THE EFFECTS OF SMART PHONE BRAND ON PURCHASE INTENTION;

COMPELE PRODUCT VERSUS INGREDIENT BRAND

By

Joon-Ki Eom

THESIS

Submitted to

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in partial fulfillment of the requirements

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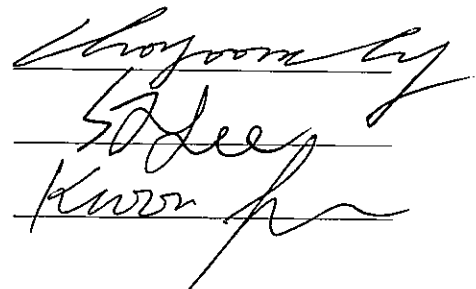in partial fulfillment of the requirements

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ABSTRACT

THE EFFECTS OF SMART PHONE BRAND ON PURCHASE INTENTION; COMPELE PRODUCT VERSUS INGREDIENT BRAND

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This article explores the effect of brand awareness for complete product versus ingredient. This paper investigate i) how smart phone consumers form attitude, purchase intention and satisfaction according to the variables of the combinations between smart phone brand as a complete product and its ingredient brands (Application Processor, Camera Sensor and Display Panel), ii) how the attitude effects on purchase intention, and iii) how the purchase intention affects expected satisfaction. The finding of this study shows that level of brand awareness of complete product and ingredients independently affects forming higher attitude, purchase intention and satisfaction, however, the level of ingredient brand awareness alone doesn't effect to form higher attitude, purchase intention and satisfaction towards the smart phone adopting given ingredients. This study provides implication on ingredient firms` marketing strategy for brand awareness by applying various statistical analyses.

Keywords: Brand Awareness, Attitude, Purchase Intention, Satisfaction, Ingredient Branding, Smart phone, Complete Product

TABLE OF CONTENTS

LIST OF TABLE

LIST OF FIGURE

I. INTRODUCTION

In early 1990s Intel, the leader of semiconductor industry opened the era of ingredient (component) branding in semiconductor industry, which had been recognized as heavily technology-depended industry. After nine years of hard efforts with "Intel Inside" marketing campaign Intel took the success as the second-best known industrial brand (after Coca-Cola). And that marketing activity has greatly contributed for Intel not only to successfully migrate their old product 386 micro-processor to 496 micro-processor, which was recognized as not necessarily required toward personal computer`s performance at that time, but to raise the company`s market share in competition and to be dominant player in semiconductor industry till now (Malone 2014). Until the middle of 1990s only limited IT companies (manufacturers) such as IBM, Apple and Japanese IT companies were affordable to produce personal computer and play in the PC industry mainly due to technological barrier. However, as the technology for PC design and manufacturing was almost reached to the 'equilibrium stage' in terms of technology gap and level between the PC manufacturers via "technology matching", lots of branded or non-branded PC manufacturer flooded in market. Under the market circumstance "Intel Inside" marketing campaign greatly contributed to increase Intel`s brand awareness to both retail (B2C consumers) and commercial users as an ingredient brand. And the marketing campaign has worked as one of the major catalysts for both retail and commercial users to choice the PCs adopting Intel micro-processor (Keller 2003). Consequently Intel has maintained about 75% of market share in CPU (for PC) so far, on the other hand AMD that is Intel`s major competitor has maintained only less than 25% since 2004 (iSupply 2011-June).

Recently smart phone industry seems to follow the similar track that PC industry already gone through. In 2007 Apple has launched its first smart phone in the world and it stimulated to expansion of smart phone market rapidly. In the early stage of smart phone era

only limited manufacturers such as Apple, Samsung, Nokia, Rim and HTC can design and produce smart phone. However, due to "technology matching" sequence that PC industry already gone through lots of branded and non-branded smart phone brands flooded into smart phone market today. According to GFK (2014.Q1) market survey, there are more than 300 smart phone brands (including sub-brands) in china. Under this market circumstance one of the leading players in mobile micro-processor (Application Processor) industry, Qualcomm, is doing hard efforts to take build their brand as Intel did. In an interview (in San Diego) with online magazine, Baron's, Qualcomm Chief Executive Paul Jacobs mentioned that "We haven't built a consumer brand" like Intel, but "we've worked very hard to get in this position" (Veverka 2012).

One interesting project in smart phone industry, which is being tested by Google, "Project Ara" provides an implication how the future of smart phone industry could be. The concept of "Project Ara" can be defined as customized smart phone. Consumers (end users) can choose the ingredients (which might be authorized by Google in advance) of smart phone to suit their taste and personnel usage. So normal consumers can involve in the process of ingredients selection to make their own and unique smart phones. So consumers might be better to know about ingredients, even very little for the "Ara" product case.

The objective of this study is to examine how the four types of combinations between complete product`s brand (host brand) awareness (high/low two case) and component`s brand (ingredient) awareness (high/low two case) can effect on consumers` attitude, purchase intention and expected satisfaction toward the complete product which adopt given components. So this study tried to suggest how this study result can be applied to ingredient branding of both smart phone component (ingredient) makers and the complete product makers under this market circumstance in smart phone industry.

II. LITERATURE REVIEW

2.1 BRAND AWARENESS

Brand awareness is composed with brand recognition and brand recall performance. Brand recognition relates consumer`s ability to confirm the brand that has been previously experienced. And Brand recall relates consumer`s ability to recall the brand from their memory when a brand is given in the product category or needs with the purpose of purchase or purchase intention. Brand awareness can be defined as the extent to which how consumers can easily memorize the brand when they buy a product (Keller 2003). Brand awareness is an initial step to precede all other steps in brand related communications (Rossiter and Percy 1987). No other brand related communication can occur without brand awareness occurring. Consumers who don`t have brand awareness cannot form brand attitude and intention to buy a product (Rossiter & Percy 1987; Rossiter et al. 1991). High level of brand awareness increase the likelihood that the brand will be a member of the consideration set, and affect choices among brands in the consideration set, finally affects consumer decision making by influencing the formation and strength of brand association that consists brand image (Keller 2003). Thus, brand awareness heavily impacts on consumers' decision-making; consumers generally use brand awareness as a decision factor. A better known brand has a much higher possibility of being chosen by consumers than a relatively unknown brand (Hoyer and Brown, 1990). Macdonald and Sharp (1996) described that "Brand awareness can determine not only entry to the consideration set, but can also determine which brand is chosen from the consideration set". So the well-known brand likely performs better in the marketplace compared to the unknown (Huang and Sarigöllü 2011).

Studies shows that when consumers are more familiar with a certain brand, which implies that brand awareness is high for the brand and their confidence toward the brand will increase (Laroche, Kim, & Zhou, 1996). Thus, the possibility to trust the brand is high (Smith

& Wheeler, 2002). Leong (1993), Macdonald and Sharp (2000) mention that consumer tend to use brand awareness as a heuristic when purchase or select a product. Because consumers generally feel that a well-known brand is more reliable than the unknown. And consumers tend to believe that marketers whose products have high brand awareness would not use "deceptive marketing tactics" on the products (Smith & Wheeler, 2002). Thus, consumers may have a better attitude toward their products and advertisements (Macdonald & Sharp, 2000).

With regards to components brand as a key study object of this survey, the effect and importance of brand awareness has been proved empirically to the components (ingredients) manufacturer through some successful ingredient branding history makers such as Intel in IT industry and Gore-Tex in shoes industry as well. Since the beginning of 1980s Intel has invested strategically to build brand awareness and brand equity, to be "positioned itself to be the heart and soul of personal computers" (Karolefski 2001). After nine years of "Intel Inside" marketing campaign, market surveys found that Intel was the second-best known industrial brand (after Coca-Cola) in the world. And it has largely contributed for Intel to achieve the world`s most successful PC and IT microprocessor maker (Malone 2014). GORE-TEX, which is waterproof micro-fabric manufacturing brand, greatly influences customer preference and choice in shoes market. In early stage GORE-TEX offered partnership to the limited and selected boots maker such as ECCO. Consequently ECCO has achieved in functional boots market by co-branding with GORE-TEX, and GORE-TEX has been considered the representative of waterproof fabric and has dominated the functional fabric market (Uggla and Filipsson 2008).

2.2 BRAND ATTITUDE

An attitude is a lasting, general evaluation of people (including one self), object, advertisements, or issues (Baron and Byrne 1987). It can be said that anything toward which one has an attitude an attitude object (Solomon 2007). An attitude toward brand is a "predisposition to respond in a favorable or unfavorable manner to a particular brand after the advertising stimulus has been shown to the individual" (Phelps & Hoy 1996). Brand attitude is consumer`s overall evaluations toward a brand and has been defined as a brand evaluation that result from reactions to both favorable and unfavorable brand information (Wilkie 1990; Fishbein and Ajzen 1975; Murphy and Zajonc 1993). Brand attitude has been considered as a construct that measures an aspect of brand equity and also reflects the strength of consumer-brand relationships (Farquhar 1990; Keller 2003). Brand attitude does important role in influencing consumer's purchase intention, because it frequently form the basis for actions and behavior that consumers take with the brand (Keller 2003; Goldsmith et al 2000; Yi 1990). Brand attitude are tend to be activated upon exposing to the brands (berger and mitchel 1989; Fazio, Powell and Williams 1989).

Brand Attitude strengthens the prediction about consumers` brand consideration, intention to purchase, purchase behavior, and brand choice (Fazio and Petty 2007; Petty, Haugtvedt, and Smith 1995; Priester et al. 2004). Various researches have proven that strength of attitude predicts purchase behavior. And this can be measured with direction of the tendency ("being inclined or disinclined toward purchase") and relative scale from "strongly positive or strongly negative" (Fazio 1995; Petty, Haugtvedt and Smith 1995).

There are four functional theories for attitudes which developed by Daniel Katz, social psychologist as follows. i) Function of adjustment: Attitude are formed based on rewards and punishment, ii) Value-expression function: Attitude are formed in order to show individual's central value of self-concept, iii) Ego-defensive function: Attitude are formed to expresses the

hatred or to protect individuals from the threats of internal or external threats, iv) Knowledge function: Attitude are formed to meet individuals` needs for self satisfaction (Keller 2003; Katz 1960). The most widely accepted modeling approach to attitude is multi-attributes formation. In this approach brand attitude is regarded as a function of the associated attributes and benefits which are critical to the brand. And Fishbein and Ajzen (1975) introduced the theory of reasoned action. It is an extension of the multi attribution model to embrace the interpersonal, social effects. This theory address that attitude towards brands can rely on consumers' beliefs about other people's opinion and consumer's motivation to be accompanied to the wishes of the others (Keller 2003)

2.3 INTENTION

Purchase intention is objective intention of consumer toward products, and the intention can be crucial element for predicting the purchase related behavior of consumers (Fishbein & Ajzen 1975). Purchase intention is defined as conscious plan or intention of consumer to purchase certain product. Purchase intention can be defined individuals` intention to purchase a specific product or brand that the individuals have chosen to purchase for themselves after evaluation for the brand or product (Laroche and Zhou 1996; Laroche and Sadokierski 1994).

The possibility to be purchased is likely to be higher for the well-know brand or product than the relatively less-known brand or product, because a brand or product having positive and better image can have the effect of decreasing the perceived risk of consumers for the product or brand (Akaah and Korgaonkar, 1988; Rao and Monroe, 1988), or enhance the perceived value for the product or brand of consumers (Loudon and Bitta, 1988; Fredericks and Slater, 1998; Romaniuk and Sharp, 2003; Aghekyan, Forsythe, Kwon, and Chattaraman, 2012). A higher perceived value of consumers strengthens consumers' purchase intention (Monroe and Krishnan 1985; Zeithaml 1988; Dodds et al. 1991; Petrick 2004). A

perceived risk of consumers has impact on perceived value negatively (Sweeney, Soutar and Johnson 1999; Snoj, Korda and Mumel 2004), thus lowering a perceived risk of consumers can increase purchase intention of consumers.

The Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975) and Theory of Planned Behavior (TPB) (Ajzen, 1985) suggest that consumer attitudes directly affect their behavioral intention, which will effect to purchase behavior in turn.

Consumer`s purchasing intention is positively and powerfully correlated with brand attitude and core brand image (Syed et al. 2012). Brand attitude has positive effect to purchase intention (Laroche and Sadokierski 1994).

2.4 SATISFACTION

Satisfaction can be defined as a consumers` feeling that consumers feel when comparing what they actually received from what they expected from the utilization of that good or service (Kotler et al. 2009). Howard and Sheth (1969) defined that "buyer`s cognitive stats of being adequately or inadequately rewarded he has undergone".

Customer satisfaction can be expressed as a customer`s overall evaluation about the performance of a service or product (Gustaffson, Johnson and Roos 2005). The satisfaction might influence repeat purchasing and positively effect on forming customer loyalty and intention toward product or service (Prayukvonge, Sophon, Hongpukdee and Charupas 2007). Hyun (2010) and Oliver (1999) mentioned customer satisfaction is related with the creating of customer loyalty too.

The satisfaction can influence to form positive world of moth recommendation (Torres and Kline 2006), the positive WOM would positively influence to attract new customers to the business (Yu et al. 2005).

Followings are some of major theories with regards to consumer satisfaction. i) Contrast Theory: It can be explained that when actual performance of product is not matched with the expectation, the discrepancy between expectation and actual result, will cause consumer recognize or feel the level of discrepancy lager than the real (Engel and Blackwell 1982; Howard and Sheth 1969; and Cardozo 1965).

ii) Assimilation-Contrast Theory, there are range of acceptance and rejection of consumer`s perceptions (Sherif and Hovland 1961). So if the gap of discord between expectation and the real performance is small enough, it can be acceptable. But it the gap is big enough, then it can be rejected (Yi 1990). If the gap between the expectation and the actual is not within acceptable range, then the contrast effect occurs and the consumers would exaggerate the disparity (Anderson 1973).

iii) Dissonance Theory: Festinger (1957) described that "dissonance is a psychologically uncomfortable tension state". Dissonance theory can be explained that dissonant or inconsistent states could exist and those are roots of psychological tension to the person who recognizes or feels it. This tension would stimulate the efforts to decrease the dissonance and recover consistency (Festinger 1957).

2.5 INGREDIENT BRANDING

Ingredient branding can be defined as "a process of bountiful identity and recognition to goods or service through uplifting the identity and recognition of its key ingredient or components" (Tiwari and Singh 2012). The one of the motivation of using ingredient branding is to make more differentiation of host brand from the competitors by highlighting the ingredients attribute in host product or brand (Desai and Keller 2002).

In the perspective of consumer behavior branded ingredients are often recognized as a signal for better quality. Carpenter, Clazier and Nakamoto (1994) suggested a finding that the

inclusion of branded attribute impacted on consumers` choices even if consumers were distinctly informed that the attribute was not related to their choice directly. So, consumers inferred certain characteristics as a result of the branded ingredient. The information and predictability of ingredient brands can lessen the risk and provide reassure to consumers, thus ingredient brands can be industry standards to consumers because those consumers would not tend to buy a product in which doesn`t contain the ingredient (Keller 2003)

Co-branded products can deliver the clue to consumer about the product quality, and leads the consumer`s evaluation and acceptance on the products ultimately (McCarthy and Norris, 1999). McCarthy and Norris (1999) provided consumer survey result that how consumer evaluates when moderate-versus higher-quality host brands are given to consumers and branded ingredients are added to the host product, and the finding suggest that customers evaluate the moderate-quality host brand more favorably in case a high-quality ingredients brand is being added. Yang (2013) mentioned that the attitude toward two alliance brands tends to be higher in case both the market position of ingredient brand and the market position of host brand are higher. Brand alliance between higher market positioned ingredients brand and host brand itself can have positive effect on building positive attitude toward a product or brand, and forming reliability toward the product or brand.

The conventional researches are limited to the products, which the consumers are very limited to purchase the product due to the limited usage of the product itself or price issue. Thus, this study extended the study about ingredient branding to daily necessity and tried to examine the previous findings more wildly using the case of smart phone.

III. HYPOTHESE DEVELOPMENT

High brand awareness may positively relate to the formation of better attitude towards a brand or product (Macdonald & Sharp, 2000). Also high brand awareness increase the possibility that the brand or product can be listed on the consideration set, then affect the choice among the brands in the list, finally affect consumer`s decision making positively (Keller 2003). So the effects of high brand awareness have been verified already through many researches at least to single product or brand. However, the study about the case that two brands or products are combined as host brand and ingredient brand has not been done sufficiently (Yang 2013), especially in the field of smart phone industry yet. It is anticipated that the effects of high brand awareness will be applied to the case of smart phone and its ingredient in this study.

So this study developed hypotheses to study i) how strongly the brand awareness of complete product and ingredient brand effects on consumers` *attitude*, *purchase intention (PI)* and *expected satisfaction*, ii) how the *attitude* effects on *purchase intention*, and iii) how the *purchase intention* effects on *expected satisfaction*.

For instance, when consumer considers purchasing a smart phone adopting the ingredients (such as application processor, camera sensor and LCD panel) that has high brand awareness, and when the smart phone itself as complete product has high brand awareness, this study evaluate how strongly an attitude, purchase intention and expected satisfaction are formed to the consumer. So, this study virtually creates four combinations between complete product (high brand awareness and low brand awareness; 2 cases) and ingredients (high brand awareness and low brand awareness; 2 cases for 3 ingredients), tests the effects of these four combinations.

i) Hypotheses from H1a to H5d are designed to evaluate how the brand awareness of complete product and ingredient brand effects on our study objectives using Application Processor (AP) as an ingredient of smart phone.

ii) Hypotheses from H6a to H10d are designed to evaluate how the brand awareness of complete product and ingredient brand effects on our study objectives using Camera Sensor (CIS) as an ingredient of smart phone.

iii) Hypotheses from H11a to H15d are designed to evaluate how the brand awareness of complete product and ingredient brand effects on our study objectives using LCD Display Panel (LCD) as an ingredient of smart phone.

[Figure 1 – Awareness effects flow model]
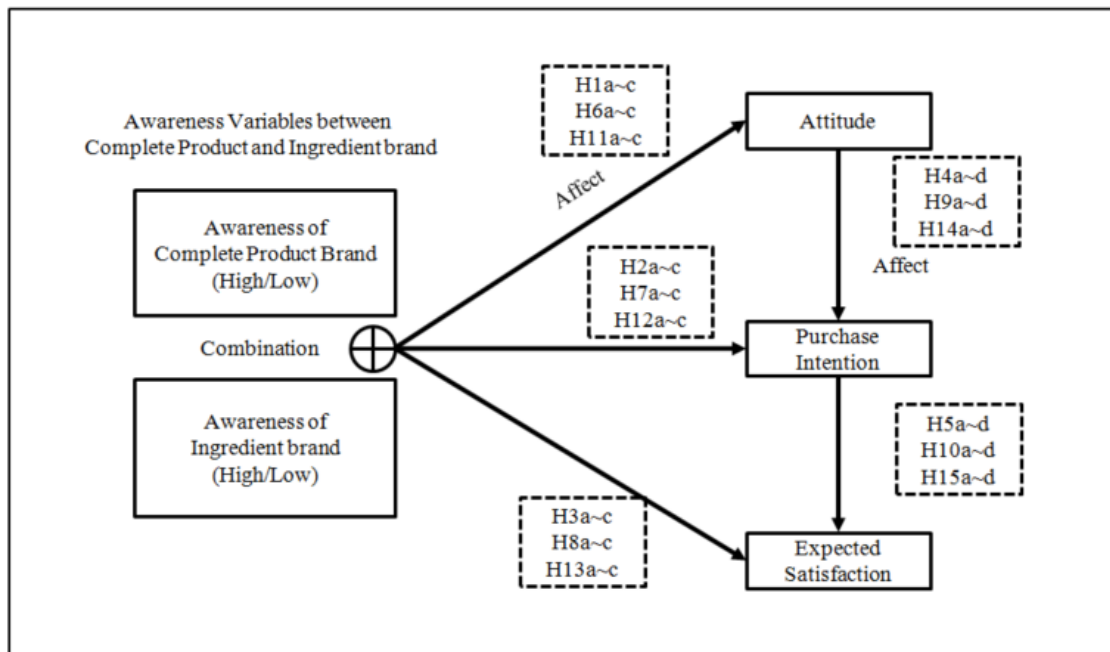
3.1 Effects of Complete Product and AP Ingredient

3.1.1 Effects of Attitudes across the awareness level of complete product and AP ingredient

The hypotheses H1a~H1c examine the effects of the level of awareness complete product and AP ingredient independently on attitude formation, then examine with complete product and ingredients variables that is composed of four variables that are 'high awareness complete product versus high awareness ingredient', 'the high versus the low', 'the low versus the high' and 'the low versus the low'. Consumers who don`t have brand awareness cannot form brand attitude and intention to buy a product (Rossiter & Percy 1987; Rossiter et al. 1991). High level of brand awareness increase the likelihood that the brand will be a member of the consideration set, and affect choices among brands in the consideration set (Keller 2003). Thus, the hypotheses H1a~H1c examine how the level of awareness level of complete products and ingredients variables is related to the attitude, especially using AP as ingredient.

H1a: Means of attitudes are significantly different across the awareness level of complete product.

H1b: Means of attitudes are significantly different across the awareness level of AP ingredient.

H1c: There are interaction effects on attitudes between complete product and AP ingredient variables.

3.1.2 Effects of Purchase Intention across the awareness level of complete product and AP ingredient

The hypotheses H2a~H2c examine the effects of the level of awareness complete product and AP ingredient independently on purchase intention formation, then examine with complete product and ingredients variables that is composed of four variables that are 'high awareness complete product versus high awareness ingredient', 'the high versus the low', 'the low versus the high' and 'the low versus the low'. High level of brand awareness increase the likelihood that the brand will be a member of the consideration set, and affect choices among

brands in the consideration set, finally affects consumer decision making by influencing the formation and strength of brand association that consists brand image (Keller 2003). Thus, the hypotheses H2a~H2c examine how the level of awareness level of complete products and ingredients variables is related to the purchase intention, especially using AP as ingredient.

H2a: Means of intention to purchase are significantly different across the awareness level of complete product.

H2b: Means of intention to purchase are significantly different across the awareness level of AP ingredient.

H2c: There are interaction effects on intention to purchase between complete product and AP ingredient variables.

3.1.3 Effects of Expected Satisfaction across the awareness level of complete product and AP ingredient

High level of brand awareness increase the likelihood that the brand will be a member of the consideration set, and affect choices among brands in the consideration set, finally affects consumer decision making by influencing the formation and strength of brand association that consists brand image (Keller 2003). Thus, the hypotheses H3a~H3c examine the effects of the level of awareness complete product and AP ingredient independently on the expected satisfaction formation, then examine again with complete product and ingredients variables that is composed of four variables that are 'high awareness complete product versus high awareness ingredient', 'the high versus the low', 'the low versus the high' and 'the low versus the low'. This study assumes that the level of awareness of each variable would affect to form expected satisfaction positively.

H3a: Means of expected satisfaction are significantly different across the awareness level of

complete product.

H3b: Means of expected satisfaction are significantly different across the awareness level of AP ingredient.

H3c: There are interaction effects on expected satisfaction between complete product and AP ingredient variables.

3.1.4 Effects of Attitude on Purchase Intention

Brand attitude does important role in influencing consumer's purchase intention, because it frequently form the basis for actions and behavior that consumers take with the brand (Keller 2003; Goldsmith et al 2000; Yi 1990). Thus, the hypotheses H4a~H4d examine how the attitudes towards complete products and ingredients variables are related to the purchase intention, especially using AP as ingredient.

H4a: Customers' attitude significantly affects purchase intention in the case of high level of awareness for both complete product and AP ingredient. (High versus High)

H4b: Customers' attitude significantly affects purchase intention in the case of high level of awareness for complete product and low level of awareness for AP ingredient. (High versus Low)

H4c: Customers' attitude significantly affects purchase intention in the case of low level of awareness for complete product and high level of awareness for AP ingredient. (Low versus High)

H4d: Customers' attitude significantly affects purchase intention in the case of both low level of awareness for complete product and AP ingredient. (Low versus Low)

3.1.5 Effects of Purchase Intention on Expected Satisfaction

14

High level of brand awareness increase the likelihood that the brand will be a member of the consideration set, and affect choices among brands in the consideration set, finally affects consumer decision making by influencing the formation and strength of brand association that consists brand image (Keller 2003). This study assumes that purchase intention will be related to expected satisfaction positively. Thus, the hypotheses H5a~H5d examine how the purchase intentions of complete products and ingredients variables are related to the expected satisfaction, especially using AP as ingredient.

H5a: Customers' intention to purchase significantly affects expected satisfaction in the case of high level of awareness for both complete product and AP ingredient. (High versus High)

H5b: Customers' intention to purchase significantly affects expected satisfaction in the case of high level of awareness for complete product and low level of awareness for AP ingredient. (High versus Low)

H5c: Customers' attitude significantly affects purchase intention in the case of low level of awareness for complete product and high level of awareness for AP ingredient. (Low versus High)

H5d: Customers' attitude significantly affects purchase intention in the case of both low level of awareness for complete product and AP ingredient. (Low versus Low)

3.2 Effects of Complete Product and Camera Ingredient

In order to avoid any biases which can be cause by product itself, this study examines three types of smart phone ingredients. As this paper shows through hypotheses H1a~H5d. which are focusing on AP ingredient as study object, the following hypotheses H6a~H10d apply the exactly same types of tests to the variables of complete product and camera sensor as ingredients repeatedly. The reason that camera sensor has been selected is camera is one of

the most frequently used functions in smart phone. Thus, this study expects to observe significant relations with regards to the study objects of this paper.

3.2.1 Effects of Attitudes across the Awareness level of Complete Product and Camera Ingredient

H6a: Means of attitudes are significantly different across the awareness level of complete product.

H6b: Means of attitudes are significantly different across the awareness level of camera ingredient.

H6c: There are interaction effects on attitudes between complete product and camera ingredient variables.

3.2.2 Effects of Intention to Purchase across the Awareness level of Complete Product and Camera Ingredient

H7a: Means of Intention to Purchase are significantly different across the awareness level of complete product.

H7b: Means of Intention to Purchase are significantly different across the awareness level of camera ingredient.

H7c: There are interaction effects on Intention to Purchase between complete product and camera ingredient variables.

3.2.3 Effects of Expected Satisfaction across the Awareness level of Complete Product and Camera Ingredient

H8a: Means of expected satisfaction are significantly different across the awareness level of complete product.

H8b: Means of expected satisfaction are significantly different across the awareness level of camera ingredient.

H8c: There are interaction effects on expected satisfaction between complete product and camera ingredient variables.

3.2.4 Effects of Attitude on Purchase Intention

H9a: Customers' attitude significantly affects purchase intention in the case of high level of awareness for both complete product and camera ingredient. (HH)

H9b: Customers' attitude significantly affects purchase intention in the case of high level of awareness for complete product and low level of awareness for camera ingredient. (HL)

H9c: Customers' attitude significantly affects purchase intention in the case of low level of awareness for complete product and high level of awareness for camera ingredient. (LH)

H9d: Customers' attitude significantly affects purchase intention in the case of both low level of awareness for complete product and camera ingredient. (LL)

3.2.5 Effects of Purchase Intention on Expected Satisfaction

H10a: Customers' intention to purchase significantly affects expected satisfaction in the case of high level of awareness for both complete product and camera ingredient. (HH)

H10b: Customers' intention to purchase significantly affects expected satisfaction in the case of high level of awareness for complete product and low level of awareness for camera ingredient. (HL)

H10c: Customers' attitude significantly affects purchase intention in the case of low level of awareness for complete product and high level of awareness for camera ingredient. (LH)

H10d: Customers' attitude significantly affects purchase intention in the case of both low level of awareness for complete product and camera ingredient. (LL)

17

3.3 Effects of Complete Product and Display Panel Ingredient

Again, in order to avoid any biases which can be cause by product itself, this study examines three types of smart phone ingredients. As this paper shows through hypotheses H1a~H10d. which are focusing on AP and camera ingredients as study object, the following hypotheses H11a~H15d apply the exactly same types of tests to the variables of complete product and LCD display panel as ingredients repeatedly. The reason that LCD display panel has been selected is that LCD display panel is the most visible part in smart phone. It would be easy for consumers to recognize the existence of that ingredient in smart phone, thus this study expects high reliability of response qualities.

3.3.1 Effects of Attitudes across the Awareness level of Complete Product and Display Panel Ingredient

H11a: Means of attitudes are significantly different across the awareness level of complete product.

H11b: Means of attitudes are significantly different across the awareness level of display panel ingredient.

H11c: There are interaction effects on attitudes between complete product and display panel ingredient variables.

3.3.2 Effects of Intention to Purchase across the Awareness level of Complete Product and Display Panel Ingredient

H12a: Means of Intention to Purchase are significantly different across the awareness level of complete product.

H12b: Means of Intention to Purchase are significantly different across the awareness level of display panel ingredient.

H12c: There are interaction effects on Intention to Purchase between complete product and display panel ingredient variables.

3.3.3 Effects of Expected Satisfaction across the Awareness level of Complete Product and Display Panel Ingredient

H13a: Means of expected satisfaction are significantly different across the awareness level of complete product.

H13b: Means of expected satisfaction are significantly different across the awareness level of display panel ingredient.

H13c: There are interaction effects on expected satisfaction between complete product and display panel ingredient variables.

3.3.4 Effects of Attitude on Purchase Intention

H14a: Customers' attitude significantly affects purchase intention in the case of high level of awareness for both complete product and display panel ingredient. (HH)

H14b: Customers' attitude significantly affects purchase intention in the case of high level of awareness for complete product and low level of awareness for display panel ingredient. (HL)

H14c: Customers' attitude significantly affects purchase intention in the case of low level of awareness for complete product and high level of awareness for display panel ingredient. (LH)

H14d: Customers' attitude significantly affects purchase intention in the case of both low level of awareness for complete product and display panel ingredient. (LL)

19

3.3.5 Effects of Purchase Intention on Expected Satisfaction

H15a: Customers' intention to purchase significantly affects expected satisfaction in the case of high level of awareness for both complete product and display panel ingredient. (HH)

H15b: Customers' intention to purchase significantly affects expected satisfaction in the case of high level of awareness for complete product and low level of awareness for display panel ingredient. (HL)

H15c: Customers' attitude significantly affects purchase intention in the case of low level of awareness for complete product and high level of awareness for display panel ingredient. (LH)

H15d: Customers' attitude significantly affects purchase intention in the case of both low level of awareness for complete product and display panel ingredient. (LL)

IV. METHODOLGY

The quantitative research conducted to 120 people, living in South Korea, male and female, over 18 year-old adults, and surveyed their attitude, purchased intention and expected satisfaction for the four combinations (Table 1, Table 2) between a given smart phone brand, which has high brand awareness or low brand awareness relatively, as complete product and smart phone component (ingredient) brand, which also high brand awareness or low brand awareness relatively. The smart phone brands selected as complete products are "Samsung Electronics" in Korea and "Coolpad" in China. And the selected smart phone components brand are "Samsung Electronics" versus "Mediatek" for AP ingredient related study, "Sony" versus "Omnivision" for Camera Sensor related study and "LG display" versus "BOE" for LCD display panel related study. The survey put the questions to compare relative level of awareness between "Samsung" and "Coolpad", and between the ingredients brands as well.

Thus, all the levels of awareness were surveyed relatively not absolutely. The survey results have analyzed by following statistical methodologies, One-way ANOVA, Two-way ANOVA and regression.

The survey has been distributed by email and the survey engine was Qualtrics.com. The total response time is about 15mins. The whole respondents are 168 people, but some of un-sincere or uncompleted responses have been excluded, and this study used 120 responses among them finally.

[Table 1 – Brand Combination Scheme between Complete Product and Component]

Complete Product		Component (Ingredient)		
Brand	Expected Brand Awareness Level	Category	Brand	Expected Brand Awareness Level
SAMSUNG	High	Application Processor	SAMSUNG	High
COOLPAD	Low		MEDIATEK	Low
SAMSUNG	High	Camera Sensor	SONY	High
COOLPAD	Low		OMNIVISION	Low
SAMSUNG	High	LCD Display	LG DISPLAY	High
COOLPAD	Low		BOE	Low

[Table 2 – Four Types of Brand Combination between Complete Product and Component]

Component Category	Brand Awareness	
	Complete Product	Component
Application Processor	High	High
	High	Low
	Low	High
	Low	Low
Camera Sensor	High	High
	High	Low

	Low	High
	Low	Low
	High	High
LCD Display Panel	High	Low
	Low	High
	Low	Low

V. DATA ANALYSIS

5.1. RESPONSE DEMOGRAPHICS

Among 117 respondents, 57.3% were female and 42.7% were male. About 3% were between the ages of 13-19 years old; 15.3% were between the ages of 18-25 years old; 34.7% were between the ages of 26-34 years old; 45.2% were between the ages of 35-54 years old; 1.6% were between the ages of above 55 years old. About 21.8% of respondents replied their annual income were less than $20,000; 35.5% between $30,000 and $50,000; 42.7% are above $50,000. About 3.2% stated that they purchase a smart phone/6 months; and 3.2% purchased a smart phone/12 months; and 10.5% purchased a smart phone/18 months; 59.7% purchased a smart phone/24 months; 23.4% purchased a smart phone/ above 30 months.

5.2 HYPOTHESES TESTING

5.2.1 Effects of Complete Product and AP Ingredient

Hypotheses from H1a to H5d are designed to evaluate how the brand awareness of complete product and ingredient brand effects on the study objectives using Application Processor (AP) as an ingredient of smart phone.

5.2.1.1 Effects of Attitudes across the awareness level of complete product and AP ingredient

According to hypotheses test result as shown in [Table 3] and [Table 4], the attitudes towards complete product (smart phone) are significantly different across the awareness level of complete product. And the attitudes towards AP ingredient are significantly different across the awareness level of the ingredient. Therefore, the findings accept hypotheses H1a~b. [Figure 2] shows that higher level of awareness of complete product and ingredient brings higher level of attitude towards complete product and ingredient each. However, there are not interaction effects on attitudes between complete product and AP ingredient variables. Therefore, the finding rejects hypotheses H1c.

[Table 3 – Descriptive Statistics for Awareness, Attitude-AP]

* Dependent Variable: Attitude
* 1.00 means the awareness is low, 2.00 means the awareness is high.

Complete_Product Awareness	Ingredient_AP Awareness	Mean	Std. Deviation	N
	1.00	2.1765	1.26660	34
1.00 (Low)	2.00	4.2800	1.20830	25
	Total	3.0678	1.61741	59
	1.00	3.9333	.98027	30
2.00 (High)	2.00	5.5000	1.23228	28
	Total	4.6897	1.35345	58
	1.00	3.0000	1.43649	64
Total	2.00	4.9245	1.35659	53
	Total	3.8718	1.69451	117

[Table 4 - Tests of Between-Subjects Effects, Attitude-AP]

* Dependent Variable: Attitude

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	176.229[a]	3	58.743	42.321	.000	.529
Intercept	1823.537	1	1823.537	1313.756	.000	.921
Complete_Product Awaress	64.002	1	64.002	46.110	.000	.290
Component_AP Awarenss	97.287	1	97.287	70.090	.000	.383

Complete_Product Aawarness *	2.082	1	2.082	1.500	<mark>.223</mark>	.013
Error	156.848	113	1.388			
Total	2087.000	117				
Corrected Total	333.077	116				

a. R Squared = .529 (Adjusted R Squared = .517)

[Figure 2 - Tests of Between-Subjects Effects, Awareness, Attitude-AP]
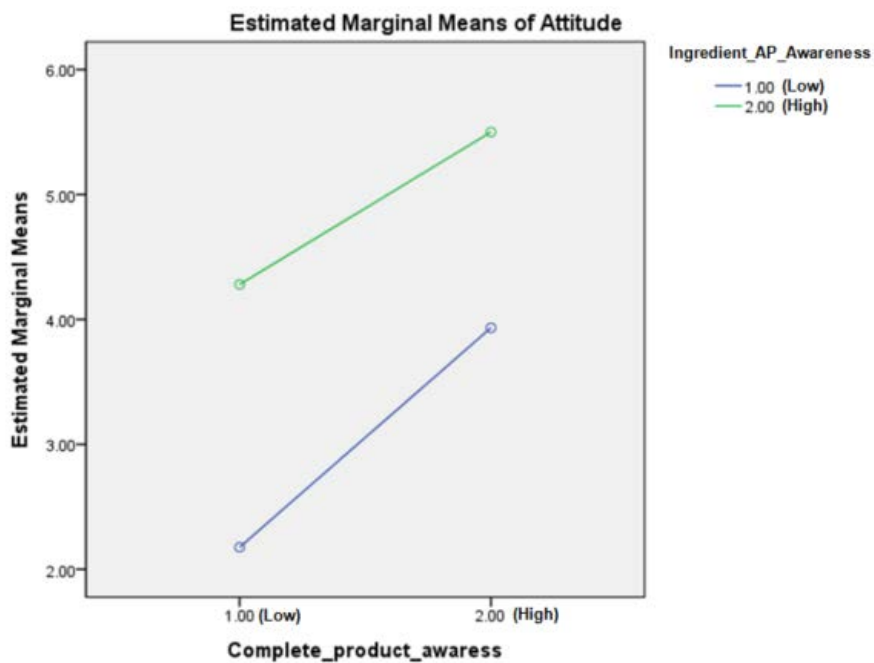
5.2.1.2 Effects of Purchase Intention across the awareness level of complete product and AP ingredient

According to hypotheses test result as shown in [Table 5] and [Table 6], the purchase intentions towards complete product (smart phone) are significantly different across the awareness level of complete product. And the purchase intentions towards AP ingredient are significantly different across the awareness level of the ingredient. Therefore, the findings

accept hypotheses H2a~b. [Figure 3] shows that higher level of awareness of complete product and ingredient brings higher level of purchase intention towards complete product and ingredient each. However, there are not interaction effects on purchase intention between complete product and AP ingredient variables. Therefore, the finding rejects hypotheses H2c.

[Table 5 – Descriptive Statistics for Awareness, Purchase Intention-AP]

* Dependent Variable: Purchase Intention
* 1.00 means the awareness is low, 2.00 means the awareness is high.

Complete_product Awareneess	Ingredient_AP Awareness	Mean	Std. Deviation	N
1.00	1.00	2.2059	1.27397	34
	2.00	3.6000	1.15470	25
	Total	2.7966	1.39926	59
2.00	1.00	4.5000	.97379	30
	2.00	5.6071	1.16553	28
	Total	5.0345	1.19891	58
Total	1.00	3.2813	1.61804	64
	2.00	4.6604	1.53101	53
	Total	3.9060	1.71697	117

[Table 6 - Tests of Between-Subjects Effects, Purchase Intention-AP]

* Dependent Variable: Purchase Intention

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	192.228^a	3	64.076	48.355	.000	.562
Intercept	1828.871	1	1828.871	1380.166	.000	.924
Complete_Product Awareness	133.619	1	133.619	100.836	.000	.472
Ingredient_AP Awareness	45.185	1	45.185	34.099	.000	.232
Complete_Product Awareness *	.595	1	.595	.449	.504	.004
Error	149.737	113	1.325			
Total	2127.000	117				
Corrected Total	341.966	116				

a. R Squared = .562 (Adjusted R Squared = .551)

[Figure 3 - Tests of Between-Subjects Effects, Awareness, Purchase Intention-AP]
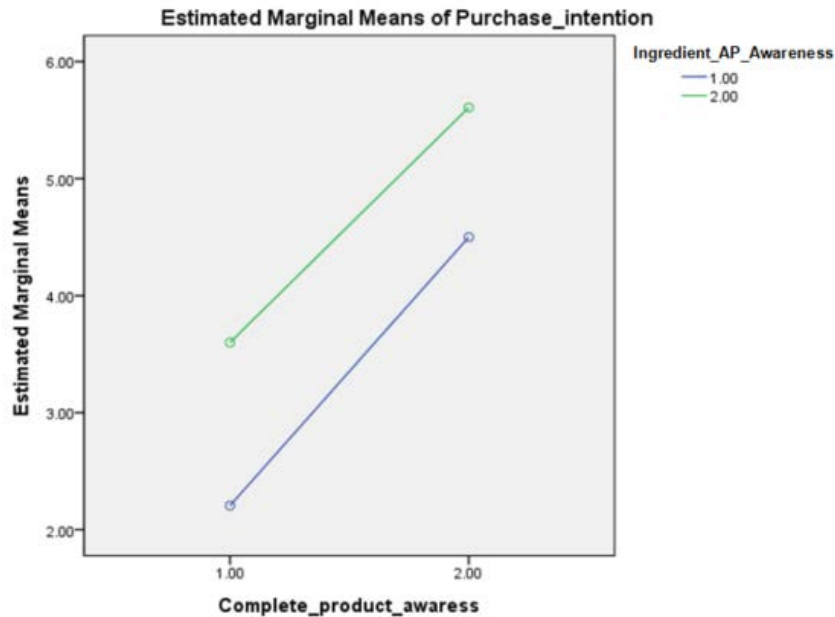
* 1.00=Low Awareness / 2.00=High Awareness

5.2.1.3 Effects of Expected Satisfaction across the awareness level of complete product and AP ingredient

According to hypotheses test result as shown in [Table 7] and [Table 8], the expected satisfactions towards complete product (smart phone) are significantly different across the awareness level of complete product. And the expected satisfactions towards AP ingredient are significantly different across the awareness level of the ingredient. Therefore, the findings accept hypotheses H3a~b. [Figure 4] shows that higher level of awareness of complete product and ingredient brings higher level of expected satisfaction towards complete product and ingredient each. However, there are not interaction effects on expected satisfaction between complete product and AP ingredient variables. Therefore, the finding rejects hypotheses H3c.

27

[Table 7 – Descriptive Statistics for Awareness, Expected Satisfaction-AP]

* Dependent Variable: Expected Satisfaction
* 1.00 means the awareness is low, 2.00 means the awareness is high.

Complete_Product Awareness	Ingredient_AP Awareness	Mean	Std. Deviation	N
	1.00	2.8000	1.25558	35
1.00	2.00	4.0800	1.03763	25
	Total	3.3333	1.32341	60
	1.00	4.5000	.77682	30
2.00	2.00	5.2500	1.04083	28
	Total	4.8621	.98138	58
	1.00	3.5846	1.35661	65
Total	2.00	4.6981	1.18622	53
	Total	4.0847	1.39337	118

[Table 8- Tests of Between-Subjects Effects, Expected Satisfaction -AP]

* Dependent Variable: Expected Satisfaction

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	100.963[a]	3	33.654	30.403	.000	.444
Intercept	2009.583	1	2009.583	1815.457	.000	.941
Complete_Product Awareness	59.853	1	59.853	54.071	.000	.322
Ingredient_AP Awareness	29.944	1	29.944	27.052	.000	.192
Complete_Product Awareness *	2.041	1	2.041	1.844	.177	.016
Error	126.190	114	1.107			
Total	2196.000	118				
Corrected Total	227.153	117				

a. R Squared = .444 (Adjusted R Squared = .430)

[Figure 4 - Tests of Between-Subjects Effects, Awareness, Expected Satisfaction-AP]
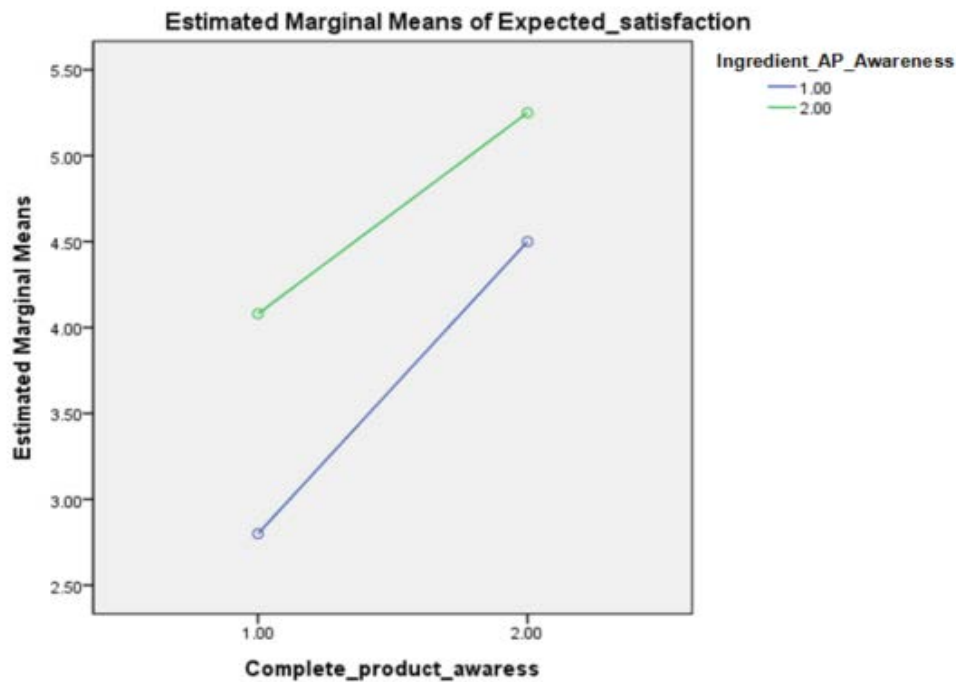
* 1.00=Low Awareness / 2.00=High Awareness

5.2.1.4 Effects of Attitude on Purchase Intention (Regression)

According to hypotheses test results, the attitudes towards the four combinations of complete product and AP ingredient are positively related with the purchase intention on those four combinations as following. i) Customers' attitude significantly affects purchase intention in the case of high level of awareness for both complete product and AP ingredient (H4a). ii) Customers' attitude significantly affects purchase intention in the case of high level of awareness for complete product and low level of awareness for AP ingredient (H4b). iii) Customers' attitude significantly affects purchase intention in the case of low level of awareness for complete product and high level of awareness for AP ingredient (H4c). iv) Customers' attitude significantly affects purchase intention in the case of both low level of

29

awareness for complete product and AP ingredient (H4d). Therefore, the findings accepted all

the hypotheses from H4a~d.

[Table 9 – Regression for Attitude & Purchase Intention, High Complete
Product + High Ingredient, AP]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.834[a]	.696	.685	.761

a. Predictors: (Constant), How much you prefer "Samsung smart phone +
  Samsung AP"

[Table 10 – ANOVA for Attitude & Purchase Intention, High Complete
Product + High Ingredient, AP]

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	38.323	1	38.323	66.255	.000[b]
1	Residual	16.774	29	.578		
	Total	55.097	30			

a. Dependent Variable: How much your purchase intention for "Samsung smart
phone + Samsung AP"
b. Predictors: How much you prefer "Samsung smart phone + Samsung AP"

[Table 11 – Coefficients for Attitude & Purchase Intention, High Complete Product +
High Ingredient, AP]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.830	.572		1.450	.158
How much you prefer "Samsung smart phone + Samsung AP"	.855	.105	.834	8.140	.000

a. Dependent Variable: How much your purchase intention for "Samsung smart phone
+ Samsung AP"

[Table 12 – Regression for Attitude & Purchase Intention, High Complete
Product + Low Ingredient, AP]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.703[a]	.494	.478	.725

a. Predictors: (Constant), How much you prefer "Samsung smart phone +
  Mediatek AP"

[Table 13 – ANOVA for Attitude & Purchase Intention, High Complete Product + Low Ingredient, AP]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15.929	1	15.929	30.268	.000[b]
	Residual	16.314	31	.526		
	Total	32.242	32			

a. Dependent Variable: How much your purchase intention for "Samsung smart phone + Mediatek AP"

b. Predictors: How much you prefer "Samsung smart phone + Mediatek AP"

[Table 14 – Coefficients for Attitude & Purchase Intention, High Complete Product + Low Ingredient, AP]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.068	.639		1.671	.105
	How much you prefer "Samsung smart phone + Mediatek AP"	.785	.143	.703	5.502	.000

a. Dependent Variable: How much your purchase intention for "Samsung smart phone + Mediatek AP"

[Table 15 – Regression for Attitude & Purchase Intention, Low Complete Product + High Ingredient, AP]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.568[a]	.323	.300	1.056

a. How much you prefer "Coolpad smart phone + Samsung AP"

[Table 16 – ANOVA for Attitude & Purchase Intention, Low Complete Product + High Ingredient, AP]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15.427	1	15.427	13.844	.001[b]
	Residual	32.315	29	1.114		
	Total	47.742	30			

a. Dependent Variable: How much your purchase intention for "Coolpad smart phone + Samsung AP"

b. Predictors: How much you prefer "Coolpad smart phone + Samsung AP"

[Table 17 – Coefficients for Attitude & Purchase Intention, Low Complete Product + High Ingredient, AP]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.401	.859		.467	.644
	How much you prefer "Coolpad smart phone + Samsung AP"	.666	.179	.568	3.721	.001

a. Dependent Variable: How much your purchase intention for "Coolpad smart phone + Samsung AP"

[Table 18 – Regression for Attitude & Purchase Intention, Low Complete Product + Low Ingredient, AP]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.811[a]	.657	.646	.787

a. Predictors: (Constant), How much you prefer "Coolpad smart phone + Mediatek AP"

[Table 19 – ANOVA for Attitude & Purchase Intention, Low Complete Product + Low Ingredient, AP]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	36.858	1	36.858	59.502	.000[b]
	Residual	19.203	31	.619		
	Total	56.061	32			

a. Dependent Variable: How much your purchase intention for "Coolpad smart phone + Mediatek AP"
b. Predictors: How much you prefer "Coolpad smart phone + Mediatek AP"

[Table 20 – Coefficients for Attitude & Purchase Intention, Low Complete Product + Low Ingredient, AP]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.299	.287		1.042	.306
	How much you prefer "Coolpad smart phone + Mediatek AP"	.782	.101	.811	7.714	.000

a. Dependent Variable How much your purchase intention for "Coolpad smart phone + Mediatek AP"

5.2.1.5 Effects of Purchase Intention on Expected Satisfaction (Regression)

According to hypotheses test results, the purchase intentions towards the four combinations of complete product and AP ingredient are positively related with the expected satisfaction on those four combinations as following. i) Customers' intention to purchase significantly affects expected satisfaction in the case of high level of awareness for both complete product and AP ingredient. (H5a). ii) Customers' intention to purchase significantly affects expected satisfaction in the case of high level of awareness for complete product and low level of awareness for AP ingredient. (H5b). iii) Customers' attitude significantly affects purchase intention in the case of low level of awareness for complete product and high level of awareness for AP ingredient. (H5c). iv) Customers' attitude significantly affects purchase intention in the case of both low level of awareness for complete product and AP ingredient (H5d). Therefore, the findings accepted all the hypotheses from H5a~d.

[Table 21 – Regression for Purchase Intention & Expected Satisfaction, High Complete Product + High Ingredient, AP]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.841[a]	.708	.697	.549

a. Predictors: (Constant), How much your purchase intention for "Samsung smart phone + Samsung AP"

[Table 22 – ANOVA for Purchase Intention & Expected Satisfaction, High Complete Product + High Ingredient, AP]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21.181	1	21.181	70.162	.000[b]
	Residual	8.755	29	.302		
	Total	29.935	30			

a. Dependent Variable: How much your expected satisfaction will be in the case of "Samsung smart phone + Samsung AP"
b. Predictors: (Constant), How much your purchase intention for "Samsung smart phone + Samsung AP"

[Table 23 – Coefficients for Purchase Intention & Expected Satisfaction, High Complete Product + High Ingredient, AP]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.938	.408		4.744	.000
	How much your purchase intention for "Samsung smart phone + Samsung AP"	.620	.074	.841	8.376	.000

a. Dependent Variable: How much your expected satisfaction will be in the case of "Samsung smart phone + Samsung AP"

[Table 24 – Regression for Purchase Intention & Expected Satisfaction, High Complete Product + Low Ingredient, AP]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.538[a]	.290	.267	.680

a. Predictors: (Constant), How much your purchase intention for "Samsung smart phone + Mediatek AP"

[Table 25 – ANOVA for Purchase Intention & Expected Satisfaction, High Complete Product + Low Ingredient, AP]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.844	1	5.844	12.637	.001[b]
	Residual	14.337	31	.462		
	Total	20.182	32			

a. Dependent Variable: How much your expected satisfaction will be in the case of "Samsung smart phone + Mediatek AP"

b. Predictors: (Constant), How much your purchase intention for "Samsung smart phone + Mediatek AP"

[Table 26 – Coefficients for Purchase Intention & Expected Satisfaction, High Complete Product + Low Ingredient, AP]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.623	.554		4.738	.000
	How much your purchase intention for "Samsung smart phone + Mediatek AP"	.426	.120	.538	3.555	.001

a. Dependent Variable: How much your expected satisfaction will be in the case of "Samsung smart phone + Mediatek AP"

[Table 27 – Regression for Purchase Intention & Expected Satisfaction, Low Complete Product + High Ingredient, AP]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.640[a]	.410	.389	.805

a. Predictors: (Constant), How much your purchase intention for "Coolpad smart phone + Samsung AP"

[Table 28 – ANOVA for Purchase Intention & Expected Satisfaction, Low Complete Product + High Ingredient, AP]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13.057	1	13.057	20.127	.000[b]
	Residual	18.814	29	.649		
	Total	31.871	30			

a. Dependent Variable: How much your expected satisfaction will be in the case of "Coolpad smart phone + Samsung AP"
b. Predictors: (Constant), How much your purchase intention for "Coolpad smart phone + Samsung AP"

[Table 29 – Coefficients for Purchase Intention & Expected Satisfaction, Low Complete Product + High Ingredient, AP]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.226	.435		5.121	.000
	How much your purchase intention for "Coolpad smart phone + Samsung AP"	.523	.117	.640	4.486	.000

a. Dependent Variable: How much your expected satisfaction will be in the case of "Coolpad smart phone + Samsung AP"

[Table 30 – Regression for Purchase Intention & Expected Satisfaction, Low Complete Product + Low Ingredient, AP]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.813[a]	.661	.650	.750

a. Predictors: (Constant), How much your purchase intention for "Coolpad smart phone + Mediatek AP"

[Table 31 – ANOVA for Purchase Intention & Expected Satisfaction, Low Complete Product + Low Ingredient, AP]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	34.060	1	34.060	60.490	.000[b]
	Residual	17.455	31	.563		
	Total	51.515	32			

a. Dependent Variable: How much your expected satisfaction will be in the case of "Coolpad smart phone + Mediatek AP"

b. Predictors: (Constant), How much your purchase intention for "Coolpad smart phone + Mediatek AP"

[Table 32 – Coefficients for Purchase Intention & Expected Satisfaction, Low Complete Product + Low Ingredient, AP]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.040	.260		4.001	.000
	How much your purchase intention for "Coolpad smart phone + Mediatek AP"	.779	.100	.813	7.778	.000

a. Dependent Variable: How much your expected satisfaction will be in the case of "Coolpad smart phone + Mediatek AP"

5.2.2 Effects of Complete Product and Camera Ingredient

Hypotheses from H6a to H10d are designed to evaluate how the brand awareness of complete product and ingredient brand effects on the study objectives using Camera Sensor (CIS) as an ingredient of smart phone.

5.2.2.1 Effects of Attitudes across the Awareness level of Complete Product and Camera Ingredient

According to hypotheses test result as shown in [Table 32], the attitudes towards complete product (smart phone) are significantly different across the awareness level of complete product. And the attitudes towards camera ingredient are significantly different across the awareness level of the ingredient. Therefore, the findings accept hypotheses H6a~b. [Figure 5] shows that higher level of awareness of complete product and ingredient brings higher level of attitude towards complete product and ingredient each. And there are interaction effects on attitudes between complete product and camera ingredient variables not like the case of AP ingredient case. Therefore, the finding accepts hypotheses H6c (at alpha=10%), and this result show a high possibility that camera ingredient can significantly affect consumer`s attitude when selecting smart phone.

37

[Table 32 – Coefficients for Purchase Intention & Expected Satisfaction, Low Complete Product + Low Ingredient, AP]

* Dependent Variable: Attitude_Camera

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	78.700[a]	3	26.233	19.336	.000	.345
Intercept	1748.648	1	1748.648	1288.885	.000	.921
Complete_product_ awareness	31.457	1	31.457	23.186	.000	.174
Component_camera awareness	39.264	1	39.264	28.941	.000	.208
Complete_product awareness *	4.938	1	4.938	3.639	.059	.032
Error	149.238	110	1.357			
Total	1965.000	114				
Corrected Total	227.939	113				

a. R Squared = .345 (Adjusted R Squared = .327)

[Figure 5 - Tests of Between-Subjects Effects, Awareness, Attitude -Camera]

Estimated Marginal Means of Attitude_Camera

* 1.00=Low Awareness / 2.00=High Awareness

38
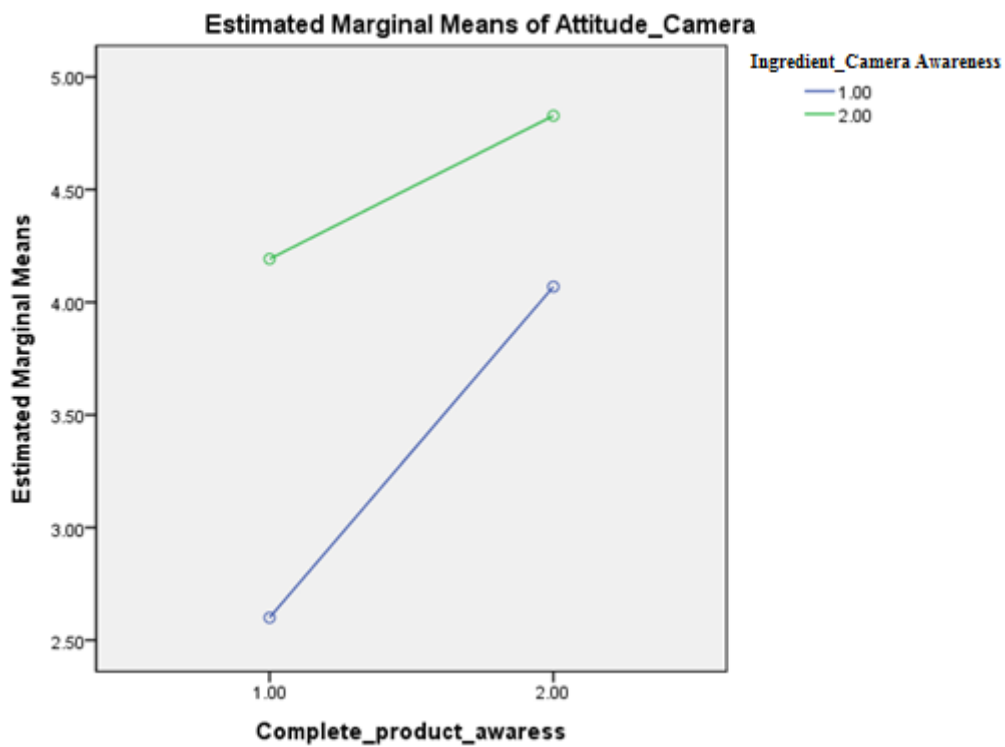
5.2.2.2 Effects of Intention to Purchase across the Awareness level of Complete Product and Camera Component

According to hypotheses test result as shown in [Table 33], the attitudes towards complete product (smart phone) are significantly different across the awareness level of complete product. And the attitudes towards camera ingredient are significantly different across the awareness level of the ingredient. Therefore, the findings accept hypotheses H7a~b. [Figure 6] shows that higher level of awareness of complete product and ingredient brings higher level of attitude towards complete product and ingredient each. However, there are not interaction effects on attitudes between complete product and camera ingredient variables. Therefore, the finding rejects hypotheses H7c.

[Table 33 – Tests of Between-Subjects Effects, Purchase Intention-Camera]
* Dependent Variable: Purchase Intention_Camera

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	127.305[a]	3	42.435	32.720	.000
Intercept	1517.136	1	1517.136	1169.806	.000
Complete_product awareness	98.915	1	98.915	76.269	.000
Component_camera awareness	21.166	1	21.166	16.320	.000
Complete_product awareness *	2.754	1	2.754	2.124	.148
Error	142.660	110	1.297		
Total	1788.000	114			
Corrected Total	269.965	113			

a. R Squared = .472 (Adjusted R Squared = .457)

[Figure 6 - Tests of Between-Subjects Effects, Awareness, Expected Satisfaction-AP]

* 1.00=Low Awareness / 2.00=High Awareness

5.2.2.3 Effects of Expected Satisfaction across the Awareness level of Complete Product and Camera Component
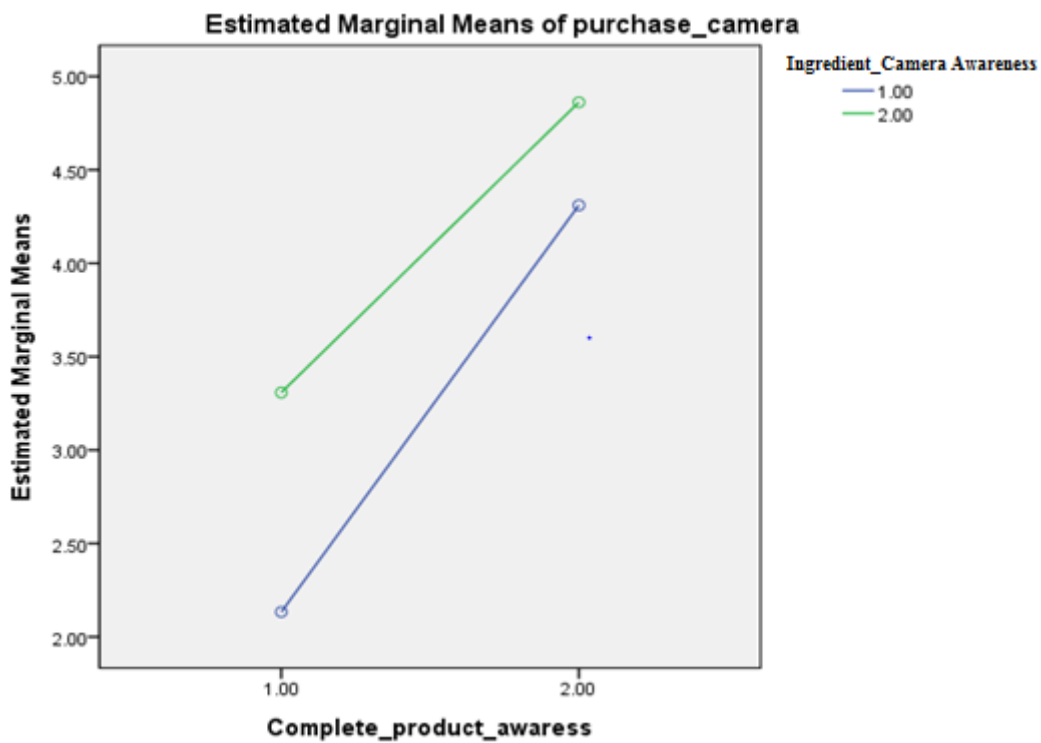
According to hypotheses test result as shown in [Table 34], the attitudes towards complete product (smart phone) are significantly different across the awareness level of complete product. And the attitudes towards camera ingredient are significantly different across the awareness level of the ingredient. Therefore, the findings accept hypotheses H8a~b. [Figure 7] shows that higher level of awareness of complete product and ingredient brings higher level of attitude towards complete product and ingredient each. However, there are not interaction effects on attitudes between complete product and camera ingredient variables. Therefore, the finding rejects hypotheses H8c.

40

[Table 34 - Tests of Between-Subjects Effects, Expected Satisfaction –Camera]
* Dependent Variable: Expected Satisfaction_Camera

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	90.572[a]	3	30.191	27.675	.000
Intercept	1767.402	1	1767.402	1620.142	.000
Complete_product_ awareness	66.296	1	66.296	60.773	.000
Component_camera awareness	20.071	1	20.071	18.398	.000
Complete_product_aw aress *	.975	1	.975	.894	.347
Error	119.998	110	1.091		
Total	1979.000	114			
Corrected Total	210.570	113			

a. R Squared = .430 (Adjusted R Squared = .415)

[Figure 7 - Tests of Between-Subjects Effects, Awareness, Expected Satisfaction-AP]

Estimated Marginal Means of satisfaction_camera
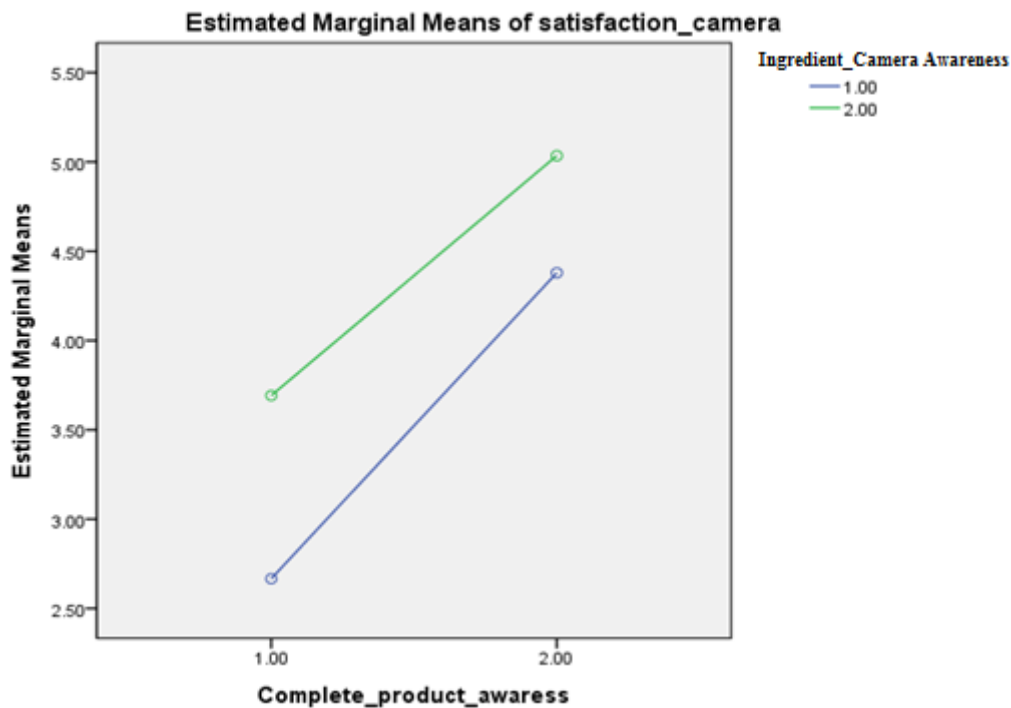
* 1.00=Low Awareness / 2.00=High Awareness

5.2.2.4 Effects of Attitude on Purchase Intention (Regression)

According to hypotheses test results, the attitudes towards the four combinations of complete

product and camera ingredient are positively related with the purchase intention on those four

combinations as following. i) Customers' attitude significantly affects purchase intention in the case of high level of awareness for both complete product and camera ingredient (H9a). ii) Customers' attitude significantly affects purchase intention in the case of high level of awareness for complete product and low level of awareness for camera ingredient (H9b). iii) Customers' attitude significantly affects purchase intention in the case of low level of awareness for complete product and high level of awareness for camera ingredient (H9c).   iv) Customers' attitude significantly affects purchase intention in the case of both low level of awareness for complete product and camera ingredient (H9d). Therefore, the findings accepted all the hypotheses from H9a~d.

[Table 35 – Regression for Attitude & Purchase Intention, High Complete Product + High Ingredient, Camera]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.771[a]	.594	.579	.654

a. Predictors: (Constant), How much prefer "Samsung smart phone + Sony Camera"

[Table 36 – ANOVA for Attitude & Purchase Intention, High Complete Product + High Ingredient, Camera]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17.501	1	17.501	40.950	.000[b]
	Residual	11.966	28	.427		
	Total	29.467	29			

a. Dependent Variable: How much purchase intention "Samsung smart phone + Sony Camera"
b. How much prefer "Samsung smart phone + Sony Camera"

[Table 37 – Coefficients for Attitude & Purchase Intention, High Complete Product + High Ingredient, Camera]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.237	.580		2.135	.042
	How much prefer "Samsung smart phone + Sony Camera"?...-	.746	.117	.771	6.399	.000

a. Dependent Variable: How much purchase intention "Samsung smart phone + Sony Camera"

[Table 38 – Regression for Attitude & Purchase Intention, High Complete Product + Low Ingredient, Camera]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.363[a]	.132	.102	.954

a. Predictors: (Constant), How much prefer "Samsung smart phone +Omnivision Camera"

[Table 39 – ANOVA for Attitude & Purchase Intention, High Complete Product + Low Ingredient, Camera]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.999	1	3.999	4.395	.045[b]
	Residual	26.388	29	.910		
	Total	30.387	30			

a. Dependent Variable: How much purchase intention "Samsung smart phone + Omnivision Camera"
b. Predictors: (Constant), How much prefer "Samsung smart phone +Omnivision Camera"

[Table 40 – Coefficients for Attitude & Purchase Intention, High Complete Product + Low Ingredient, Camera]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.439	.900		2.711	.011
	How much prefer "Samsung smart phone +Omnivision Camera"	.459	.219	.363	2.096	.045

a. Dependent Variable: How much purchase intention "Samsung smart phone + Omnivision Camera"

[Table 41 – Regression for Attitude & Purchase Intention, Low Complete Product + High Ingredient, Camera]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.702[a]	.493	.475	.926

a. Predictors: How much prefer "Coolpad smart phone +Sony Camera"

[Table 42 – ANOVA for Attitude & Purchase Intention, Low Complete Product + High Ingredient, Camera]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	23.364	1	23.364	27.256	.000[b]
	Residual	24.002	28	.857		
	Total	47.367	29			

a. Dependent Variable: How much purchase intention "Coolpad smart phone + Sony Camera"
b. Predictors: (Constant), How much prefer "Coolpad smart phone + Sony Camera"

[Table 43 – Coefficients for Attitude & Purchase Intention, Low Complete Product + High Ingredient, Camera]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.683	.553		1.235	.227
	How much prefer "Coolpad smart phone + Sony Camera"	.650	.124	.702	5.221	.000

a. Dependent Variable: How much purchase intention Coolpad smart phone + Sony Camera"

[Table 44 – Regression for Attitude & Purchase Intention, Low Complete Product + Low Ingredient, Camera]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.827[a]	.684	.674	.711

a. Predictors: (Constant), How much prefer "Coolpad smart phone + Omnivision Camera"

[Table 45 – ANOVA for Attitude & Purchase Intention, Low Complete Product + Low Ingredient, Camera]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	33.863	1	33.863	67.069	.000[b]
	Residual	15.652	31	.505		
	Total	49.515	32			

a. Dependent Variable: How much purchase intention Coolpad smart phone + Omnivision Camera"

44

b. Predictors: (Constant), How much prefer "Coolpad smart phone + Omnivision Camera"

[Table 46 – Coefficients for Attitude & Purchase Intention, Low Complete Product + Low Ingredient, Camera]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.121	.274		.441	.663
	How much prefer "Coolpad smart phone + Omnivision Camera"	.805	.098	.827	8.190	.000

a. Dependent Variable: How much purchase intention Coolpad smart phone + Omnivision Camera"

5.2.2.5 Effects of Purchase Intention on Expected Satisfaction (regression)

According to hypotheses test results, the purchase intentions towards the four combinations of complete product and camera ingredient are positively related with the expected satisfaction on those four combinations as following. i) Customers' intention to purchase significantly affects expected satisfaction in the case of high level of awareness for both complete product and camera ingredient. (H10a). ii) Customers' intention to purchase significantly affects expected satisfaction in the case of high level of awareness for complete product and low level of awareness for camera ingredient. (H10b). iii) Customers' attitude significantly affects purchase intention in the case of low level of awareness for complete product and high level of awareness for camera ingredient. (H10c).   iv) Customers' attitude significantly affects purchase intention in the case of both low level of awareness for complete product and camera ingredient (H10d). Therefore, the findings accepted all the hypotheses from H10a~d.

[Table 47 – Regression for Purchase Intention & Expected Satisfaction, High Complete Product + High Ingredient, Camera]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.885[a]	.784	.776	.473

a. Predictors: How much purchase intention "Samsung smart phone + Sony Camera"

[Table 48 – ANOVA for Purchase Intention & Expected Satisfaction, High Complete Product + High Ingredient, Camera]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	22.706	1	22.706	101.560	.000[b]
	Residual	6.260	28	.224		
	Total	28.967	29			

a. Dependent Variable: How much expected satisfaction "Samsung smart phone + Sony Camera"

b. Predictors: How much purchase intention "Samsung smart phone + Sony Camera"

[Table 49 – Coefficients for Purchase Intention & Expected Satisfaction, High Complete Product + High Ingredient, Camera]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.695	.433		1.606	.120
	How much purchase intention "Samsung smart phone + Sony Camera"	.878	.087	.885	10.078	.000

a. Dependent Variable: How much expected satisfaction "Samsung smart phone + Sony Camera"

[Table 50 – Regression for Purchase Intention & Expected Satisfaction, High Complete Product + Low Ingredient, Camera]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.763[a]	.582	.567	.500

a. Predictors: How much purchase intention "Samsung smart phone + Ommnivision Camera"

[Table 51 – ANOVA for Purchase Intention & Expected Satisfaction, High Complete Product + Low Ingredient, Camera]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.097	1	10.097	40.343	.000[b]
	Residual	7.258	29	.250		
	Total	17.355	30			

a. Dependent Variable: How much expected satisfaction "Samsung smart phone + Ommnivision Camera"

b. Predictors: (Constant), How much purchase intention "Samsung smart phone + Ommnivision Camera"

[Table 52 – Coefficients for Purchase Intention & Expected Satisfaction, High Complete Product + Low Ingredient, Camera]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.914	.400		4.790	.000
	How much purchase intention "Samsung smart phone + Ommnivision Camera"	.576	.091	.763	6.352	.000

a. Dependent Variable How much expected satisfaction "Samsung smart phone + Ommnivision Camera"

[Table 53 – Regression for Purchase Intention & Expected Satisfaction, Low Complete Product + High Ingredient, Camera]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.833[a]	.693	.682	.669

a. Predictors: How much purchase intention "Coolpad smart phone + SonyCamera"

[Table 54 – ANOVA for Purchase Intention & Expected Satisfaction, Low Complete Product + High Ingredient, Camera]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	28.281	1	28.281	63.251	.000[b]
	Residual	12.519	28	.447		
	Total	40.800	29			

a. Dependent Variable: How much expected satisfaction "Coopad smart phone + Sony Camera"
b. Predictors: (Constant), How much purchase intention "Coolpad smart phone + SonyCamera"

[Table 55 – Coefficients for Purchase Intention & Expected Satisfaction, Low Complete Product + High Ingredient, Camera]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.147	.355		3.229	.003
	How much purchase intention "Coolpad smart phone + SonyCamera"	.773	.097	.833	7.953	.000

a. Dependent Variable: How much expected satisfaction "Coopad smart phone + Sony Camera"

[Table 56 – Regression for Purchase Intention & Expected Satisfaction, Low Complete Product + Low Ingredient, Camera]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.807[a]	.651	.640	.704

a. Predictors: (Constant), How much purchase intention "Coolpad smart phone + OmmnivisionCamera"

[Table 57 – ANOVA for Purchase Intention & Expected Satisfaction, Low Complete Product + Low Ingredient, Camera]

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	28.700	1	28.700	57.918	.000[b]
1	Residual	15.361	31	.496		
	Total	44.061	32			

a. Dependent Variable: How much expected satisfaction "Coopad smart phone + Ommnivision Camera"
b. Predictors: (Constant), How much purchase intention "Coolpad smart phone + OmmnivisionCamera"

[Table 58 – Coefficients for Purchase Intention & Expected Satisfaction, Low Complete Product + Low Ingredient, Camera]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	(Constant)	.961	.245		3.921	.000
1	How much purchase intention "Coolpad smart phone + OmmnivisionCamera"	.761	.100	.807	7.610	.000

a. Dependent Variable: How much expected satisfaction "Coopad smart phone + Ommnivision Camera"

5.2.3. Effects of Complete Product and Display Panel Component

Hypotheses from H11a to H15d are designed to evaluate how the brand awareness of complete product and ingredient brand effects on the study objectives using Display Panel (LCD) as an ingredient of smart phone.

5.2.3.1 Effects of Attitudes across the Awareness level of Complete Product and Display Panel Component

According to hypotheses test result as shown in [Table 59], the attitudes towards complete product (smart phone) are significantly different across the awareness level of complete product. And the attitudes towards display panel ingredient are significantly different across the awareness level of the ingredient. Therefore, the findings accept hypotheses H11a~b. [Figure 8] shows that higher level of awareness of complete product and ingredient brings higher level of attitude towards complete product and ingredient each. However, there are not interaction effects on attitudes between complete product and display panel ingredient variables. Therefore, the finding rejects hypotheses H11c.

[Table 59 - Tests of Between-Subjects Effects, Attitude -Camera]
* Dependent Variable: Attitude_DisplayPanel

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	114.153[a]	3	38.051	22.488	.000
Intercept	1736.296	1	1736.296	1026.140	.000
Complete_product awareness	42.377	1	42.377	25.044	.000
Component_display awareness	65.526	1	65.526	38.726	.000
Complete_product awareness *	3.383	1	3.383	1.999	.160
Error	186.127	110	1.692		
Total	2014.000	114			
Corrected Total	300.281	113			

a. R Squared = .380 (Adjusted R Squared = .363)

[Figure 8 - Tests of Between-Subjects Effects, Awareness, Attitude-Display]

Estimated Marginal Means of Attitude_DisplayPanel
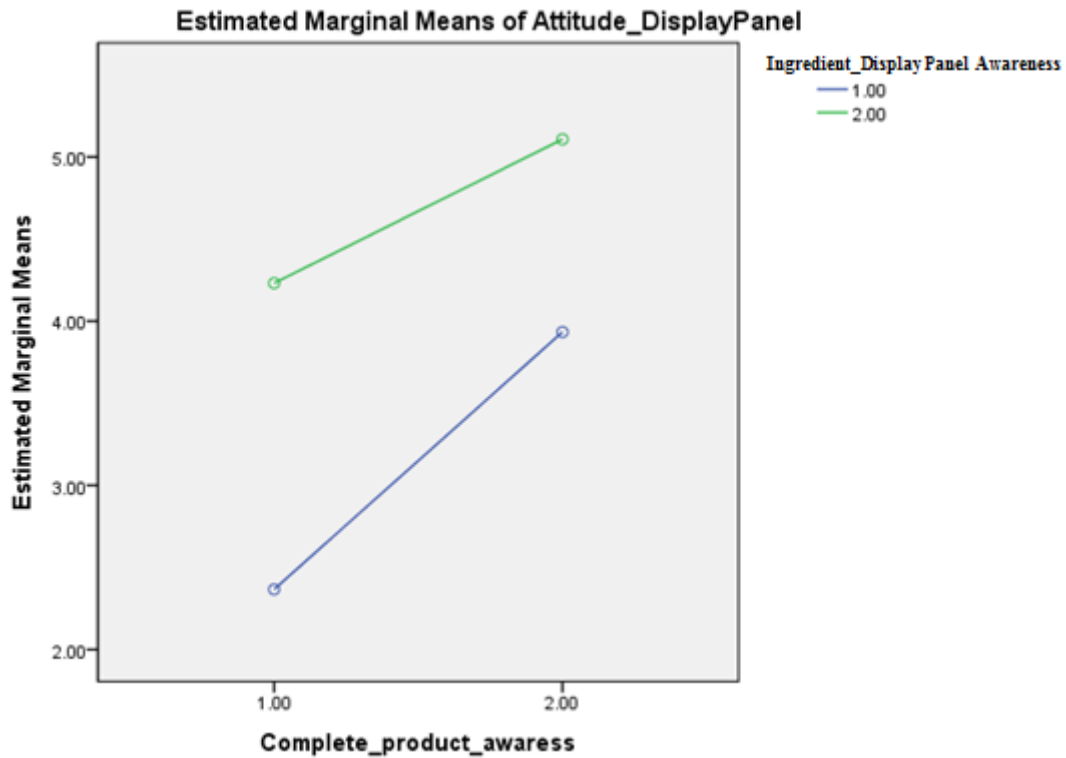
* 1.00=Low Awareness / 2.00=High Awareness

5.2.3.2 Effects of Intention to Purchase across the Awareness level of Complete Product and Display Panel Component

According to hypotheses test result as shown in [Table 60], the purchase intentions towards complete product (smart phone) are significantly different across the awareness level of complete product. And the purchase intentions towards display panel ingredient are significantly different across the awareness level of the ingredient. Therefore, the findings accept hypotheses H12a~b. [Figure 9] shows that higher level of awareness of complete product and ingredient brings higher level of purchase intention towards complete product and ingredient each. However, there are not interaction effects on purchase intention between complete product and display panel ingredient variables. Therefore, the finding rejects hypotheses H12c.

[Table 60 - Tests of Between-Subjects Effects, Purchase Intention -Camera]
* Dependent Variable: Purchase Intention_Display Panel

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	135.433[a]	3	45.144	29.556	.000
Intercept	1579.324	1	1579.324	1033.993	.000
Complete_product awareness	87.688	1	87.688	57.410	.000
Component_display awareness	44.884	1	44.884	29.386	.000
Complete_product awareness *	.052	1	.052	.034	.854
Error	168.014	110	1.527		
Total	1873.000	114			
Corrected Total	303.447	113			

a. R Squared = .446 (Adjusted R Squared = .431)

[Figure 9 - Tests of Between-Subjects Effects, Awareness, Purchase Intention-Display]

Estimated Marginal Means of purchase_display
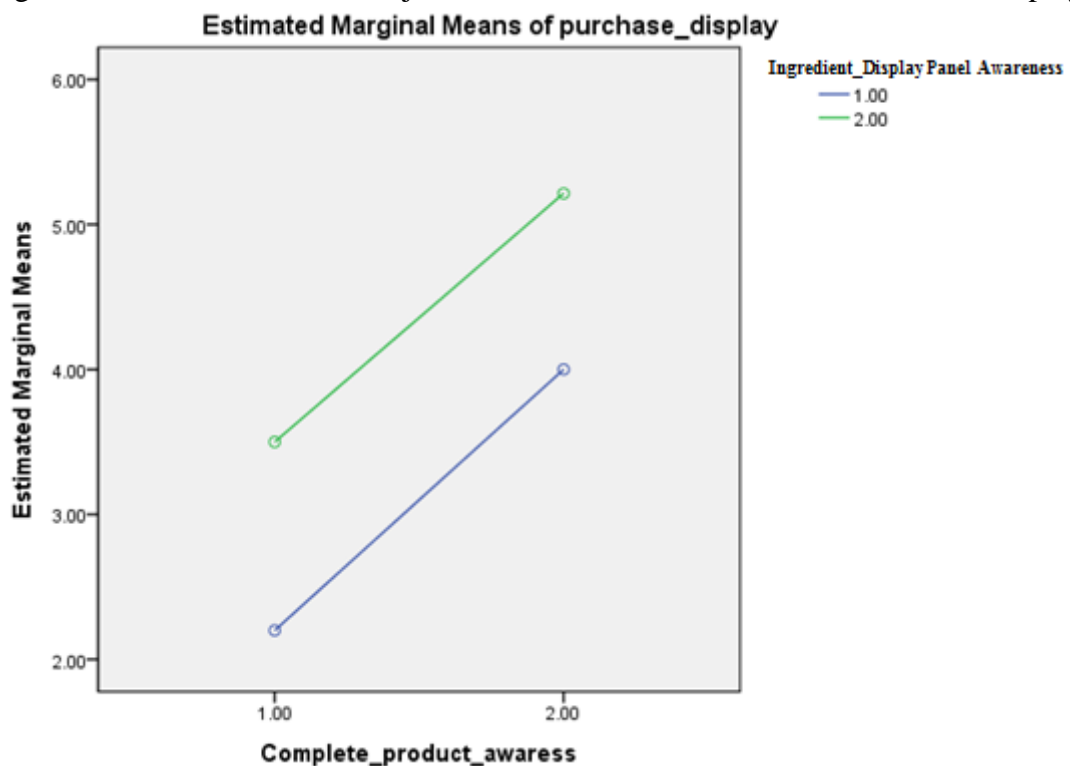
* 1.00=Low Awareness / 2.00=High Awareness

5.2.3.3 Effects of Expected Satisfaction across the Awareness level of Complete Product and Display Panel Component

According to hypotheses test result as shown in [Table 61], the expected satisfactions towards complete product (smart phone) are significantly different across the awareness level of complete product. And the expected satisfactions towards display panel ingredient are significantly different across the awareness level of the ingredient. Therefore, the findings accept hypotheses H13a~b. [Figure 10] shows that higher level of awareness of complete product and ingredient brings higher level of expected satisfaction towards complete product and ingredient each. However, there are not interaction effects on expected satisfaction between complete product and display panel ingredient variables. Therefore, the finding rejects hypotheses H13c.

[Table 61 - Tests of Between-Subjects Effects, Expected Satisfaction –Display]
* Dependent Variable: Expected Satisfaction_Display Panel

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	127.115ᵃ	3	42.372	31.915	.000	.465
Intercept	1701.536	1	1701.536	1281.606	.000	.921
Complete_product awareness	59.336	1	59.336	44.692	.000	.289
Component_display awareness	64.496	1	64.496	48.578	.000	.306
Complete_product_ awareness *	.418	1	.418	.314	.576	.003
Error	146.042	110	1.328			
Total	1956.000	114				
Corrected Total	273.158	113				

a. R Squared = .465 (Adjusted R Squared = .451)

[Figure 10 - Tests of Between-Subjects Effects, Awareness, Expected Satisfaction-Display]

* 1.00=Low Awareness / 2.00=High Awareness
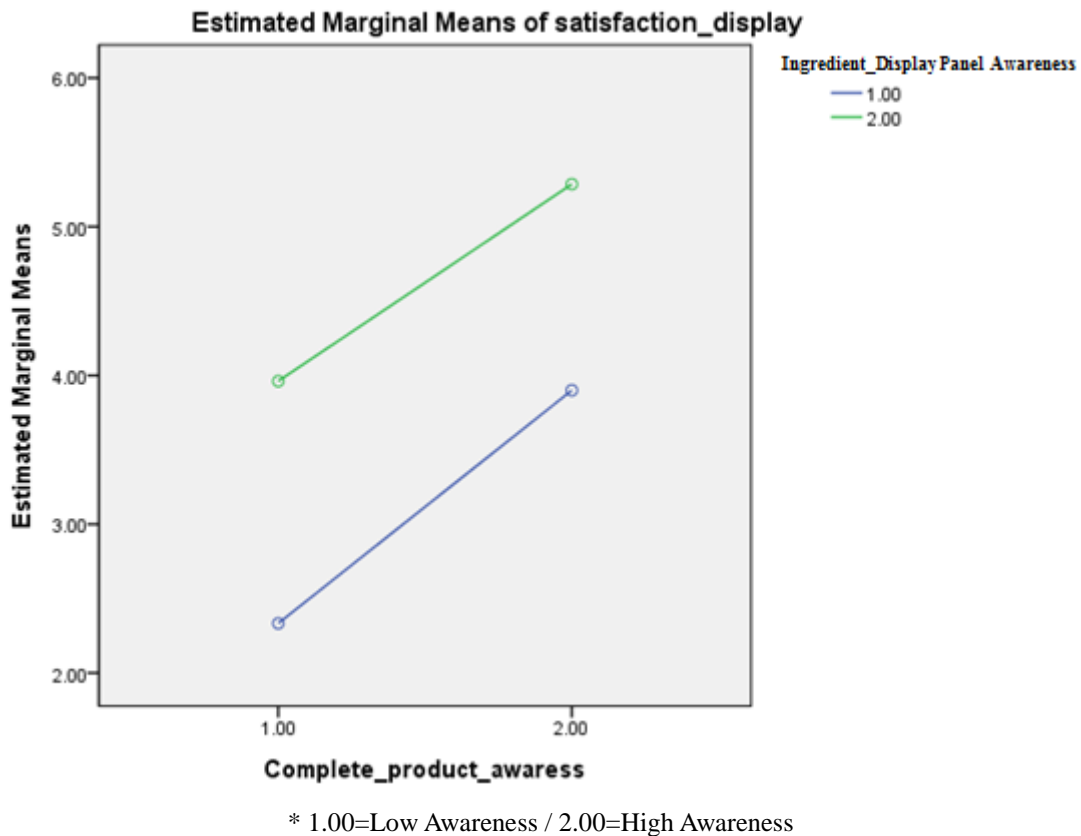
5.2.3.4 Effects of Attitude on Purchase Intention (Regression)

According to hypotheses test results, the attitudes towards the four combinations of complete product and AP ingredient are positively related with the purchase intention on those four combinations as following. i) Customers' attitude significantly affects purchase intention in the case of high level of awareness for both complete product and display panel ingredient (H14a). ii) Customers' attitude significantly affects purchase intention in the case of high level of awareness for complete product and low level of awareness for display panel ingredient (H14b). iii) Customers' attitude significantly affects purchase intention in the case of low level of awareness for complete product and high level of awareness for display panel ingredient (H14c). iv) Customers' attitude significantly affects purchase intention in the

case of both low level of awareness for complete product and display panel ingredient (H14d).

Therefore, the findings accepted all the hypotheses from H4a~d.

[Table 62 – Regression for Attitude & Purchase Intention, High Complete Product + High Ingredient, Display]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.904[a]	.817	.810	.638

a. Predictors: (Constant), How much prefer "Samsung smart phone + LG display"

[Table 63 – ANOVA for Attitude & Purchase Intention, High Complete Product + High Ingredient, Display]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	50.766	1	50.766	124.676	.000[b]
	Residual	11.401	28	.407		
	Total	62.167	29			

a. Dependent Variable: How much purchase intention "Samsung smart phone + LG display"
b. Predictors: How much prefer "Samsung smart phone + LG Display"

[Table 64 – Coefficients for Attitude & Purchase Intention, High Complete Product + High Ingredient, Display]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.714	.415		1.717	.097
	How much prefer "Samsung smart phone + LG display"	.891	.080	.904	11.166	.000

a. Dependent Variable: How much purchase intention "Samsung smart phone + LG display"

[Table 65 – Regression for Attitude & Purchase Intention, High Complete Product + Low Ingredient, Display]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.865[a]	.748	.739	.565

a. Predictors: (Constant), How much prefer "Samsung smart phone + BOE display"

[Table 66 – ANOVA for Attitude & Purchase Intention, High Complete Product + Low Ingredient, Display]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27.443	1	27.443	85.885	.000[b]
	Residual	9.266	29	.320		
	Total	36.710	30			

a. Dependent Variable: How much purchase intention "Samsung smart phone + BOE display"
b. Predictors: (Constant), How much prefer "Samsung smart phone + BOE display"

[Table 67 – Coefficients for Attitude & Purchase Intention, High Complete Product + Low Ingredient Display]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
How much prefer "Samsung smart phone + BOE display	.561	.375		1.496	.145
	.871	.094	.865	9.267	.000

a. Dependent Variable: How much purchase intention "Samsung smart phone + BOE display"

[Table 68 – Regression for Attitude & Purchase Intention, Low Complete Product + High Ingredient, Display]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.622[a]	.387	.365	.970

a. Predictors: How much prefer "Coolpad smart phone + LG display"

[Table 69 – ANOVA for Attitude & Purchase Intention, Low Complete Product + High Ingredient, Display]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16.610	1	16.610	17.645	.000[b]
	Residual	26.357	28	.941		
	Total	42.967	29			

a. Dependent Variable: How much purchase intention "Coolpad smart phone + LG display"
b. Predictors: (Constant), How much prefer "Coolpad smart phone + LG display"

[Table 70 – Coefficients for Attitude & Purchase Intention, Low Complete Product + High Ingredient, Display]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.966	.659		1.466	.154
	How much prefer "Coolpad smart phone + LG display"	.606	.144	.622	4.201	.000

a. Dependent Variable: How much purchase intention "Coolpad smart phone + LG display"

[Table 71 – Regression for Attitude & Purchase Intention, Low Complete Product + Low Ingredient, Display]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.815[a]	.664	.653	.718

a. Dependent Variable: How much purchase intention Coolpad smart phone + BOE display"

[Table 72 – ANOVA for Attitude & Purchase Intention, Low Complete Product + Low Ingredient Display]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	31.556	1	31.556	61.297	.000[b]
	Residual	15.959	31	.515		
	Total	47.515	32			

a. Dependent Variable: How much purchase intention Coolpad smart phone + BOE display"
b. Predictors: (Constant), How much prefer "Coolpad smart phone + BOE display"

[Table 73 – Coefficients for Attitude & Purchase Intention, Low Complete Product + Low Ingredient, Display]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.499	.252		1.980	.057
	How much prefer "Coolpad smart phone + BOE display"	.764	.098	.815	7.829	.000

a. Dependent Variable: How much purchase intention Coolpad smart phone + BOE display"

5.2.3.5 Effects of Purchase Intention on Expected Satisfaction (Regression)

According to hypotheses test results, the purchase intentions towards the four combinations of complete product and display panel ingredient are positively related with the expected satisfaction on those four combinations as following. i) Customers' intention to purchase significantly affects expected satisfaction in the case of high level of awareness for both complete product and display panel ingredient. (H15a). ii) Customers' intention to purchase significantly affects expected satisfaction in the case of high level of awareness for complete product and low level of awareness for display panel ingredient. (H15b). iii) Customers' attitude significantly affects purchase intention in the case of low level of awareness for complete product and high level of awareness for display panel ingredient. (H15c). iv) Customers' attitude significantly affects purchase intention in the case of both low level of awareness for complete product and display panel ingredient (H15d). Therefore, the findings accepted all the hypotheses from H5a~d.

[Table 74 – Regression for Purchase Intention & Expected Satisfaction, High Complete Product + High Ingredient, Display]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.901ᵃ	.811	.805	.553

a. Predictors: How much purchase intention "Samsung smart phone + LG display"

[Table 75 – ANOVA for Purchase Intention & Expected Satisfaction, High Complete Product + High Ingredient, Display]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	36.805	1	36.805	120.362	.000ᵇ
	Residual	8.562	28	.306		
	Total	45.367	29			

a. Dependent Variable: How much expected satisfaction "Samsung smart phone + LG display"
b. Predictors: How much purchase intention "Samsung smart phone + LG display"

[Table 76 – Coefficients for Purchase Intention & Expected Satisfaction, High Complete Product + High Ingredient, Display]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.258	.376		3.344	.002
	How much purchase intention "Samsung smart phone + LG display"	.769	.070	.901	10.971	.000

a. Dependent Variable: How much expected satisfaction "Samsung smart phone + LG display"

[Table 77 – Regression for Purchase Intention & Expected Satisfaction, High Complete Product + Low Ingredient, Display]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.879[a]	.772	.764	.523

a. Predictors: How much purchase intention "Samsung smart phone + BOE display"

[Table 78 – ANOVA for Purchase Intention & Expected Satisfaction, High Complete Product + Low Ingredient, Display]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	26.891	1	26.891	98.128	.000[b]
	Residual	7.947	29	.274		
	Total	34.839	30			

a. Dependent Variable: How much expected satisfaction "Samsung smart phone + BOE display"
b. Predictors: (Constant), How much purchase intention "Samsung smart phone + BOE display"

[Table 79 – Coefficients for Purchase Intention & Expected Satisfaction, High Complete Product + Low Ingredient, Display]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.466	.350		1.330	.194
	How much purchase intention "Samsung smart phone + BOE display"	.856	.086	.879	9.906	.000

a. Dependent Variable: How much expected satisfaction "Samsung smart phone + BOE display"

[Table 80 – Regression for Purchase Intention & Expected Satisfaction, Low Complete Product + High Ingredient, Display]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.701[a]	.491	.473	.785

a. Predictors: How much purchase intention "Coolpad smart phone + LG display"

[Table 81 – ANOVA for Purchase Intention & Expected Satisfaction, Low Complete Product + High Ingredient, Display]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16.633	1	16.633	27.025	.000[b]
	Residual	17.234	28	.615		
	Total	33.867	29			

a. Dependent Variable: How much expected satisfaction "Coopad smart phone + LG display"
b. Predictors: (Constant), How much purchase intention "Coolpad smart phone +LG display"

[Table 82 – Coefficients for Purchase Intention & Expected Satisfaction, Low Complete Product + High Ingredient, Display]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.806	.458		3.945	.000
	How much purchase intention "Coolpad smart phone +LG display"	.622	.120	.701	5.199	.000

a. Dependent Variable: How much expected satisfaction "Coopad smart phone + LG display"

[Table 83 – Regression for Purchase Intention & Expected Satisfaction, Low Complete Product + Low Ingredient, Display]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.836[a]	.700	.690	.677

a. Predictors: (Constant), How much purchase intention "Coolpad smart phone + BOE display"

[Table 84 – ANOVA for Purchase Intention & Expected Satisfaction, Low Complete Product + Low Ingredient, Display]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	33.115	1	33.115	72.197	.000[b]
	Residual	14.219	31	.459		
	Total	47.333	32			

a. Dependent Variable: How much expected satisfaction "Coopad smart phone + BOE display"

b. Predictors: (Constant), How much purchase intention "Coolpad smart phone + BOE display"

[Table 85 – Coefficients for Purchase Intention & Expected Satisfaction, Low Complete Product + Low Ingredient, Display]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.487	.247		1.968	.058
	How much purchase intention "Coolpad smart phone + BOE display"	.835	.098	.836	8.497	.000

a. Dependent Variable: How much expected satisfaction "Coopad smart phone + BOE display"

VI. CONCLUSION

6.1 DISCUSSION

The purpose of this study is to explore the effects of ingredient`s brand awareness on an attitude, purchase intention and expected satisfaction of smart phone consumers. Accordingly, this study tried to attest the necessity of the marketing activity like 'Intel Inside' campaign to smart phone ingredient manufacturers (brands), since smart phone industry also seems to reach market saturation that PC industry already gone through (Malone 2014; Keller 2003).

So the key research questions of this study are i) how strongly the brand awareness of 'complete product' and 'ingredient' affects attitude, purchase intention and expected

satisfaction, ii) how the attitude affects purchase intention, and iii) how a purchase intention affect the expected satisfaction. The results are as follows.

i) the awareness level of 'complete product' and 'ingredient' individually affect to form the attitude of itself positively. However, there are no interaction effects on attitudes of the variables between 'complete product' and 'ingredient'. So, even though the brand awareness of smart phone`s ingredient is strong, it does not contribute to improve a weak awareness of the smart phone (complete product) adopting that strongly aware ingredient. In other words, consumers are mostly rely on the brand awareness of 'complete product`, not the ingredient, when forming the attitude toward a smart phone. Exceptionally, camera sensor shows relatively strong influence on the attitude of the smart phone adopting the given camera sensor. It is assumed that camera is recognized the very important function of smart phone to the respondents, so they might impose more importance on camera as imposed on smart phone. However, the fundamental reason of the inconsistency among the cases (AP, Camera Sensor, Display Panel) has not been clearly verified yet in this study.

ii) the awareness level of 'complete product' and 'ingredient' individually affect to form purchase intention and expected satisfaction of itself too. However, there are no interaction effects on purchase intention and expected satisfaction of the variables between 'complete product' and 'ingredient'. In other words, ingredient alone cannot contribute to improve the purchase intention and expected satisfaction of the smart phone that has weak awareness.

iii) the level of attitude is positively related to the level of purchase intention of consumers.

iv) the level of purchase intention is positively related to the level of expected satisfaction of consumers.

Consequently this study found that marketing activity by ingredient manufactures to improve their awareness is not necessarily required targeting smart phone consumers, especially regarding AP and LCD display.

Instead this study finds that the variable where the level of awareness of both 'complete product' (smart phone) and 'ingredient' (AP, Camera, Display Panel) highly contribute to form better attitude, purchase intention and satisfaction than the variable where any of 'complete product' and 'ingredient' has low awareness level. This finding has been examined through other product`s case studies too (Yang 2013). This finding would suggest both 'complete product firms' and 'ingredient firms' to consider proceeding ingredient branding strategy as a type of co-branding together (Keller 2003) instead individual brand marketing. And for those who have both complete product business and ingredient product business under single brand this finding might provide implication that why enterprise level brand management and investment are strongly required as well. However, unlike the other ingredients (AP, Display Panel) *camera sensor* shows significant effect on attitude formation. Again it is assumed that this is related with the survey result that camera is recognized as the most important ingredient among AP, Camera and Display Panel by respondents (63% among 117 respondents). This would provide a clue to camera sensor manufacturers to start marketing activities for increasing their brand awareness.

6.2 LIMITATION OF THE STUDY AND FUTURE RESEARCH SUGGESTION

This paper examined the effects of brand awareness with the limited sample quantity relatively. It might be better to collect more samples in order to provide the findings more firmly considering the popularity of smart phone. And the samples variables given as complete products is rather limited, so it is not sufficient to examine the effect of ingredients in the case where the gap of awareness level is various (i.e. Samsung versus LG, Samsung

versus Apple). And the respondents of this study was limited to only non-professional user intentionally, who are not involved with smart phone or smart phone ingredients company`s employee considering bias due to their knowledge on the product. Lastly, there are not many researches on IT related high-tech ingredient marketing (Yang 2013), so it was hard to provide supports to enhance the findings of this paper. Therefore, in order to suggest the findings of this study more firmly it would be better to collect more samples in further studies. And it is required proceeding the study that include professional users so as to more comprehensive understanding about the study object of this study in further study.

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Appendix

Survey Questions

Survey Questions

Ingredients marketing
(Smart phone semiconductor component)
2014.08.22 – Eom JK
Ver 1.2

Update;;

✓ *Adding Attitude Questions*

Contents

1. *Introduction*
2. *Survey Methodology*
3. *Test – Group A*
4. *Test – Group B*
5. *Test – Group C*
6. *Test – Group D*
7. *Common Test - Demographics*

Introduction - *Understanding of smart phone components*

♣ **How a smart phone is composed (with what sorts of electronic components)?**

Smart phone is composed of lots of electronic devices such as **Application Processor (AP), Camera Sensor (CMOS), LCD Display Panel** and other electronic components (PCBs).

♣ **then, what are key components (ingredients of smart phone)?**

The most critical component of smart phone is **Application Processor (AP).** As we`ve heard frequently the terms such as 'dual core', 'quad core', or even 'octa core' via medias, AP is doing the *"brain"* of smart phone. So, it is essentially one of the key components of smart phone because it decide the how smart phone works smartly and fast.

The second core component is **Camera Sensor (CMOS)**. Embedded camera`s function decides the quality of picture and moving picture users take. Especially the camera function is key concern point when female users purchase a smart phone now days.

The third core component is **LCD Display Panel.** Functionally it display the graphics and letters what users input. Recently we`ve heard about the terms such as *'HD', 'FHD' and 'WQHD' display*, these terms express how the display quality is good (or fine). The higher resolution, the better image and graphic quality. Please reminder the terms *"Retina display"* of Apple and *"Super AMOLED"* of Samsung, then you can easily understand why display panel is core component of smart phone.

■ **Application Processor (AP)**
- Brain of Smart phone
- Dual Core, Quad Core etc.

■ **Camera Sensor (CMOS)**
- Taking Photo / Movie
- Type: 10/13/16M pixel

■ **LCD Display Panel**
- Showing graphics
- HD/FHD resolution

70

Survey Methodology

- This Survey will divide interviewees into four group according to general brand awareness on both 'smart phone' and 'component' of smart phone.
- Then, will repeat the same types of questions about 1) Application Processor, 2) Camera Sensor, 3) LCD Display Panel
- And will find how the strength of consumer`s purchase intention of smartphone using specific component (smart phone component) is related with brand awareness and attitude to the smart phone brand, component brand, and for the case of combination of 'smart phone' + 'component' brand are integrated.

Group	Brand Awareness	
	Smart Phone Brand	Component Brand
Group A (Target n=30)	High	High
Group B (Target n=30)	High	Low
Group C (Target n=30)	Low	High
Group D (Target n=30)	Low	Low

Questions – *Group A : Smart phone Brand Level Test*

***Test A.1.1~5: Test for smart phone brand awareness and attitude

Q) A. 1. 1 – How much do you aware of the below smart phone brand?
    Please mark it with the norm of "high" or "low"

Brand	Product Feature	High	Low
SAMSUNG		● example	
Coolpad			● example

Q) A. 1. 2 – How much do you aware of the below smart phone brand?
    Please mark it with scale of "1 ~ 7" as below.

Brand	Scale						
	1 (Very low)	2	3	4 (Middle)	5	6	7 (Very high)
SAMSUNG							●
Coolpad		●					

Questions – *Group A : Smart phone Brand Level Test*

Q) A. 1.3 – how much do you think the following **brands** are important?
   Please mark it with scale of "1 ~ 7" as below.   ***Attitude checking

Q) A. 1. 4 – How much do you believe the performance of the following **brands**?
   Please mark it with scale of "1 ~ 7" as below.   ***Attitude checking

Q) A. 1. 5 – How much do you prefer the below smart phone brand?
   Please mark it with scale of "1 ~ 7" as below.   ***Attitude checking

[Answer reference image for Question 1.3~1.5]

Brand	Scale						
	1 (Very Bad)	2	3	4 (Middle)	5	6	7 (Very good)
SAMSUNG							●
Coolpad		●					

Questions – *Group A : Application Processor Test*

Q) A. 3. 1 – How much do you have an intention to purchase with below combination
   [Smart phone brand + Component brand combination]
   Please mark with scale of 1~7 as given format.
   ※ if smart phone brand is "samsung", and component brand is "samsung" too,
       then it means 'samsung' smart phone 'samsung's application processor.

Used Brand		Purchase intention						
Smart Phone	Component	1 (Very low)	2	3	4 (Middle)	5	6	7 (Very high)
SAMSUNG	SAMSUNG							●

Q) A. 3. 2 – If assume that you purchase the above smart phone brand using mentioned component above,
   [Smart phone brand + Component brand combination]
   How much you are going to be satisfied with your purchasing with above combination?
   Please mark with scale of 1~7 as given format.

Used Brand		Satisfaction in case you purchase this combination						
Smart Phone	Component	1 (Very low)	2	3	4 (Middle)	5	6	7 (Very high)
SAMSUNG	SAMSUNG							●

Questions – *Group A : Camera Sensor Test*

Q) A. 4. 1 – How much do you aware of the below Camera Sensor brand?
  Please mark it with the norm of "high" or "low"

Brand	Product Feature	High	Low
SONY		🔴 *example*	
OmniVision.			🔴 *example*

Q) A. 4. 2 – How much do you aware of the below Camera Sensor brand?
  Please mark it with scale of "1 ~ 7" as below.

Brand	Scale						
	1 (Very low)	2	3	4 (Middle)	5	6	7 (Very high)
SONY							🔴
OmniVision.		🔴					

Questions – *Group A : Camera Sensor Test*

Added for Attitude test

Q) A. 4. 3.1 – how much do you think the following **Camera Sensor** brands are important?
  Please mark it with scale of "1 ~ 7" as below.   ***Attitude checking

Q) A. 4. 3.2 – How much do you believe the performance of the following **Camera Sensor** brands?
  Please mark it with scale of "1 ~ 7" as below.   ***Attitude checking

Q) A. 4. 3.3 – How much do you prefer the below **Camera Sensor** brand?
  Please mark it with scale of "1 ~ 7" as below.   ***Attitude checking

Brand	Scale						
	1 (Very Bad)	2	3	4 (Middle)	5	6	7 (Very good)
SONY		🔴					
OmniVision.							🔴

Questions – *Group A : Camera Sensor Test*

***Test A.5.0~2: Test for combination of 'smart phone' + 'component' brand[Camera Sensor]

Q) A. 5. 0.1 – how much do you think the following **brands combination** are important?
[Smart phone brand + Component brand combination]
Please mark with scale of 1~7 as given format.   ***Attitude checking
※ if smart phone brand is "samsung", and component brand is "Sony",
then it means 'samsung' smart phone 'sony's camera sensor.

Q) A. 5. 0.2 – How much do you believe the performance of the following **brands combination**?

***Attitude checking

Q) A. 5. 0.2 – How much do you prefer the following **brands combination**?   ***Attitude checking

Used Brand		Satisfaction in case you purchase this combination						
Smart Phone	Component	1 (Very low)	2	3	4 (Middle)	5	6	7 (Very high)
SAMSUNG	SONY							●

Questions – *Group A : Application Processor Test*

***Test A.2.1~3: Test for component brand awareness and attitude [Application Processor]

Q) A. 2. 1 – How much do you aware of the below Application Processor brand?
Please mark it with the norm of "high" or "low"

Brand	Product Feature	High	Low
SAMSUNG	Samsung Exynos	● example	
MEDIATEK			● example

Q) A. 2. 2 – How much do you aware of the below Application Processor brand?
Please mark it with scale of "1 ~ 7" as below.

Brand	Scale						
	1 (Very low)	2	3	4 (Middle)	5	6	7 (Very high)
SAMSUNG							●
MEDIATEK		●					

74

Questions – *Group A : Application Processor Test*

Q) A. 2. 3.1 – how much do you think the following **Application Processor** brands are important?
Please mark it with scale of "1 ~ 7" as below.   ***Attitude checking

Q) A. 2. 3.2 – How much do you believe the performance of the following **Application Processor** brands?
Please mark it with scale of "1 ~ 7" as below.   ***Attitude checking

Q) A. 2. 3.3 – How much do you prefer the below **Application Processor** brand?
Please mark it with scale of "1 ~ 7" as below.   ***Attitude checking

[Answer reference image for Question 2.3.1~2.3.3]

Brand	Scale						
	1 (Very Bad)	2	3	4 (Middle)	5	6	7 (Very good)
SAMSUNG		🔴					
MEDIATEK							🔴

Questions – *Group A : Application Processor Test*

***Test A.3.0.1~2: Test for combination of 'smart phone' + 'component' brand[Application Processor]

Q) A. 3. 0.1 – how much do you think the following **brands combination** are important?
[Smart phone brand + Component brand combination]
Please mark with scale of 1~7 as given format.   ***Attitude checking
※ if smart phone brand is "samsung", and component brand is "samsung" too,
then it means 'samsung' smart phone 'samsung's application processor.

Q) A. 3. 0.2 – How much do you believe the performance of the following **brands combination**?
                    ***Attitude checking

Q) A. 3. 0.2 – How much do you prefer the following **brands combination**?   ***Attitude checking

[Question image for A.3.0.1~A.3.0.2

Used Brand		Purchase intention						
Smart Phone	Component	1 (Very low)	2	3	4 (Middle)	5	6	7 (Very high)
SAMSUNG	SAMSUNG							🔴

Questions – *Group A : Application Processor Test*

Q) A. 3. 1 – How much do you have an intention to purchase with below combination
[Smart phone brand + Component brand combination]
Please mark with scale of 1~7 as given format.
※ if smart phone brand is "samsung", and component brand is "samsung" too,
then it means 'samsung' smart phone 'samsung's application processor.

Used Brand		Purchase intention						
Smart Phone	Component	1 (Very low)	2	3	4 (Middle)	5	6	7 (Very high)
SAMSUNG	SAMSUNG							●

Q) A. 3. 2 – If assume that you purchase the above smart phone brand using mentioned component above,
[Smart phone brand + Component brand combination]
How much you are going to be satisfied with your purchasing with above combination?
Please mark with scale of 1~7 as given format.

Used Brand		Satisfaction in case you purchase this combination						
Smart Phone	Component	1 (Very low)	2	3	4 (Middle)	5	6	7 (Very high)
SAMSUNG	SAMSUNG							●

Questions – *Group A : Camera Sensor Test*

Added for Attitude test

***Test A.5.0~2: Test for combination of 'smart phone' + 'component' brand[Camera Sensor]

Q) A. 5. 0.1 – how much do you think the following **brands combination** are important?
[Smart phone brand + Component brand combination]
Please mark with scale of 1~7 as given format.
※ if smart phone brand is "samsung", and component brand is "Sony",
then it means 'samsung' smart phone 'sony's camera sensor.

***Attitude checking

Q) A. 5. 0.2 – How much do you believe the performance of the following **brands combination**?

***Attitude checking

Q) A. 5. 0.2 – How much do you prefer the following **brands combination**? ***Attitude checking

Used Brand		Satisfaction in case you purchase this combination						
Smart Phone	Component	1 (Very low)	2	3	4 (Middle)	5	6	7 (Very high)
SAMSUNG	SONY							●

Questions – *Group A : Camera Sensor Test*

Q) A. 4. 3.1 – how much do you think the following **Camera Sensor** brands are important?
Please mark it with scale of "1 ~ 7" as below.   ***Attitude checking

Q) A. 4. 3.2 – How much do you believe the performance of the following **Camera Sensor** brands?
Please mark it with scale of "1 ~ 7" as below.   ***Attitude checking

Q) A. 4. 3.3 – How much do you prefer the below **Camera Sensor** brand?
Please mark it with scale of "1 ~ 7" as below.   ***Attitude checking

Brand	Scale						
	1 (Very Bad)	2	3	4 (Middle)	5	6	7 (Very good)
SONY		🔴					
OmniVision.							🔴

Questions – *Group A : Camera Sensor Test*

***Test A.5.0~2: Test for combination of 'smart phone' + 'component' brand[Camera Sensor]

Q) A. 5. 0.1 – how much do you think the following **brands combination** are important?
[Smart phone brand + Component brand combination]
Please mark with scale of 1~7 as given format.   ***Attitude checking
※ if smart phone brand is "samsung", and component brand is "Sony",
then it means 'samsung' smart phone 'sony's camera sensor.

Q) A. 5. 0.2 – How much do you believe the performance of the following **brands combination**?
                    ***Attitude checking

Q) A. 5. 0.2 – How much do you prefer the following **brands combination**?   ***Attitude checking

Used Brand		Satisfaction in case you purchase this combination						
Smart Phone	Component	1 (Very low)	2	3	4 (Middle)	5	6	7 (Very high)
SAMSUNG	SONY							🔴

Questions – *Group A : Camera Sensor Test*

Q) A. 5. 1 – How much do you have an intention to purchase with below combination
　　　　[Smart phone brand + Component brand combination]
　　　　Please mark with scale of 1~7 as given format.
　　　　※ if smart phone brand is "samsung", and component brand is "sony" too,
　　　　　　then it means 'samsung' smart phone 'sony's Camera Sensor.

Used Brand		Purchase intention						
Smart Phone	Component	1 (Very low)	2	3	4 (Middle)	5	6	7 (Very high)
SAMSUNG	SONY							●

Q) A. 5. 2 – If assume that you purchase the above smart phone brand using mentioned component above,
　　　　[Smart phone brand + Component brand combination]
　　　　How much you are going to be satisfied with your purchasing with above combination?
　　　　Please mark with scale of 1~7 as given format.

Used Brand		Satisfaction in case you purchase this combination						
Smart Phone	Component	1 (Very low)	2	3	4 (Middle)	5	6	7 (Very high)
SAMSUNG	SONY							●

Questions – *Group A : LCD Display Panel Test*

***Test A.6.1~3: Test for component brand awareness and attitude [LCD Display Panel]**

Q) A. 6. 1 – How much do you aware of the below LCD Display Panel brand?
　　　　Please mark it with the norm of "high" or "low"

Brand	Product Feature	High	Low
LG Display		● example	
京东方 BOE			● example

Q) A. 6. 2 – How much do you aware of the below LCD Display Panel brand?
　　　　Please mark it with scale of "1 ~ 7" as below.

Brand	Scale						
	1 (Very low)	2	3	4 (Middle)	5	6	7 (Very high)
LG Display							●
京东方 BOE		●					

Questions – *Group A : LCD Display Panel Test*

Q) A. 6. 3.1 – how much do you think the following **LCD Display Panel** brands are important?
Please mark it with scale of "1 ~ 7" as below.   ***Attitude checking

Q) A. 6. 3.2 – How much do you believe the performance of the following **LCD Display Panel** brands?
Please mark it with scale of "1 ~ 7" as below.   ***Attitude checking

Q) A. 6. 3.3 – How much do you prefer the below **LCD Display Panel** brand?
Please mark it with scale of "1 ~ 7" as below.   ***Attitude checking

Brand	Scale						
	1 (Very Bad)	2	3	4 (Middle)	5	6	7 (Very good)
LG Display		●					
京东方 BOE							●

Questions – *Group A : LCD Display Panel Test*

Q) A. 6. 3.1 – how much do you think the following **LCD Display Panel** brands are important?
Please mark it with scale of "1 ~ 7" as below.   ***Attitude checking

Q) A. 6. 3.2 – How much do you believe the performance of the following **LCD Display Panel** brands?
Please mark it with scale of "1 ~ 7" as below.   ***Attitude checking

Q) A. 6. 3.3 – How much do you prefer the below **LCD Display Panel** brand?
Please mark it with scale of "1 ~ 7" as below.   ***Attitude checking

Brand	Scale						
	1 (Very Bad)	2	3	4 (Middle)	5	6	7 (Very good)
LG Display		●					
京东方 BOE							●

Questions – *Group A : LCD Display Panel Test*

Q) A. 6. 3.1 – how much do you think the following **LCD Display Panel** brands are important?
Please mark it with scale of "1 ~ 7" as below.   ***Attitude checking

Q) A. 6. 3.2 – How much do you believe the performance of the following **LCD Display Panel** brands?
Please mark it with scale of "1 ~ 7" as below.   ***Attitude checking

Q) A. 6. 3.3 – How much do you prefer the below **LCD Display Panel** brand?
Please mark it with scale of "1 ~ 7" as below.   ***Attitude checking

Brand	Scale						
	1 (Very Bad)	2	3	4 (Middle)	5	6	7 (Very good)
LG Display		🔴					
京东方 BOE							🔴

Questions – *Group A : LCD Display Panel Test*

***Test A.7.0~2: Test for combination of 'smart phone' + 'component' brand[LCD Display Panel]

Q) A. 7. 0.1 – how much do you think the following **brands combination** are important?
[Smart phone brand + Component brand combination]
Please mark with scale of 1~7 as given format.   ***Attitude checking
 ※ if smart phone brand is "samsung", and component brand is "LG",
   then it means 'samsung' smart phone 'LG's LCD display Panel.

Q) A. 7. 0.2 – How much do you believe the performance of the following **brands combination**?

                                                  ***Attitude checking

Q) A. 7. 0.2 – How much do you prefer the following **brands combination**?   ***Attitude checking

Used Brand		Satisfaction in case you purchase this combination						
Smart Phone	Component	1 (Very low)	2	3	4 (Middle)	5	6	7 (Very high)
SAMSUNG	LG Display							🔴

80

Questions – *Group A : LCD Display Panel Test*

Q) A. 7. 1 – How much do you have an intention to purchase with below combination
[Smart phone brand + Component brand combination]
Please mark with scale of 1~7 as given format.
※ if smart phone brand is "samsung", and component brand is "LG" too,
then it means 'samsung' smart phone 'LG's Camera Sensor.

Used Brand		Purchase intention						
Smart Phone	Component	1 (Very low)	2	3	4 (Middle)	5	6	7 (Very high)
SAMSUNG	LG Display							●

Q) A. 7. 2 – If assume that you purchase the above smart phone brand using mentioned component above,
[Smart phone brand + Component brand combination]
How much you are going to be satisfied with your purchasing with above combination?
Please mark with scale of 1~7 as given format.

Used Brand		Satisfaction in case you purchase this combination						
Smart Phone	Component	1 (Very low)	2	3	4 (Middle)	5	6	7 (Very high)
SAMSUNG	LG Display							●

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