

Bandung Electronic Center: Consumer Attitude toward Smart-phone and Tablet PC

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Abstract - An increase in complexity of current communication needs makes humans require more sophisticated communication tools than before. Through a high need for gadgets, many electronics centers emerge in many major cities in Indonesia. The purpose of this research is to identify the profile of consumers in the largest electronic shopping center in Bandung, namely BEC. The profile was seen only on consumer attitudes towards communication devices, smartphones and Tablet PCs which are claimed to be the best-selling at BEC. A total of 805 respondents involved in completing the questionnaire during the period of 4 months using purposive sampling method. Measurement of consumer attitudes is referred to the formula developed by Fishbein. The result was that consumer attitudes (Ao) of smart-phone users with iOS in term of product attributes were better when compared with consumer attitudes (Ao) of smart-phone users with BlackBerry and Android operating system. In addition, consumer attitudes of iPad users were better than the iPad Mini users. This research is useful as it provides information for the sellers of smart-phones and tablet PCs at BEC in particular on how consumers rate the products they sell and that eventually the sellers can formulate a more effective marketing strategy.

Keywords—Smart-phone, Tablet PC, Bandung Electronic Center, Consumer Attitude, Profiling

I. INTRODUCTION

Industry of electronics business in 2014 grew by 12%, higher compared to the year of 2013 by 11% [1], whereas according to [2], and according to Director Ufo Electronics and Furniture [3] electronic sales throughout 2014 grew by 20%. Market of Electronic products, including telecommunication equipment such as mobile phones and smart-phones, in Indonesia in 2014 was estimated to reach IDR 152.4 trillion, increase by 10% compared to that in 2013 amounting to IDR 138.6 trillion. Directorate General of International Industry Cooperation, Ministry of Industry,

Tjahajana [4] stated that the national electronics industry did not need to be wary of trade competition in the era of ASEAN free trade but had to notice about competition in the services sector that was stringent increasingly. Both of these sectors will be traded freely by the end of 2015. This is due to the agreement made in the ASEAN Economic Community (AEC) whose mandate is to make liberalization for 128 service sub-sectors to be reached in 2015 with a specific schedule.

With the increasing needs for gadget, many electronics centers rise. In 2014, there were 235 companies engaged in the electronics [5]. Electronic shopping center in Bandung for example, almost always exists in every mall, and Bandung Electronic Center (BEC) is the largest and most complete one. BEC sells wide range of electronic products such as mobile phones, Laptops, Computers, Accessories, Modem, TV, various applications, GSM (Global System for Mobile), CDMA (Code Division Multiple Access), and others. The brands offered some are originally from domestic while the others from abroad. BEC is the first electronic center which provides a large and complete variety of information technology devices. It also has first title strata in Bandung. BEC has a very solid stream of visitors, approximately around 25.000-30.000 visitors on workday and 40,000-50,000 visitors on weekends. The land area of BEC reaches 17,000 m², which covers three floors of parking areas and six-floor of retail areas (LU, LG, UG, 1st F, 2nd F, 3rdF). Located in a strategic area between the city centers on Jalan Purnawarman, it becomes one of the prestigious areas in the commercial center and the hustle of the city of Bandung, BEC has a varied market segments. In addition, BEC provides great and complete information technology products [6]. On the main floor, lower ground, and upper ground are shops that sell mobile phones and accessories from a variety of products. A total of 70% of the counters sell Tablet PC, iPad and iPad Mini, Smart-phone, whereas the others sell the rest, as explained by Shandy on Thursday, November 14th, 2013.

Shandy is the current operational staff of Bandung Electronic Center. In BEC, there is difference between sellers on the main floor (LU), lower ground (LG) and upper ground (UG) who sell variety of mobile phones, smart-phones, tablet PCs, accessories, mobile applications (games, MP3, MP4), Service Center Provider, Information Desk, Chinese mobile phone vendors, SIM card. On floor 1 and 2, the sellers sell various types of computer, laptop, play station and accessories, tablet pc, digital camera, service center, modem and accessories, Hardware and Software, Audio, Video, Recording. On the 3rd floor there are food courts, IT counters, and meeting room.

Indonesia becomes the biggest smart-phone sales market in Southeast Asia. As mobile devices have become something regular nowadays, the total sales of smart-phones keep rising from year to year. The latest data from GfK suggests that the total sales of smart-phones in Southeast Asia this year has reached \$16.4 Billion (around IDR 198 Trillion) so far, increasing 33 percent from last year. The total volume of units sold also increases by 44 percent annually. In Indonesia, the growth of smart-phone sales has risen up to 70% in past twelve months, the highest among other Southeast Asian countries [7]. Furthermore, it is reported that in term of total sales growth, Indonesia takes the lead with 70%, followed by Vietnam (56%) and Thailand (44%). Meanwhile, when it comes to valuation, Vietnam is placed first with 52% of growth, followed by Indonesia (32%) and Thailand (31%) [7].

Tablet PC and smart-phones are among IT products that are taking the center stage [8]. Deloitte predicts that global sales of smart-phones, tablets, PCs, TV sets and video game consoles will exceed \$750 billion in 2014, increasing \$50 billion from 2013 and almost double the total sales in 2007[9]. Ref [9] also states that massive scale economies drove down prices for lower-end PCs, tablets and smart-phones. Therefore, such that large numbers of less affluent families in emerging and developed markets could afford them.

In addition to interesting data above, in terms of online shopping behavior, 66 percent of respondents claimed to be shopping via mobile devices such as mobile phones and tablets, while 86 percent of respondents also said they would shop online using a computer device [10]. In choosing smart-phones and tablets to be purchased, there are a few considerations of the consumer: Product Quality, Product Features, Price, Brand, Warranty, Auxiliary Services, and Product Design [11].

From the background above, this study aims at identifying the profile of consumer in electronic shopping center BEC based on popular sold products in 2014. The study focuses on consumer attitudes based on the attributes of smart-phones and tablet PCs. Practical benefits of this research are: first to give an overview to BEC management and sellers regarding the consumer profile that can be considered for improving product marketing strategies, and second as a consideration in providing product knowledge training for their sales division.

II. LITERATURE REVIEW

A. State of The Art

Research on consumer attributes have been conducted such as [12] examining consumer attitude to Purchase Intentions of Counterfeiting Bag Product in Indonesia. Ref [13] made a research about model of behavioral intention to buy domestic versus imported product of Confucian culture. Ref [14]

studied Determinants of Behavioral Attitude to Accept E-Shopping among the Student in Malaysia. Ref [15] emphasized more to what product's attributes that influenced consumer at buying Nigerian Food and Beverages Industry in Lagos Metropolis. Other researches were about preference of motorcycle [16]; about smart-phone [11] using Fishbein Multi attribute approach. Beside two last researches, multi attribute Fishbein was popularly used as tool to measure consumer's behavior, few national journals [17-22] used multi attribute Fishbein as well to measure consumer attribute.

Additionally, there are also many researches discussing about smartphone and tablet PCs such as research of [23] regarding factors affecting smart-phone purchase decision among Malaysian generation y; [8] studied on determinant factors to purchase for tablet PC and smart-phone by a comparative analysis; [24] examined the impacts of iPad attributes, users' lifestyles, and media dependency on the adoption and intensity of iPad usage.

B. What is Consumer's behavior Analysis?

Attitude is an important concept in research on marketing and information systems. Fishbein defined an attitude as "a learned predisposition of human beings" (Fishbein on [25]). In general, attitude is "mental states used by individuals to structure the way they perceive their environment and guide the way they respond to it" [14]. Ref [26] elaborated attitude as an individual personal evaluation, emotional feeling attached and action tendency toward some objects or ideas. According to [27], the personal attitudes is obtained from the consequences caused by the belief in behaving.

The most popular measurement of attitudes used by consumer researchers was a model of the Multi Attribute. Attitude Model of Fishbein, consisted of three models: the attitude toward the object model, attitude toward behavior model, and the theory of Reasoned Action [28].

The attitude toward the object model is very suitable for measuring attitudes toward the class of products (or services) or a particular brand. According to this model, consumer attitudes toward products or specific product brand is a function of the presence (or absence) and evaluation of a conviction or certain properties.

In other words, consumers usually have level of adequate properties and positive values, and they have an unpleasant attitude towards the brands they feel do not have adequate levels of undesirable traits or too many negative or undesirable properties [29].

Furthermore, in this model, Fishbein (1967) on [16] said that a person's attitude toward an object was a function of his belief that the object was associated with certain attributes and evaluative responses connected to that belief.

C. Smartphones and Tablet PCs

Ref [8] defines smartphone as a mobile computing phone with a touch screen interface and a diagonal dimension that is seven inches or less. While [30] states smart-phone as portable PCs that can freely remove and add applications based on general PC operating system. For Tablet PC, A tablet computer refers to a computer that is intermediate in size between a laptop computer and a smart-phone [31]. While [32] offers a definition of a tablet PC as a complex device that has the functionality of an MP3 player, a PMP, a net-book, and a smart phone with a touch screen interface for writing

with a stylus. This research uses a framework provided below in figure 1.

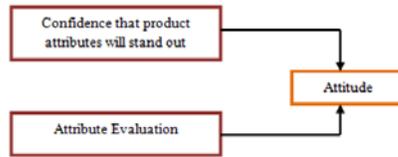


Figure 1. Framework of Research

From the conceptual framework above, two sets of hypotheses were developed.

- H1: *Consumer's behavior on smart-phone with Blackberry OS, Android OS and iOS do have the same score.*
- H2: *Consumer's behavior on Tablet PC with iPad and iPad mini brand do have the same score.*

III. RESEARCH METHODOLOGY

A field survey was conducted in 2013-2014 to test the hypotheses both for smart-phone and tablet PC. The questionnaire is adapted from the instruments used in [16] to measure consumer attitude in choosing motorbike and in [17] about consumer behavior in purchasing Acer-Brand Consumer. Therefore, the considered attributes in this research comprise Product Quality, Product Features, Price, Brand, Warranty, Auxiliary Services, and Product Design. The questionnaire had 2 major parts. First part was about collecting the respondent's demographic data such as gender and length of gadget's possession. The second part was the main part of questionnaire. The scale used in the questionnaire is a scale of staple and the explanation of the code are as follows: very unapproved (-3), unapproved (-2), rather unapproved (-1), rather approved (1), approved (2) and very approved (3) [33]. Sampling process was conducted with purposive sampling method.

The questionnaire was pretested over 60 respondents, in which 30 for tablet PC's consumers and 30 for smart-phone's consumers. It was distributed to respondent in BEC especially on LU, LG and UP. A total of 1000 questionnaires were distributed and 805 of them were returned.

Objects of smart-phone that was examined in this research were smart-phone with the Operating System of Android, iOS and Blackberry, whereas for tablets, only on IPAD and iPad mini. Objects were drawn based on information from the seller in BEC, they stated that it was the best-selling brand during 2013-2014.

Once the data had been collected, the data was processed using a model of consumer attitude toward an object that was developed by [29]:

$$A_o = \sum_{i=1}^n b_i e_i \quad (1)$$

Where: A_o = Attitude toward an object; b_i = The strength of the belief that the object has an attribute i ; e_i = Evaluation of attribute i ; n = Amount of belief

IV. DATA ANALYSIS AND DISCUSSION

A. Data Reliability

The attitude data were first tested for reliability using Cronbach's Alpha to assess the data. The result, for smart-phone the value was 0.930 which was higher than 0.7 (acceptable) so did for Tablet PC that reached 0.806. Those values indicate that the collected data are reliable.

B. Respondent's Profile

From 805 respondents, 48% were women and men were 52%. The length of use of both smart-phones and tablet gadget comprise the followings: the use of <6 months were 21%, 6 months - 1 year were 25%, 26% represented 1-2 years and 2-5 years represented by 27%. From the respondent's profile, it did not look much different proportions in both gender and length of use, it was intentional in order to minimize respondent bias.

C. Consumer Attitudes to Smart-phone

Analysis on the calculation results for all three smart-phones with BlackBerry OS, Android OS, and iOS based on the average and total consumer attitudes (A_o) can be seen in Table 1. Table 1 shows that the highest consumer attitudes (A_o) of smart-phone users with BlackBerry operating system is the product quality attributes of the performance with a value of (3.69). Additionally, the lowest consumer attitudes (A_o) of smart-phone users with BlackBerry operating system is its durability with a value of (-0.24). The highest consumer attitudes (A_o) of smart-phone users with the Android operating system is product feature attribute of the smart-phone providing many applications with the value of (4.29). While the lowest consumer attitudes (A_o) of smart-phone users with Android operating system is also its durability with a value of (0.04). The highest Consumer Attitudes (A_o) of smart-phone users with iOS operating system is on the attributes of the product features because it provides many applications with the value of (5.79). While the lowest consumer attitudes (A_o) of smart-phone users with iOS operating system is in terms of pricing with a value of (-0.02).

From the data, if it is sorted, five top attributes that are considered by customer to choose BlackBerry are: to support the activities of customer (3.69), easily obtained (3.25), provides easy access to the application (3.14), the famous smart-phone brand (3.12) and a sophisticated smart-phone (2.63). For smart-phone with android OS, the five top attributes that are considered by customers are: amount of applications (4.29), provides easy access to the application (3.83), the famous smart-phone (3.58), sophisticated Smart-phone (3.29) and support activities (3.26). Smart-phone iPhone with iOS if we sort the five top attributes that are considered by customer to choose iPhone with iOS are: Smart-phone provides many applications (5.79), sophisticated Smart-phone (5.76), attractive smart-phone display (5.25), the famous smart-phone (5.01), and provides easy access to the application (4.92).

TABLE 1: COMPARISON SCORE OF SMARTPHONE CONSUMER ATTITUDES WITH BLACKBERRY OS, ANDROID OS, AND IOS OS

No	Attribute	Ao (BlackBerry)	Ao (Android)	Ao (iOS)
1	Smartphone supports your activity	3.69	3.26	4.62
2	Smartphone is recognized as sophisticated communication tool	2.63	3.29	5.76
3	Smartphone has a good durability	-0.24	0.04	0.53
4	Smartphone that you possess suits your taste well	1.60	2.00	3.60
5	Smartphone enables you with application access	3.14	3.83	4.92
6	Your Smartphone boosts up your confidence	1.68	1.68	3.95
7	Smartphone provides a lot of apps	2.22	4.29	5.79
8	Smartphone has OS's stability	0.67	1.52	2.29
9	Smartphone enables you to multitasking	1.90	2.80	4.09
10	Smartphone provides security system	1.50	1.04	3.09
11	Smartphone's price is affordable	0.54	0.07	-0.02
12	Smartphone's price fits the quality	1.31	1.89	2.46
13	Smartphone's brand has a positive image	2.05	2.83	3.26
14	Smartphone's brand has a good reputation	3.12	3.58	5.01
15	Smartphone's display is attractive	2.36	3.03	5.23
16	Smartphone's colour is eye-catched	1.49	1.77	2.79
17	Smartphone's size fits your need	2.49	1.55	3.65
18	The warranty period provides a sense of security	2.04	1.98	1.55
19	The warranty type provides a sense of security	1.90	1.74	1.71
20	Smartphone that you own corresponds with the advertised ones	1.94	1.33	3.80
21	Smartphone's advertising encourages you to buy one	1.21	1.14	2.25
22	Smartphone is easily obtained	3.25	2.08	3.26
23	The location of service center easily accessible	1.61	1.31	1.86
24	There are a smartphone user community	1.94	1.85	1.76
	Total	46.04	49.90	77.23

In addition, Table 1 shows the comparison of the total score of consumer attitudes (Ao) of smart-phone users with BlackBerry, Android and iOS. The comparison shows consumer attitudes (Ao) of smart-phone users with the highest iOS operating system with a total value of (77.20), android (49.90) and BlackBerry (46.04). This means that the attitude of consumers (Ao) of smart-phone users with iOS operating system relies on a better product attributes when compared with the consumer attitudes (Ao) of smart-phone users with BlackBerry and Android operating system.

The results of the reviews from [34] states that "the smart-phone market has been growing and evolving rapidly and shows no signs of stopping. Given the rapid change, choosing the right mobile OS may seem difficult, but after a bit of research most users can find the one which is right for them. If you are new to smart-phones or just looking for a simple, elegant user interface with numerous safe roommates apps integrated seamlessly with it, Apple's iOS is probably for you. If you are a power user or techie looking for maximum flexibility, possibly even have the ability to experiment with the OS and the apps, Android is probably for you. If you are looking for a business productivity roommate's phone plays well with office and enterprise technology, Blackberry is probably for you ". This is consistent with the result that Blackberry is used to support the core activities, to the apple iOS can be seen from the consideration from three of them that it looks attractive, yet, from the main consideration for android by consumers is its application attribute.

These results are supported by data reported by [10], namely the decline of BlackBerry's reputation and the availability of BBM in the Android application may be the factors that affect the buyer's decision. However, the price remains one of the major factors that influence a buyer's decision in choosing a smart-phone.

The analysis of result calculation for both Apple Table PCt with iPad and iPad Mini based on the average and total consumer attitudes (Ao) can be seen in Table 2. From the data, if it is sorted for the top five attributes that are considered by

customer, they choose iPad because the application type offered is attractive (6.78), Apple iPad Tablet PC is considered sophisticated (5.13), Apple iPad Tablet PC is not susceptible to the virus (4.45), Apple iPad Tablet PC supports customer's activity (4.28) and Apple iPad Tablet PC is reliable (4.09). As for iPad mini, its top five consideration are that the Apple iPad mini Tablet PC's size meets the customer's need (4.56), Apple iPad mini Tablet PC supports customer's activities (3.72), Apple iPad mini Tablet PC has a good durability (3.61), Apple iPad mini Tablet PC's design is attractive (3.59) and the offered apps meet customer's need (3.48).

Table 2 also describes the ratio of the total score of consumer attitudes (Ao) of Apple Tablet PC users with the iPad and iPad Mini. The comparison shows that consumer attitudes (Ao) of iPad users is higher by (102.49) compared to the iPad Mini with a value of (84.41). This means that the consumers' attitude (Ao) of iPad users is better than the iPad Mini users'.

One of the similarities between the iPad and iPad mini is their memory capacity. There are option for the memory of 16GB, 32GB and 64GB with different price, whereas iPad models can be upgraded to 128 GB, yet standard memory is available on either one [35]. The results of this study can be changed with the development of the product and may have different results if done in other electronic shopping mall. As the results of the reviews by [36] and [35] that iPad Mini that has a 7.9-inch landscape display can be said to be more stable than the "regular" iPad (9.7 inches), regardless of iPhone. Ref [35] adds that "The iPad mini is definitely easier to carry around, putting the "mobile" in mobile device. It easily fits into customer purse or backpack pocket, and is also easy to use with one hand. At a depth of 0.28 inches, it's thinner than other iPads, and if the smaller screen ever bothers customer, customer can always connect it to a TV (though that kind of defeats the purpose). These aspects bring up an interesting point. Some people have compared the iPad mini to a slightly larger iPhone, with all of the same capabilities except making calls. Whenever customers think about it, the screen of Samsung's Galaxy Note smart-phone is only approximately 2 inches smaller than the iPad mini's. The difference seems to be the iOS ecosystem if you are looking for a small iPad, that's literally what you'll get with the iPad mini."

Besides that, [35] states "the iPad mini is for those Apple customers who already know and understand the iOS ecosystem (or who are looking for an introduction to it), but always thought the iPad was too large and expensive."

TABLE II: COMPARISON SCORE OF SMART-PHONE CONSUMER ATTITUDES WITH IPAD AND THE IPAD MINI

No.	Attribute	Ao iPad	Ao iPadMini
1	Apple Tablet PC supports your activity	4.28	3.72
2	Apple Tablet PC is considered as sophisticated tool	5.13	3.02
3	Apple Tablet PC has speed in access	3.96	-0.1
4	Apple Tablet PC is reliable	3.59	-0.03
5	Apple Tablet PC is trusted	4.09	1.80
6	Apple Tablet PC has a good durability	1.36	3.61
7	Apple Tablet PC has a durable battery	1.64	1.74
8	Apple Tablet PC fits your desire	2.54	3.20
9	Apple Tablet PC fits your expectation	3.32	1.06
10	Apple Tablet PC provides convenience in carrying out activities	1.74	2.49
11	Apple Tablet PC easily repaired	3.09	1.59
12	Apple Tablet PC can be repaired	2.55	0.49
13	Features in Apple Tablet PC meet the needs	2.07	1.77
14	Overall apps in the Apple Tablet PC support your needs	2.92	2.64
15	Offered apps according to the needs	3.50	3.48
16	Types of offered apps are interesting	6.78	2.66
17	Operating System (OS) that owned by Apple Tablet PC is stable	2.01	1.59
18	Operating System (OS) that owned by Apple Tablet PC is sophisticated	2.40	2.23
19	Apple Tablet PC is multitasking	3.00	2.03
20	Apple Tablet PC provides security system	2.51	1.88
21	Apple Tablet PC is not susceptible to the virus	4.45	1.95
22	Apple Tablet PC has an affordable price	0.06	1.08
23	Apple Tablet PC's price in accordance with the quality	3.00	3.24
24	Apple's reputation is trusted	2.50	1.77
25	Apple's brand is popular	3.63	2.07
26	Apple is the first brand that you think about when choosing a Tablet PC	1.42	2.99
27	Apple Tablet PC is easy to use	3.36	2.69
28	Apple Tablet PC has an attractive display	1.97	2.12
29	Apple Tablet PC has an attractive design	1.41	3.59
30	Apple Tablet PC's design fits your desire	1.82	2.48
31	Apple Tablet PC has an eye-catching color	2.55	2.36
32	Apple Tablet PC's size met your need	1.59	4.56
33	Apple Tablet PC's size met your expectation	1.29	3.27
34	The grace period of Apple Tablet PC's warranty is sufficient	2.16	2.1
35	Warranty of tablet PC gives sense of security	2.33	2.68
36	Type of warranty is reliable	2.01	2.25
37	A lot of service centers provided	2.55	0.42
38	Care Center Online is standby	1.91	1.95
	Total	102.49	84.41

The difference in results could be due to many factors, one of which is that the iPad mini is considered late coming to Indonesia prior to the city of Bandung. However, another review states that Apple has managed to shift a significant sale for the more expensive models. In 2013, the iPad 2 had robbed a quarter to a third of the overall iPad seller (Levin, CIRP, as reported from the Inquirer in [37]).

Many sites discuss the advantages and disadvantages of each product by calling it in the Indonesian language [35-36]; [38-40]. When compared to the results of research on the product and consumer attitudes, some were relevant, whereas other was different. For example Android that can run multiple applications at the same time. The other provides information that the apps on the iPhone are the highest compared to android and blackberry. It is in accordance with the highest consumer attitude saying that because the apps they use are android and iPhone. Supporting the data of sheer volume of apps, Android and iOS stand head and shoulders over Blackberry. Apple's App Store has over 500,000 apps available and the Android Market has over 250,000 available, compared to Blackberry's with only 45,000 or so [34].

Other appropriate data is about iPhone's weakness from the price. Of the three products compared; it is the iPhone that

has the most expensive price. However, the data does not match the item that explains blackberry's weakness in durability, while the results of the reviews, iPhone and android have a weakness in rapid battery waste compared to blackberry. The result of measurement on consumer attitudes toward smart-phones and Tablet PCs is that both reject hypothesis 1 and 2 because the results are different from each other.

V. CONCLUSION

The result of research on consumer attitude in BEC floor LG, LU and UP was that consumer attitudes (Ao) of smart-phone users with iOS operating system were better in terms of product attributes when compared to consumer attitudes (Ao) of smart-phone users with BlackBerry and Android operating system. Additionally, consumer attitudes (Ao) of iPad users were better than the iPad Mini users'.

Weaknesses of the research and further research

This research was made during the period of September 2013 - February 2014, the length of the study period could create bias to the results obtained for a new product or a new OS. Therefore, it may interfere the development of research results. It is suggested for the next research study to be conducted in a shorter time span to minimize bias of the data. In this study, we did not take into consideration the customer segments, therefore next research may preferably aim at specific segments such as on youth segment, the segment of workers, and so forth. In this research, it recently discusses consumer attitudes toward smartphones and tablet PCs, whereas Fishbein's multi attribute itself discussed further on the behavior that is taken from the attitude and subjective norm. In terms of the object, this research was limited to smart-phones and tablets with particular brand that was considered as sample. In fact, the development of such products are more rapid on new brands that can compete with the famous ones. Therefore for further research it is worth to consider potential new comer that owns a high market high in the city.

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