

# The Influence of Smartphone Design on Millennial Generation Consumer Perceptions on Brand Attitude, Purchase Intention and WOM in Indonesia

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**Abstract.** Today's company is also looking for ways to meet consumer needs, to stay ahead and competitive by investing in innovation not only from technology but also from design, as the company is currently able to launch breakthrough product designs. Product design is a key success factor in the market which not only attract the attention of consumers but also can communicate the product value and closely related to consumer behaviours. By using a quantitative method and the use of the S-O-R model, the purpose of this study is to examine the effect of product design on smartphone breakthroughs and the effect of product involvement on the process psychological responses (cognitive and affective) especially in millennial consumers and to see the role of brand attitudes that affect consumer response (WOM and Purchase Intention). The result indicates that there are significant relationship between NPD and psychological response. In addition, functional dimension is the strongest dimension in NPD.

**Keywords:** Product design, psychological response, brand attitude, WOM, Purchase Intention

## 1 Introduction

Digitalization is an era where people are encouraged to have digital products to support their activities. Every aspect of people's lives today is in contact with the internet and has been increasingly seen when there is a shift in activity from offline to online while Covid-19 hits due to limited space for movement in the community (Binus, 2020). Activities that used to be done offline such as teaching and learning, work, shopping, sports, and even financial transactions can also be done online. This phenomenon occurs because of the development of digital products such as smartphones which are currently one of the products that are used massively. Apart from that, smartphones are not just because of the urge to meet their needs, but there is also an aspect of hedonism in them (Kiran, Thomas, & Johny, 2019). This aspect of hedonism reflects the pleasure and emotion in consumers which usually also comes from the value of a brand (Kiran, Thomas, & Johny, 2019). Like wanting to be in a certain social class or just wanting to follow the latest trends.

In addition, smartphone companies are also trying to meet consumer needs emotionally and socially. Companies can release the latest products in a relatively short period with a variety of different features and looks. This makes the smartphone market grow and expand so that currently consumers have various choices in buying smartphones. Companies are also looking for ways to stay ahead and competitive by investing in innovation, with the hope that the company can dominate the industry (Grants, 2010). And although companies have traditionally regarded technology as a source of innovation and development, in recent years they have shifted their focus to design (Farhana & Bimenyimana, 2015). The company understands that product design is a key success factor in the market, besides to attracts the attention of consumers it also can communicate clearly to consumers to promote product value. Product design is referred to as the activity of expressing ideas and needs into a physical form that begins as a solution concept and then becomes an arrangement of elements, materials, and components (Walsh, Roy, & Potter, 1992). The communication contained in this design product is essential because when the product is more meaningful, the customer's perceived value becomes high (Veganti, 2009). In addition, design practices play other important roles such as encouraging users to adopt innovations (Hernandez, Cooper, & Tether, 2018). According to Rubera and Droge, companies can innovate by changing the function or modifying form (Rubera & Droge, 2013). Innovations related to function can be said to be technological innovations, while innovations that affect product form and aesthetics are seen as design innovations (Hernandez, Cooper, & Tether, 2018).

iPhone companies have products with attractive visuals, there are strong hedonism, and functional and symbolic values which further help companies develop their product identification and brand identification (Lin Hsu, Chun Chen, Ning Yang, & Ko Lin, 2018). And with the current example, Samsung is presenting a smartphone breakthrough, the folding smartphone Galaxy Z Flip and Galaxy Fold with a hybrid tablet and cellphone theme. Breakthrough products are products that are technologically advanced and creatively superior to existing products on the market. Breakthrough can be interpreted as a revolutionary change in technology and can occur in the company's creative process. In other words, breakthrough products meet consumer needs at a higher level than current products such as more advanced and innovative technologies (Breakthrough Products, 2021)

According to Connor, a breakthrough is a breakthrough innovation in creating new business lines for companies and markets (O'Connor, C., & Rice, 2001). In addition, what is meant by new is a product or a feature that has never existed before Samsung flip and fold has a breakthrough with an innovative design and technology that allows smartphones to be folded. In addition, the iPhone 13 has the latest breakthrough with a cinematic camera mode that allows individuals to record videos like cinema, even though they are not professional filmmakers. This is the benchmark why the three products are categorized as breakthrough products. However, it is not uncommon for breakthrough smartphones issued by companies to fail in the market. In this case, call it LG Optimus 3D, which releases a smartphone with a 3D screen so that consumers can feel the real screen display. Likewise, MI Mix alpha, a smartphone with a 360 screen issued by Xioami and the product output from One Plus, is a smartphone with the Xray feature, which turns out to be criticized because the smartphone camera can penetrate the fabric surface and this will interfere with privacy. Thus, it becomes interesting to know why the Samsung Flip and Fold as well as the Iphone 13 can succeed in the market

In today's market, product design is increasingly considered an essential strategic tool in creating preferences and value for customers (Noble & Kumar, 2008). Design elements can create functional product differentiation and create transactional for consumers. At the same time, other design strategies such as form can create more emotional value. Homburg states that aesthetics, functionality, and symbolism positively affect consumers' evaluations before they finally make a choice (Homburg, Schwemmler, & Kuehnl, 2015). As the perception of aesthetic design can create a pleasant effect for consumers, then the perception of function can increase consumer awareness of product performance. The symbol of a product design explains the value and mood that a person feels with the focus item, or functions in helping users to form their identity (McCracken, 1986). It is also supported by Brunner who found that product design positively affects consumers' evaluations of a product, which then affects their decision to buy it or not (Brunner, Ullrich, & Jungen, 2016).

Seeing the rapid development of technology and also the changes in market demand, require companies to be able to improve the quality of their products on the design of these dimensions. When developments go hand in hand, companies also need to know what consumers are interested in buying products, especially smartphones.

This research will try to understand the role of the smartphone's breakthrough product design in millennial generation consumers which refers to the three dimensions of product design from Homburg. In addition, seeing there's a correlation between product design and consumers' affective and cognitive psychological responses, researchers try to take a deeper look at the relationship between the two in the millennial generation. Refers to Chia-Lin Hsu's research, testing whether product design affects psychological responses such as cognitive and affective. In this study, researchers will also see how the psychological response relates to consumer brand attitudes before consumers finally decide to buy or just do WOM.

The results of this study are expected to contribute to the company knowing what dimensions most are considered by consumers so that companies can supply their best products according to the needs and desires of consumers. It is also hoped that the results of this research can be used as product strategy suggestions as well as marketing and smartphone product development where R&D can balance the dimensions of product design to create the largest products.

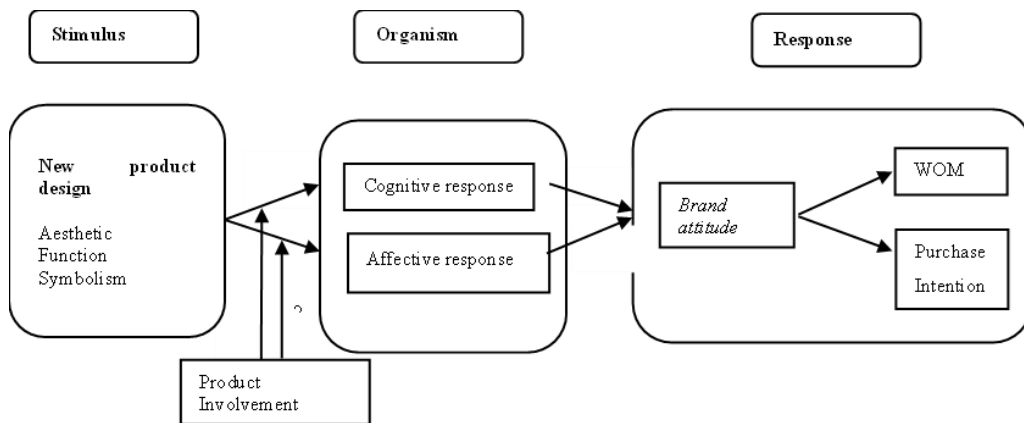
Based on the problem formulation that has been described and adopted from Homburg, the researcher poses research questions that are expected to be answered at the end of the study as follows: Does the new product design (Aesthetic, symbolism, functional) on smartphones significantly affect consumer perceptions (cognitive response and affective response) of Indonesian millennials? What is the moderating effect of product innovation on the relationship between NPD and cognitive-affective response that affects brand attitude, purchase intention, and WOM?

## **2 Methodology**

This study uses the S-O-R concept in the proposed model. In the stimulant section, there is an NPD (new product design) that consists of aesthetic, functionality, and symbolism elements (Lin Hsu, Chun Chen, Ning Yang, & Ko Lin, 2018). Researchers use new product designs

because, in the current smartphone context, companies tend to issue products with designs that are always different even though not all dimensions (aesthetics, function, symbolism) are in the product. Providing an ever-new design, it can help increase the product's appeal to consumers. NPD in smartphone products is still considered relevant, especially for millennial consumers who are very visual. First impressions are very important before they finally buy the product (Martínez-González & Ivarez-Albelo, 2021)

Furthermore, in the proposed model, the stimulus leads to an organism in which there is a cognitive response and the affective response. This is adjusted to the current development of SOR theory. Prior to the use of the Stimulant-Response concept used in the Homburg study (see model 2), the consumer gave a direct reflex to the stimulant. Currently, the concept has been developed by adding organisms as a form of logical reasoning, namely the individual's internal perception process before finally responding to the captured stimulant. This is supported by consumer behavior which explains that the stimulus will be responded to and analyzed by individuals who can ultimately encourage the behavior.



**Fig. 1.** Research Model

The researcher uses one question to screen millennial consumers with questions ranging from the birth year of the respondents. Referring to Kotler's millennial definition, the millennial birth year range is 1980-2000. Respondents who fall into the category will continue in the next section, namely the core questions. Those who are not will go directly to the exit page. Before entering the core question, the researcher provided stimulation to respondents by displaying smartphones along with descriptions and prices, including Iphone 13, Samsung Z fold, and Z flip. new in the market as well as on the smartphone brand. In this section, the researcher uses variables that have been tested, namely product design, cognitive-affective response, product involvement, brand attitude, purchase intention, and WOM. Overall there are 29 items indicators consisting of 7 items for NPD, CR 3 items, AR 4 items, PIV 3 items, BA 4 items, PI 3 items, and WOM 3 items.

The research took place in two stages. First, a preliminary survey using 30 questionnaires was conducted to measure the feasibility of the research tool before proceeding to a full evaluation. A 5-point Likert scale was used with 5 for strongly agree and 1 strongly disagree. The Likert

scale provides consistent responses that can be easily entered, measured, and evaluated. This research was conducted on 294 respondents with 30 respondents intended for the pre-test stage, 257 respondents were selected to be used in the main test, and data from 7 respondents were not included because they did not include the criteria.

This study discusses consumer responses to new product design smartphones and therefore there are questions about the consumption pattern of respondents to find out their tendencies when they intend to buy smartphones. From the data obtained, the budget range for purchasing smartphones >13 million is at 21.8% then 11-13 million with 8.1%, 9-11 million with 14.7%, 7-9 million with 19.3%, 5-7 million with 12, 3% , and < 5 million 23.2%. Furthermore, respondents feel that the advantages that their smartphone has are on the smartphone display by 41%, 24.4% operating system, then 15.9% camera, 10.2% memory capacity, and 8.5% battery capacity. Respondents also tend to seek information from YouTube by 41.7%, social media by 32.5%, website brands or retailers by 13.4% and e-commerce by 3.5%.

**Table 1.** Sample characteristic

<b>CRITERIA</b>	<b>FREQUENCY</b>	<b>PERCENTAGE</b>
<b>SEX</b>		
Male	92	<b>35,7%</b>
Female	165	<b>64,2%</b>
<b>Education</b>		
SD	-	<b>0%</b>
SMP	1	<b>0,3%</b>
SMA	32	<b>12,45%</b>
D3	16	<b>6,23%</b>
S1	196	<b>76,2%</b>
Pascasarjana (S2-S3)	8	<b>3,1%</b>
<b>Income</b>		
0 – 4.000.000	43	<b>16,7%</b>
4.000.000- 8.000.000	19	<b>7,39%</b>
8.000.000-12.000.000	3	<b>23,3%</b>
12.000.000 – 16.000.000	88	<b>34,2%</b>
16.000.000 >	100	<b>38,9%</b>
Tidak menjawab	4	<b>1,5%</b>

**Table 2.** Factor loading and Reliabilities Statistic

VARIABLE	INDICATORS	FACTOR LOADING	AVE	CRONBACH'S ALPHA	COMPOSITE RELIABILITY
<i>AESTHETIC</i>	A1	0.976	0,887	0,936	0,959
	A2	0.973			
	A3	0.873			
<i>FUNCTIONAL</i>	F1	0.947	0,940	0,953	0,970
	F2	0.979			
	F3	0.943			
<i>SYMBOLISM</i>	S1	0.940	0,915	0,953	0,970
	S2	0.962			
	S3	0.967			
<i>COGNITIVE RESPONSE</i>	CR1	0.961	0,940	0,968	0,979
	CR2	0.962			
	CR3	0.984			
<i>AFFECTIVE RESPONSE</i>	AF1	0.928	0,876	0,953	0,966
	AF2	0.948			
	AF3	0.923			
	AF4	0.946			
<i>PRODUCT INVOLVEMENT</i>	PIV1	0.924	0,760	0,833	0,903
	PIV2	0.965			
	PIV3	0.703			
<i>BRAND ATTITUDE</i>	BA1	0.846	0,711	0,864	0,908
	BA2	0.852			
	BA3	0.854			
	BA4	0.821			
<i>WOM</i>	WM1	0.865	0,846	0,892	0,932
	WM2	0.947			
	WM3	0.906			
<i>PURCHASE INTENION</i>	PI1	0.869	0,821	0,909	0,943
	PI2	0.927			
	PI3	0.951			

The Cronbach's  $\alpha$  coefficients were computed to check the unwavering quality of each scale. Figure 3 appears that all the values of Cronbach  $\alpha$  lie inside the worthy edge; that's, they are over the least 0.70 level as prescribed by Nunnally (1978). All the values of composite reliability are positive and statistically significant.

### 3 Result and Discussion

**Table 3.** Hypotesis

- H1 : Product design (aesthetic, functional, and symbolic) affects cognitive responses positively
- H2 : Product design (aesthetic, functional, and symbolic) affects the affective responses positively
- H3 : Cognitive response affects brand attitude positively
- H4 : Affective response affects brand attitude positively
- H5 : Brand attitude has a positive effect on WOM

H6 : Brand attitude has a positive effect on purchase intention

H7 : Product involvement moderates the effect of product design on cognitive response

H8 : Product involvement moderates the effect of product design on affective response

The relationship between Product Design and Cognitive response has a t-value of 16,122 and a p-value of 0.000 0.05, meaning there is a significant relationship between Product Design and Cognitive response. The original sample value known from the table is 0.840 which is a positive value. The conclusion obtained is that product design has a positive and significant effect on cognitive response and the data supports the hypothesis and H1 is accepted.

Cognitive response refers to the judgments that users or consumers make about a product based on information perceived by the senses. This assessment includes an evaluation of the perceived quality of the product. So this can make the functional dimension have a strong influence. Previous research from Lin Hsu found that the strongest relationship between PD and the cognitive response came from the functional, and symbolic dimensions compared to aesthetics (Lin Hsu, Chun Chen, Ning Yang, & Ko Lin, 2018). This finding was also found in this study by looking at the direct relationship between product design and cognitive response, the functional and aesthetic dimensions have a stronger relationship than the symbolic dimension. This can happen because the cognitive approach tends to be more up-to-date and related to technology, and therefore is aimed at product convenience and friendliness (Tavares, Junior, & Marcelo, 2021). According to Hoegg, consumers can make inferences about functional performance based on product form, and these conclusions can influence or even override more objective information considerations (Hoegg, 2011). Reviews obtained from consumers who want to buy the Samsung Flip stated that they intended to buy this because the Samsung Fold has a compact design that makes it easy to carry. Compact design can be categorized as ease of use and this is included in the functional dimension. This finding is different from previous findings which state that product design has a different effect on psychological response. This can happen because consumers when consumers see a breakthrough smartphone that has a different appearance and has the latest technology in it, consumers will tend to ensure that all the functions contained in the smartphone can work properly and on target.

The relationship between New Design Product and Affective Response has a t-value of 42.003 and a p-value of 0.000 0.05, meaning there is a significant relationship between New Design Product and Affective Response. The original sample value known from the table is 1.050 which is a positive value. The conclusion obtained is that NPD has a positive and significant effect on Affective Response and the data supports the hypothesis and H2 is accepted.

When consumers see the appearance of the product, consumers perceive a certain trait in the product design (e.g., color, shape, and texture), and the combination of color, material, and other physical aspects can show an appearance that can only be described with certain attributes (Brunswick, E. (Brunswick, E. ( 1952). For example, a smartphone with a metallic color and a glass material will have a luxurious impression on the product, or sophistication such as a foldable smartphone can have a modern impression. It is also conveyed in previous literature that shape, material, and color are basic aspects of product design to affect emotionally (Chang

& Wu, 2007; Kim & Boradkar, 2002; rgen, 2006). If a product looks modern, it can create a positive evaluation if consumers have the motivation to see the product from the aesthetic side.

In addition, the meaning communicated by the appearance of a product can help consumers judge the product based on functional, aesthetic, symbolic, or ergonomic motifs. The findings from Candi's research state that product design can evoke emotions from consumers. In addition, of the three dimensions (aesthetic, functional, and symbolic), aesthetic is considered to be the most important dimension (Candi, Jae, Makarem, & Mayoor, 2017). In contrast to the findings of Chia-Lin Shu who explains that the functional and symbolic dimensions are stated to have a greater influence than the aesthetic dimensions (Lin Hsu, Chun Chen, Ning Yang, & Ko Lin, 2018). These findings were also found in this study. The results of the descriptive variable show that of the 3 dimensions of product design, functional and aesthetic dimensions have a greater influence than other dimensions. In other words, Indonesian millennials consider the functionality of the product to be the most important assessment. When consumers have a perceived quality when using or owning a product, they unconsciously develop their affective response to the product (Naderi, Naderi, & Balakrishman, 2020). In this study, the results show that the affective response is owned by consumers even before they use or own the product. This shows that an attractive product design can lead to consumer confidence in the functionality of the product.

The relationship between cognitive response and brand attitude has a t-value of 42.003 and a p-value of 0.000 0.05, which means there is a significant relationship between cognitive response and brand attitude. The original sample value known from the table is 0.393 which is a positive value. The conclusion obtained is that cognitive response has a positive and significant effect on brand attitude and the data supports the hypothesis and H3 is accepted.

Attitude can be formed from consumer confidence in the knowledge they get about objects, attributes, or benefits of a product. When consumers believe, they tend to have a positive response to the product. Consumer trust in question is consumer knowledge of an object, attribute or benefit, where later trust, attitude, and behavior will be related to product attributes. In other words, when consumers feel the quality of the dimensions of a product is high, consumers will have a positive brand attitude (Kim, 2021). Thus, to be able to form a strong brand attitude, consumers will tend to process cognitive responses (Eagly, 1993). This finding was also obtained in this study, where if you look at the t-value, the cognitive response has the highest t-value. This finding is also in line with the results of research from Yih Wu on the effectiveness of advertising which states that the more consumers show their cognitive response, the stronger they will shown a pleasant attitude towards advertisement attitude and brand attitude (Yihn Wu & Yun Lu, 2011).

In this study, the relationship between Affective Response and brand attitude has a t-value of 9.853 > t-table 1.96 and a p-value of 0.000 0.05, which means that there is a significant relationship between Affective Response and brand attitude. The original sample value that is known from the table is 0.507 which is a positive value. According to Hwang, affective responses are important in shaping attitudes (Hwang, Yoo, & No, 2011). This is because the evaluation of a good product design is able to encourage positive reactions from consumers such as feelings of pleasure, achievement, and inspiration (Givechi and Velasquez 2004). In addition, the strength of the brand attitude itself is related to consumers' assessment of whether they love



or hate the brand and this departs from the affective (Ahn & Ki, 2017). The data found in this study is the affective response indicator which states that "this smartphone completely attracts my attention" has a high mean of 4.25 and the highest mean has an indicator (AF2) "this smartphone not only sells products or services - but also entertains me". Thus, consumer responses regarding smartphone evaluations as a whole are positive and this is in line with the explanation that has been conveyed. So the conclusion obtained is that Affective Response has a positive and significant influence on brand attitude and the data supports the hypothesis and H4 is accepted

According to previous research, it's been stated that affective responses can increase purchase intention and word-of-mouth directly or indirectly through product/brand attitudes (Zanger, Meißner, & Rauschnabel, 2021). A positive attitude toward a brand resulting from its evaluation not only produces consumer preferences for the brand but also has positive effects on purchase intention (Aaker and Keller, 1990) (Wu and Wang, 2011). This is also in line with the findings of previous research that customer attitudes towards a brand have a significant influence on purchase intention because brand attitude is the most important determinant of purchase intention (Abzari and Vosta, 2014).

Moon's research explains that consumers will tend to have intentions because consumers have evaluated products emotionally, when consumers evaluate a product/service emotionally, their tendency to have a purchase intention will be higher (Moon, et al., 2017). The strength of the brand attitude is related to the customer's assessment of love or hate for a big brand, the intensity, and the strength of emotional attachment which is an important aspect of consumers' affective responses (Ahn & Ki, 2017).

The moderating relationship between Product Involvement between NPD and Affective response has a t-value of 3.830 and a p-value of 0.000 0.05, which means that PIV can increase the relationship between NPD and cognitive response. Product involvement is the interaction between the individual and the object so that the interaction can determine the strength of the effect of product involvement. The intended interaction can be in the form of disbursing information about product design. In this case, when consumer interaction with smartphones is high and they aggressively seek relevant information, it indicates a high level of consumer involvement and this also means that consumers have a high attraction to the smartphone (Mitchell, 1979). When consumers are interested in the dimensions of smartphones and have a high level of consumer involvement, they will be more aggressive in searching for relevant information and then evaluating smartphones. According to Brown, most high levels of involvement can determine consumer cognition in assessing the relevance and usefulness of a product (Brown & Homer, 1998). This is found in this study from the data referred to in table 4.8 where the mean value of the high product involvement indicator (PIV1) states "smartphones are important to me" and this shows that millennials feel that smartphones are high product involvement. It can be indicated that respondents will seek more information about product design, such as by looking at product reviews on the platform or visiting product sellers. This is what makes them tend to give cognitive responses because they evaluate product design attributes rationally. This result is also in line with what was found in previous research. The higher the level of product involvement, it can be interpreted that consumers perceive that the

higher the attractiveness and the more important the products issued by a brand (Candi, Jae, Makarem, & Mayoor, 2017) (Brown & Homer, 1998) (Richins and Bloch, 1986)

The moderating relationship between Product Involvement between NPD and Affective response has a t-value of 2.362 and a p-value of 0.019 0.05, which means that PIV can increase the relationship between NPD and affective response. As previously explained, consumers tend to dig up information about high-involvement products. In the findings of this study, the product design of the breakthrough smartphone has a strong influence on the affective response if it is supported by high product involvement. It can happen because consumers can understand more about the advantages and benefits, they can have whether it is functional or symbolic. This indication from the high mean of the affective response indicator states "this smartphone is not only selling products but also can entertain me." This finding is in line with the results of previous research stating that product involvement can increase emotional arousal (Candi, Jae, Makarem, & Mayoor, 2017) (Malar, Krohmer, Hoyer, & Nyfferenegger, 2011) (Ha & Lennon, 2010). Thus, from these results, it concluded that hypothesis 8 is accepted.

#### **4 Conclusion**

The new product design of the smartphone breakthrough significantly affects the cognitive response and affective responses of millennials in a positive way. Judging from the dimensions contained in the NPD, the functional and aesthetic dimensions have a strong influence than symbolism. Although most millennials currently have smartphones with attractive appearances, for a smartphone breakthrough in this study, the functional dimension is the most important factor in encouraging cognitive response and affective response. It can also be seen in offline smartphone stores, where consumers do not hesitate to see smartphone displays and consumers tend to try product displays such as selfies, see video quality, open and close flip or fold smartphones, and so on. The tendency of the influence given by NPD on psychological response in this study is that NPD has a greater influence on the affective response. The results show that the t-value affective response > t-value cognitive response and with this it can be said that the influence of product design can trigger consumer feelings or emotions about the product. Millennials consider smartphones as an important product in their activities so smartphones are categorized as high-involvement products. In the context of smartphone breakthroughs, product involvement has a stronger influence and is able to increase millennial cognitive response in evaluating smartphone product design than the affective response. The activity of gathering information of smartphones is carried out by millennials through product reviews. Such as Youtube or other social media Instagram, and Twitter to see the quality of the smartphone functions. Seeing that the breakthrough smartphone has a unique big difference in design or technology, this makes it possible that consumers' sense of "curious" for the product is getting higher and can increase interaction activities with the product.

In this study, the influence of brand attitude has a significant influence on purchase intention. This is because the smartphone display is the latest product and also an interesting product because it is used by celebrities. For example, the Samsung fold and flip which are often seen in Korean dramas can be a factor in influencing consumer attitudes towards the brand and coupled with their liking for using the smartphone. However, in this research, the influence of

brand attitude towards WOM is higher than purchase intention. This can happen because the breakthrough smartphone product is in a high price range and this is far from their budget for buying a smartphone, even though in this study, consumers still think the price of the smartphone is not too economical but still reasonable. On the other hand, even though millennials calls as a productive generation, the existence of social status in society can also influence. Such as millennials who are already married will have more important priorities or those who are squeezed by the sandwich generation can be a factor that makes the influence on WOM have a high significant value.

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