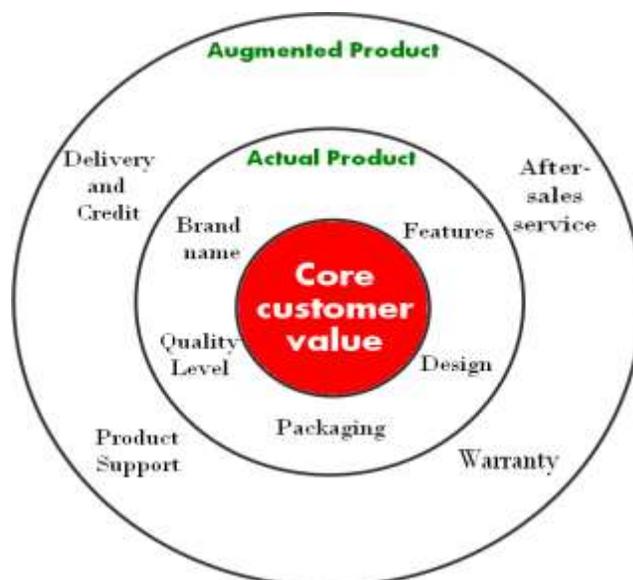According to Kotler and Armstrong (2010:250) there are three levels of product:

Figure 3. The Level of Product
Source: Kotler and Armstrong (2010)

<u>**Product Attribute**</u>

According to Philip Kotler and Gary Armstrong (2010:272), a product with its attributes of product is one means of marketers' main positioning. Attributes have a direct impact on the performance of the product or service. Therefore, attributes are closely associated with value and consumer satisfaction.

RESEARCH METHODS

This study used quantitative conjoint analysis as its method. The populations were 25-64 years old productive housewives in Surabaya. Based on Statistics Indonesia in 2015, the total number of females in Surabaya was 1.422.676, while the percentage of productive age in Indonesia was 66.5%, thus it was estimated in 2015 that the number of productive females in Surabaya was 946.080. According to Sugiyono (2014:158), Isaac and Michael's formula to count the number of size for known samples can be applied to determine the size of sample for this study, which is as follows:

$$s = \frac{\lambda^2.N.P.Q}{d^2(N-1)+\lambda^2.P.Q}$$

$$s = \frac{(3,841).(946.080).(0,5).(0,5)}{(0.1)^2.(946.079)+(3.841).(0.5).(0.5)}$$

$$s = \frac{908.473,32}{9.461,75} = 96 \text{ samples}$$

This study used proportionate stratified random samplings its sampling technique. This technique was used since the population was heterogeneous and stratified proportional. The followings are details for the samples.

Table 1. The Number of Selected Sample Using Proportionate Stratified Random Sampling Technique.

Age	Selected sample (96 samples)
25-34 years old (31%)	29,76 = 30 people
35-44 years old (30%)	28,8 = 29 people
45-54 years old (24%)	23,04 = 23 people
55-64 years old (15%)	14,4 = 14 people
TOTAL	**96 samples**

The data were collected through questionnaire distributed to 96 respondents. The researchers distributed the questionnaires in four places, namely *Pasar* Modern, Hypermart Supermall Pakuwon Indah, Hypermart Ciputra World Surabaya, and the community of family welfare movement (*PKK*). In this study, the instrument was used to collect ordinal data by ranking the data by using 24 combination of available product attributes (3x2x2x2 = 24). In this study, the variables to observe were the attributes of WIPE Product which were (1)effective, (2)thickness, (3) foam and (4) package or wrapping.

Table 2. Conjoint Analysis Stimuli

Card List

	Card ID	keampuhan	kekentalan	busa	kemasan
1	1	kaca	kental	berbusa	sachet
2	2	stainless	kental	tidak berbusa	sachet
3	3	keramik	cair	tidak berbusa	botol plastik
4	4	keramik	kental	berbusa	sachet
5	5	kaca	kental	berbusa	botol plastik
6	6	kaca	cair	tidak berbusa	botol plastik
7	7	keramik	cair	berbusa	botol plastik
8	8	stainless	kental	berbusa	botol plastik
9	9	stainless	kental	tidak berbusa	botol plastik
10	10	stainless	kental	berbusa	sachet
11	11	kaca	kental	tidak berbusa	botol plastik
12	12	kaca	cair	berbusa	sachet
13	13	kaca	cair	tidak berbusa	sachet
14	14	keramik	kental	berbusa	botol plastik
15	15	keramik	cair	tidak berbusa	sachet
16	16	keramik	cair	berbusa	sachet
17	17	stainless	cair	tidak berbusa	sachet
18	18	stainless	cair	berbusa	botol plastik
19	19	stainless	cair	tidak berbusa	botol plastik
20	20	kaca	kental	tidak berbusa	sachet
21	21	keramik	kental	tidak berbusa	sachet
22	22	keramik	kental	tidak berbusa	botol plastik
23	23	kaca	cair	berbusa	botol plastik
24	24	stainless	cair	berbusa	sachet

FINDINGS AND DISCUSSIONS

Overall Statistics

Table 3. Overall Utilities

Utilities

		Utility Estimate	Std. Error
Effective	Stainless	2.570	.360
	Glass	-.615	.360
	Ceramic	-1.955	.360
Thickness	Liquid	.273	.254
	Thick	-.273	.254
Foam	Not foamy	-1.162	.254
	Foamy	1.162	.254

Package	Sachet	-2.183	.254
	Bottle	2.183	.254
(Constant)		12.504	.254

Based on the statistical evidences, the utility value in the level for effectiveness was 2.570 for *stainle*ss, -0.615 for glassand -1.955 for ceramic. It can be interpreted that all respondents favored its effective for stainless cleaner (positive symbol), and did not favor its effective for glass and ceramic (negative symbol).

For the thickness factor, the biggest utility value was found in the liquid level which was 0.273, followed by thick level at -0.273. This means that all respondents favored ready to use or liquid detergent (positive symbol) without having to mix it with water first.

For the foam factor, the biggest utility value was found in the foamy level which was 1.162 and followed by non foamy level which was -1.162. This means that all respondents favored foamy detergent (positive symbol).

For the wrapping factor, the biggest utility value was found in the bottle which was 2.183 and then followed by sachet for -2.183. This means that all respondents favored detergent packaged in plastic bottle (positive symbol).

Table 4. Overall Importance Value
Importance Values

Effectiveness	35.943
Thickness	12.288
Foam	23.925
Package	27.845

The importance values show the level of importance of each factor (effectiveness, thickness, foam, and package). The larger its value, the more important that factor in influencing respondents' preference to make purchase. Based on the data on Table 4, the biggest *importance values* was effectiveness factor which was 35.943%, followed by package which was 27.845%, foam with 23.925%, and the smallest value was thickness with 12.288%. The effectiveness factor is the most considered factor prioritized by the respondents when choosing to buy homecare detergent product.

Table 5. Overall Correlation
Correlations[a]

	Value	Sig.
Pearson's R	.945	.000
Kendall's tau	.833	.000

The value according to *Pearson*and *Kendall's*tests shows the correlation between respondents that was used as the basis of correlation measurement. Correlation value shows strong relationship between estimation and actual respondents. If the value is larger than 0.5, then there is a strong correlation between estimation and actual. The

above table shows that the values obtained from *Pearson* and *Kendall's* test were larger than 0.5, therefore they have proven that there is a strong correlation between estimation and actual, and there is a very high predictive accuracy in this conjoint process.

Furthermore, correlation can also be proven by the significance level at *Pearson* and *Kendall's* tests. The followings are the discussion on significance level in this study:

Hypothesis:

H0 : there was no strong correlation between estimates variables and actual variables.

H1 : there was strong correlation between estimates variables and actual variables.

Rules:

If probability (*significance*) > 0.05 then the Ho was accepted.

If probability (*significance*) < 0.05 then the Ho was rejected.

The values of significance level obtained from *Pearson* and *Kendall's* test showed similar value which was 0 (lesser than 0.05). Since the significant value was lesser than 0.05, then the Ho was rejected. In other words, there was a strong correlation between estimates variables and actual variables, and the prediction accuracy for all respondents was good.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions:

1. Consumers' priority for the product attribute of homecare detergent is effectiveness factor with importance value 35.943%, followed by package factor 27.845%, and then foam factor 23.925%, and the last factor is thickness factor 12.288%. It means that effectiveness factor is the factor that is most prioritized by respondents in buying homecare detergent product.
2. For effective attribute, the effectiveness of product in cleaning stainless steel has become main priority in buying homecare detergent product.
3. For thickness attribute, liquid texture has become main priority in buying homecare detergent product.
4. For foam attribute, foamy has become main priority in buying homecare detergent product.
5. For package attribute, plastic bottle that can be pushed has become main priority in buying homecare detergent product.

Recommendations:

1. Recommendations for WIPE company
   a. To create more new products with specification for stainless steel. Furthermore, to make new effective product for each category of toilet cleaners and kitchen appliances cleaners.
   b. To make liquid ready to use product, therefore consumers do not have to mix the product with water anymore.
   c. To give more foam booster for more foam.
   d. To produce economic package with 250 mL/300 mL sizes for the consumers. This small and economic package will attract new consumers to try the product since it is less expensive.
2. Recommendations for future researches

a. To not use price attribute in conjoint analysis since the level of attributes are already comparable. Respondents will surely choose less expensive product instead of the more expensive ones. If the price attribute must be analyzed in order to study about perception or consumers' buying decision, then it is suggested to use other analysis tool instead of using conjoint analysis tool.

b. To not study many attributes and levels of attribute, since it will make respondents face difficulties in ordering the stimuli preferences, and hence will negatively influence the result of research.

REFERENCES

Agustina, Dela; Luhut Sihombing dan Salmiah. (2015). 'Analisis Conjoint Terhadap Preferensi Konsumen pada Produk Minyak Goreng Kelapa Sawit di Kota Medan'. *Journal on Social Economic of Agriculture and Agribusiness***Vol. 4**, No 5.

Bafadal, Arif Kamal. (2013). 'Analisis Konjoin'. Available at: https://arifkamarbafadal.wordpress.com/2013/06/08/analisis-konjoin/

BKKBN. (2011). *Pemutakhiran Data Keluarga, Rekapitulasi Data Demografi (Jumlah Jiwa Berdasarkan Umur)*. Available at: http://aplikasi.bkkbn.go.id/mdk/MDKReports/Kependudukan/Tabel 63.aspx.

Gasperz, Vincent. (2011). *Ekonomi Manajerial (Managerial Economic) Landasan Analisis, dan Strategi Bisnis untuk Manajemen Perusahaan dan Bisnis (Edisi Revisi, Best Seller).* Bogor: Vinchristo Publication.

Hair, Joseph F. Jr.; Robert P. Bush dan DavidJ. Ortinau. (2009). *International edition. Marketing research in a digital information environment. Fourth edition.* United States: McGraw Hill Education.

Hasin, Nashrullah. (2016). *Kreatifitas Desain Kemasan*. Available at: http://www.pesandesignkemasan.wordpress.com.

Hawksins, Del I. Dan Mothersbaough, David L. (2010). *Consumer Behaviour: Building Marketing Strategy (Eleventh Edition).* New York: McGraw-Hill/Irwin.

Kardes, Frank R. (2008). *Consumer behaviour and managerial decision making (Second Edition).* United States: Prentice Hall.

Kotler, Philip dan Keller, Kevin L. (2012). *Manajemen Pemasaran (Edisi 14)*. Jakarta: PT. Index.

Kotler, Philip dan Keller, Kevin L. (2012*). Marketing Management (Edisi 14)*. London: Prentice Hall. Pearson Education.

Kotler, Philip dan Gary Armstrong. (2010). *Prinsip-prinsip Pemasaran. Jilid kesatu. Edisi Ketiga belas.* Alih Bahasa:Bob Sabran. Jakarta: Erlangga.

Ma'rufaa, Riziiq. (2012). *Managemen Pemasaran*. Available at: http://www.pendidikanekonomi.com/2012/07/pengertian-dan-manfaat-atribut-produk.html .

Narbuko, Cholid; Achmadi, Abu. (2015). *Metodologi Penelitian.* Jakarta: Bumi Aksara.

Peter, J. Pail, dan Olson, Jerry C. (2010). *Consumer Behaviour & Marketing Strategy 9th Edition*. Singapore: McGraw-Hill Education.

Pintar, Bikers. (2014). *Pengertian Spesialisasi dalam Industri.* available at : http://arti-definisi-pengertian.info/pengertian-spesialisasi-dalam-industri/.

PT. Data Consult. (2011). *Detergent Industry Growing Amid Sharp Competition*. Available at: http://www.thefreelibrary.com/Detergent+industry+growing+amid+sharp+competition.-a0282327209.

Puspitasari, Nia Budi dan Afina Hasya. (2014). 'Analisis Preferensi Konsumen Terhadap Produk Coca-Cola, Pepsi Dan Big Cola Di Kota Semarang Dengan Analisis Konjoin'. *IENACO (Industrial Engineering National Conference).*

Resmawati, Trianita: Moch. Abdul Mukid, dan Diah Safitri. (2013). 'Analisis preferensi konsumen terhadap produk susu berbasis analisis conjoint menggunakan metode presentasi pairwise-comparison (studi kasus di beberapa smp di kecamatan banyumanik kota semarang)'.*Journal Gaussian (Statistika Undip)* **Vol 2**. No 4.

Santoso, Singgih. (2015). Menguasai Statistik Multivariat. Jakarta: PT Elex Media Komputindo Kelompok Gramedia, Anggota IKAPI

Schiffman, Leon dan Leslie Lazar Kanuk. (2008). *Perilaku Konsumen*. Edisi ketujuh. Cetakan keempat. Jakarta:PT Indeks.

Sugiyono. (2014). *Metode Penelitian Manajemen*. Bandung: Alfabeta.

Shtudiner, Ze'ev; Moti Zwilling dan Jeffrey Kantor. (2016). 'Did I Make the Right Decision? Attributes that Influence People Choice of City of Residence Using Conjoint Analysis as Marketing Optimization Tool'. *Social Science Research Network.*

Sumarwan, M.Sc.;l Prof. Dr. Ir. Ujang. (2011). *Perilaku Konsumen: Teori dan Penerapannya dalam Pemasaran (Edisi Kedua)*. Bogor: Ghalia Indonesia.

Sunyoto, Danang. (2016). *Statistika Deskriptif dan Probabilitas.* Yogyakarta: CAPS(Center for Academic Publishing Service).

Supranto, J. (2010). *Analisis Multivariat: Arti dan Interpretasi*. Jakarta: Rineka Cipta.