Recommendation for Marketing Communication Program of X Natural Skin Care Clinic, Cikupa-Tangerang

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Abstract. The rising beauty industry trends and demand are driving a more competitive situation in service providers such as skin care clinics. The objectives of this research is to gain potential skin care market in Cikupa and create marketing communication program. X Natural Skin Care Clinic has opened a new branch in Cikupa, Tangerang. Market potential in the region is convincing, but it needs a strategy to compete, by planning a marketing communication program. Determination of the target audience needs to be studied through research. Skin care clinic consumer's choice-criteria is used for segmentation bases to understanding consumer characteristic. Therefore, prior skin care clinic consumer's choice-criteria is done by exploratory factor analysis, the results namely quality, reputation, time, and economic. Then, consumer segmentation is done by integrating Self Organizing Map and K-means. The best number of segments based on the smallest Davies Bouldin Index value (0,9042) is divided into five segments, namely the quality segment, the economic segment, the non-economic segment, the reputation segment, the time segment. Marketing communication program recommendation encompassing advertising, sales promotion, public relations, personal selling, and direct marketing are planned over the next year in the form of timeline, as well as goals and estimated cost based on consumer's profile and characteristic.

Keywords: Skin Care Clinic Choice-criteria, Consumer Segmentation, Self Organizing Map, K-means, Marketing Communication Program

1. Introduction

The global and national beauty industry is growing. Indonesian regulations set the beauty industry as a mainstay industry, namely the priority industry that plays a major role as an economic prime mover [9]. This has led to competitive business, where the beauty industry is currently shifting toward service providers, commonly known as skin care clinic.

X Natural Skin Care Clinic has opened a new branch in Cikupa, Tangerang. This region has the same market potential with the target of this skin care clinic, which is middle to lower class. However, there are many competitors who have similar target markets around the region. Therefore, this research aims:

1. Identify choice criteria factors in choosing skin care clinic of X skin care clinic in Cikupa consumer with factor analysis
2. Identify characteristic and profile of X skin care clinic in Cikupa consumer with consumer segmentation
3. Formulate marketing communication program recommendation for X skin care clinic in Cikupa

2. Methodology

The data collection of this research utilized questionnaire and observation. The questionnaire consist of three main parts. The first part contains consumer profile questions (gender, marital status, age, education level, occupation, monthly income, frequency of treatment). The second part contains 15 questions which were developed from prior literatures about the selection criteria of choosing skn care clinic from consumers' point of views [1-2], [4], [6-7].

Pretest questionnaire was conducted to test the validity and reliability of questionnaire's content. A total of 30 questionnaires were released. Validity test of independent variables was done by MSA (Measures of Sampling Adequacy) of each variable, greater than .5 is valid [8]. Reliability test was done by Cronbach's Alpha, .6 is considered poor, .7 is acceptable, and .8 is categorized as good [10]. The research methodology flow is shown on Figure 1.
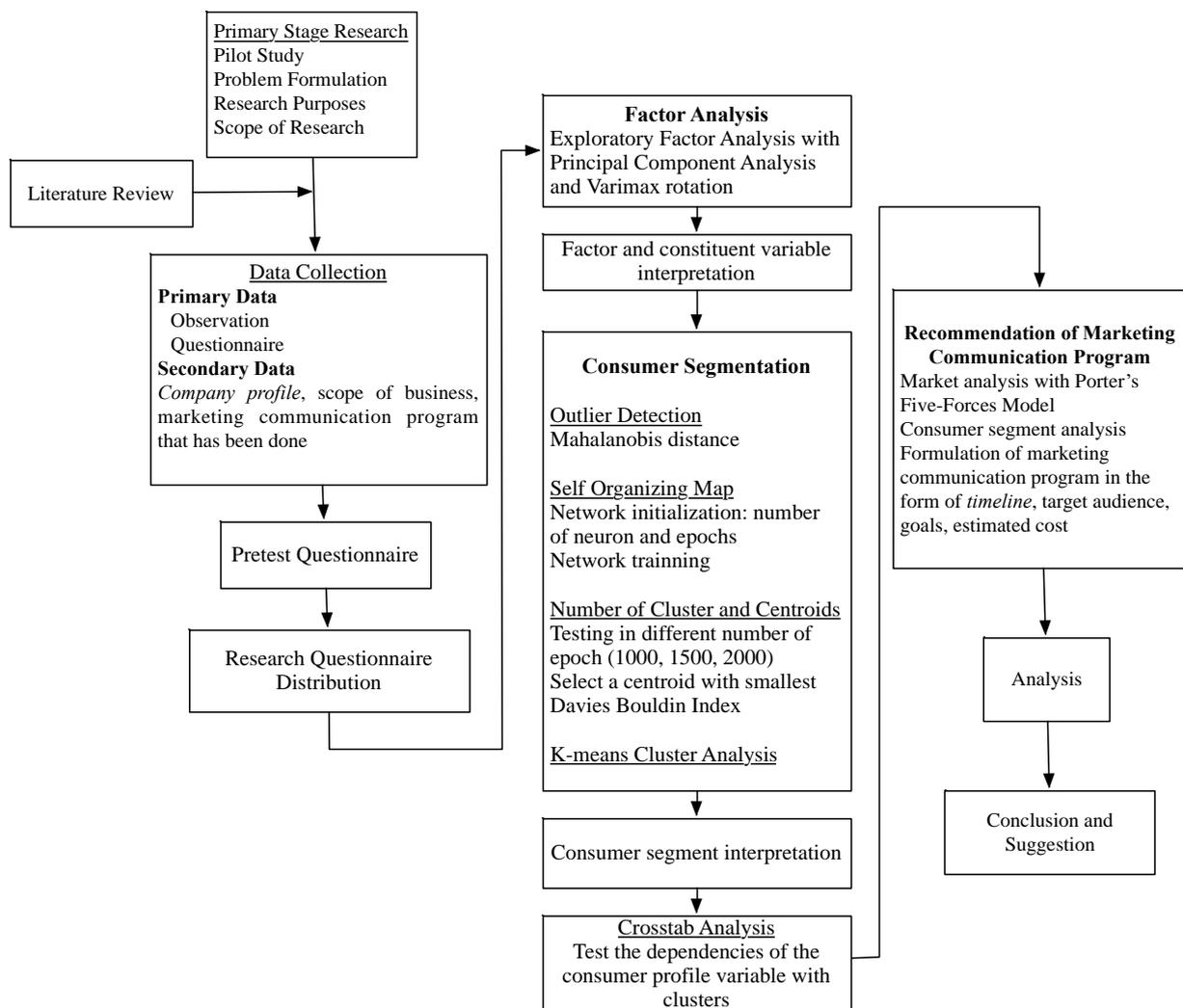

Figure 1. Research Methodology

Integration of Self Organizing Map dan K-means was applied to segmenting consumers' based on skin care clinic choice criteria. Some literature has proven that this method has a better accuracy than other statistical method [3], [6]. K-means algorithm which is one of non-hierarchical cluster analysis can allocated data by calculating error, but its initial centroid is selected from random starting point.

3. Results and Discussion

3.1. Consumer Profile

Consumer profile obtained from the questionnaire. Characteristics of consumer based on the profile variables were dominated by women, single status, 21 - 30 years, diploma/bachelor, employee, monthly income level above IDR 3.500.000, -, frequency of treatment 1 (one) time per month, and resource of information mostly from friend / family recommendation.

3.2. Factor Analysis

The factor analysis was u sed to extract factors from second part of questionnaire that contains of 15 independent variables. Then, principal component analysis and varimax rotation were utilized to extract factors whose eigenvalues are greater than 1. Based on KMO (Kaiser-Meyer-Olkin) Index, its value is greater than .5. The second factor analysis result has already meet the criteria of KMO and MSA (Measures of Sampling Adequacy) values, then factor analysis is feasible to proceed.

Table 1. Varimax Rotation Result

	Component			
	1	2	3	4
P10	0.758			
P11	0.697			
P9	0.659			
P12	0.648			
P15		0.842		
P13		0.794		
P14		0.632		
P2			0.792	
P1			0.736	
P3			0.714	
P6				0.813
P7				0.809
P8				0.548

The factors interpretation by each constituent variables as follows:

1. Factor 1 consist of reputation of the skin care clinic brand (P10), familiar doctor/beauty therapist (P11), reputation of the doctor (P9), and family/friend recommendation (P12). These variables are related to reputation and relationship with the employee. Therefore, it was named as **reputation**.
2. Factor 2 consist of convenient procedure (P15), waiting time for treatment (P13), and waiting time for consultation (P14). These variables are focused on time related consideration. Therefore, it was named as **time**.
3. Factor 3 consist of easy access to buy products (P2), cost of the consultation/treatment (P1), and clinic environment (P3). These variables portray characteristic of cost and place of the clinic. Therefore, it was named as **economic**.
4. Factor 4 consist of doctor's skill in handling patient problems (P6), friendly and courteous employee (P7), and use of modern equipment (P8). These variables portrays clinic's functional and service quality. Therefore, it was named as **quality**.

These factors were named subjectively based on prior literatures. Each factor's eigenvalue and Cronbach's Alpha can be seen Table 3.

Table 1. Results of Factor Analysis

Factor	Font	Spacing	Reliability
Reputation	Reputation of the skin care clinic brand (P10)	2.240	.676
	Familiar doctor/beauty therapist (P11)		
	Reputation of the doctor (P9)		
	Family/friends recommendation (P12)		
Time	Convenient procedure (P15)	1.938	.712
	Waiting time for treatment (P13)		
	Waiting time for consultation (P14)		
Economic	Easy access to buy products (P2)	1.798	.632
	Cost of the consultation/treatment (P1)		
	Clinic environment (P3)		
Quality	Doctor's skill in handling patient problems (P6)	1.726	.602
	Friendly and courteous employee (P7)		
	Use of modern equipment (P8)		

Factor score obtained from regression method and used as an input for consumer segmentation.

3.3. Consumer Segmentation

Outlier detection was first conducted by calculating Mahalanobis distance. One data must be removed because it has a Chi-square probability smaller than .001. The process then used Self Organizing Map and K-means.

1. *Self-Organizing Map*

Factor score that consist of four factors shown that the data were in four dimensions. Self-Organizing Map placed the data into two dimensions, m x n neuron. Self-Organizing Map was done by MATLAB (SOM Toolbox). First initialization were:

a. Number of neuron   : $5\sqrt{199} = 70.5 \approx 72$ (8 x 9 neuron)

b. Number of epoch   : 1000, 1500, and 2000 epochs are tested

    Davies Bouldin Index (DB Index), an internal cluster validation index, lower better, is used to select the best number of clusters. Figure 3 shown the DB Index graph for two to six clusters in 1000 epochs.
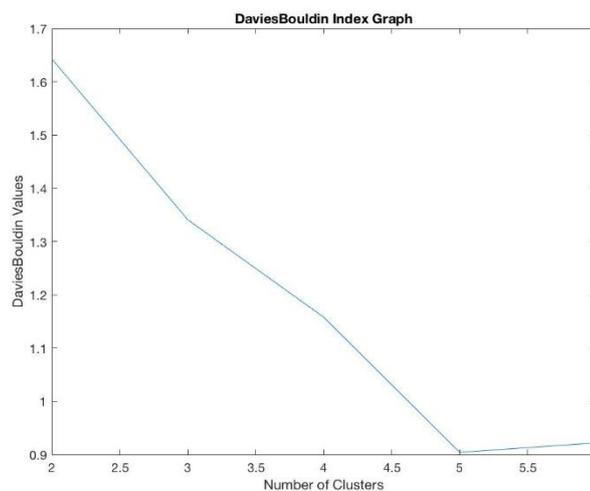
Figure 2. Davies Bouldin Index Graph

The smallest DB Index from Figure 2 obtained by the number of 5 clusters. Therefore, 5 clusters are the best number of clusters. Next, different number of epochs were tested and compared by the DB Index to determine the best cluster centroid.

Table 3. Epoch Testing Comparison

Epoch	Davies Bouldin Index
1000	.9149
1500	.9042
2000	.9414

Based on Table 3., the smallest DB Index is in 1500 epoch. Therefore, the clusters centroid result from this network were used as an initial cluster centre in K-means.

2. *K-means*

K-means algorithm was done by SPSS. Initial cluster center filled with centroid from Self Organizing Map. The results are cluster 1 contains 25 subjects, cluster 2 (42), cluster 3 (47) , cluster 4 (50) , cluster 5 (35) . Characteristic of the consumer each cluster is determined by final cluster centres score.

Table 4. *Final Cluster Center*

	Cluster				
	1	2	3	4	5
Reputation Factor	-1.22918	.16468	.43689	-.34333	.72381
Time Factor	-1.29320	.46579	.49427	.55856	-1.11685
Economic Factor	-.61280	-.25127	-.82445	.84137	.61193
Quality Factor	.13567	-1.35596	.71733	.38533	.01147

Characteristic of the consumer of each cluster interpretation shown in Table 4 as follows:
1. Cluster 1 (Quality Cluster) is closed to quality factor, but time factor is the farthest.
2. Cluster 2 (Time cluster) is closed to time factor, but quality factor is the farthest.
3. Cluster 3 (Non-economic) is closed to quality factor, but economic factor is the farthest. The difference between this cluster and cluster 1 is the reputation and time factor also considered in this cluster.
4. Cluster 4 (Economic cluster) is closed to economic factor, but reputation factor is the farthest.
5. Cluster 5 (Reputation) is closed to reputation factor, but time factor is the farthest.

Economic and non-economic cluster has the most number of members. These clusters have an opposite dominant factor, which economic factor is the differentiating factor. Furthermore, quality factor is closed to all of the clusters, except cluster 2. Crosstab analysis is conducted to determine if any dependence consumer profile variables with clusters.

Table 5. Crosstab Analysis

Profile Variable	Sig.	Conclusion
Gender	.016	Not significant
Marital status	.119	Not significant
Age	.248	Not significant
Education level	.355	Not significant
Occupation	.198	Not significant
Monthly income	.006	Not significant
Frequency of treatment	.688	Not significant

Table 5. show significance value among seven consumer profile variables. All the value are greater than significance level (>.001), which mean the consumer profile variables are not significantly different among the clusters. The smallest value of significance in gender and monthly income can be considered as the differentiator of target audience.

3.4. Marketing Communication Program Recommendation
Before formulating marketing communication program recommendation, market analysis was first conducted by Porter's Five-Forces.
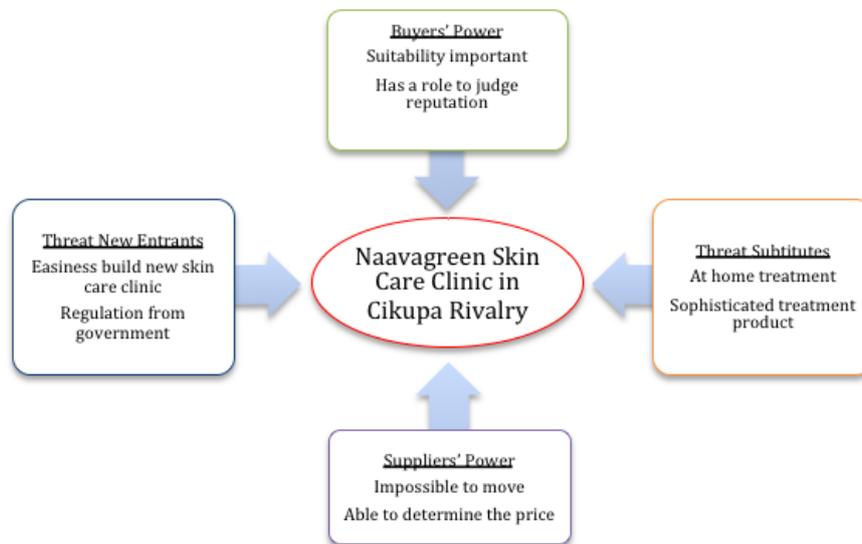

Figure 3. Porter's Five-Forces of X Skin Care Clinic in Cikupa

Five forces from Porter's Five-Forces that has been described in Figure 3 indicates a strong intensity of competition so X Skin Care Clinic in Cikupa. The marketing implications of each cluster as follows:
1. **Quality cluster**. Consumers of this cluster pay attention about quality. To attract this cluster, marketing communication should emphasize information about quality of the skin care clinic, including service and functional quality.
2. **Time cluster**. Consumer of this cluster concern the time effectiveness. Most consumer of this cluster has a higher education level and work as an employee. Their busy scheduled requires a time effective treatment.
3. **Non-economic cluster**. Consumer of this cluster not only concern about the quality aspect, but also reputation and time. The quality aspect is indicated by employee performance and equipment.
4. **Economic cluster**. Consumer of this cluster concern the cost and location aspects. Giving information about the treatment cost in X skin care clinic which already affordable and inside clinic's environment by advertising.
5. **Reputation cluster**. Consumer of this cluster choose a skin care clinic based on their surrounding people. X skin care clinic has not recognized yet by surrounding people in the region.

The marketing communication program recommendation is described in Table 7.

Table 2. Marketing Communication Program Recommendation

Activity	Goals	Target Audience	location	Estimation
1. Flyer	Create awareness	Women, housewife/student/ employee/21-30 years	School , ecoculture, Telaga Bestari, Tigaraksa, Curug, Tiptip, Sabar Subur, World of Wonder, Water world	Rp. 1 Milion /month
2. Give free treatment Rp. 40.000,- discount voucher or souvenir	Create desire to purchase		Tarakanita, Citra Berkat (school event); ecoculture festival	Rp. 500K-RP 1 Mio
3.Demo and presentation			Dharma Wanita, PKK, Persit, Citra Raya office, school	Transport IDR 100K
4.Open Booth			Ecoplaza, Tangcity, Giant, Tiptop, Sabar Subur, Cikupa	IDR 5 mio – 15 Mio
5. Teach about beauty care		Women/student	SMK Tangerang /stewardes	N/A
6. Magazine or electronic (radio, website) advertising	Information about product and event	Women/Men. 20-30 years	Tanferangnews.com Tangerangkab.go Magazine: Citra Raya	IDR 4 Mio – 10 Mio
7. Selegram endorsement			Selegram : Jessica W. (Model)	IDR 100K-500K
8. Photobooth contest	Ensure the customer like the product	Women/Men. 21-30 years	Inside the clinic	IDR 1 Mio – 5 Mio
9. 1 year celebration	Awareness	Women housewife > 31 years	Puskesmas Balaraja	IDR 8 Mio – 15 Mio
10. pre-holiday celebration	Customer Loyalty	Customer	Inside the Clinic	IDR 3 Mio – 5 Mio
11. SMS Blast/WA	Information			Mobile payment

Some of the marketing communication mix proposed to support each other, for example public relations activities supported by advertising so the information about the event that has been run by the skin care clinic can be widespread. This research showed that skin care clinic consumer, which is part of the lifestyle industry, pay more attention to the quality aspect, which includes the quality of doctors, employees, and equipment used. Therefore, supervisor should be considered the quality of human resources and equipment in the skin care clinic.

4. Conclusion
1   The choice criteria factors in choosing skin car clinic of X skin care clinic in Cikupa consumer are quality, reputation, time, and economics.
2   X skin care clinic in Cikupa consumer is divided into five segments namely quality segment, time segment, non-economic segment, economic segment, and reputation segment. The dominance of consumer profiles in these five segments are women, ages 21 - 30 years, diploma/bachelor, employee and student, monthly income above Rp 3,500,000, and frequency of treatment once a month.
3   Marketing communication program recommendation for X skin care clinic in Cikupa are given to compete in a new area, in the form of timeline for one-year ahead, goals, and estimated cost.

5. References
[1]   Al-Doghaither A H, Abderlrhman B M, Saaed A W and Magzoub M A 2003 Factor Influencing Patient Choice of Hospitals in Riyadh, Saudi Arabia. *The Journal of the Royal Society for the Promotion of Health* **2**(123) p 105-9
[2]   Al-Durgham L M and Barghash M A 2015 Factor and Cluster Analysis as a Tool for Patient Segmentation Applied to Hospital Marketing in Jordan. *American Journal of Operations Research* **5** p 293-306

[3]   Arini M, Hendrawan R and Hafidz I 2014 Karakteristik Pelanggan Telepon Kabel dengan SOM & K-means Untuk Klasifikasi Pelanggan Perusahaan Telekomunikasi (Studi Kasus: PT XYZ). *Prosiding Seminar Nasional Sistem Informasi Indonesia* p 419-25

[4]   Elleuch A 2008 Patient Satisfaction in Japan. *International Journal of Health Care Quality Assurance* **21**(7) p 692-705

[5]   Ghosh M 2015 An Empirical Study on Hospital Selection in India. *International Journal of Health Care Quality Assurance* **28**(1)

[6]   Kuo R, Ho L and Hu C 2002 Integration of Self-Organizing Feature Map and K-means Algorithm for Market Segmentation. *Computers & Operation Research* p 1475-93

[7]   Lee W I, Shih B Y and Chung Y S 2008 The Exploration of Consumers' Behavior in Choosing Hospital by the Application of Neural Network. *Expert System with Applications* **34** p 806-16

[8]   Nasution M E and Usman H 2007 *Proses Penelitian Kuantitatif* (Jakarta: Lembaga Penerbit Fakultas Ekonomi Universitas Indonesia)

[9]   Rahayu E M 2016 *Wow, Indonesia Pasar Pertumbuhan Utama Industri Kecantikan ASEAN.* [Retrieved: Oktober 20, 2017] from https://swa.co.id/swa/business-strategy/wow-indonesia-pasar-pertumbuhan-utama-industri-kecantikan-asean

[10]   Sekaran U and Bougie R 2010 *Research Methods For Business: A Skill Building Approach.* 5th Ed. (Haddington: John Wiley & Sons)