Customer behaviour for telecommunication service provider

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Abstract. Nowadays, telecommunication business is in maturity phase. Meanwhile, Indonesia is open market to telecommunication service provider. Indonesia has many telecommunication provider companies. The competition makes service provider compete to acquire customer. Learning customer behavior is one way to acquire customer. By knowing customer behavior, company can know formulate product or service that offered. This study used statistic approach which is conducted in Medan, North Sumatera. The result of this paper show that brand, network and distribution have significant relation to customer preference while choose service provider. Tariff, promotion and relation have not significant effect to customer behavior while choose service provider. This paper to know customer behavior intention while choose telecommunication service provider.

1. Introduction

It is important to know about customer behavior by service provider to offer product or service. There are many researches about customer behavior while choosing product or service. Ashaduzzaman [1] defines people in Bangladesh choose service provider based on tariff, brand and customer service. Sirkit [2] defines that people in Thailand choose service provider based on customer profile, product that is offered, and quality of service. Now days in Indonesia, there are many company offer service of product telecommunication. To facing competition, service provider must know who is their customer, how they decide, and what variable that influence the decision. The competition also causes many products offering that makes competition tighter. This paper aims to know customer prepaid behavior in Medan, Indonesia.

Kotler [3] defines there are many factor affect customer buying perception such as, culture, social, personal, psychology. Culture is something that needs to be learned, consumers are not born to spontaneously understand about the values and norms of social life, but they must learn about what is received from their families and the environment. Social Class is affecting different behaviors in purchasing behavior. Personal characteristic include age and life cycle, occupation and economic circumstances, personality, lifestyle and self-concept. Psychology include motivation, perception, learn, faith. There are many factor influence customer perception. The factors are external, internal, self-concept, and lifestyle. External factor is about preference, learning, memory, motivation, personality, emotion and behavior. Self-concept is about feeling about their self. Lifestyle is about how people buy, user, feel it. Customer behavior by Schiffman and Kanuk [4] is process people while finding, buying, using, evaluating, and acting after consume product or service or idea that is expected to fulfill needs. Changing customer behavior needs much investment than offer product according customer behavior (Kotler). Therefore, company need to learn more about customer behavior.
In telecommunication business, there are several variables used in order to attract customers to buy services. The variables are brand image (Pratompong Srinuan [5]; Ho Kyun Shin [6]; Ashaduzzaman; how tariff and promotion from service provider (Ho Kyun Shin; Mehmet Karacuka [7]; Ashaduzzaman; João Confrariaa [8]; Dilek Atlas [9]; Pratompong Srinuan. Network is also influence customer behavior while choosing a service provider. How telecommunication service Provider Company offer their network, quality, coverage and speed. The study from Ho Kyun Shin, Mehmet Karacuka dkk, Sirikit, João Confrariaa, Dilek define that network also affects customer choice. From the study of Kotler, relation can affect buying behavior. Several service providers have special offerings for similarity provider. Jia-Yin Qi dkk [10], João Confrariaa, dkk define that relation has influence for buying behavior. Distribution is an activity to facilitate the consumer to get the services delivered. Choosing the right path will make it easier for consumers to obtain existing services.

2. Research methodology

2.1. Sample
The sample size based on rule of thumb in Panuwatwanich [11] suggests a ratio 1:5. One question is for 5 respondents. In this research there are 46 questions, so minimum sample is 230. Theory Gervitz [12] defines if population more than 10,000, then total sample between 200-1000. In this research, researcher uses 331 samples.

2.2. Operation definition and measurements of variable
Based on study literature, research defines 6 variables which will be used in this study.

- **Brand**
  Giovanis and Athanasopoulou [13] define variables that compose brand are trust, satisfaction and commitment. Brand trust is a sense of security felt by consumers in the interaction using the brand. Customer satisfaction is defined as the fulfillment of customer expectations. A commitment is a desire to maintain relationships in the long run.

- **Tariff**
  Prices in the world of telecommunications are better known as tariffs. Tariff is the unit price of goods / services or charges imposed on goods / services. Based on Arthur S. Cayanan and Ivy D.C. Suan [14] tariff in telecommunication are divided tariff based on telephone, cellular, and internet. Telecommunication tariff build by regulation, competition, and technology. Previous study define that tariff have influence to customer buying decision (Ho Kyun Shin; Mehmet Karacuka; Ashaduzzammam; João Confrariaa; Dilek. Tariff based on Shi [15], differentiated linear tariff and unit tariff. Kramer [16] define tariff can be shown two models, average tariff and flexible tariff. Flexible tariff means pay per used. To interest customer, some provider give discount.

- **Promotion**
  Marketing communications include advertising, salespeople, packaging and others useful to introduce their products. Promotion can also be done by doing good public relations. Promotion is one example of marketing communication. Promotions can be advertising, certain events, or cooperation with certain parties, using brand ambassador. In previous research Pratompong Srinuan et al, Ho Kyun Shin et al, Dilek show promotions have an influence in the selection of service providers.

- **Network**
  Variable network contains coverage, and quality. Coverage based on government is a service area of STBS (Mobile Cellular Network) is the scope of services as per the permit of the organizer of STBS (regional or national). Network quality can be defined as the specific requirements provided by the network to the user, which is necessary to achieve the required application functionality (service). Quality network have three parameters such as, delay, voice quality and signal. According to Ho Kyun Shin et al, Mehmet Karacuka et al, Sirikit network quality is
very influential on the selection made by consumers.

• **Relation**
  According to Mehmet the similarity of users / relations means that if have similarities with the people around the operator while according to Confraria the similarity of operators with relations is very important. The influence of relationships is very important role in decision making. According Dwivedi, et al [17], the influence of relationships can be from family, friends and around.

• **Distribution**
  Distribution is one of marketing aspects. This activity aims to accelerate and facilitate consumers’ goods and services from producers to consumers. The importance of selection of distribution channels will make it easier for consumers to obtain products or services. In this study researchers want to know how the distribution factor to the selection of telecommunications services.

Tabel 1 shows variables and criteria.

**Table 1.** Operation definition and measurements of variable

| Variable   | Criteria         | Description                                                                 |
|------------|------------------|-----------------------------------------------------------------------------|
| Brand      | Trust            | Customer believe, satisfied and committed to continue to have relationships with the brands used |
|            | Satisfaction     |                                                                             |
|            | Commitment       |                                                                             |
| Tariff     | Discount         | Has lower price                                                             |
|            | Model Price      | The existence of tariff models                                              |
| Promotion  | The effect of advertising | The influence of advertising and publicity                             |
|            | The Influence of Public Relations |                                                   |
| Network    | Coverage         | It has a modern technological device                                         |
|            | Quality          | Have the quality and speed of service in accordance with the promised       |
| Relation   | The influence of family | Influences from Family, Friends and around                               |
|            | The influence of friends |                                                   |
|            | The Influence of the Circumstances |                                                   |
| Distribution | Facility  | Easeness                                                                     |
Figure 1. Research Methodology

In this study, researchers want to know how the influence of brands, tariffs, promotions, networks, relationships and distribution in the selection of telecommunication products / services. In this research, there are hypothesis test such as

- Hypothesis 1
  H0 : There is no significant influence between brands on consumer behavior in choosing cellular provider
  H1 : There is a significant effect between brands on consumer behavior in choosing cellular provider

- Hypothesis 2
  H0 : There is no significant influence between tariffs on consumer behavior in choosing cellular provider
  H1 : There is a significant effect between tariffs on consumer behavior in choosing cellular provider

- Hypothesis 3
  H0 : There is no significant influence between promotions on consumer behavior in choosing cellular provider
  H1 : There is a significant effect between promotions on consumer behavior in choosing cellular provider

- Hypothesis 4
  H0 : There is no significant influence between networks on consumer behavior in choosing cellular provider
  H1 : There is a significant effect between networks on consumer behavior in choosing cellular provider

- Hypothesis 5
  H0 : There is no significant influence between relations on consumer behavior in choosing cellular provider
  H1 : There is a significant effect between relations on consumer behavior in choosing cellular provider

- Hypothesis 6
  H0 : There is no significant influence between distributions on consumer behavior in choosing cellular provider
  H1 : There is a significant effect between distributions on consumer behavior in choosing cellular provider
3. Results and Discussions

Data collected as many as 331 respondents, after the data collected then researcher do screening. From the data, 290 respondents data that is proper for processing, this is because there are 41 respondents that domicile are outside of Medan and do not use prepaid service. After doing the coding, data is tested to know validity and reliability.

The formula to calculate validity test can be seen below

$$r_{xy} = \frac{N(\sum XY) - (\sum X)(\sum Y)}{\sqrt{[N(\sum X^2) - (\sum X)^2][N(\sum Y^2) - (\sum Y)^2]}}$$

$r_{xy}$ = Correlation product  
N = Total Data  
X = Total X  
Y = Total Y

The formula to calculate reliability test can be seen below

$$r_{11} = \left( \frac{K}{K-1} \right) \left( 1 - \frac{\Sigma \sigma_i^2}{\sigma^2} \right)$$

$r_{11}$ = Reliability coefficient  
K = Total Variable  
$\Sigma \sigma_i^2$ = Variance Score per item  
$\sigma_i^2$ = Variance Total

The formula to calculate variance

$$S^2 = \frac{n \Sigma X^2 - (\Sigma x)^2}{n(n-1)}$$

$S_i$ = Total Variance  
N = Total Respondent

From the validity test is known that the value of $r$-count every indicator is greater than $r$-table, $r$-count < $r$-table so it can be said that the data is valid, it can be seen in Table 2.

| Variable | Indikator | r-count | r-table | Remark |
|----------|-----------|---------|---------|--------|
| Merek    | X1        | 0.542   | 0.361   | Valid  |
|          | X2        | 0.409   | 0.361   | Valid  |
|          | X3        | 0.383   | 0.361   | Valid  |
|          | X4        | 0.623   | 0.361   | Valid  |
|          | X5        | 0.496   | 0.361   | Valid  |
| X6       | 0.379     | 0.361   | Valid   |
| X7       | 0.426     | 0.361   | Valid   |
| X8       | 0.624     | 0.361   | Valid   |
| X9       | 0.63      | 0.361   | Valid   |
| X10      | 0.583     | 0.361   | Valid   |
| X11      | 0.641     | 0.361   | Valid   |
| X12      | 0.726     | 0.361   | Valid   |
While in reliable testing conducted with SPSS can be seen in table 3. The test show value of Cronbach’s Alpha r-count is greater with r-table (r-table = 0.6). R count > r-table 0.6, it means data is reliable.

**Table 3. Reliability Test**

| Variable         | Cronbach’s Alpha | Remark   |
|------------------|------------------|----------|
| Brand            | 0.792            | Reliable |
| Tariff           | 0.791            | Reliable |
| Promotion        | 0.791            | Reliable |
| Network          | 0.783            | Reliable |
| Relation         | 0.77             | Reliable |
| Distribution     | 0.848            | Reliable |
| Buying Behavior  | 0.828            | Reliable |
Correlation test is used to know the relationship between dependent variable that is buying behavior and independent variable that is brand, tariff, promotion, network, relation and distribution. The formula of correlation is

\[
r = \frac{N(\Sigma XY) - (\Sigma X)(\Sigma Y)}{\sqrt{(n \Sigma X^2 - n)(\Sigma X)^2} \sqrt{n \Sigma Y^2 - n}(\Sigma Y)^2}}
\]

\[r = \text{Correlation Coefficient}\]
\[n = \text{Total Data}\]
\[X = \text{First Variable}\]
\[Y = \text{Second Variable}\]

In the research conducted obtained coefficient value calculation. Correlation coefficient value indicates strong or weak relationship between dependent and independent variables and the direction of the relationship. Correlation table is tested with Pearson. If correlation value (R-value) between 0.4 - 0.699 show medium correlation. Low correlation if R-value between 0.299 - 0.699. Brand variables show the value of correlation with consumer behavior in choosing operator is 0.604 that is correlation is going tariff has a low correlation that is 0.253, while the other variables show a moderate correlation of the promotion of 0.452, the network of 0.558, 0.454 relation and 0.476 distribution. The six variables have a positive value, which means that the value indicates a direct relationship between the dependent variable and the independent variable. It can be seen in the table 4 below.

### Table 4. Correlation Test

| Variable | Correlation | Remark        |
|----------|-------------|---------------|
| Brand    | 0.604       | Medium Correlation |
| Tariff   | 0.253       | Low Correlation  |
| Promotion| 0.452       | Medium Correlation  |
| Network  | 0.558       | Medium Correlation  |
| Relation | 0.454       | Medium Correlation  |
| Distribution | 0.476 | Medium Correlation  |

Hypothesis testing was done by double correlation of t-test and f-test. F-test is used to test whether variables exist simultaneously (together) have a significant effect or not. T-test is used to test whether the variables exist partially have an influence or not. The formula calculate t-test is

\[t = \frac{r \sqrt{n - 2}}{\sqrt{1 - r^2}}\]

\[t = \text{T-test}\]
\[r = \text{Correlation between dependent and independent}\]
\[n = \text{Total of sample}\]

The formula to calculate f-test is:

\[f = \frac{R^2 / k}{(1 - R^2) / (n - k - 1)}\]

\[R^2 = 1 - [(1 - r_{x_1,y})(1 - r_{x_2,y}) \ldots (1 - r_{x_n,y})]\]
f = F-test  
R = Correlation Coefficient  
k = Variable Independent  
n = Total Sample  
$r_{xy}$ = Coefficient Correlation $X$, Y

Hypothesis testing was done by double correlation of t-test and f-test with 95% confidence level ($\alpha = 0.05$) for t-test and f-test with same level of 95% ($\alpha = 0.05$). F-test is used to test whether variables exist simultaneously (together) have a significant effect or not. From result of calculation of f-test obtained significant value that is 0.00. The value shows the value of sig f-test $0.00 < 0.05$. It means variable brand, tariff, promotion, network, relation distribution have simultaneously together to buying behavior. Variable brand t-test value 6.645, it show t-test $> t$-table (1.96). It means H0 Rejected, H1 Accepted so variable brand have significant effect to buying behavior. Variable tariff has t-test (-0.68) $< t$-table (1.96), so H0 accepted, it means variable tariff have not significant effect to buying behavior. Variable promotion, and relation show H0 accepted. Promotion t-test value (1.612) $> t$-table (1.96), Relation t-test value (1.325) $> t$-table means variable tariff have not significant effect to buying behavior, so H0 Accepted. It means promotion, relation don’t have significant effect to buying behavior. On the other side, network and distribution show that H0 rejected. Network t-test (4.76) $> t$-table (1.96), and distribution t-test (2.818) $> t$-table (1.96). H0 rejected shows that network and distribution have significant relation with customer behavior

| Variable | t-test | t-table | Remarks       |
|----------|--------|---------|--------------|
| Brand    | 6.645  | 1.96    | H0 Rejected  |
| Tariff   | -0.68  | 1.96    | H0 Accepted  |
| Promotion| 1.612  | 1.96    | H0 Accepted  |
| Network  | 4.76   | 1.96    | H0 Rejected  |
| Relation | 1.325  | 1.96    | H0 Accepted  |
| Distribution | 2.818 | 1.96 | H0 Rejected |

4. Conclusions

The research conducted that cellular operator companies need to conduct in-depth research in formulating marketing strategies to fit consumer behavior. So the company can achieve the market share. Variable that have medium correlation to customer buying behavior are brand, promotion, network, relation and distribution. Meanwhile tariff has low correlation to customer buying behavior. Changing tariff will only have low effect to customer buying decision.

Hypothesis test above shows the variables that have significant relationship to consumer behavior in choosing the service providers are brand, network, and distribution. Changes in brand image will affect customer decisions. Brands that have a downward image, will make people reluctant to buy it. Network have significant relation to customer decisions, if the network coverage and quality are reduced it will make people have a downhill interest in the product. Moreover distribution has effect to customer. The easiness of obtaining product/service will make the consumer prefer that product rather than the hard earned.

Hypothesis testing in this study shows that people in Medan are not too influential on the price. If there is changing about price, people in Medan do not much pay attention about the changing. More over variable promotion, people in Medan not have affect to promotion. The people in Medan do not pay much attention to promotions as the chosen variables. Besides affecting the relationships of both family, friends, and colleagues are not too influential on consumer behavior in choosing a cellular operator.
The study shows that people in Medan focusing on brand, network and distribution. The company must improve their network, brand image and distribution channel. Improving network can be done by using update technology. By improve network, distribution channel it can also improve brand image. Company must be trusted, satisfy so customer will have commitment to have long term relationship.

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