SEGMENTATION OF MOBILE INTERNET USERS IN THE INDONESIAN CONTEXT: INSIGHTS FOR MOBILE INTERNET PRODUCT DEVELOPMENT MANAGEMENT

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Abstract

This study strives to identify the market segment for mobile Internet based on demographic characteristics and technology usage behavior attributes. Market segment analysis is one of the most important factors for target market identification of products or services. Segmentation analysis is also very crucial to the success of product development management to ensure that products reach their potential customers or their target market effectively with the right marketing strategies, thereby ensuring peak profitability. In this segmentation research project, data were collected through a paper-based survey using nonprobability sampling among 232 respondents. Based on cluster analysis, the mobile Internet segment in Indonesia can be divided into four groups: savvy users (35.8%), loyal users (27.6%), value users (27.6%) and traditional users (9.9%). The study found that factors which clearly differentiate mobile Internet segments are: mobile data usage during web browsing, communication activity including social media activity, game activity, and price sensitivity.

Keywords: segmentation, mobile Internet segment, cluster analysis, product development management, marketing management

Abstrak

Penelitian ini bertujuan untuk mengidentifikasi segmen pasar untuk mobile internet di Indonesia, dengan menggunakan kriteria demografis dan krieteria atribut perilaku pengguna terhadap teknologi. Data penelitian dikumpulkan dengan menggunakan metode non-probability sampling dengan jumlah responden sebanyak 232 orang dan diolah dengan menggunakan analisis kluster. Analisis kluster memberikan hasil sebagai berikut: bahwa segmen pasar mobile internet di Indonesia dapat dibagi menjadi empat kelompok: pertama adalah kelompok pengguna yang cukup bijak (savvy users) dengan persentase sebanyak 35.8%, kedua adalah kelompok pengguna yang setia (loyal users) dengan persentase sebanyak 27.6%, ketiga adalah kelompok pengguna yang berorientasi pada nilai (value users) dengan persentase sebanyak 27.6% dan kelompok keempat adalah pengguna tradisional (traditional users) dengan persentase sebanyak 9.9%. Riset juga memperlihatkan bahwa faktor yang membedakan empat kelompok segmen tersebut adalah penggunaan data internet mobile untuk web browsing, aktifitas komunikasi termasuk aktifitas media sosial, aktifitas permainan (game) dan sensitifitas terhadap harga.

Kata kunci: segmentasi, segmen pasar mobile internet, analisis kluster, manajemen pengembangan produk, manajemen pemasaran

Since it was first commercialized, the ongoing development of mobile telecommunications technology has changed the way we communicate. The mobile telecommunications industry is growing very rapidly in this decade, and this is evident in the growing number of customers around the world, including Indonesia. Based on mobile telecommunication data released by the International Telecommunication Union (ITU), Internet users in Indonesia in 2010 rose to 220 million mobile phone customers. It is undeniable that advancements in telecommunications technology provides various facilities to communicate and also shape the behavior and lifestyle of technology-driven customers. Advancements in telecommunications technology include improvements to equipment used by telecommunications operators as well as telecommunications equipment used by consumers.

The progress of user equipment in the mobile phone industry is very aggressive today, and it affects users and the people around them in their efforts to keep abreast of the constantly changing technology. Mobile phone, which were initially a luxury item for many people, have now become general or commonplace goods that are owned by nearly everyone, especially young people or professionals, making their lives easier and more efficient. Today, nearly everyone in their daily life relies on their mobile phone, not only for communications, but for many other functions as well, including reminder devices, entertainment sources, and other features. It supports the growing demand for cellular phones in Indonesia, as evidenced by its increasing penetration each year. These rises are not only supported by increasingly sophisticated features, but also by lower prices for mobile phones offered in the Indonesian market by several mobile phone brands. Research conducted by Nielsen Indonesia demonstrates that users of cable telephone (TELKOM or Wifone brands) fell by 50% since 2005, and this is inversely proportional to the rising use of mobile phones, which increased three times in 2012. This is not only supported by the availability of mobile handsets in the market. The future growth of the Internet will also increase rapidly in conjunction with government support for network access. The Indonesian government has been invested in the provision of backbone infrastructure – the Palapa Ring – with a long-term goal of connecting important areas in the west area of the country. The government is also installing subsea cables to the islands in the eastern area and installing more fiber-optic cable in curbs for households and businesses. As a general indicator, the World Economic Forum's Network Readiness Index (NRI) measured the capacity of each country to gain benefits from the new information and communication technologies. By this measure, Indonesia has shown great improvement over the last five years, rising from a rank 62 out of 122 countries in 2006-2007 to a rank 53 out of 138 countries in 2010-2011. According to Shin et al (2010), mobile Internet service strives to send packet-switched transmission and Internet protocol (IP)-based access to a wide path that provides special value-added data applications (e.g., web browsing, e-mail, video streaming) through a mobile cellular network (Lee, 2013). Mobile Internet strives to offer a useful service, such as wired Internet access (cable, modem, dial-up telephone line) or a wireless base, such as WLAN /

WIFI. Mobile Internet distinguishes itself from the competition by the model fixed (cable) or portable (WIFI), so Internet services can be provided anywhere and anyplace without being limited to a certain range.

Based on data released by the International Telecommunication Union (ITU), users of mobile telecommunication in Indonesia in 2010 reached 220 million mobile phone users, with the assumption that 92 of 100 people in Indonesia's population are using mobile phones in their daily lives. This is about a 130% increase in use per 100 people in 2007. Internet usage in Indonesia is no longer a special thing. The high percentage of public interest in the use of information and communication on the Internet has created very strong business opportunities for service providers and Internet data access in Indonesia. Broadly speaking, in 2011 Indonesia was ranked first among users of social networks like Facebook and Twitter. According to Nielsen research, Indonesia has had a shift in the culture of communication and is not less forward with its surrounding countries, such as Singapore.

The trend of the market share of Internet users through mobile media is increasingly high in Indonesia, and of course, every provider does not want to miss the opportunity to meet existing market demand. Based on the Nielsen survey, nearly 50% of mobile phone users in Indonesia currently use Internet access via mobile phones. This is not only supported by the availability of its mobile handset. The future growth of the Internet will also enhance the rapid review of government support for network access. The issue to be observed in this study is how market segments are formed among consumer Internet users via mobile phones. Thus, the purpose of this study is to analyze the market of mobile Internet users. By knowing the segmentation of the attribute usage, the researcher can examine the character of every segment, as the details of the market segmentation of users are formed by their demographic characteristics and their behavioral pattern. The results of market segmentation analysis are expected to effectively identify existing customers. The comprehensive understanding of customers may lead to a great business opportunity or a strong idea of new products, and furthermore companies may identify effective communication strategies in accordance with their target market segment. This analysis can be very useful to the insights of product development management, especially in mobile phone products.

LITERATURE REVIEW

Marketing activities should begin with the assessment of potential customer needs, in order to accurately achieve the company's objectives. To carry this out, a marketing strategy planning process is needed to achieve this objective (Perreault, Cannon and McCarthy, 2012). Today, consumers in the market are increasingly sensitive to product strategy and other marketing strategies related to products. Marketers will be able to meet their customers' needs and wants only if they can effectively study and research their potential customers in an increasingly competitive market. Kotler (2012) argued that the market consists of many consumers or buyers, and each buyer is different in one or many ways. The customers or buyers may have differences in their desires,

resources, location, and behaviors. Any of the variables mentioned earlier can be used to divide the market segment. According to Kasali (1998), market segmentation is the process of grouping the market (which is very heterogeneous) into potential customer groups who have the same needs and the same character or who have the same basic response in terms of how they spend their money (Kasali, 1998).

In market segmentation, one distinguishes homogeneous groups of customers who can be targeted in the same manner because they have similar needs and preferences. In 1956, Smith defined market segmentation as follows: "Market segmentation involves viewing a heterogeneous market as a number of smaller homogeneous markets, in response to differing preferences, attributable to the desires of customers for more precise satisfactions of their varying wants." This is an accurate definition today, and one of its most appealing aspects is that it presents segmentation as a conceptual model of the way a manager wishes to view a market. Even if it is a powerful concept, it is still an empirical question as to how well it describes the situation for a particular product or service to provide input to managerial decisions; there are alternatives to segmentation, in particular one-to-one marketing in one extreme and mass marketing in another (Wedel, 2002). Segmentation is generally performed by marketers to reach their marketing and product development management objectives: the first objective is to analyze the market and customer characteristics and assessing what is required by the market from the product. The second objective is to find opportunities within

existing markets. The third objective is to design products in response to market demand or opportunities that were examined. According to Kımıloğlu (2010), high-tech products such as mobile phones are becoming indispensable in people's lives, thus leading to a high-involvement decision-making process. It is crucial for marketers of these products to understand behaviorally different consumer segments that demonstrate significant variations in their decision-making criteria for such products and approach them accordingly.

Market segmentation is a very popular marketing tool. The characteristics of different consumer attitudes and consumption habits are often employed as the basis for segmentation. However, the success of a target-oriented marketing approach to selected groups of consumers depends on the results of the methodology applied (Müller, 2014). According to Kotler (2014), in determining the segmentation of the consumer market, there are several types of basic segmentation. The first is geographic segmentation, which requires the division of the market into geographic units such as country, state, territory, region, county, city or residential area. A company may decide to operate in one or a few geographical areas. The second is demographic segmentation, which divides the market into groups based on variables such as age, gender, family size , family life cycle, income, employment, education, religion, race, and nationality. The third is psychographic segmentation, in which buyers are divided into different groups based on social class, lifestyle or personality traits. The fourth is behavioral segmentation, in which buyers are divided into groups according to their knowledge, attitudes,

usage and response to a product. The fifth is benefit segmentation, in which buyers are divided into groups according to their preferential benefit of the product or services.

New products often experience notoriously high failure rates. Many new products fail not because of technical shortcomings, but because they simply have no market. Studies have found that timely and reliable knowledge about customer preferences and requirements is the single most important area of information necessary for product development management (Ogawa, 2006). Market segment analysis is one of the ways in which company can find reliable knowledge about customer preferences and requirements of products or services including in technology industry such as mobile phone and Internet service provider.

RESEARCH METHOD

This research employs a descriptive research design that is survey based. Since the population of the object is not clear enough in terms of number or size, this research employs a non-probability sampling method with a questionnaire survey among respondents located in Jakarta, Indonesia. Segmentation analysis was conducted using two-step cluster analysis to profile demographic dimensions (age, gender, income and expenditure of the Internet, etc.) and Internet usage behavior (for example, how much time users spend accessing the Internet, and primary activities carried out during browsing). The variables used in this study as the basis of segmentation are demographic variables and behavioral variables, which were derived from behavioral segmentation, consisting of: benefit sought and attitude toward price. In

the questionnaires, the researcher used data from Johnson (2006), which employed a trichotomy of Internet activities in general, including: Internet communication and online games to measure the benefit sought. As for the questions in the survey, this research was gained some adjustments. This adjustment refers to the data of Internet usage via mobile phone which was conducted by PEW Research Center's Internet & American Life Project, 2001. There were six additional activities in the use of mobile phones besides voice call and SMS: 54% use their mobile phone to send / share pictures and videos to friends, 23% access social media networks (Facebook, Twitter, Myspace) via mobile phones, 20% use mobile phones to watch videos, 15% post photos or videos online, 11% purchase products through mobile phones, 10% use their mobile phone to access a status update of social media, for example, Facebook and Twitter. This adjustment was supported by Wedel (2002), who stated that in order to get a response unique structure, researchers often combine variables that can reinforce one another. Based on this theory, the following variables were used to measure the benefit sought. As for measuring the attitude toward price, researchers use the types of questions from Heskett and Sasser (2010). According to Heskett and Sasser (2010), the value profit is aligned with the possibility to re-purchase a product. Each of the measured variables is presented in the form of a statement for later assessment by the respondents regarding their agreement or disagreement to the statement based upon a Likert scale with a measure of 1-6, where 1 represents the disapproval of respondents to a given statement, while 6 represents the agreement of respondents to a given statement. The

operational variable is presented in Appendix 1, which has been developed from related construct theories, as described before.

RESULT AND DISCUSSION

A powerful form of segmentation is to group target consumers or buyers according to the different benefits they seek from a product. This segmentation required the presence of a finding of primary benefits sought by consumers. This research used clustering in two stages (two-staged cluster). Namely, by first analyzing the hierarchical clustering, clusters are identified. Then, in the second stage, the respondent analysis is employed to serve the next program (partition clustering).

Respondent Demographics

From the results, it can be seen that respondents in this study were 45% female and 55% male, with a total of 232 respondents. The age of the respondents who actively use mobile handsets for Internet surfing are teenagers and adults. As for the primary activity of Internet users, they are predominantly private sector employees and students. Generally, the marital status is also single or not yet married, so they have much spare time outside of general activities for surfing via mobile phones. As for allowance / cost of consumption per month, Internet access within an allowance controlled by participants' own money is relatively low, i.e., IDR 200.000-1,500.000. per month.

Clustering Analysis

In analyzing the data cluster, the authors conducted weighting to construct questions in preparing the questionnaire. In the construct itself, there are a few questions regarding the benefits sought and the price factor for mobile services. The questions used a six-point Likert scale that ranged from strongly disagree (1) to strongly agree (6) to assess the construct as follows: communication, accessing the website, games, and attitude toward price. The authors conducted weighting and found the median value of each construct and processed with SPSS using the two-step cluster. Using Schwarz's Bayesian Criterion (BIC), the author tried to remove the cluster formation, which is automatic, and produced three clusters (Figure 1) with a measure silhouette and cohesion separation in value of 0.4, which can be said to be fair. For greater variety, the authors have also tried the clustering method known as Akaike's Information Criterion (AIC) and yielded seven clusters (Figure 2) with a measure silhouette and cohesion separation at fair value 0.4. From AIC clusters, the authors found that the distance distribution of the respondents are not too far away. Also due to the number of respondents, which is relatively few, the authors worried that the behavior of each cluster to be examined is not sufficient to provide a significant or valid data to create a basis for the determination of behavioral segmentation of mobile Internet users.

Seeing the results of distribution at AIC, the authors tried to perform clustering by locking in fixed cluster 4 as the amount that is not far from the BIC technique. From the results of locking in four clusters (Figure 3), the authors noted that the silhouette measure and cohesion of separation at a value of 0.4, which means that the cluster is still decent enough to be segmented. Here are the results of the specify fixed cluster as the final cluster performed.
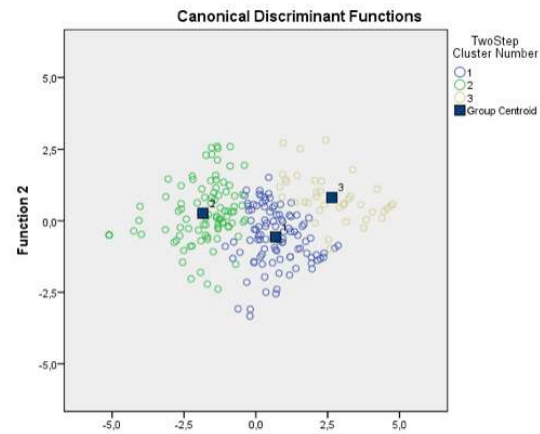
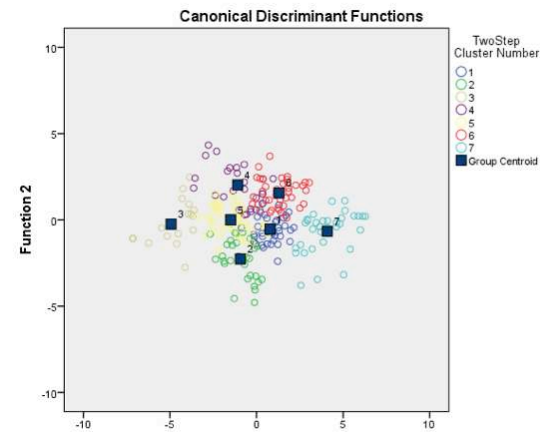Figure 1. Distribution of BIC, Clustering Process Phase 1

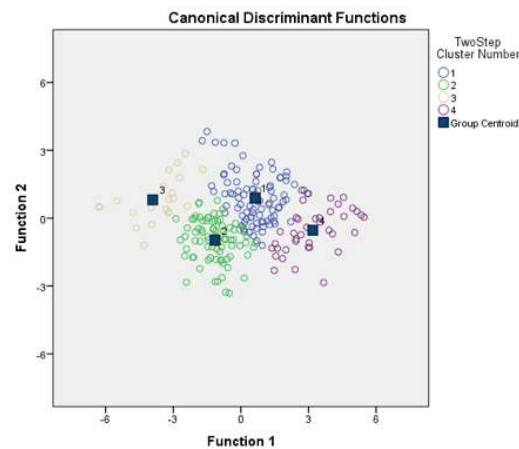Figure 2. Distribution of AIC, Clustering Process Stage 2

Figure 3. Distribution of Specify Fixed Cluster-Final Stage Cluster

Table 1. Cluster Member Percentages

	N of number	Percentage
Cluster 1	90	38,8%
Cluster 2	80	34,5%
Cluster 3	23	9,9%
Cluster 4	39	16,8%
Total	232	100%

From the results above of the specify fixed cluster, the authors decided to use the classes generated by the above techniques. With these four clusters, the authors will use the data to assess the behavior that is characteristic of all of the four clusters. By using the two-step cluster to specify fixed, there are four clusters to represent market segments for class categorization of mobile Internet users via mobile phones in Indonesia. In this research, 232 respondents were obtained by the authors, following the model viewer cluster data from SPSS in Table 1. It can be seen from the table that the highest number of respondents are in cluster 1 (38.8%), followed by cluster 2 (34.5%), then cluster 4 (16.8%) and, finally, cluster 3 (9.9%).

Behavioral Analysis for Four Clusters of Market Segment

Segmentation analysis of mobile Internet users via mobile phones based on their behavioral pattern resulted in four clusters. In cluster 1, respondents primarily use their mobile phone for communication and web browsing, but they are quite sensitive to the price factor and make it a priority to gain a competitive advantage for a given product. As for Cluster 2, the main use of their mobile phones is for communication and web browsing, but they are not so concerned with the price factor. In this case, the

respondents say they are sufficiently confident with the provider they are using and do not want to change the providers they use now. Cluster 4 has high usage for communication and web browsing, even maximizing the product for the use of gaming. On the other hand, respondents in cluster 4 are very sensitive to the price factor, which allows them to switch to other providers if the current provider does not satisfy them. Finally, respondents in cluster 3 do not maximize the use of mobile Internet on their mobile phone, using it only to simply communicate, although minimally. On the other hand, they are already quite settled in terms of the provider they currently use. They also indicated that they are not too sensitive to the price factor and tend to not want to switch.

After assessment of the data clusters, as shown in Table 2, the following analysis was conducted to determine the characteristics of each segment based on the clusters described above. In accordance with the data given above, the following segmentation is generated as follows:

Cluster 1: With the characteristic behavior as the level of browsing the web using is quite medium-high (3.88), level of communication usage is high (4.19), the level of gaming is medium (2.97), but with a high degree of sensitivity to the price factor (4.7),

Clusters

Input (Predictor) Importance

☐ 1,0 ☐ 0,8 ☐ 0,6 ☐ 0,4 ☐ 0,2 ☐ 0,0

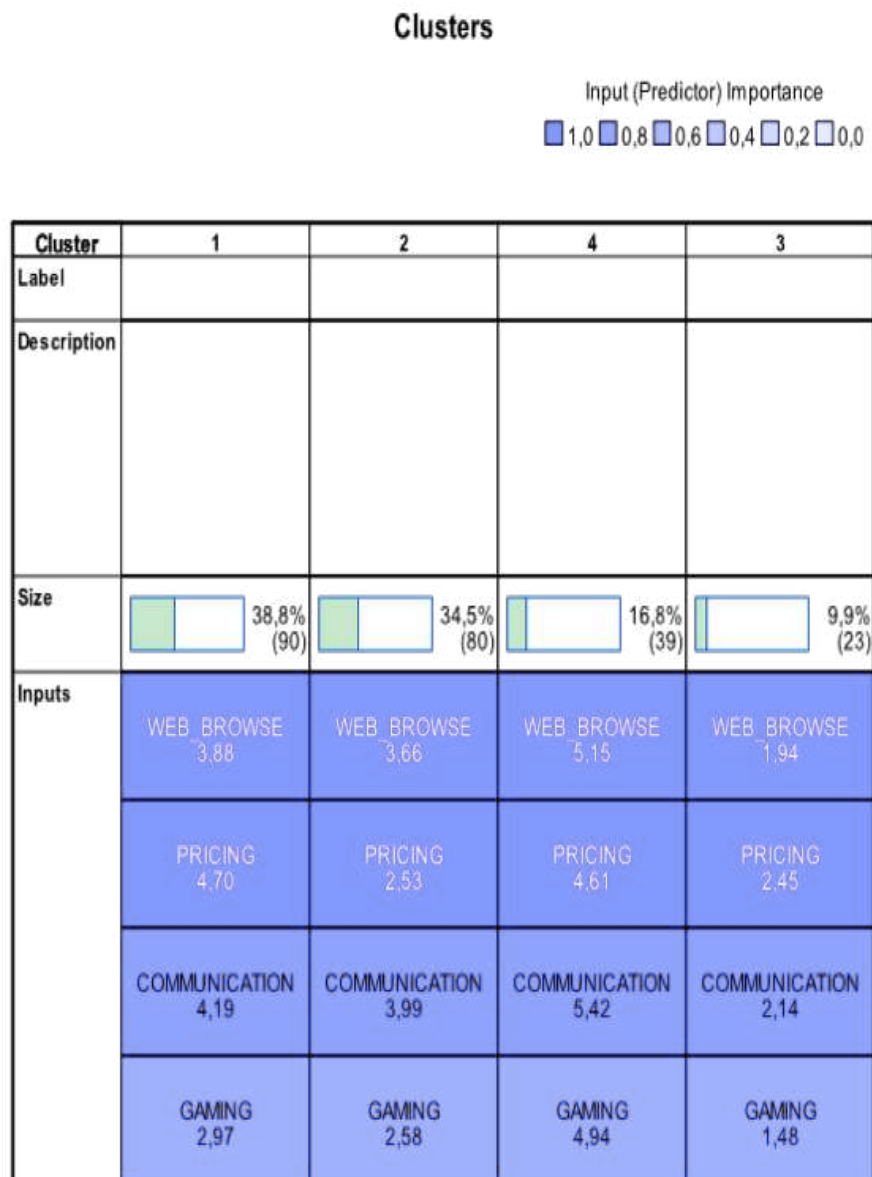| Cluster	1	2	4	3
Label				
Description				
Size	38,8% (90)	34,5% (80)	16,8% (39)	9,9% (23)
Inputs	WEB BROWSE 3,88	WEB BROWSE 3,66	WEB BROWSE 5,15	WEB BROWSE 1,94
	PRICING 4,70	PRICING 2,53	PRICING 4,61	PRICING 2,45
	COMMUNICATION 4,19	COMMUNICATION 3,99	COMMUNICATION 5,42	COMMUNICATION 2,14
	GAMING 2,97	GAMING 2,58	GAMING 4,94	GAMING 1,48

Figure 4. Four Behavioral Analysis Clusters in the use of Mobile Internet

it is possible to switch to a fairly high level if there are other products that offer lower prices. While the element that supports demographics is the respondent in this group generally in the age ranges of 12-17 years and 18-25 years, the proportion of male respondents is greater than female respondents, and most are college students / students and private sector employees and the self-employed. Allowance or expenses incurred in this group ranged from IDR 250K -1.5 million and IDR 1.5 million - 3 million. Respondents may also have more than 3 million allowance per month. With the characteristics described above, the writer named this cluster the user value segment.

Cluster 2: The respondents in cluster 2 have this behavioral characteristic: the level of web browsing usage is high (3.66), and the level of communication

Table 2. Four Behavioral Analysis Clusters in the use of Mobile Internet

Cluster 1: Value Users (38.8%)
• Focus on the use of web browsing medium-high
• High communication
• Level of gaming
• High sensitivity to price
Cluster 2: Loyal Users (34.5%)
• Use web browsing medium-high
• Medium-high communication, gaming medium
• Low sensitivity to price
Cluster 3: Traditional User (9.9%)
• The focus of the use of the basic benefit (web browse, communication and gaming are low)
• Low sensitivity to price
Cluster 4: Savvy Users (16.8%)
• Focus on the use of web browsing
• Communication and gaming are very high
• High sensitivity to price

is medium-high (3.99), the level of gaming is medium (2.58), but they are less sensitive to the price factor (2,53), which means the possibility to switch is not high, but it is quite concerned with competitive advantage given by the products in the market. Cluster 2 respondents have the following demographic characteristics: most respondents are in the age range of 12-17 years and 18-25 years, the number of female respondents is greater than male respondents, and most are college students / students and private sector employees. Allowance or expenses incurred in this group ranged from IDR 250K - 1.5 million, and IDR 1.5 million -3 million. Quite a lot of the respondents have over 4 million allowance s.d 6 million in this segment group. With the characteristics described above, this cluster is named the loyal user segment.

Cluster 3: Cluster 3 has the following behavioral characteristics: level of web browsing usage is low (1.94) and communication was also low (2.14), the level of gaming is also low (1.48), but they are not sensitive to the price factor, which means they are less likely to switch (2.45). Their demographic characteristics are described as follows: most respondents are in the age ranges of 12-17 years and 18-25 years, the proportion of men to women is almost equal, and the most respondents are college students / students and private sector employees. With the characteristics described above, this cluster is named the traditional user segment. This is because the authors estimate that the low usage of the respondents could be due to limited support from the handset / mobile phone used and the limitation of their access to Internet from their mobile phones.

Cluster 4: The respondents in cluster 4 have the following behavioral characteristics: level of web browsing

is the highest (5.5) and use of communication is also the highest (5.42), even the use of gaming is also very high (4.94), but they have a high sensitivity to the price factor (4.61) due to the level of their strong understanding of the fit between competitive advantage and the price given. Their demographic characteristics are described as follows: most respondents are in the age ranges of 12-17 years and 18-25 years, the proportion of men to women is almost equal, and most are college students / students and private sector employees. Allowance or expenses incurred in this group ranged from IDR 250K - 1.5 million, and 1.5 million - 3 million. Some respondents have over 3 million or an allowance of 4,5-6 million. With the characteristics described above, the writer named this cluster the savvy user segment.

CONCLUSION

According to Kımıloğlu (2010), high□tech products such as mobile phones and its attendant services are becoming indispensable in people's lives, leading to a high-involvement decision□making process. It is crucial for marketers of these products to understand behaviorally different consumer segments that demonstrate significant variations in their decision-making criteria for such products and approach them accordingly. This research strives to gain insight from customers who use their mobile phone to access their Internet service. From the cluster analysis of the segment that has been formed for mobile phone users who access the Internet via their mobile phones, by taking a sample of 232 respondents in Jakarta as a city who has the largest population in Indonesia, it can be concluded that there

are four segments of mobile Internet users when employing demographic and behavioral segmentation bases, namely:

• Value Users (38.8%)
• Loyal Users (34.5%)
• Savvy Users (16.8%)
• Traditional Users (9.9%)

This segmentation analysis of potential customers is very useful in the product development process. By enhancing the fit between new product features and customer preferences, the customer knowledge development process fosters new product success. Despite this significant benefit, there is considerable variance in the extent to which firms engage in this process in their new product development projects. This is because not all firms can meet the resource, strategic flexibility, and motivational requirements of the process (Joshi and Sharma, 2004). In this research, we can find customer willingness and demand from the assessment of the characteristics of each group. The first group, value user segment, is the group with the greatest proportion, representing as much as 38.8% of the population, which has the characteristics of medium-high web browsing, high levels of communication and gaming, and a high sensitivity to price. The second group is the loyal user segment, representing 34.5% of users, has the characteristics of medium-high web browsing, medium-high communication and gaming, but low sensitivity to price. The next group is the savvy user segment, representing 16.8% of the population. The characteristics of the this group are very high levels of web browsing and communication, as well as high gaming levels, but this group has a high sensitivity to the price. The

last segment is the traditional user, who ranks very high in use of web browsing and communication but has a very low level of gaming activities and low sensitivity to price. According to Kristensson (2008), there are strategies required for the successful involvement of customers in the co-creation of new technology-based services. Segment analysis of mobile Internet users in this research can provide insights into product development managers in their decision to make useful and marketable content for mobile phones and in the world of cellular telecommunications in Indonesia by adjusting the features of their product and services based on the characteristics of a given segment.

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Operational Variables

Appendix

Dimensions	Operational Variable
1. Accesing Benefit Sought: any benefits derived from the use of mobile Internet communication or using mobile phones to communicate through the Internet.	• Using e-mail • Visiting chat rooms • Using the instant message • Sending pictures / share pictures / videos to friends online. • Using the Internet to access social media Facebook and Twitter
2. Accessing Website: use the Internet for purposes that are beneficial beyond communication and entertainment types of questions:	• Using of search engines • Seeking General Information Online • Accessing personal information online • Downloading data, songs, videos from the Internet • Hearing / watching songs, video streaming from the Internet • Make a purchase online
3. Games Attitude: asessing play games are connected to others via the Internet	• Playing games online from mobile phones
4. Attitude towards price Attitude: Assessing the possibility of product swith	• the importance of product features and price