

Identification of Customer Values in Telecommunication Service Industry

A Case of Postpaid Cellular Customers in Indonesia

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Abstract— The vast development of mobile technologies has led to a competitive environment between the existing providers of telecommunication services in delivering their best offers to create customer values. Among their customers, postpaid subscribers have a distinguished position due to their exclusive characteristics which require special treatments from respective providers. This study aims to identify customer values created by telecommunications services provider, particularly for postpaid subscribers. A descriptive and causal analysis with further examination using Structural Equation Modeling is taken as the research methodology. There are 650 postpaid subscribers of 3 major telecommunications service providers in Indonesia, *i.e.* Telkomsel, Indosat and XL Axiata, asked to be the respondents. The results indicate that to create customer values particularly for postpaid mobile customers, companies should prioritize the development and performance improvement of customers' relationship management, a deeper integration of customer characteristics, and an improved marketing mix. Looking at these results, this study offers a strategic step for telecommunication service providers in improving customer values as a means to increase customer loyalty to their services.

Keywords— *customer relationship management; customer values; telecommunication service providers; marketing mix*

I. INTRODUCTION

The massive development of mobile technologies has driven the creation of a very competitive mobile services market. ITU [12] has stated that “the role of mobile telecommunications services in the future will be greater in supporting the activities global communication.” During 2007-2011, the annual average growth of mobile phone subscribers in the world is about 14%, or equal to the growth of internet. However, the density of fixed-phone decrease steadily at $\pm 2\%$ per year. In 2011, the density of mobile phone subscribers is 86%. The rate is two times greater than internet users and five times than fixed phone [12]. Thus, this research needs to focus on mobile telecommunication services.

Furthermore, Indonesia is the most populous country and the biggest economy in South-East Asia. These facts offer a great environment for the sustainable growth of its telecommunications industry. Particularly, there is a significant growth of mobile subscribers in the country. It then indicates the important role of mobile services for the community. In Indonesia, there are currently 7 operators of mobile telecommunications which serve 263.2 million

subscribers. Among those customers, 83% are served by the three mobile operators, *i.e.* PT.Telkomsel (121,5 million), PT.Indosat Tbk. (55,5 million) and PT.Excelcomindo Axiata Tbk. (42,3 million). In fact, the largest portion of total customers are prepaid ones (Sources: Mobile Operators, the Ministry of Communications, *etc.*; Data in 2012/Q3).

However, this research focuses on postpaid customers by considering the little attention postpaid service got from mobile operators in the last decade, meaning that the postpaid service is arguably stagnant in terms of service development and the number of subscribers. Although the total postpaid subscribers are smaller than prepaid customers, but they generate higher Average Rate per User (ARPU) for mobile operators compared to ARPU from prepaid subscribers. Thus, every postpaid subscriber has a major contribution to the revenues of respective mobile service operator(s).

In facts, the vast development of mobile telecommunication services supported by advances in smartphone technology has driven the behavior of postpaid subscribers in which many individuals use services from more than one mobile operator. The phenomenon has triggered several challenges for mobile operators. One of those problems is customer loyalty. The problem occurs particularly on post-paid customer due to the relatively low perceived customer values gained by postpaid customers. In other words, the values do not meet their expectations. Besides, the declining ARPU gained by mobile operators have decreased their profits. The declines hence encourage them to develop a marketing strategy that may create superior customer values. It is taken by understanding customers' individual characteristics and improving marketing mix as well as customer relationship management (CRM).

To elaborate issues covered by this study, a preliminary survey is conducted by using systematic sampling procedures on 50 customers of postpaid card who use in minimum one card from these following providers: Kartu Halo (issued by Telkomsel), Matrix (Indosat), and XL postpaid (Excelcomindo Axiata). Besides, four variables are taken in the preliminary study, *i.e.* customer values, marketing mix performance, CRM performance and customers' characteristics. Apparently, the results indicate an inferior measurement on customer values particularly related to benefits and costs dimensions. In facts, cost dimensions are larger than benefits. Besides, the low satisfactions of postpaid customers influence the performance indicators of cellular network. Also, several dissatisfactions

related to customer services occur, *e.g.* response to phone bill complaint, phone re-activation, and accuracy of usage records. In short, the low satisfaction of postpaid customers indicates the low benefits obtained by the customers.

On the other hand, the survey results show the performance of the seven marketing mix dimensions. Apparently, five dimensions, *i.e.* product, price, people, physical infrastructures and processes, are stated as low, while place and promotion shows a high performance. These results are consistent with the existing studies by Depkominfo [6]; ITU Group [11]; and YLKI [36].

Meanwhile along with the shift of marketing activities from the transactional era towards a more relational era, the inferior customer values are also influenced by CRM run by mobile operators. Based on the results of preliminary survey, CRM performance is considerably low, particularly on the psychological benefits and gifts dimensions. The easements dimensions, on the other hand, show a high performance.

Moreover, in the preliminary survey on customers' individual characteristics respondents assess the dimensions of income, lifestyle and profession. Apparently, these dimensions have not been well-addressed by mobile operators in developing post-paid services. However, those respondents indicate that mobile operators have included good personality dimensions in developing the services.

Then, based on these backgrounds this study particularly focuses on the influences of individual characteristics, marketing mix performance, and CRM performance on customer values in Indonesian mobile-cellular industry.

II. LITERATURE REVIEW

A. Individual Characteristics

Kotler et. al [16] have stated that the concept of marketing 3.0 refers to a marketing-driven value by which companies see customers as human beings with mind, heart and spirit. It indicates that the characteristics of individuals as an integral part of human beings have become an important concern in recent management sciences. Then, Kotler and Keller [17] have suggested that individual characteristics include age, stage in the life cycle, occupation, consumer income, personality, self-concept, lifestyle and values.

Linking Individual Characteristics to Marketing-Mix and CRM

According to Koh et. al [13]; Alina [2]; and Wu et.al [35] have concluded that there are significant influences of individual characteristics on the marketing mix. Koh et. al [13] focuses on the services convergence of broadcasting and telecommunications by investigating dimensions on individual characteristics, *i.e.* income, gender, education and age, and marketing mix dimensions, *i.e.* information and communications technology (ICT) services. Knowledge on customers is obtained from customer profiles gathered from either database or data mining technique. Particularly, YLKI [36] have stated that there is a strong relationship between individual characteristics and CRM.

Linking Individual Characteristics to Customer Values

Furthermore, a deeper understanding on the relationship between the characteristics and customer values has been conducted by Wong and Alison [34]. They suggest that "individual characteristics through the dimension of awareness about the price and time factor have a significant relationship to customer value." Then, Sim et. al [25] have stated that "the individual characteristics, *i.e.* age, gender, innovativeness, and qualifications, have a significant relationship on perceived usefulness. Meanwhile, only individual innovations, age and gender which have a relationship on perceived ease of use."

B. Marketing-Mix

Marketing mix is a set of marketing tools taken by business in achieving its goal either to satisfy target customers or to influence their purchasing behavior on product/service (Kotler and Keller [14]; Azzadina et.al [3]). Marketing-mix consists of 7 factors (7P), *i.e.* product, price, place, promotion, people, process, and physical evidence. Ahonen et. Al [1] and Strouse [29] have explained that telecom operators have long practiced the bundling strategy. Strouse [29] has given an example of a fixed-telephone operator that provides special offers on local access, remote voice mail messaging, call forwarding, call waiting by adding a bonus on lower rate usage times compared to ones listed in the bill for individual services.

Linking Marketing-Mix to CRM and Customer Values

Reinartz et. al [24] have identified price and customer services as the value drivers for the performance of CRM. Next, a similar perspective has also been presented by Guenzi and Gabrielle [8]. They propose that companies which have a customer-oriented sales-force positively encourage the creation of superior customer values and increase their market share. Particularly, Sucherly [30] has conducted a research on Indonesian telecommunication services industry. He suggests that the "performance of marketing-mix strategies affects the value of telecommunications services." He also proposes that "the superiority of promotional programs and service processed form a superior customer value."

C. Customer Relationship Management (CRM)

CRM is more commonly used in the context of technology solutions and has been described as "information-enabled relationship marketing" (Ryals and Payne [37] and Zablah et. al [15]). Kotler and Keller [17] have suggested that marketers should build a strong relationship with customers. Rahaman et. al [23] have examined the role of CRM in Bangladesh telecom operators by using five dimensions, *i.e.* thankful, responsiveness and relationship, appropriateness, caring and keep in touch (psychological benefits). Meanwhile, Lee et al. [18] have attempted to examine internet service providers of mobile CRM by using Suh and Park's dimensions [26], *i.e.* contents differentiation, contact frequency, repetition contents (psychological benefits and easements). Then, Ghafari *et al.*'s work [7] on CRM at Iran Bank utilizes dimensions on information sharing, customer partnership, long-term relationship, joint problem-solving and technology-based CRM (psychological benefits and easements).

Linking CRM to Customer Values

Focusing on the relationship between CRM performance and customer values, Verhoef [33] has attempted to examine the financial service provider customers. He suggests that membership in customer loyalty programs and direct mailings indicate a positive influence on changes in customer values. Loyalty program delivers values to customers by giving reward points after they make purchases. It gives a psychological sense for them (Hsee et. al [10]; Osselaer et. al [32]). Liu [20] has also proposed that at the time a customer swaps the point rewards, the subscriber receives economic benefits and psychology from the loyalty program. Then, Sirdeshmukh [28] have emphasized that starting a retentive relationship to customers has a functional importance in delivering a superior value to customers.

D. Customer Values

Sucherly [31] advocates that the only company capable of creating a superior customer value will win the competition. Furthermore, Kotler and Keller [17] suggest that every business has a task to construct customer values to gain benefits. Chou [5] use three-dimensional perceptions of customer values, *i.e.* monetary, emotional, and conditional values. Petrick [22], on the other hand, attempts to examine cruise-ship services. He identifies the perceived values as quality, emotional response, monetary price, behavioral price and reputation. Then, Lee et. al [18] examine the creation of superior values by associating the performance of a company to the responsiveness to customer needs, the ability to develop creative solutions to the needs of the customer, the speed of action in innovation and market.

Figure 1 below illustrates the framework taken in this study. Then, the study is supposed to test these following hypotheses:

- H₁: $\mu_1 > 5$, Individual characteristics have been properly applied by mobile operators in their postpaid services
H₂: $\mu_2 > 5$, Marketing-mix performance is considerably good
H₃: $\mu_3 > 5$, CRM performance already is considerably good
H₄: $\mu_4 > 5$, Superior customer values
H₅: Individual characteristics (X_1), marketing mix performance (X_2) and CRM performance (X_3) simultaneously and partially affect customer values (Y).

III. METHODOLOGY

This study adopts descriptive and causal methods. The first one is used to describe the existing condition of individual characteristics, marketing-mix execution, CRM performance, and customer values. Then, the second method is taken to test the possible effects of individual characteristics, marketing-mix performance, and CRM performance to the customer values of postpaid cellular subscribers in Indonesia.

A. Data and Samples

Population taken in this study covers all postpaid subscribers of mobile operators (Telkomsel, Indosat, and XL Axiata) all over Indonesia. The sampling technique used is a

multistage random sampling by combining two or more of the sample design. This technique is often used in large-scale studies in which the population is widely dispersed geographically (Hansen, MH and WN Hurwitz, 1943). The first stage is used stratified random sampling is a sampling technique that divides the population into groups (stratum) are heterogeneous. Furthermore, cluster random sampling technique was used to select the area of each of these areas. Then, the process of primary data collection from respondents of postpaid customers conducted by systematic random sampling, the sampling process is random and sequentially with a certain interval. 650 respondents are taken as the samples from the population.

Furthermore, sources of information in this study are divided into primary and secondary data. Primary data are gathered by using questionnaires asked to the respondents. Other primary data consist of information on mobile business development gathered through either direct interviews (face-to-face) or indirect ones, *i.e.* by phone, e-mail and SMS, with the managers of mobile operators. Secondary data, on the other hand, are gathered from literature on the developments of telecommunications and regulations at global level and ASEAN particularly Indonesia.

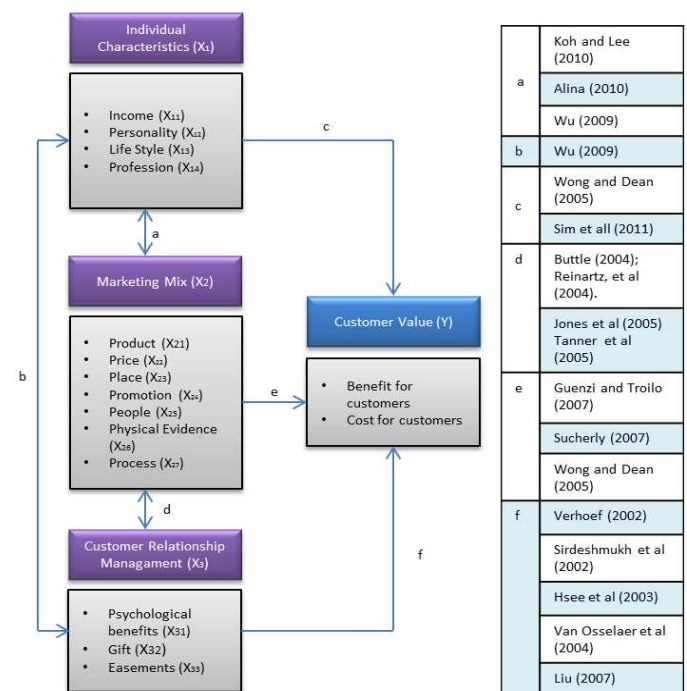


Figure 1. Conceptual Model

B. Instrument and Data Analysis

Questionnaire is used as the instruments in this study. It is divided into several sections. The first one asks the profile of the respondents to identify and map their background. The second section as them to choose statements that best suits their thinking on individual characteristics, marketing-mix, CRM performance, and customer values. Measurements of the questions in the questionnaire are six-point likert rating

scale. The use of a six-point likert scale to avoid a neutral opinion or prejudice. The respondents cannot choose a moderate value, the midpoint of the rating scale type because the respondents had to choose between one of two qualifiers scale be the answer. Furthermore, the results are analyzed by using Structural Equation Modeling (SEM), including Confirmatory Factor Analysis (CFA) as its major component. A 5% level of significance is set. The instrument is stated as valid and reliable if the t -test is bigger than t -table and Cronbach's alpha is greater than 0.7. In particular, SEM is taken due to the existence of several interrelated-dependence relationships in the proposed model. Besides, SEM has an ability to analyze concepts and relationships being observed, including calculation of error in estimation process [9].

IV. RESULT AND DISCUSSION

A. Respondent Profile

The majority of respondents are between 31-40 years (39%). The rest is 30% >51 years, 20% <30 years, and 11% between 41-50 years. Next, 53% of respondents are male respondents, and the rest is females. By jobs, civil servants are the most dominant (42%). Others are private employees (28%), self-employed (16%), employees in state-owned enterprises (7%), professionals (4%), housewives (2%), and students (1%). Then, 47% respondents see the promotion of postpaid mobile services from television. The rests are from radio (28%), newspapers (17%), billboard (6%), and magazines (2%).

B. Descriptive Analysis: Findings and Discussions

a) Individual Characteristics

The calculation results indicate the t -value at -28.43. The t -table with 0.05 α value is -1.96. The value of t -test is smaller than the t -table, and H_0 is hence accepted. It means that individual characteristics have not been well-implemented by mobile operators in their post-paid services.

Next, income dimension has the highest average value (4.69). Others are the profession (4.49), the lifestyle (4.02), and the personality dimension (3.61). It means that the mobile operators pay more attention to the revenue aspects of postpaid subscribers; however the personality aspect is overlooked in the development of postpaid services.

These results are supported by the interviews which indicate the higher attention to revenue aspect in the development of postpaid services compared to aspects related to individual characteristics, *e.g.* lifestyle and personality. It leads to the lack of attractiveness of postpaid services to prospective customers, which then results in the small number of postpaid subscribers compared to the total subscribers of mobile operators under investigation.

Then, individual characteristics of customers are in fact critical for the cellular operators to meet customer demands on products/services being marketed (Kotler and Keller [17]; [27]). It may lead to the effectivity of a company in achieving its business goals. Mobile operators face a risk of losing market if the characteristics are not properly considered. Therefore,

mobile operators are expected to properly develop postpaid and other mobile services according to the individual characteristics of postpaid subscribers.

b) Marketing Mix

The obtained t -value for this variable is -8.62. The value of t -test is smaller than t -table (-1.96), so H_0 is accepted. It means that marketing-mix performance is considerably not good.

The highest average value in this variable is the product dimension of (5.12), meaning that the performance of the products has been good, particularly on the diversity of cellular services, signal, sound clarity, SMS speed, and other interesting features. However, the speed and reliability of internet connection, mobile network coverage and product development are still considerably unfavorable.

In this variable, the promotion dimension has the lowest average value (4.47), meaning that promotion-related performances are not good. Among the five indicators of promotion dimensions, only a publicity activity is considerably good, and the worst indicator is advertising (4.24), meaning that the advertisement performance is considerably not good. It is due to the fact that only a few numbers of mobile operators have advertised postpaid services. In general, they focus on pre-paid services. As the result, postpaid subscribers are difficult to obtain information about postpaid services. By comparing to the previous study [31], the low performance of postpaid service promotions can surely hamper the efforts to achieve a superior customer value.

c) Customer Relationship Management (CRM)

The obtained CRM's t -value is -13.61. The value of t -test is smaller than t -table (-1.96), so H_0 is accepted. It means that CRM performance is currently not in a good form.

Apparently, the average values of all three CRM performance dimensions are below five, meaning that the performance of the psychological benefits, gifts and easements are not good. Among these dimensions, the performance related to psychological benefits has the highest value (4.87), yet it is considerably not good because it means that mobile operators have not properly preserved and maintained their relationships with customers. Besides, they have not fully aimed to meet the needs of their customers. On the other hand, mobile operators have been good in providing service continuity by delivering necessary services for customers, *e.g.* SIM card replacement service.

Looking at previous studies (Kotler and Keller [17]; Lovelock et. al [21]), CRM may build relationships with customers. Kotler et. al [16] and Bridson [4] also suggest that a weak CRM performance may cause problems in fostering customer loyalty. Therefore, mobile operators must develop a CRM which performs optimally in developing their business by utilizing ICT creatively in delivering an integrated experience for postpaid customers.

d) Customer Values

In this variable, the obtained t -test is -9.22. The value of t -test is smaller than t -table (-1.96), and H_0 is hence accepted. It

means that customer value is considerably low. The inferior customer value is caused by the low benefits perceived by postpaid customers. Besides, it is due to the high-rates of postpaid services. These underlying causes are parallel with the Lehtonen's formulation [19] in which customer value is simply expressed as benefits gained per unit price. The inferior value indicates higher expectations of customers on the benefits of services. Thus, mobile operators must take necessary measures to increase the benefits, *e.g.* by developing innovative postpaid services and other mobile services, improving the quality of mobile networks, increasing service innovation for postpaid customers, and developing strategic partnerships with either local or global Over The Top (OTT) players such as Google, Yahoo, Skype, or YouTube.

C. Causal Analysis: Findings and Discussions

Furthermore, the analysis on the effects of individual characteristics, marketing mix and CRM on customer value simultaneously produces $F = 351.33$. It is higher than F -table (2.62 at $\alpha = 0.05$), meaning that there is a simultaneous influence of individual characteristics, marketing mix and CRM on customer value.

Based on the model (Figure 2), the structural equation is:

$$Y = 0,30X_1 + 0,27X_2 + 0,56X_3 + \zeta_1$$

Therefore, the overall model is stated as fit by looking at the insignificant *Chi*-square values, the RMSEA value (0.016 < 0.08), and a significant *p*-value (< 0.05).

Furthermore, a structural model measurement is conducted to analyze causal relationships between variables. Accepted hypothesis is indicated by the lower *t*-value of each coefficient compare to *t*-table (1.96 at $\alpha = 0.05$). If a coefficient is close to zero, it indicates the smaller effect relationship. Based on Table 1, individual characteristics, marketing mix, and CRM partially have a significant positive influence on customer value because the *t*-value > *t*-table.

Table 1. Effect of Individual Characteristics, Marketing-Mix Performance, and CRM on Customer Values (CV)

Structural Model	Path Coefficient	<i>t</i> -test	R ²
Individual Characteristics → CV	0,30	4,63*	0,134
Marketing-mix performance → CV	0,27	4,76*	0,115
CRM Performance → CV	0,56	8,48*	0,373

*) significant at $\alpha = 0.05$

Next, based on the R² value, CRM has a dominant influence on customer values (37.3%) compared to individual characteristics (13.4%) and marketing-mix (11.5%). The total effect of these three variables on customer value is 62%. The influence of other factors, *e.g.* the development of mobile phone technology, networks improvement, the emergence of new operators, strategies over competitors (including mergers between operators), changes on currency exchange rates, and government policy regarding interconnection, is 38%.

Based on the testing on hypotheses, marketing-mix performance has a positive and significant effect on customer value. On the other hand, testing results indicate that the CRM performance significantly affects customer value. Delivering

convenience is stated as the most powerful dimension to describe CRM performance. Besides, assessment on acquired or experienced postpaid customers indicate a positive influence due to several easiness, *e.g.* in getting services for defective SIM cards or in accessing general and billing information. The majority of customers, particularly executives and businessmen, prefer the importance of convenience aspect because it may improve the smoothness of and reduce the required time to do their activities.

Table 2. Direct and Indirect Influences of X1, X2, X3 to Y

Variable		Type of Affect		
Independent	Dependent	Direct	Indirect	Total
Individual Characteristics		9,0%	4,4%	13,4%
Mix Marketing	Customer Value	7,3%	4,2%	11,5%
CRM		31,4%	5,9%	37,3%
Total		47,7%	14,5%	61,2%

Furthermore, Table 2 shows the direct influence of individual characteristics on customer value by 9%. Besides, its indirect influence through marketing-mix performance is 1.4% while through CRM performance is 3.0%..

Next, Table 2 also shows that marketing-mix performance has a direct effect on customer value by 7.3%. Besides, a marketing-mix that considers the individual characteristics of postpaid customers may give an indirect effect on customer value by 1.4%. Then, considering psychological benefits, gifts and provision of facilities may signifies the indirect effect of the marketing mix performance on customer value by 2.8%. In short, the direct effect is greater than the indirect ones.

Then, CRM is stated as having a direct effect on customer value by 31.4%. In fact, the majority of postpaid customers are businessmen and civil servants who require aforementioned various features. Their digital lifestyle is enhanced by the presence of smartphones, including rich-content applications and multimedia services. The development of post-paid services and features that support the lifestyle may provide more benefits for postpaid subscribers, and hence increases customer value. A CRM that covers the aspects of lifestyle, personality, profession and income will give an indirect effect on customer value by 3%; and one that includes the aspects of marketing-mix may give an indirect effect by 2.9%.

V. CONCLUSIONS AND RECOMMENDATIONS

Individual characteristics, marketing-mix performance, CRM performance clearly affect customer value, either simultaneously or partially. CRM performance has a dominant influence in increasing customer value, with the dimension of facilities largely reflects CRM performance. Based on the descriptive findings and discussion, the conclusions are as follow: (1) Individual characteristics have not been properly reflected on postpaid services. Lifestyle is a dominant indicator but has not received a priority concern from mobile operators. (2) Marketing-mix performance is considerably not good. Product is most dominant dimension in shaping the performance. (3) CRM is not in a good shape. Easement is the most dominant dimension to reflect CRM performance

because customers expect the ease in using postpaid services in their daily activities.

On the other hand, recommendations are focused on the increase of benefits obtained by postpaid customers, *e.g.* better international roaming services for postpaid subscribers, and the improvement on special promotion and reward programs for postpaid subscribers.

For further research, it is necessary to conduct an analysis on the behavior of other factors, *e.g.* economic conditions, substitution of telecommunications services, applications from the internet providers, and mobile network technology. In addition, a further research can possibly be expanded to cover pre-paid customers; hence, mobile operators may better understand consumer behaviors and may formulate a more appropriate marketing strategy, including the applicability of the proposed model in the mobile industry in general.

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