

# Sustainability Supply Chain Management On Mobile Phone Features According To Consumer Preferences In Surabaya

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## Abstract

**Purpose** - *This study aims to determine the sustainability of the supply chain management related features according to the preferences of mobile phone users in Surabaya. Consumer preferences are increasingly supporting sustainability in products and services that drive the need for new operational and managerial practices that support sustainability in the supply chain management.*

**Design/methodology/approach** - *This study uses a quantitative approach in three parts. First, use the phone features related to the sustainability of supply chain management for conjoint analysis, which is used to determine consumer preferences for attributes. Furthermore, use of TNS Atlas additional questions to determine the attitude of the respondents green consumption.*

**Findings** - *The research findings provide information about the preferences of mobile users against mobile features related to the sustainability of the supply chain management. This study identified three groups of buyers, namely budgeters, environmentalists, and long-life users. According to the findings there are some consumers who are willing to pay more for products with sustainability features. This study also considers the implications for the design of mobile supply chain management company.*

**Keywords:** *Sustainability, Supply Chain Management, Consumer Preferences, Mobile Phones, Consumer Behavior*

## 1. Introduction

Environmental and social issues has become a global public attention. The most talked about issue is the issue of climate change because of its impact most directly felt by humans. Global climate change is an impending disaster in the earth. Causes of climate change due to

human constant use and even exploit the massive fuel derived from fossil such as coal, petroleum and natural gas.

Human life and other living creatures are directly or indirectly dependent on the environment. The world has given special attention to the environmental problems of this. United Nations (UN) also began to pay attention to environmental problems after 27 years of existence. World Environment Conference in 1972 in Stockholm successfully implement an agency that handles environmental issues, namely the United Nations Environmental Programme (UNEP). (<http://www.news.detik.com>)

As global awareness of environmental issues, today's consumers are becoming an important factor emergence of eco-design. The basic idea of eco-design is the reduction of environmental impact throughout the entire product life cycle to improve product design (Schischke *et al.*, 2005). Consumers are becoming aware of the consequences of consumption decisions and choices are increasingly influencing consumer product offerings (Andersen dan Skjoett-Larsen, 2009; Defee *et al.*, 2009). Consumers are no longer interested only in the physical packaging products, but also the raw material used in making the product, which is derived from the raw material, the use of hazardous materials, waste production, after the end of its life will be what, and so on. In other words, consumers are interested in the environmental and social impact of the supply chain of a product (Anu Bask *et al.*, 2012).

Over the past 20 years, companies are under pressure to consider the environmental consequences of the products and services produced (Kleindorfer *et al.*, 2005). In the context of development, the company is not merely for economic gain, but also must pay attention to social and environmental aspects. If the company only depend on economic terms would not guarantee the company can grow sustainably.

Concern companies on sustainability, as described previously been spread in the entire supply chain management process (Fabbe-Costes *et al.*, 2011; Seuring and Muller, 2008). Currently the company sees sustainability as a source of competitive advantage, and even as the backbone of the company's innovation (Nidumolu *et al.*, 2009).

The era of economic globalization is accompanied by the rapid development of technology has resulted in intense competition and changes in the industrial environment. Industrial development is very fast, when there are no more limitations that hinder its

development. Currently, one of the emerging industries and filled with competition is the telecommunications industry, particularly mobile phones.

Some mobile phone manufacturers have been producing environmentally friendly consumers who received less attention. In 2006, Nokia introduced a range of PVC-free phone, and in 2008, Nokia launched a free mobile hazardous materials fire prevention. LG follow in the footsteps of Nokia by removing beryllium from its products, and introducing environmentally friendly plastics for various mobile phones manufactured. Do not miss the world's second largest mobile phone maker Samsung Electronics Co. Ltd., which manufactures environmentally friendly mobile phone Blue Earth. Samsung revealed, Blue Earth is the first touch screen phone that uses solar energy. Samsung is committed achieve the highest environmental friendly status by presenting environmentally friendly products and campaigning activities of saving the environment. However, in the end product is environmentally friendly mobile consumers receive less attention because only the mobile phone manufacturers to follow the trend of environmentally friendly course. (Anu Bask *et al.*, 2012)

Sustainable development efforts currently less attention in the consumer side to see the value or features of a product and service sustainability. Viewpoint of supply chain sustainability is not associated with consumer choice behavior only in the perspective of the company, while consumers have an important role to give entered on the manufacturer. Consumer preferences is the underlying basis of how consumers behave that may affect demand. Each individual consumer has a set of preferences and values that determine behavior. Consumer choice behavior is influenced by culture, education, income, individual tastes, and other factors (Anu Bask, 2013).

Mapping lines derived from consumer preferences measured at the level of consumer satisfaction in taking various combinations or bundles of goods. The purpose of the consumer is choosing a bundle of goods that provide the greatest level of satisfaction when consumers consume (Cashel-Cordo).

herefore, this study also uses case studies of mobile phones, but the mobile phone users in Surabaya, and at the same time with the increasing volume of mobile phone sales, sustainability is becoming increasingly important in the production and supply chain management phones. The primary key of this research are the features most important sustainability from the perspective

of mobile phone users in Surabaya in the supply chain of mobile phones, which will be considered for phone manufacturers to produce mobile phones.

## **2. Literature Review**

### **Sustainability Supply Chain Management**

The holistic view sustainable supply chain management (SSCM) covering aspects of environmental, economic, and social. Carter and Rogers (2008) defines SSCM as: The strategic, transparent integration and achievement of an organization's social, environmental, and economic goals in the systemic coordination of key interorganizational business processes for improving the long-term economic performance of the individual company and its supply chains.

According to Carter and Easton (2011), SSCM associated with long-term improvement of the organization and has economic implications for the bottom line of the company. Involved in SSCM is a requirement for a successful business. SSCM provides a framework that describes the relationship between aspects of the triple bottom line and provide a key role in the supply chain professionals in implementing sustainability practices (sustainability). Increased significantly SSCM has emerged from the need to find operational practices and new managerial practices to reduce the environmental impact of the operations of each company and the entire supply chain. For example, cost pressures due to changes in commodity prices, supply essential materials are limited, and long-distance transport are questioning the company in developing a resource strategy and supply chain management company. Therefore, development issues in sustainability not only involve the company alone but the entire supply chain (Fabbe-Costes *et al.* 2011).

Corporate initiatives towards environmental and social economic impact on the supply chain (Carter and Jennings, 2002), and corporate social responsibility (CSR) related to sustainability greater supply chain management. Thus, the role of CSR has changed, which covers the entire supply chain management companies not only the domain of individual companies (Andersen and Skjoett-Larsen, 2009; Spence and Bourlakis, 2009). In addition, Lee and Kim (2009) show that firms responsible recognizes the environmental impact must be managed in a way that is just as important as the financial and commercial performance. If the company wants to be competitive and survive competitor in market, companies need to expand CSR activities throughout the supply chain management companies.

The concept of sustainable development more often associated with product design, sourcing and materials management, as well as the reduction of resource use and waste in the supply chain (Shang et al., 2010; Dangelion and Pontrandolfo, 2010; Srivastava, 2008; Linton et al., 2007; Fiksel, 2001; Luttrupp and Lagerstedt, 2006; Stahel, 2001). A supply chain sustainability can be built on the following pillars: sustainable product design, sourcing and manufacturing processes sustainable, as well as reverse logistics operation and coordination. Mobile phone manufacturers stated that there are several aspects that can be used to operationalize the sustainability of supply chain management. Therefore, for further analysis of the sustainability of the supply chain management, there are four framework developed theme, namely sustainable strategies and policies, sustainable product design, sustainable resources, and updates and product obsolescence.

First, the strategy and policy of ongoing problems when dealing with manufacturers include aspects such as: vision / strategy / and or policies used by the company regarding sustainability (Angell and Klassen, 1999); have a structured environment assessment tools (eg life cycle assessment) (Hervani et al., 2005); invest in waste, energy and emissions management; publish CSR reports (Chen and Bouvain, 2009); and participate in global development initiatives.

Second, given that the "world-class supply chain begins with product design" (Stank et al., 2011), sustainable product design to bring sustainability to the entire supply chain of products and production planning to end of life product management. In fact, this stage determine 80 percent of the cost of the supply chain (Carter and Ellram, 1998; Stank et al., 2011) and thus affect various stages such as dismantling, reuse, and recycling (Carter and Jennings, 2002). Hilletoft et al. (2010) emphasizes that the development of new products (New Product Development) should be driven by customer expectations, which called for profound knowledge of them. Initiative, perceptions and opinions of customers could have implications for the design of supply chain management, so there is a need for continuous collection of information on consumer needs and benefits in order to adjust the supply chain and target segments (Hilletoft et al., 2010).

The third deals with sustainable resources, enterprises are increasingly dependent on their suppliers to achieve competitive advantage (Handfield et al., 2005), the principles of today's global world network of sustainability should win. Given the increasing number of outsourcing

from developing countries and countries with cheap, concerns about the social and environmental impacts have increased (Andersen and Skjoett-Larsen, 2009). Sustainable resources include aspects such as: the extent to which suppliers are involved in environmental initiatives (eg recycling, hazardous materials and waste processing production), develop business, and ensure a safe working environment and ethical in their factory (Carter, 2005; Carter and Jennings, 2002). At the operational level manufacturers must: have a certified tool to evaluate the environmental sustainability of its suppliers, to systematically monitor and audit the supplier (Spence and Bourlakis, 2009), train suppliers on sustainability issues (Lee and Kim, 2009; Hervani et al., 2005 ), systematically share information on materials that require control (Handfield et al., 2005), and give clear instructions about the use of resources and waste management (Scott, 2008).

Fourth, renewal and obsolescence of products requiring recycling, reuse and remanufacturing of products and materials (Daugherty et al., 2001;. Rogers and Tibben-Lembke, 2001; Stock, 1998). End of life management policies include recycling, and develop efficient processes for handling returns is an example of putting the strategy into practice-oriented sustainability.

### **Consumer Preferences and Choice Behavior**

Cashel-Cordo Professor define consumer preferences as the underlying foundation of how consumers behave that may affect demand. Each individual consumer has a set of preferences and values that determine behavior. Mapping lines derived from consumer preferences measured at the level of consumer satisfaction in taking various combinations or bundles of goods. The purpose of the consumer is choosing a bundle of goods that provide the greatest level of satisfaction when consumers consume.

Consumer preference is subjective individual taste, as measured by the utility (satisfaction), the various bundles of goods. Consumers rank the bundle of goods supplied in accordance with the level of utility gained from consuming the bundle of goods. Individual preferences influenced income and prices of goods. The ability to buy goods not determine whether the consumer likes or dislikes of certain goods. For example, a consumer has a preference on the Porsche car but can not afford to buy it, then he will buy Ford cars that fit with the ability to buy. The purpose of the theory of preference for consumers is to know the ratings

bundle of goods in accordance with the level of utility obtained by the consumer. In other words, consumers have different preferences on various combinations of goods, which is a bundle of goods that have been provided.

Consumer choice behavior is influenced by culture, education, income, individual tastes, and other factors. In terms of consumer choice towards sustainability, Chen (2001) recognizes that the greening itself is not a concept that has been well-defined, meaning that consumers, manufacturers, dealers, and governments see the benefits of a product / service in different ways. Characteristics of environmental attributes according to Chen in general include recycling, recycled content, fuel efficiency, reduction of toxic content, and performance-related emissions. However, Chen did not discuss matters relating to corporate social responsibility. Various other studies assessing the importance of sustainability development (sustainable development) in consumer purchasing decisions. Attribute selection in this analysis are based on previous experience or literature, for example, the influence of the eco-label.

Consumer preference assessment method most commonly used is the analysis of conjoint and discrete choice analysis. Some research shows cluster analysis is also used to provide a more detailed look at the company on a variety of consumer attitudes towards sustainability features. Many studies have attempted to assess the willingness of consumers to pay a premium for certain features, such as 28-45 percent premium organic food (Moon et al., 2002), premium eco-friendly wood furniture 2-16 percent (Veisten, 2007). These figures are based on conjoint analysis (CA). Today's consumer is an innovator in the product life cycle of innovation diffusion. (Anu Bask et al., 2013)

From the results of the conjoint analysis study Anu Bask et al. in Finland, found a segment of mobile phone users with different preferences named updater, budgetary, environmentalist, and long-life user. The fourth segment allowing identification of several potential implications for the sustainability of supply chain management.

### **3. Research Methods**

This type of research is descriptive, is the type of research that provides an overview or description on a state very clearly about the object under study. This study is called descriptive because research aimed to understand the preferences of mobile users in Surabaya on features from the perspective of supply chain sustainability, which will be measured using five attributes

sustainable development on mobile phones, physical strength and length of life, updating characteristic: software and hardware, recycling (plastic and metal parts and phone recycling), hazardous materials and waste processing in production, and ethical labor aspects and environmental conditions with suppliers.

Collecting data using questionnaires with respondents specified are mobile phone users, especially students of the final S1, S2 and S3 majoring in Management, Engineering, and Design universities in Surabaya. Students are taken as characteristics for being able to understand the questions put to good and expected students with higher education can be an innovator of aspects of sustainability development. Students tend to be decision-makers and opinion leaders in the future, and may even affect the decision in choosing. Data processing using conjoint analysis and cluster to get a class segment of respondents and preferences of mobile users against mobile features related to supply chain management sustainability.

#### **4. Result and Discussion**

In this study, the results of the conjoint questionnaire before analyzed by conjoint, first analyzed using SPSS 22 K-Means to divide respondents into clusters grouping. The result is three clusters. A total of 44 respondents are in cluster 1, 23 respondents included in cluster 2, and 33 respondents included in cluster 3. Once divided into three clusters, each cluster conjoint questionnaire results were analyzed using SPSS 22. In the conjoint analysis conjoint analysis, mobile features also called attributes. Researchers used five sustainability attributes associated mobile supply chain management, coupled with price attributes obtained from the focus group Anu Bask discussion on research to determine consumer preferences.

Respondents were asked to assume they wanted to buy a new phone, then compare with the old phone and rank 14 cards conjoint with the most desirable attributes of mobile phones to the most undesirable. Each attribute has two levels. Attributes of physical endurance and durability of the product and attributes of software and hardware that are updated have level "same as before" and "better than ever". Attributes of plastic and metal recycling, hazardous material usage attributes, and attribute ethical and environmental aspects of suppliers have the level of "no information" and "better than ever". As for the price attribute has a level of "same as before" and "10% more expensive than before". The results of the ranking is done by the respondents may reflect features / attributes of what is most preferred by respondents in the purchase of mobile phone products.

**Tabel 1. Attribute Importance terhadap 3 Cluster Responden**



Attribute importance	1	2	3
Physical strength and length of life	36.78	16.85	3.61
Updating characteristic: software and hardware	17.10	16.69	10.04
Recycling (plastic and metal parts)	12.38	10.95	12.05
Hazardous materials	12.96	3.34	26.51
Ethical labor aspects and environmental conditions with suppliers	3.89	23.68	9.64
Price	16.88	28.49	38.15
Total	100	100	100
Cluster size	44	23	33

Table 1 above shows the importance of the attributes in each cluster. Cluster 1 has the highest interest rate on the attributes of resilience and durability product, ie 36.783% and the value of utility at the same level as before. The value of the interests of both the software and hardware attributes are updated, which is 17.102% and the value of utility at the same level as before. Third interest in the value of the attribute with a value price of 16.885% and utilities at the level of 10% more expensive than before. The fourth value of the interest on the attributes of the use of hazardous materials by 12.963% and utilities at a level no information. The fifth value in attribute importance of recycling plastics and metals at the level of 12.382% and no information utility. The last attribute has the lowest interest rate in this cluster is the ethical aspects and environmental attributes suppliers only 3.885% and the level of utility no information. Researchers refer to the respondents in this cluster as a cluster of long-life user because respondents attach great importance to this cluster resistance and durability of the product and do not care about the other features, even willing to pay 10% more expensive.

From the results of the crosstab cluster in Table 2, the first cluster or clusters of long-life users are female respondents as many as 21 people and male respondents as many as 23 people. Respondents in this cluster at most aged 15-23, as many as 23 people. Price range phones to be purchased by the majority of respondents cluster Rp 3100000-4000000. Duration replace the phone, the majority of respondents cluster of more than 24 months. This is consistent with the results of the conjoint, ie respondents who liked the robustness and durability of the product. The attitude of the respondents of this cluster of green consumption, including quite positive because the average response to the question lowest Atlas is 3.66. This cluster of respondents want a phone that is not only durable and long lasting, but respondents also accept if you have to pay 10% more expensive to get the desired features.

Products are durable and long lasting means can be used in a long time so do not quickly into disuse. On the sustainability of supply chain management, product durable and long lasting influence of mobile phone companies in the drafting and design ideas phones, influence the selection of components and materials to be used, in other words also affect supplier selection. Mobile phones are durable and long lasting will also affect the level of sales of mobile phones, as mobile phone sales will slow.

Cluster 2 has the highest interest rate on the attributes of price, ie 28.494% and utility value at the level of 10% more expensive than before. The value of the interests of both the ethical and environmental aspects of the attributes of the supplier, which is 23.680% and the value of utility at a level no information. Third interest in the attribute value resilience and durability of the product with utility value of 16.848% and at a better level than before. The fourth value of the interest in the software and hardware attributes are updated by 16.693% and utilities at the same level as before. The fifth value in attribute importance of recycling plastics and metals at the level of 10.947% and no information utility. The last attribute has the lowest interest rate on this cluster is an attribute use of hazardous materials only at the level of 3.339% and no information utility. Researchers refer to the respondents in this cluster as the cluster cluster environmentalist because respondents are very willing to pay 10% more expensive for phone features an environmentally friendly, such as ethical and environmental aspects of suppliers, resilience and durability of the product, and updated software and hardware.

Results crosstab cluster Table 2, the second cluster or clusters environmentalist there were 10 female respondents and male respondents as many as 13 people. Respondents in this cluster at most aged 15-23, as many as 8 people. Price range phones to be purchased by the majority of respondents in this cluster over USD 4,000,000. It is precisely with the results of the conjoint, ie respondents are willing to pay 10% more expensive than the previous phone. Duration replace the phone, the majority of respondents cluster of more than 24 months. The attitude of the respondents of this cluster of green consumption, including very positive as the average response to the question lowest Atlas is 3.91. Respondents environmentalist cluster is concerned about the environment, the results of the conjoint features aspects of environmental ethics and suppliers into the third feature to be considered in the purchase of the phone.

In the mobile phone supply chain, associated with waste disposal phone will give a bad impact on the soil by chemical substances that exist in the phone. This will pollute the

environment and it means the phone company does not implement sustainability in the process. Aspects of environmental ethics and suppliers affect the cell phone company in selecting raw materials to be used. The raw material in the form of components and materials used should not adversely impact the environment. The Company shall inform the supplier of the principles of sustainability. Transportation used for distribution should also consider environmental pollution. Manufacturing waste should be able to sort the components of plastic and metal that can still be used.

Cluster 3 has the highest interest rate on the attributes of price, ie 38.153% and the value of the same utility as before. The value of the interests of both the attribute use of hazardous substances, ie 26.506% and utility value at the level of no information. Third interest in the attribute value of recycling plastics and metals with a value of 12.048% and utilities to better than ever. The fourth value of the interest in the software and hardware attributes are updated by 10.040% and utilities at a better level than before. The value of the fifth interest in the ethical and environmental aspects attribute supplier 9.639% and the utility level is better than ever. The last attribute has the lowest interest rate in this cluster is the resilience and durability of the product attributes only 3.614% and at the same utility level as before. Researchers refer to the respondents in this cluster as the cluster budgetary because this cluster of respondents were willing to pay the same as the previously owned cell phones, but the features desired mobile phone is better than ever and this cluster of respondents do not care about the resilience and durability of the product.

Results crosstab cluster Table 2, the third cluster or clusters contained budgetary female respondents were 20 people and male respondents as many as 13 people. Respondents in this cluster at most aged 30-49, as many as 12 people. Price range phones to be purchased by the majority of respondents in this cluster over USD 3100000-4000000. Duration replace the phone, the majority of respondents cluster of more than 24 months. The attitude of the respondents of this cluster of green consumption is positive because the average response to the question lowest Atlas is 3.79. Respondents in this cluster want to buy a phone with the same price as the previous phone, but want the features of other phones sustainability better than previous phones. This means that consumers have been aware of and have a positive attitude toward green consumption. However, if it is associated with a willingness to pay more for environmentally friendly products, on average respondents disagree. That is, respondents have limited

consumption of environmentally friendly products. Most features are not ignored by this cluster is the resilience and durability of the product.

Lately, many mobile phone manufacturers respond budgetary mobile phone users. Trends in the current mobile phone manufacturers to produce phones that are not focused on durability, but at a low price so that when damage occurs quickly consumers will make repeat purchases, so phone sales will increase.

**Tabel 2. Deskripsi Berdasarkan Cluster**

<b>Question</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>All</b>
<i>Gender (%)</i>				
Female	21.00	10.00	20.00	51.00
Male	23.00	13.00	13.00	49.00
<i>Age (%) (years)</i>				
19-23	23.00	8.00	8.00	39.00
23-26	8.00	2.00	4.00	14.00
26-29	6.00	3.00	4.00	13.00
29-49	5.00	6.00	12.00	23.00
49-69	2.00	4.00	5.00	11.00
<i>Atlas questions</i>				
Atlas 1, mean	3.66	4.00	3.79	3.82
Atlas 2, mean	3.93	3.91	4.15	4.00
Atlas 3, mean	4.05	4.35	3.97	4.12
Atlas 4, mean	4.34	4.30	4.36	4.34
Atlas 5, mean	4.45	4.35	4.36	4.39
<i>Next phone: intended price class (%) (Rp)</i>				
Below 1.000.000	0.00	0.00	0.00	0.00
1.100.000-2.000.000	4.00	0.00	0.00	4.00
2.100.000-3.000.000	11.00	5.00	7.00	23.00
3.100.000-4.000.000	18.00	7.00	14.00	39.00
More than 4.000.000	11.00	11.00	12.00	34.00
<i>Time interval for changing phones (%) (months)</i>				
1-12	4.00	1.00	2.00	7.00
13-18	7.00	4.00	1.00	12.00
19-24	10.00	4.00	12.00	26.00
More than 24	23.00	14.00	18.00	55.00

## 5. Conclusion

Phone features associated with the sustainability of supply chain management, which is used as an attribute is a feature of physical endurance and durability of the product, features the use of hazardous substances in products, and features the characteristics of software and hardware updates. The consumer preferences impact on the supply chain management of mobile phone manufacturers, which influence the selection of raw materials, suppliers, production processes, product design, product packaging, transportation, distribution to retailers.

The fact is emphasized that physical strength and durability of the phone is the only attribute that received the highest rating in the cluster of long-life user. Attributes that are emphasized in the cluster environmentalist is an attribute price 10% more expensive and ethical and environmental aspects of suppliers. Attributes that are focused on budgetary cluster attribute the low price and other environmentally friendly attributes better than ever.

Products are durable and long lasting means can be used in a long time so do not quickly into disuse. On the sustainability of supply chain management, product durable and long lasting influence of mobile phone companies in the drafting and design ideas phones, influence the selection of components and materials to be used, in other words also affect supplier selection. In the mobile phone supply chain, associated with waste disposal phone will give a bad impact on the soil by chemical substances that exist in the phone. This will pollute the environment and it means the phone company does not implement sustainability in the process. Aspects of environmental ethics and suppliers affect the cell phone company in selecting raw materials to be used. The raw material in the form of components and materials used should not adversely impact the environment. The Company shall inform the supplier of the principles of sustainability. Lately, many mobile phone manufacturers respond budgetary mobile phone users. Trends in the current mobile phone manufacturers to produce phones that are not focused on durability, but at a low price so that when damage occurs quickly consumers will make repeat purchases, so phone sales will increase.

Results of research on the positive attitude of consumers towards environmentally friendly products that are not followed by a willingness to pay higher prices provide a challenge for mobile phone manufacturers to create products that are environmentally friendly and not too expensive. The results of this study can be useful for mobile phone manufacturers. Mobile phone companies can also use the results of this research in the development of products with matching

phone features what the consumer preferences. Currently some cell phone companies, such as Samsung, Apple, Nokia, Sony, has been implementing sustainability issues (sustainability) in their products, but these products do not sell well in the market because the company did not pay attention to the desires of consumers and just follow the development trend of environmentally friendly only.

Therefore, the preference of mobile users is very important in creating a profitable supply chain management for the company and for users of mobile phones itself. If the mobile phone user desires are met then there will be customer satisfaction and can lead to repeat purchases, meaning that the phone company will also benefit.

Suggestions for mobile phone manufacturers in accordance with the preferences of each cluster, namely mobile users are included in the cluster of long-life user liked products durable and long lasting. Environmentalist cluster mobile users pay attention to the impact on the environment. Mobile phone manufacturers can provide eco-label on the packaging. Mobile users who budgetary like a cheap product and also environmentally friendly.

This study has several limitations. Limitations of this study could open up opportunities for further research in future. The sample used in this study is limited to mobile consumers in Surabaya, which is represented by the student. For the next researcher who wants and will do similar research can do research on different respondents in the City or the wider area coverage so that it can be compared with the results of this study.

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