

# PERCEIVED QUALITY'S EFFECT ON LOYALTY: WEIGHT AS INTRINSIC CUES OF SMARTPHONE

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**Abstract:** This study tested the hypothesis of Van Rompay et al., (2014) which stated that cellphones that looked heavy were perceived as having higher quality. For this reason, this study seeks to find out the effect of perceived quality on smartphone user loyalty. The experimental research design was used to manipulate respondents' perceptions of two smartphones with different weights, namely 110-grams and 185-grams. Respondents sequentially extracted haptic information from the weight of the smartphones to evaluate the quality of the smartphones. One hundred and five respondents were categorized based on their preferences in extracting and utilizing information through a haptic system or low need for touch (Low NFT) and high NFT (HighNFT) using the NFT Scale (Peck & Childers, 2003b). Comparison of multiple linear regression analysis shows that in both respondent categories, the perceived quality of smartphones weighing 110-grams has a greater effect (r square) on loyalty than smartphones weighing 185-grams. Thus, it can be concluded that light smartphones are perceived to have better quality than heavy smartphones.

**Keywords:** haptic information, perceived quality, loyalty, need for touch

## 1. Introduction

Digital transformation accelerated by the COVID-19 pandemic has increased the public's need for smartphones. Statista (2021) data shows the growth of smartphone users in Indonesia in the period 2019 to 2022 reaching 27% or 44.5 million new users. In 2022, it is estimated that there will be 210.45 million users or the equivalent of 72% of the Indonesian population. From January 2020 to December 2021, there are 254 smartphone variants from various brands released in Indonesia (cellular. id). For this reason, consumers are faced with many choices of variants, and often the same product specifications are found in several different brands. Consumers need other sources of information to interpret the quality of smartphones. In this study, the researchers tested the weight of the smartphone as a quality signal.

For most people, the weight of the phone is not an aspect that is consciously considered in choosing a *smartphone*. Sigmund Freud in Kotler & Keller, (2016: 187) says that people's behavior is mostly *unconscious*. Weight is an intrinsic cue of a product. Intrinsic cues are cues that are directly related to the physical product. while extrinsic cues are cues that can be changed without changing product attributes such as packaging, price, country of origin, and brand name (Sharma, 2020). Consumers get a signal of product quality from intrinsic and extrinsic cues. The intrinsic and extrinsic definitions of the product must be determined by marketers when developing new offerings. Marketers need to know what attributes consumers evaluate. Do intrinsic cues such as weight useful for consumers to evaluate product quality?

In making smartphones, the focus is on two main aspects, the materials used and their impact on weight and final sensation. Research on several smartphone brands with 5-inch screens on the market shows the following data:

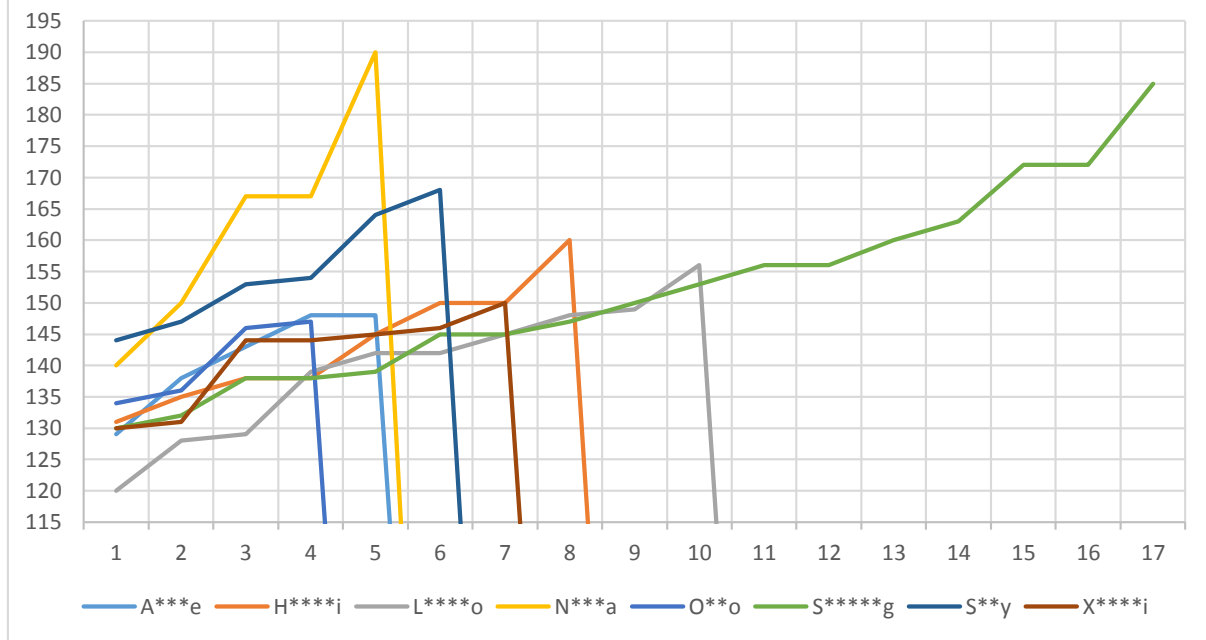


Figure 1: Smartphone Brand Weight  
Source: processed by researchers from various sources

Smartphones measuring 5 – 5.5 inches occupy the third position in worldwide shipments. In 2020 it will be 270 million, 2021 will be 230 million and it is estimated that it will be 220 million in 2022. Figure 1 above shows that each brand has several weight variants. The lowest weight of a smartphone with a 5-inch screen on the market is 120 grams and the highest is 190 grams. S\*\*\*\*\*g is the brand that has the most weight variants.

Uddin *et al.*, (2014) and Mudondo, (2014) concluded that the weight and size of mobile phones are the main considerations that influence purchasing decisions. There's a kind of stigma that a heavier *handset* feels more durable. Petrovan, (2013) in Batra *et al.*, (2015) states that mobile phone manufacturers who use tougher and heavier materials enjoy the public perception that their products are of better quality. Van Rompay *et al.*, (2014) in their research concluded that consumers perceived phones that look heavy have a higher quality. However, Jean (2017) stated the opposite, between 2011 and 2016 the manufacturer's R&D investment focused on reducing the average weight of smartphones. Garosi, (2019) stated that current smartphones that have popularity are characterized by cheap, lightweight, and ease of use.

In this study, we will find out whether research respondents prefer heavier smartphones. Is there any difference between individuals with a low *need for touch* (LowNFT) and high (HighNFT) in evaluating product quality using weight as an intrinsic cue of smartphones? *The need for touch* is a person's preference for obtaining and interpreting information through touch. Differences in preferences are assumed to affect how respondents perceive the quality of smartphones.

## 2. Literature Review

### Use of Weight as a Cue to Measure Quality

Kotler & Keller, (2016: 187) stated that consumers who examine a particular brand will react not only to its capabilities, but also to other less conscious cues such as shape, size, weight, material, color, and so on. Clodfelter & Fowler, ( 2001) stated that consumers differentiate products based on their perception of product characteristics. Attributes that signal quality is divided into intrinsic and extrinsic cues. Intrinsic cues refer to the physical attributes of the product (i.e. design, shape, texture, weight, etc.) whereas extrinsic cues refer to the conceptual

level and extension of product definition i.e. brand, product name. The presence of tactile cues from a product, the perceived quality, performance, and usefulness of the product, as well as the connotations associated with it, can evoke certain emotional responses to the product.

Several consumer psychology studies have shown that consumer perceptions of quality are strongly related to the physical weight of the product. The same wine or perfume is considered to be of higher quality if it is served in a heavier bottle; Heavier vehicles are considered safer vehicles (Thomas & Walton, 2008). In the context of smartphone products, several studies have concluded that several intrinsic cues used by consumers in choosing smartphones include screen size (Belbag et al., 2016, Fan & Yang, 2020), heaviness or lighter weight, higher camera resolution, longer battery talk time, a more advanced chipset a larger screen (Fan & Yang, 2020), and design. Van Rompay et al., (2014) in their research concluded that consumers perceived phones that look heavy have a higher quality.

### **The Effect of Perceived Quality on Loyalty**

Perception of quality is the customer's perception of the overall quality or superiority of a product or service as expected by the customer. Perception of quality is the customer's perception of the overall quality or superiority of a product (; Akdeniz et al., 2013. Macdonald & Sharp, 2000 ). A company can determine steps that can be taken to strengthen customer perceptions of the company's brand. Furthermore, the general perception of quality can generate values such as (1) reasons to buy, (ii) differentiation or positioning, (iii) price premium, (iv) distribution of customer intentions, and finally (v) brand extension, brand perception, awareness. brand and brand association brand loyalty (Juran & Godfrey, 1999).

### **Need for Touch (NFT)**

In certain products such as smartphones, it is difficult for customers to be prohibited from touching before making a decision. Therefore, the tendency to buy smartphones online is low. (Rex P. Bringula et al., 2018). Customers feel insecure about products they don't see, touch, or feel (Rex Perez Bringula, 2016). Need for touch (NFT) is the difference or individual preference for obtaining and interpreting information from touch. preference for extracting (getting) and utilizing information obtained through the haptic system (Peck & Childers, (2003) Peck & Childers, (2003) stated the concept of NFT includes two basic dimensions, namely instrumental and autotelic touch. Instrumental touch refers to individual evaluations related to the goal (utility) of the product's performance or purchase goals. Individuals are driven by motivations that match the structural elements of the product (e.g., texture, temperature, and weight). Autotelic dimensions are driven by individual preferences related to hedonic aspects of touch such as seeking pleasure, arousal, and joy. This dimension captures the sensory aspects of touch evoked by psychological reactions (Peck & Childers, 2003b).

## **3. Method**

This study uses experiments as the research design. The characteristic of experimental research is manipulation (J. Hair et al., 2009) on the causal relationship of this study by asking respondents to lift and weigh different smartphones to influence the value of the independent variable and measure its effect on the value of the dependent variable.

All research instrument has been tested its validity and reliability. The validity test was carried out using the Pearson product-moment method. The results of the validity test showed that all research instrument and the NFT questionnaire had a coefficient value above the  $r_{table}$  or  $> 0.19$  and had a significance value of  $< 0.01$  or less than 0.05. The smallest coefficient value obtained from the validity test is 0.699 and the highest value is 0.963. The reliability test was carried out

using the Cronbach alpha method. The results of the reliability test showed that all the instruments used in this study were reliable or the Cronbach alpha value above or  $> 0.7$ . Questionnaires were distributed to 105 (52 men and 53 women) respondents in Surabaya. Before filling out the questionnaire respondents were asked to lift and weigh two smartphone products that have the same length and width dimensions but alternately with different weights. Smartphones are selected based on the casing material which affects the weight. Smartphone A with *polycarbonate plastic* material is 110 grams, and smartphone B with *reinforced glass material* is 185 grams. Smartphones are put in the bag so that the smartphone brand does not affect the perception of quality and respondents only focus on the weight of the smartphone. In this study, multiple linear regression analysis was used to determine the effect of perceived product quality on loyalty. In this study, respondents were differentiated based on their preference motivation to touch things ( *need for touch* ) before deciding to interpret the quality of a smartphone. Peck & Childers, (2003b) differentiated customers based on their motivation through the “Need for Touch” (NFT) scale. The NFT scale has two dimensions, namely *autotelic* and *instrumental*, both of which have 12 statement items. Customers who have a high value or score are individuals with the motivation to touch and if the individual is prevented from getting *haptic information* (touching) then the confidence when evaluating the product will decrease. Meanwhile, customers with low NFT scores are individuals with low motivation to touch. This study also uses other measurements using gender and generational demographic characteristics to determine whether the research model is robust. The assumption used to test the robustness of the model is that there are differences in preferences between genders and between generations. This practice is in line with Micskei et al., (2012) who stated that the robustness test was carried out considering that this study used an experimental method. The NFT scale (Peck & Childers, 2003b) measures individual preferences in *haptic* (touching) information constructed and tested in the United States. For this study, the NFT scale was validated in the Indonesian context before using it in classifying customers with low or high motivation. The first step is to translate the 12 statement items into Indonesian, the second step is to do *face validity* or *logical validity* by asking 4 (four) English experts who understand English to ensure that the translation of the 12 statement items on the scale can be understood and by the intent.

#### 4. Results and Discussions

**Table 1. Demographic Characteristics of Respondents**

Respondent	n	Frequency
Gender		
Men	52	49.5%
Women	53	50.5%
Generation		
Gen X 41 to 56	7	6.7%
Gen Y 25 to 40	40	38.1%
Gen Z 6 to 24	58	55.2%
Education		
Senior High School	55	52.4%
Diploma	9	8.6%
Bachelor Degree	30	28.6%
Master Degree	10	9.5%
Doctoral Degree	1	1%

**Source: research data processed by researchers**

The demographic data shows that the proportion based on gender can be said to be balanced. However, there is a high proportion difference in the generation category where the respondents

from generation X are very few. This is also found in the education category; the respondents are dominated by respondents with a high school education background. As for diplomas and doctorates, the proportion is very small.

Factor analysis was conducted to test whether the 12 items fit into two factors or two dimensions as stated by. The results show that 12 statement items fall into 3 (three) *initial eigenvalues* of 4.998, 1.750, and 1.097 (Table 2).

**Table 2. Results of Need for Touch Factors Analysis**

	1	2	3
P3	.683		
P4	.563		
P8	.825		
P10	.806		
P11	.766		
P5		.613	
P7		.854	
P9		.825	
P12		.664	
P6			.481
P1			.725
P2			.801
Eigenvalues	4,998	1,750	1,097
Variance (%)	41,650	14,583	9,146
Cronbach's	.819	.798	.820
M	24.10	35.79	19.26
SD	7.56	7.38	5.49

Source: SPSS output processed by researchers

Based on the results of *rotated component matrix*, it shows that 6 instrumental items fall into 2 (two) dimensions, namely factors 1 and 3, while for 6 *autotelic items*, it is known that they fall into 2 (dimensions) factors 2 and 3. However, Peck & Childers, (2003) stated that researchers can use a combined scale or separate it into 2 (two) dimensions, namely *autotelic* and *instrumental*. In this study, the researcher continued to use the NFT scale (Peck & Childers, 2003a) with combined scale of autotelic and instrumental dimensions.

**Table 3. Descriptive Statistical Results**

Index	M	SD	Scale	MEDIAN
Need for Touch	79.15	16.65	7 to 108	81
NFT Autotelic	36.65	10.45	7 to 54	
NFT Instrumental	42.48	8.75	7 to 54	

Source: SPSS output processed by researchers

The high and low of the NFT are determined by *the median split*. Respondents who had a score above the median (score of 81) were classified as high NFT and those below the median were classified as low NFT. Respondents with high NFT in this study were n = 53 while the low NFT was n = 52.

**Table 4. Results of Regression Analysis**

Heavy Product	Variable	Consumer Loyalty						
		NFT		Male	Female	X	Y	Z
		Low	High			Gen	Gen	Gen
A 110 Gram	Constant	4.859	5.976	2.874	6.442		2.815	6.026
	Durability	.547***			.870***		.491**	.423**
	Reliability	.790***	1.025***	1,409***			1,041***	.929***
	F	41,939***	49,890***	65,348***	50,741***		41,948***	51,835***
	N	52	53	52	53		39	58
	R <sup>2</sup> -	.636	.662	.727	.670		.694	.653
B 185 Gram	Constant	19,141	36,243	19,409	26,988		18,605	25,852
	Durability	.887**			1.301***		.	
	Reliability			1,587**			1,506**	
	F	15,398***	3,798**	10,909***	14,979***		9916***	11,169***
	N	52	53	52	53		39	58
	R <sup>2</sup> -	.391	.130	.308	.375		.349	.289

\*\* p=< 0.05; \*\*\*p=<0.01

**Source: SPSS output processed by researchers**

Based on table 4, it is known that in the first experiment, the results of the ANOVA test showed that the LowNFT and HighNFT respondents, the perceived quality dimensions simultaneously influenced loyalty. With a rejection point of 0.01, the effect is categorized as significant. The strength of the influence of perceived quality on loyalty reached 63.6% for Low NFT and 66.2% for high NFT or included in the moderate category (JF Hair et al., 2011) . In LowNFT respondents, it was found that the beta value of the reliability dimension did not contribute to loyalty. As for HighNFT, it is known that two dimensions of perceived quality have an insignificant contribution to loyalty.

In the second experiment, the results of the ANOVA test showed that in LowNFT and High NFT respondents, the perceived quality variable simultaneously affected loyalty. With a rejection point of 0.01, the effect is categorized as significant. However, the strength of the perceived quality influence on loyalty has decreased to 39.1% for Low NFT and 13% for HighNFT, thus the relationship is categorized as weak. (JF Hair et al., 2011). In LowNFT respondents, it is known that there is a change in the influence of the reliability dimension where the reliability of the smartphone does not have a significant effect on loyalty, while in HighNFT both quality perception dimensions do not show a significant effect.

Consumers with high levels of NFT show differences in the decision-making process. In both types of smartphone products, respondents with high NFT have higher confidence in accessing haptic information and determining the level of smartphone product quality. This can be seen from the r-value of HighNFT which is higher in each experiment compared to LowNFT respondents. High self-confidence is due to HighNFT respondents being able to directly access the product. The need for touch affects elements of the speed of access to tactile information, motivation and skills in processing written messages, consumer judgment and trust, and product quality judgments (Peck and Childers, 2003b).

The high level of NFT then affects their perception of the product and ultimately has an impact on their loyalty. On the other hand, respondents with low NFT, even though they have less confidence in accessing haptic information, can determine the level of quality of smartphone products. This can be seen from the value of r<sup>2</sup> which, although lower than respondents with

high NFT, is still in the significant category. As for the heavier smartphone products, the confidence of respondents with low NFT decreases so that the results of the ANOVA analysis show a value above the cut-off value of 5% or not significant.

Comparison of the value of  $r^2$  also shows that the perception of quality on a lighter smartphone (first experiment) has a greater influence on loyalty. When the second experiment results showed a significant decrease in the value of  $r^2$ . The findings above can be interpreted that respondents view that lighter smartphone products are perceived to have better quality than lighter smartphone products. This is in line with the opinion of Garosi, (2019) who found that currently lightweight smartphones are preferred.

The results of the robustness test of this study confirmed this research model. Where in the gender category and the generation category the results show that there is a decrease in  $r^2$  when there is the manipulation of smartphone weight from 110-grams to 185-grams. Male and female respondents have a higher perceived quality influence on loyalty on smartphones with a lower weight. lighter., The same conclusion was found in the respondents in the generation category. Generations Y and Z. In this study, generation X has a perceived quality effect that does not affect loyalty.

## 5. Conclusion

The research hypothesis of Van Rompay et al., (2014) which states that a smartphone that looks heavier is perceived as having better quality does not get further empirical support from this study. The results of the first experimental study showed that respondents with Low NFT and HighNFT had a moderate effect of perceived quality on loyalty. As for the second experiment, the results show that for both respondents the perception of quality has a weak influence on loyalty. Thus, it can be concluded that a lighter smartphone is perceived as better and has a higher impact on quality

Weight is one of the intrinsic signals that consumers can use in evaluating smartphone products. Consumers will have more confidence when they can touch a smartphone product before making a decision. Perceptions of smartphone product quality arising from haptic information affect consumer loyalty. Consumers with high NFT have higher confidence in haptic information than respondents with LowNFT. This causes in the two experiments, respondents with HighNFT have a higher influence on perceived quality and loyalty than respondents with LowNFT, however, the influence they have is still in the moderate category.

In this study, there are limitations where measurements within X generation, the perceived of quality do not influence loyalty for both types of smartphones, this is because the number of respondents obtained is very small so they do not have analytical power, thus the recommendations given in this study is to increase the sample size and increase the number of respondents from generation X. Generation X is the generation that lived in the early generation of mobile phones where at that time most mobile phones were thick and heavy. It would be an interesting insight to test the quality perception of the weight of smartphones in this generation.

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