THE INFLUENCE OF THE PRODUCT ATTRIBUTES ON THE CONSUMER'S RISK PERCEPTION

(A Case Study on Student's Perception of Mobile Phone Radiation in the use of Mobile Phone at the Economics Faculty-Islamic University of Indonesia)

A THESIS

Presented as Partial Fulfillment of the Requirements

To Obtain the *Bachelor Degree* in Management Department

By

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DEPARTMENT OF MANAGEMENT

INTERNATIONAL PROGRAM

FACULTY OF ECONOMICS

UNIVERSITAS ISLAM INDONESIA

2004

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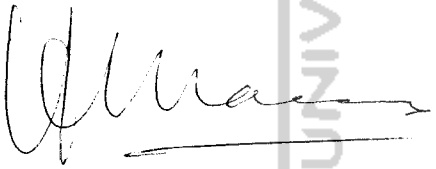

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Language Advisor,

Dyah S. Ciptaningrum, S.Pd **September 17, 2004**

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Defended before the Board of Examiners
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ABSTRACT

Sastomo Sejati, Haryo. **The Influence of the Product Attributes on the Consumer's Risk Perception (A Case Study on Student's Perception of Mobile Phone Radiation in the Use of Mobile Phone at the Economics Faculty-Islamic University of Indonesia).** International Program. Management Department. Faculty of Economics. Islamic University of Indonesia. Yogyakarta. 2004

Recently, there has been an increasing awareness among the product users toward the product safety. Finding out the users' behavior toward the product safety is becomes the important factor in order to survive in today's market competition. One way to analyze the user's behavior is by investigating the relationship between product's attributes and users' perception on product safety.

The research which investigate the relationships of the product attributes to the perception on product safety done by Tse (1999) and Siu (2000). Their research conclude that the product attributes are having strong relationship to the perception on the product safety.

This research tries to find out the relationships between the mobile phone product attributes to the users' perception toward mobile phone radiation safety. The product attributes in this research are: price of the mobile phone, brand name of the mobile phone, specialty and reputable store which sell mobile phone, product test, length of the mobile phone warranty and position of the mobile phone antenna.

The first objective of this research is to find out the relationships and the relationship's power between overall mobile phone's products attributes to the user's perception on mobile phone radiation safety. The second objective is to find out the dominant product attribute that influences the user's perception on mobile phone radiation safety. Those objectives analyzed by using Multiple Linier Regression, Multiple Correlation Analysis, Multiple Coefficient of Determination, F-test and t-test. Meanwhile, this research is done in Faculty of Economics of Islamic University of Indonesia.

The result indicates that Financial and Functional Risks are the risks that the users most avoided. Thus, according to the computation it is showed that there is a weak relationship between the overall product's attributes to the user's perception on mobile phone radiation safety (instead of brand name variable) and the coefficient and equation is considered significant. The dominant product attribute that influences the user's perception on mobile phone radiation safety is product test and the t-value of the product test is considered significant.

The research implications are the mobile phone vendors must develop their product that would not give financial and functional loses for their consumers, maintain their relationship to the more specialty and reputable media which usually done product test and develop their good image. The specialty and reputable mobile phone store must maintain and develop their image by giving excellent services and provide qualified products.

ABSTRAK

Sastomo Sejati, Haryo. **Produk Atribut yang Mempengaruhi Persepsi Resiko Konsumen (Studi Kasus Pada Persepsi Mahasiswa Universitas Islam Indonesia Mengenai Keamanan Telepon Genggam Terhadap Radiasi Telepon Genggam).** Program Internsional. Jurusan Manajemen. Universitas Islam Indonesia. Yogyakarta 2004.

Saat ini tingkat kesadaran pengguna produk terhadap tingkat keamanan produk tersebut terus meningkat. Mengetahui perilaku dari pengguna produk terhadap tingkat keamanan produk oleh produsen telah menjadi faktor yang penting agar dapat bertahan di pasar yang kompetitif pada saat ini. Salah satu cara untuk menganalisa perilaku pengguna produk adalah dengan cara menyelidiki hubungan antara persepsi pengguna terhadap keamanan produk tersebut. dengan atribut produk.

Terdapat dua penelitian yang menyelidiki hubungan antara atribut produk dengan persepsi terhadap keamanan produk. Penelitian oleh Tse (1999) dan penelitian oleh Siu (2000) menghasilkan kesimpulan bahwa ada hubungan yang kuat antara atribut produk dengan persepsi pengguna produk terhadap keamanan produk.

Penelitian ini mencoba untuk mencari hubungan antara atribut produk telepon genggam terhadap persepsi keamanan pengguna telepon genggam dari radiasi yang ditimbulkan telepon genggam tersebut. Atribut produk yang dipakai dalam penelitian ini adalah: harga, merek, spesialisasi dan reputasi toko yang menjual telepon genggam, tes produk, panjang waktu garansi dan posisi antenna.

Sasaran pertama dari penelitian ini adalah membuktikan apakah hubungan tersebut ada dan mengukur derajat kekuatan dari hubungan tersebut. Sasaran kedua adalah untuk mencari atribut produk yang paling dominan mempengaruhi persepsi pengguna telepon genggam terhadap keamanan dari radiasi telepon genggam tersebut. Sasaran-sasaran tersebut dianalisa menggunakan Regresi Linier Berganda, Analisa Korelasi Berganda, Koefisien Determinasi Berganda, uji signifikansi F dan uji signifikansi t. Penelitian ini dilaksanakan di seputar Fakultas Ekonomi Universitas Islam Indonesia.

Berdasarkan hasil perhitungan menunjukkan bahwa resiko finansial dan fungsional dari telepon genggam menjadi resiko yang paling dihindari pengguna produk. Ada hubungan yang lemah antara atribut produk secara keseluruhan (kecuali variabel merek) dengan persepsi pengguna telepon genggam terhadap keamanan dari radiasi telepon genggam dan nilai koefisien dan persamaannya signifikan. Faktor yang paling dominan mempengaruhi persepsi keamanan radiasi telepon genggam adalah tes produk dengan nilai t yang signifikan.

Implikasi dari penelitian ini adalah produsen telrpon genggam harus menjaga dan mengembangkan produk yang tidak merugikan konsumen dari sisi finansial dan fungsional, menjaga hubungan dengan media dan menjaga nama baiknya. Toko penjual telepon genggam harus menjaga nama baiknya dengan memberikan pelayanan yang baik dan menjual produk yang berkualitas.

CHAPTER I

INTRODUCTION

1.1. BACKGROUND OF THE STUDY

The business world today is changing very rapidly and this phenomenon happens because of several factors. The technological development creates more opportunities for the business agents to develop their business and maintain it steadily. The change in the consumer behavior toward a certain product which is influenced by many factors leads the business agents to change their business in order to follow the customer's demand and wants. It means that, the customers are the guidance for the business agents in developing the business agent's business strategy. An understanding on the customer behavior toward a certain product is very important in order to win the customers and setting the most correct business strategies for the company's future.

The consumer's perception on the product produced by a certain company will lead the consumers to buy or purchase the product. When the consumer's perception meets the expectation of the consumer, the buying process can be developed into the consumer loyalty toward that product because the consumer feel satisfied in using that product. Of course it will give great benefit to the company

since the loyalty of the consumer means that the consumer "believes" the company's product.

The consumer risk perception means the perception of consumers about the risk that they will take when they consume a certain product. On the company side, the safety of it product can influence the consumer risk perception that the consumers will take if they are using the company's product. Since the company always tries to satisfy its consumers, the company should identify what the consumer's perception are about the safety of its product.

There is only little researches that were conducted to find out and to observe whether the variables, which correlates to the safety of a certain product, influence the consumers to choose that desired product. Most of the research discussed about the correlation between the product qualities and the perception of the consumer toward the product. If it is in a form of service, the previous research mostly discussed about the perception of the consumer toward the service delivered to the service qualities provided by the service provider. The research which concern about the factors that influence the consumer toward the product safety were only conducted by Alan Ching Biu Tse (1999) and Noel Yee Man Siu in association with Hon Yan Wong (2002).

Tse's research was concern about the variables that influence students toward the safety perception in using the PC monitor. Tse's research refers his research variables to the research done before and Tse considers the product safety as the ability of the product to perform its function well. Thus, Tse states the product safety

is similar with the product quality since the product which can perform well can be concluded as having proper safety to the users. In finding out the variables used, Tse conducts light interview to the students about the PC monitor that the students perceived. His research's results in finding of several variables, they are: the price of the PC monitor, the brand of the PC monitor, the store which sold the PC monitor, the country of origin of the product, the parties that promote the product, the product test, and the length of the product warranty. Then Tse analyzes those variables and proves that those variables have a correlation to the perceived product safety of the students toward PC monitor.

Siu and Hon's research was almost the same with Tse's but Siu and Hon's research was concern about variables which influence the perception of cosmetics safety. Siu and Hon's refer their research to Tse's research and used Tse's variables, with any necessary revision depending on the product used to analyze, and adding some other variables through focus group that Siu and Hon's conducted before analysis process. The survey method was done by forming 3-4 groups in which each group consists of 5-6 students. Then, Siu and Hon conducted a discussion with each group followed by giving questionnaire to gain any necessary variables. The result of the focus group found out that there were several other variables that could be included into the factors that can influence the consumers or users of cosmetics. Those extra variables are the promotion channels of the product, the level of the discount offered and packaging were added to the research. After that, those extra variables were added to the questionnaires which have Tse's variables. The result of

the research indicated that the variables being investigated had correlation to the perceived cosmetic safety.

From those research above they show that each of the product categories which have its characteristics has its own variables which can influence the perceived safety of the product. The researcher should find out the variables which have a possibility to influence the perception on safety of a certain product.

This research then focuses on the use of mobile phone and the users' perception about the mobile phone safety. It is widely known that mobile phone is one of the high technological communication tools which are commonly used by people today. This tool gives a lot of beneficiaries toward its users since nowadays people are mobile and the proper communication is needed. The use of mobile phone increases and this is indicated by the increase in the sales of the mobile phone. The benefits in using the mobile phone vary. It supports the communication as well as it fulfills the users demand. Internet service, mobile-banking, news and weather reports, camera, music and radio player, word processor, short messages service, multi media messaging service, enhance messaging service, etc. are the facilities provided by mobile phones.

Students who are the most potential market for the mobile phone producers have several characteristics which fit to the characteristics of the use of mobile phone. Those characteristics are students are mobile and they have a lot of activities so that they need communication tools which can support their activities. Students are also considered as persons who are open minded to the technology which means that

students are considered to have the ability to follow the technological changes. Students also consider that mobile phone will increase their privilege and then it becomes a life style and students recognize it as one of the characteristics of modern people or society.

On the other hand, the mobile phone gives bad effect to the health of the users. Many research found that the wave or radiation emitted from mobile phone endangers the human's health. The electromagnetic wave used to transfer the signal of the mobile phone can trigger the brain cancer and tumor. Since the facilities provided by mobile phone are vary and useful to the users, the intensity in using mobile phone in the daily life becomes increasing. It means that the users are facing more risks to the effect of the mobile phone's radiation. In some countries, this issue is become a controversies since many people admit that their health was affected by the mobile phone radiation and many studies done indicate that the radiation can negatively affect the organism tissue. On the other hand, the mobile phone vendors declare that their products were already tested and it would not harm their products' users. The some of the foreign government authorities whose handle this issues were also support that the radiation emit by the mobile phone are below the standard limit which means that it would not endanger the mobile phone users. By the way, this issue is already spreading in the society in the world and this controversy is become a discussion among the society.

This research is attempts only at finding out the product's attributes which shape the perception of the mobile phone safety and also tries to prove whether the

attribute used by the preceding research can be applied in the product studied here, i.e. mobile phone. This research considers the students as the research subject based on the factors above and the variables used in this research refer to Tse and Siu research which has been done earlier. Thus, the title for this research is: **The Influence of the Product Attributes on the Consumer's Risk Perception (A Case Study on Student's Perception of Mobile Phone Radiation in the use of Mobile Phone at the Economics Faculty - Islamic University of Indonesia).**

1.2. PROBLEM IDENTIFICATION

Identifying the product's attributes which can influence the perception of the consumer on the safety of a certain product will give a lot of benefits to the producers and also to the academic for the next analysis. The producers can improve their product since they already knowledge on the consumers' expectation about the safety of the product. The academic can analyze further about the factors which can affect the product quality since product safety is one of the factor which can determine a certain product's quality.

From the explanation above, this research attempts to find out whether the product's attributes, which are related to mobile phone, have influences toward the perception on the degree of safety of the user's mobile phone. The safety in here means the safety from radiation emitted by mobile phone which can endanger the physical condition of the users.

1.3. PROBLEM FORMULATION

The writer setup the problem formulations from the explanations above which are:

1. Do the overall mobile phones' product attributes influence the users' perception on radiation risk altogether?
2. What products' attribute that has the strongest influence to the user's radiation risk perception?

1.4. LIMITATION OF THE RESEARCH AREA

This research has limitation in order to avoid any broader scope of the research which may result in a bias. The limitations are:

1. This research mostly refers to the previous research which are:
   a. Alan Ching Biu Tse research (1999) entitled "Factors Affecting Consumer Perceptions on Product Safety" published in European Journal of Marketing Volume. 33 page 911.
   b. Noel Yee Man Siu and Yan Wong Han research (2002) entitled "The Impact of Product-Related Factors on Perceived Product Safety" published in Journal of Marketing Intelligence and Planning Volume 20 Number 3 page 185-194.
2. Variables used in this research are taken from the two research above and any revisions of the variables are done considering to the real condition and

situation of the product being studied. Independent variables used in this research are:

a. Price of the product.
b. Brand name of the product
c. Stores which sell the product.
d. Product test
e. The length of the product's warranty.
f. Position of the mobile phone's antenna

And the dependent variable is the user's perception on product/mobile phone's radiation safety or the perception of the users toward his/her mobile phone regarding to its radiation safety from the product attributes of the mobile phone point of view.

3. This research is only to test the attributes above, by defining whether there are any influences between the product's attributes to the perceived radiation risk, it can be concluded that the specific product attribute has contributions in shaping the risk perception of the mobile phone radiation. If there are not any influences, it means that the product attributes do not have any contribution and/or the users are not aware about the radiation risk emitted by mobile phone or there are any other reasons which create such kind of condition. Therefore, it will be unnecessary to know whether the population in this research is aware or not to the safety of the physical risk of mobile phone

because to identify the awareness of the population needs further research beyond the scope of this research.

4. The physical risk which is the risk of radiation emitted by mobile phone experienced by the users which in the future give disadvantages to the physical condition/health of it users. The other risks dimensions be ask in the questionnaire are to explain the sample's awareness priority toward product's risk dimensions of the mobile phone. This explains the intention of the samples regarding the risks in using mobile phone.
5. The product being studied, mobile phone, it is a kind of worldwide product. Therefore, this research only concerns about mobile phone which are sold in Indonesia only.
6. The mobile phones are new products, not a second hand or used mobile phones.
7. The mobile phones here are only the mobile phone which operated in GSM system not CDMA, AMPS and NMT.
8. The respondents of this research are the students of Faculty of Economics, Universitas Islam Indonesia, Yogyakarta
9. The research data are also collected from the relevant sources, references and also observation to complete the research.

1.5. RESEARCH OBJECTIVES

This research has some objectives to be achieved. Those objectives hopefully can be attained through this research in order give positive contributions to the other parties.

1. To find out whether the overall product's attributes have or not an influence on the user's perception on mobile phone's radiation safety altogether by testing the available mobile phone's attributes which are derived from the previous research done before and/or attributes which reflect the specific characteristics of the mobile phone.
2. To find out the product attributes that dominantly influences the user's perception on mobile phone's radiation safety. This is done by testing each mobile phone's attributes

1.6. RESEARCH CONTRIBUTIONS

This research hopefully can give positive contributions to the parties mentioned below.

1. For the Researcher

This research can give contribution to the writer's future and also it is a value added for the writer to apply what the writer has received in the college into the real business situation. This research is also as the partial requirement for the writer in achieving the Bachelor degree from UII.

2. For the Public

Hopefully, this research can inspire the public on the importance of avoiding or lessening the product risk, especially the radiation emitted from mobile phone, so that the public can be more alert to the product/mobile phone they will consume or use.

3. For the Mobile Phone Vendors and Other Related Parties

This research is meant to give an information to the mobile phone producers/vendors or parties involved in this business about the consumer perception on the mobile phone radiation safety. Thus, the vendors can make better effort in developing their products by identifying the consumer's perception and then by meeting their expectation.

1.7. DEFINITION OF TERMS

In this research there are several definitions that have to be explained in order to make the flow of the research clearer.

1. Marketing (Management)

The process of planning and executing the conception, pricing, promotion and distribution of goods, service and ideas to create exchanges with target groups that satisfy customer and organizational objectives (Phillip Kotler 1994:13)

2. Perception

A process by which individuals organize and interpret their sensory impressions in order to give meaning to their environment (Stephen P. Robin; 1996:132)

3. Product safety

The degree of product safety which may affect the users or the consumers when they consuming or using the product.

4. Perceived on product safety

Consumer perception toward the safety of the product purchased. Perceived product safety may include into the dimension of perceived product quality (Tse; 1999: 912).

5. Perceived Risk

The uncertainty that consumer face when making a purchase decision. On the other words perceived risk is the degree of uncertainty or fear about the consequences of a purchase that a consumer feels when considering the purchase of a new product. (Leon G. Schiffman and Leslie L. Kanuk; 1996: 546, 562)

6. Perceived Quality

Consumers often judge the quality of a product or service on the basis a variety of informational cues that they associate with the product. Some of the cues are intrinsic to the product and the others are extrinsic to the product. (Leon G. Schiffman and Leslie L. Kanuk; 1996: 664).

CHAPTER II

REVIEW OF RELATED LITERATURE

2.1. THEORETICAL REVIEW

2.1.1. MARKETING

Marketing has been defined in various ways. Many marketing book authors give their own definition of marketing. One of them is Phillip Kotler who defined marketing as the social and managerial process by which individuals and groups obtain what they need and want through creating, offering, and exchanging products of value with other (Phillip Kotler; 1994: 6). From the definition above, there are some major core concepts that Phillip Kotler offers which are: needs, wants and demands; products; value, cost and satisfaction; exchange, transaction, and relationship; markets; marketing and marketers.

The marketer should differentiate between the needs and wants. The needs are the human need that is state a felt of deprivation of some basic satisfaction such as: food, shelter, clothing, safety, and few other things for survival. The wants are the desires for specific satisfiers of these deeper needs such as people need foods and want Gudeg, people need clothing and want

Dagadu T-shirt. The demands are the wants for a specific product supported by an ability and willingness to buy them.

Wants become demands when supported by purchasing power i.e. many people want to buy BMW but only few are able and willing to buy one.

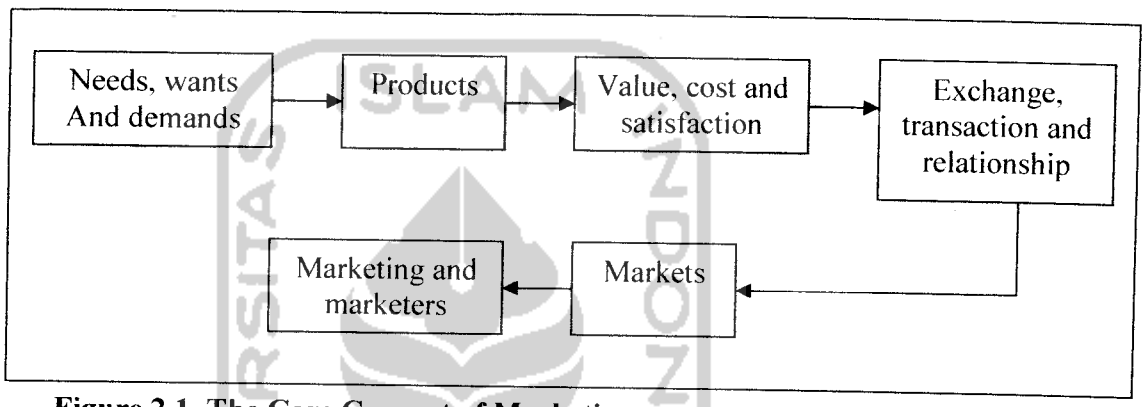

Figure 2.1. The Core Concept of Marketing
Source : Kotler, Phillip. *Marketing Management: Analysis, Planning, Implementation and Control.* 1994. pp 7. New Jersey. Prentice-Hall.

Products are anything that can be offered to satisfy a need and want. So, it covers the goods and services. The physical products are the vehicles that deliver services to the consumers, for example: a consumer buys a car not to look at it but because it offers the transportation service. In addition, services are also supplied by other vehicles, such as person (comedian, physician, nurse, and servant), place (Parangtritis Beach, Kaliurang), organization (join Muhammadiyah, HIPMI or Political Party), activities (join aerobic, heart training) and ideas (adopt Marxism, Buddhism). The terminology of product is used to cover the physical product, service product

and other vehicles that are capable of delivering satisfaction of want or need (Phillip Kotler; 1994: 8).

Value is the consumer's estimation of the product's overall capacity to satisfy his or her needs. The consumer may choose the product that has capacity which can satisfy his/her need set from his/her product choice set. The consumer has a need set for example: costless, safety and effortless. Then, he/she will estimate the product choice set for example: bus, automobile, motor cycle, and bicycle. After that, the consumer will choose the product choice set that can satisfy his/her need set. For instance he/she choses the automobile because of its safety and effortless. But then he/she should rethink about the cost that the automobile has because automobile has a greater cost compared to a bicycle. The consumer will consider the product's value and price before making a choice and choose the product that will produce the most value per rupiah.

Exchange is the act of obtaining a desired product from someone by offering something in return. If two parties are said to be engaged in an exchange, if they are negotiating and moving toward an agreement and if agreement reached, it means that the transaction has taken place. A transaction consists of a trade of values between two parties. Here, the relationship can emerge since the transaction has happened and then a smart marketer will try to build up long term, trusted, win-win relationship with valued customers, distributors, dealers, and suppliers.

Market is the place where buyers and sellers gather to exchange their goods and services. A market consists of all the potential customers sharing a particular need or want who might be willing and able to engage in an exchange to satisfy that need or want.

A marketer is someone seeking a resource from someone else and is willing to offer something of value in exchange. The marketer is seeking a response from the other party, either to sell something or to buy something. So, a marketer may be a seller or a buyer.

2.1.2. MARKETING MANAGEMENT AND CONSUMER'S PERCEPTION

Marketing management is the process of planning and executing the conception, pricing, promotion and distribution of goods, services and ideas to create exchanges with target groups that satisfy customers and organizational objectives (Phillip Kotler; 1994:13). From this definition, there are several processes involved in the marketing management. Those processes are: planning, executing and implementation of the marketing functions that covers goods, services and ideas creating an exchange and the final goal is to produce satisfaction for the parties involved. Marketing management has a task in influencing the level, timing and composition of demand in a way that will help the organization achieves its objectives. Marketing management is essentially as demand management.

Connected to the perception of the customers, the effective marketing management must rest on two fundamentals (Gordon Foxall; 1998:51)

1) Consumers act on their perceptions which stem principally from the information they receive.
2) Managers need to understand the nature of the perceptions their customers and potential customers have of themselves, their social world, and the product available to them.

The information sent to the consumers influence significantly to the creation of the perception of the consumers toward a certain product or services. The consumers perceive the product or service through their senses and the information can be in many forms. The managers also have to understand more to the consumer's circumstances and condition because those give the effect to the creation of perception toward a certain product.

2.1.3. MARKETING CONCEPT AND CONSUMER'S PERCEPTION

The marketing concept rests on four main pillars, namely target market, customers need, coordinated marketing and profitability (Phillip Kotler; 1994:18). This concept is greatly different with the selling concept. The selling concept starts from the factory, focuses on the company's existing products, and calls for heavy selling and promoting and produce profitable sales. Therefore, the selling concept can be called as the inside-out perspective. The marketing concept starts with the well defined market, focuses on customers needs, coordinates all the activities that will affect

customers and produces profits by creating customers satisfaction. Hence, the marketing concept can be called as the outside-in perspective.

The next figure can explain why the company must seek what kinds of needs and demands of the company's potential consumers. Studying the behavior of the consumers will provide information to the company about the consumer's behavior toward the company and its product. By identifying the consumer perception, which is one of the behaviors of consumer, the company can describe the consumer's opinion toward the company or its product. At the end, the company can develop its marketing and other strategies after knowing the consumer opinion and expectation about the company and it product.

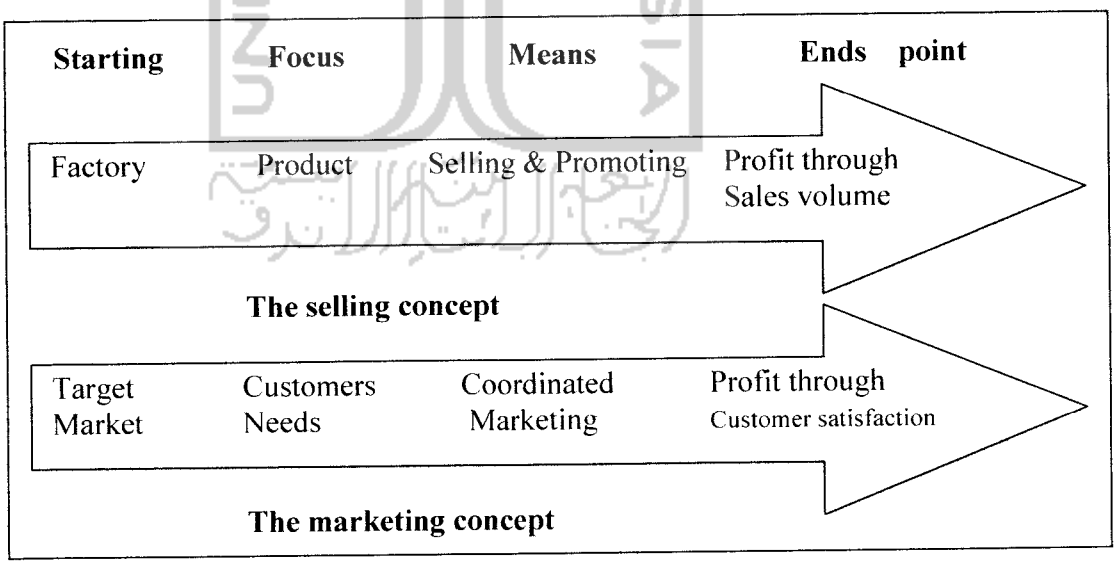

Figure 2.2. The Selling Concept and Marketing Concept
Source : Kotler, Phillip. *Marketing Management: Analysis, Planning, Implementation and Control.* 1994. pp 19. New Jersey. Prentice-Hall.

2.1.4. CONSUMER BEHAVIOR

Identifying the consumer behavior in developing the business strategy can give a lot of benefits to the businessman to gain and maintain the existing consumers. It is true since the knowledge about the consumer gives significant influence to the design of the overall business like the product offered, the product specification, promotion used, the service provided, etc.

According to Leon G. Schiffman and Leslie L. Kanuk (1996:7) consumer behavior refers to the behavior that consumers display in searching for, purchasing, using, evaluating and disposing of products and services that they expect will satisfy their needs. The study of consumer behavior is also includes how individuals make decision in using their resources like: time, money, effort on consumption-related items. Thus, that it includes the study of what, why, when, where, how often they buy it and how often they use it.

Studying the consumer behavior has different purposes but there are at least three parties who have the different purposes in studying the consumer behavior (Leon G. Schiffman and Leslie L. Kanuk, 1996: 9). The first is as consumers, the study of consumer behavior will give in-depth insight toward the consumption related decision and it will make the consumers become better and wiser consumers. The second is as marketers and future marketers. The study of consumer behavior is very important to the marketers and future marketers to make better strategic marketing decision. Understanding the consumer behavior makes the marketers and future marketers can predict the

consumer behavior in the future and also it will give the marketers and future marketers' competitive advantages in the marketplace. The third party is the scholars who wish to understand the consumer behavior which then will result in the diversity of theoretical approaches of consumer behavior studies.

2.1.5. ATTITUDES

The attitude plays a major role in shaping the consumer behavior, so that it is useful to know, for the marketers, the attitude of the consumer toward product or service. The attitude is an overall evaluation or in other words what consumers like and dislikes (James F. Engel, Roger D. Blackwell and Paul W. Miniard: 1995:362).

2.1.5.1. COMPONENTS OF ATTITUDES

Attitude is commonly consists of three components which are: cognitive, affective and conative component (James F. Engel, Roger D. Blackwell and Paul W. Miniard: 1995:364). The cognitive is the consumer's knowledge and beliefs about some attitude object. The affective component is a person's feelings about the attitude object and the conative component refers to the person's action or behavioral tendencies toward the attitude object.

According to Leon G. Schiffman and Leslie L. Kanuk (1996: 242-244), there are also three components of attitude model or tricomponent attitude model which are: cognitive component, affective component and conative component.

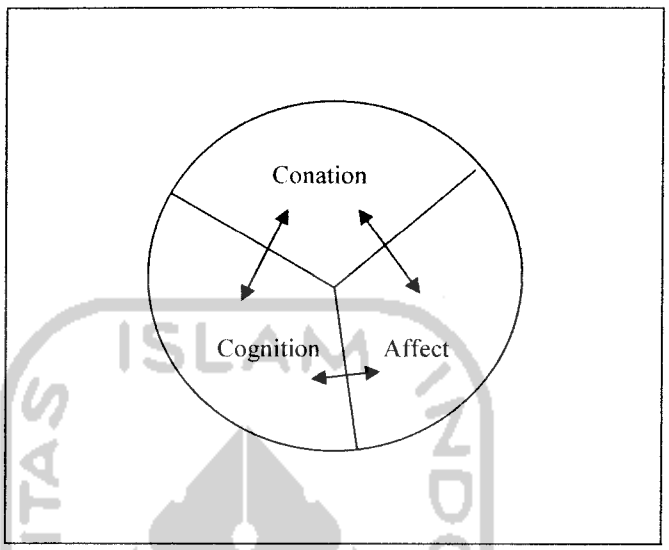

Figure 2.3. A Simple Representation of the Tricomponent Attitude Model
Source : Schiffman, Leon G. and Leslie L. Kanuk. *Consumer Behavior*. 1996. pp 242. New Jersey. Prentice-Hall.

The cognitive component is the knowledge and perceptions that are acquired by a combination of direct experience with the attitude-object and related information from various sources. This knowledge and perception can be called as a belief; meaning to say that the consumer believes that the attitude-object possesses various attributes and that specific behavior will lead to specific outcomes.

The second component is affective component which is the consumer's emotion or feelings about a particular product or brand or can be stated as the evaluative or the extent in which the individual rates the attitude-object as "favorable" or "unfavorable". The affective

component can construct a picture of consumer's overall feeling about a product or service.

The third component is conative component which is concerned with the likelihood or tendency that an individual will undertake a specific action or behave in a particular way with regard to the attitude-object.

In the contemporary view about attitude, there are two components, cognitive component and affective component, which conceptualized as the determinants of attitude. Or in other words, a person's overall evaluation of an attitude object is seen as being determined by the person's belief and/or feelings about the attitude object (James F. Engel, Roger D. Blackwell and Paul W. Miniard: 1995:364-365). Thus, there are some products which the person attitude toward those products is primarily on beliefs and there are also some products which the person attitude toward those products is primarily on feelings.

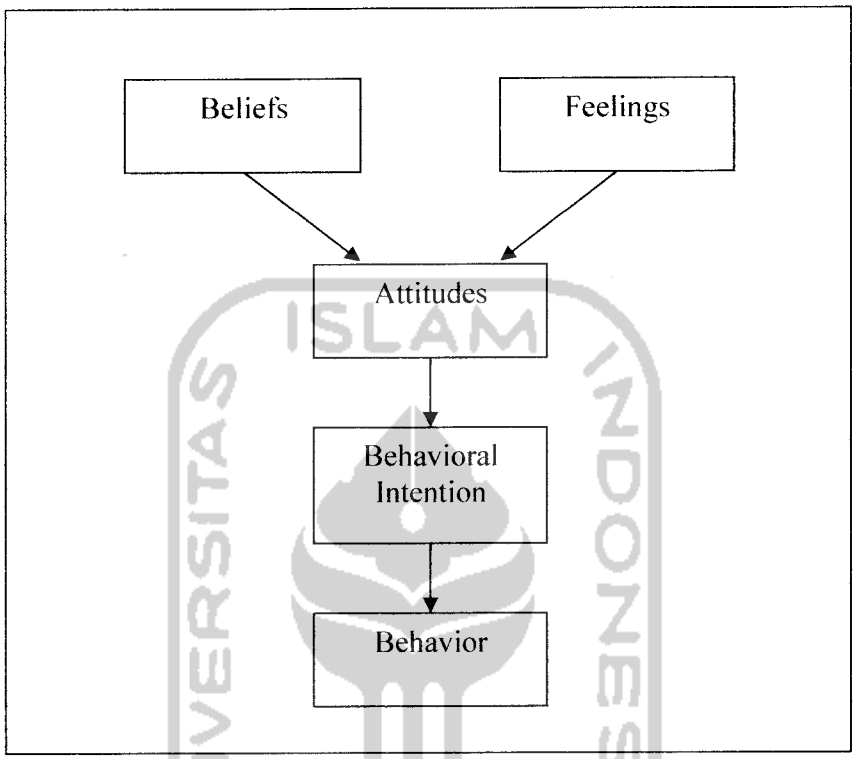

Figure 2.4. A Contemporary View of the Relationships among Beliefs, Feeling, Attitude, Behavioral Intention and Behavior.

Source : Engel, James F., Roger D. Blackwell and Paul W. Miniard. *Consumer Behavior 8th Edition*. 1995. pp. 365. Orlando. Dryden Press

From the figure above, it can be viewed that conative component, behavioral intention, is not seen as the determinant of attitude but the attitude determines the conative component. Hence, the behavioral intention will depend on the person's attitudes. As a result, consumer's intentions to perform some behaviors should increase as their attitudes become more favorable.

2.1.5.2. THE PROPERTIES OF ATTITUDES

The attitudes of persons can be varied depend on it dimensions or properties (James F. Engel, Roger D. Blackwell and Paul W. Miniard: 1995:367-368). Those dimensions or properties are: valence, extremity, resistance, persistence and confidence.

Valence refers to the person's attitudes toward a certain product whether the attitudes are positive, negative or neutral. The intensity of the liking or disliking toward something is the second dimension of attitudes which is extremity. This also represents the idea that there can be varying degrees of favorability. The third dimension of attitude which i.e. resistance represents the degree to which an attitude is immune to change. This kind of understanding to this attitude is very important in developing the defensive marketing strategies or offensive marketing strategies. The notion that attitudes may gradually erode is simply due to the passage of time reflected the next properties of attitude: persistence. It can happen that the person's valence positive or negative become neutral as time goes by. The company must maintain the favorability of the consumer since time is become a factor that can change the consumer's favorability. The last property is confidence which represents a person's belief that his/her attitude is correct. Understanding the degree of confidence associated with an attitude is important since it can affect the strength of the

relationship between attitudes and behavior and also affect an attitude's susceptibility to change. Then, if attitudes have a greater confidence it will be more resistant to change.

2.1.6. PERCEPTUAL PROCESS

Recognizing the consumer behavior in making the choice toward products has become an important thing to the managers to identify what the consumers really want. The consumers gain the information about the product through the product's package, advertisements, promotions and conversations to other people (word of mouth). That information builds the awareness of the consumers and may result in a buying decision.

There are two facets of perception that are of special interest. The first is, people become aware of their environment through the five senses and therefore sensation is the process with which perception begins. Actually what is the process of "to perceive" is? According to Foxall Gordon who adapted from Young (1961), he explains "to perceive" by the following diagram.

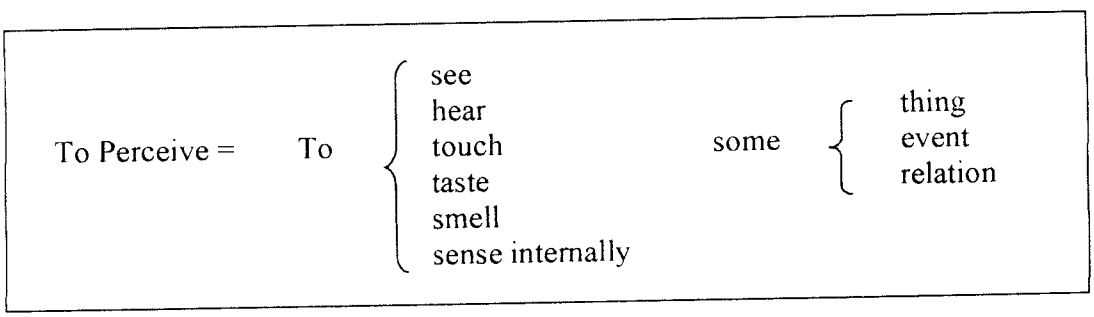

Figure 2.5. Perceptual Process
Source : Foxall, Gordon. *Consumer Psychology for Marketing* 1998. pp 52. London. International Thomson Business Press.

Thus, the roles of the senses are very important toward something, some events or some relations and the process started from the stimuli received by the consumer. The second facet is the process of interpretation which depends on the socio-psychological meanings that the individual attaches to the object perceived (the stimulus). These psychological meanings are greatly influenced by the motives which direct behavior and each of the individual has different circumstances. Therefore, perception of reality differs from individual to individual as each person interprets physical and social stimuli so that they are harmoniously accommodated within his/her overall world-view.

2.1.7. CONSUMER'S PERCEPTION

From the explanation about "to perceive" definition and it two facet above, the perception can be vary among the people based on their own need, values and expectation. According to Leon G. Schiffman and Leslie L. Kanuk (1996:195), perception can be defined as a process by which an individual selects, organizes, and interprets stimuli into a meaningful and coherent picture of the world. Thus, the perception processes varies, they depend on the interpretation of the stimuli which is very subjective of the consumers. But then there are influences that tend to distort objective interpretation which are physical appearances, stereotypes, halo effects, irrelevant cues, first impressions and the tendency to jump to conclusions. These perceptual factors

make the marketers work harder in exposing the message processes to the consumers and also the marketers cannot generalize the perception on a certain people to others.

Referring to this research, sometimes consumers judge the quality of the product or the service on the basis of a variety of informational signs which are: some intrinsic to the product and extrinsic of the product (Leon G. Schiffman and Leslie L. Kanuk: 1996:191). Examples of intrinsic of the product or service are color, size, aroma, etc and the extrinsic of the product are price, store image, brand image, etc. This research concerns with whether the extrinsic factors (attributes of the products) of the product researched (mobile phone) which are: price, brand name, store which sells the product, product test by media, length of the warranty and the intrinsic of the product which is the position of antenna are influencing to the safety perception of the product.

2.1.8. PERCEIVED RISKS

In the product purchase decision there is an important feature of consumer perception and their impact on decision which involves the amount of risk that consumers perceive to be present. According to the J. Paul Peter and Jerry C. Olsen (2001: 77), perceived risk is a consumer's knowledge or beliefs about unfavorable consequences including the negative effective responses associated with these unpleasant consequences such as: unfavorable evaluations, bad feeling and negative emotions. The perceived risk also

described as the function of two factors (Gordon Foxall; 1998: 58). The first factor is the amount of uncertainty present in the information a consumer has about a product. Thus, that lack of information or knowledge may heighten the perception of risk. The second factor is the extent of the consequences of purchase. Actually product with little information, poor product choice will probably perceive as low-risk purchases. The perceived risk may increase as the consequences of a bad choice are severe.

The amount of perceived risk, according to J. Paul Peter and Jerry C. Olsen in their book "Consumer Behavior and Marketing Strategies 6th Edition", a consumer's experiences are influenced by two things. The first is the degree of unpleasantness of the negative consequences and the second is the likelihood that these negative consequences will occur. Marketer tries to manage consumer's perception of the negative consequences of product purchase and use by applying such strategies like: money back guarantee, money back if not satisfied guarantee etc.

Consumers in purchase and use decision making basically consider the risk that they would take in using such product or service. The usual actions done by the consumers in facing those risks are avoided and/or lessen the risks. According to Leon G. Schiffman and Leslie L. Kanuk (1996:562) there are several types of risks which the consumers or product users try to avoid or lessen. Those risks are:

1) Functional risk: is the risk that the product will not perform as expected.

2) Physical risk: is the risk to self and others that the product may pose.

3) Financial risk: is the risk that the product will not be worth its costs.

4) Social risk: is the risk that a poor product choice may result in social embarrassment.

5) Time risk: is the risk that the time spent in product search may be wasted if the product does not perform as expected.

6) Psychological risk: is the risk that a poor product choice will bruise the consumer's ego.

Those risks above will influence the consumers in their decision making of product or service they would acquire. In addition, not all people in the world have the same level of risk perception toward product or service. That is why marketers must seek additional information about the consumer's risk perception because the marketers cannot generalize the perception of the people in one country to another.

2.1.9. PREVIOUS STUDIES ABOUT PRODUCT SAFETY

There are a small number of studies and research which specialize in analyzing the product safety compared to the perceived product quality and perceived risks studies. That is why researchers who begin to try to investigate the product safety refer his/her research by using perceived product quality and perceived risks studies as references. Hence, this research refers to the previous study and research done by, Alan Ching Biu Tse (1999)

and Noel Yee Man Siu associates with Yan Wong Han (2002), this research refers to their research on the perceived product quality and perceived risks.

1) Alan Ching Biu Tse research (1999).

Alan Ching Biu Tse tried to refer the perceived product safety to the perceived quality as well as the perceived risk since the sources about product safety was very little. Tse argues that most people have higher perception on product safety if the product has higher quality. Then, people also have higher perceived risk if they have higher perceived quality. Tse's research was about the perception of the students toward PC monitor safety since it was known that PC monitor emits radiation from its screen which harms the health of the users. Tse gathered variables trough pre-test by distributing questionnaires requested to the students spontaneously about the product attributes and attributes level and modified those variables to ensure the actual market ranges. After that, Tse conducted some interviews to the students by asking them to rate the risk of cancer induction and the level of satisfaction of the product safety standards of monitor of each attribute level of the eight product's attributes. Then, Tse analyze the collected data and found out that those eight variables were significantly affected the perception on PC monitor safety. Those eight variables are:

a. Price

According to Alan Chin Biu Tse, price has a related correlation to the perceived product safety. Tse refers it from research done by

Jacoby et al. (1971, 1977), Mitchell and Greatorex (1989), Malone (1990), William et al. (1991), Asher (1992), Gotlieb and Sarel (1992) and Narasimban et al. (1993). From those sources, Tse has an argumentation that the higher price leads to the higher perceived risk which then can affect the perception on product safety. This case was based on research done by Roselius (1971) and Akaah associates with Korgaonkar (1988). Tse tried to refer the perceived product safety to the perceived quality as well as the perceived risk.

b. Brand name of the product

According to Tse, brand name should also be an important factor affecting perceived product safety since it affects perceived product quality. Studies on the effect of brand name on perceived product quality, which are the basis for Tse's research, include those conducted by Jacoby et al. (1971, 1977), Mitchell and Greatorex (1989), Malone (1990), William et al. (1991), Asher (1992), Gotlieb and Sarel (1992), Narasimban et al. (1993) and Richardson et al. (1996). Tse also picked from the research, in the area of perceived risk, done by Schaninger (1976) who suggested that brand loyalty is a strategy used by consumers to lower ambiguity and risk in making a purchase. Research by Bauer (1960), Roselius (1971) and Peter and Ryan (1976), also become

the references for Tse in the area of risk, he shows that high correlation exists between perceived risk and brand loyalty. Since consumers tend to associate reputable brands with good product quality and lower perceived risk, it is reasonable to assume that well-known brands are also related with higher levels of product safety.

c. Store which sold the product

According to Tse, image of the store where the product is bought should be considered and the effects of store name on perceived product quality. Tse refers it from Jacoby et al. (1971, 1977), Mitchell and Greatorex (1989), Malone (1990), William et al. (1991), Asher (1992), Gotlieb and Sarel (1992) and Narasimban et al. (1993). In general, the more specialized and reputable a store is in selling the product, the more highly the quality of its products will be perceived. Tse also takes from similar findings which are obtained by previous studies on the effect of store name on perceived risk done by Spence (1970), Roselius (1971), Akaah and Korgaonkar (1988).

d. Country of origin of the product

The country of origin, according to Tse, also affects the perceived product quality and perceived risk. Tse refer his study from various research (Schooler, 1971; Bilkey and Nes, 1982; Wang

and Lamb, 1983; Thorelli et al., 1989; Han and Terpstra, 1988; Sadafumi, 1990; Ettensen and Gaeth, 1991; Wall et al., 1991; Cordell, 1992; Chao, 1993; Showers and Showers, 1993). These research find that country-of-origin affects perceived product quality. For perceived risk, Tse refers his study from Witt and Rao (1992) who investigated country-of-origin effects on consumer perceived risk of overseas production by US firms in two newly industrialized countries, Taiwan and Mexico. The findings indicate that consumer perceptions differ significantly on the basis of the country of origin. It is supported by Alden (1993), whose research was used as Tse's references. He also finds that country of origin affects perceived risk. In the Tse's research, the concept of country of origin was taken one step further by splitting it into two components: the country where the parts are manufactured, and the country where such parts are assembled into the complete product.

e. Personalities that promote the product

Tse's argumentation is, based on the previous studies, that since an effect was found on perceived risk through such factors as personal influence (Cunningham, 1965; Arndt, 1967) and endorsement (Roselius, 1971), the possible effect of source credibility on perceived product safety was subsequently extrapolated to include

a survey of whether the type of personalities used to promote the product influences its perceived level of product safety.

f. Product test

Tse's research considers whether the product has been tested by an authority and, if it has been tested, the nature of the authority testing the product can also alter the consumer's perceptions of its standard of product safety, as hinted by Roselius's study on perceived risk (Roselius, 1971). Two types of relevant testing authorities were investigated: government agencies and private product testing agencies

g. Length of the product warranty

Tse, based on Thorelli et al. (1989), states that warranty affects perceived product quality. From Kelley and Conant (1991), Tse also states that consumers view extended warranties as a way of reducing perceived risk. Hence, whether product warranty is provided and, if it is provided, the duration of the warranty, may also affect the level of perceived safety of the product

The hypotheses of this study are then tested by using MANOVA test, using risk of cancer induction and the level of satisfaction of UN (PC monitor) safety standards as the dependent variables. The result of this pioneer study is this research has found that perceived product safety is affected by a number of product-related attributes which are price, brand

name, store name, country of origin, personalities who promote the product, product test and length of warranty.

2) Noel Yee Man Siu and Yan Wong Han research (2002).

Noel Yee Man Siu associated with Yan Wong Han studied about the safety of the cosmetics which were considered as containing preservatives and color additive that endanger the human health. The same as Tse's, Siu and Han's research consider that the perceived product quality and perceived risk were their reference since the perceived product safety sources and material was very limited. Unlike Tse's research, the variables in this research came from Tse's and from three focus groups which consists of 5 to 6 female students. From those groups, they yield some new variables to be studied namely: promotion channels, the level of discount offered and packaging had an impact upon consumer's perceived product safety. Thus, the variables used in this research are: price of the brand, brand name, country of origin, store which sells the product, person who promotes the product, product tested plus the new variables found which are promotion channels, discount offered and packaging. After that, Siu and Han distributed questionnaires to 200 respondents through mall intercept method with convenience and judgmental sampling method to collect data. By using statistical method in analyzing the data, the independent sample *t*-test and one way ANOVA with the 5 per cent significant level were used and the level of perceived safety was treated as the

dependent variable. The result of the analysis indicates that those variables and the additional variables affect the perceived on the cosmetics safety

2.2. THEORETICAL FRAMEWORK

2.2.1. USER'S BELIEFS - USER'S ATTITUDE/EVALUATION

Basically this research is only to test whether the product attributes of the mobile phone which are: price, brand name, store which sell the product, product test, length of warranty and position of the antenna has influence to the user's perception on mobile phone's radiation safety. The method is by identifying whether there is any influence among the mobile phone user knowledge/beliefs considering the mobile phone radiation safety through the mobile phone attributes point of view to the mobile phone user attitude or the user's evaluation to the user's mobile phone based on mobile phone attribute. If there is any influence from a certain safety beliefs viewed from a product attribute to the evaluation of the user's mobile phone/user's perception considering the safety viewed from product attribute, can be stated that this certain product has contribution or influences the perceived safety or this product attribute is one of the factor that can shape the perception on the product regarding the safety of that product.

From the Figure 2.4 on page 23 above, it is shown that there is a relationship between the person's beliefs/knowledge to the person's attitude.

Instead of person's beliefs there is also a feeling which also as attitude determinant. However, this research only consider that belief is the only determinant in shaping the attitude since this research does not refer to a specific brand but more to the product which has many brands in it and an attitude toward specific product can be primarily depends only on beliefs (James F. Engel, Roger D. Blackwell and Paul W. Miniard: 1995:365). The relationships of the student's beliefs to the student's attitude toward the mobile phone radiation safety are shown in the Figure 2.6 on page 38.

2.2.2. ADAPTATION FROM PERCEIVED QUALITY

Research about product's safety is still rare and most of the research which correlates to the perception of the consumers relates the product's attributes to the quality of the product. However, for a specific product and in general speaking, the product's safety relates to the quality of the product. It means that the degree of product's safety relates to the degree of the product's quality. More safety means the quality of the product is also higher. For example: people know that Mercedes Benz cars are equipped with some safety tools in order to lessen the accidental risk that may happen which caused injuries to the passengers, then it can be said that the Mercedes Benz cars are having higher quality than other brand cars which are not equipped with those kind of safety tools. According to Tse (1999), the product's safety reflects the performance of the products which then reflects the quality of those products themselves.

example: people know that Mercedes Benz cars are equipped with some safety tools in order to lessen the accidental risk that may happen which caused injuries to the passengers, then it can be said that the Mercedes Benz cars are having higher quality than other brand cars which are not equipped with those kind of safety tools. According to Tse (1999), the product's safety reflects the performance of the products which then reflects the quality of those products themselves.

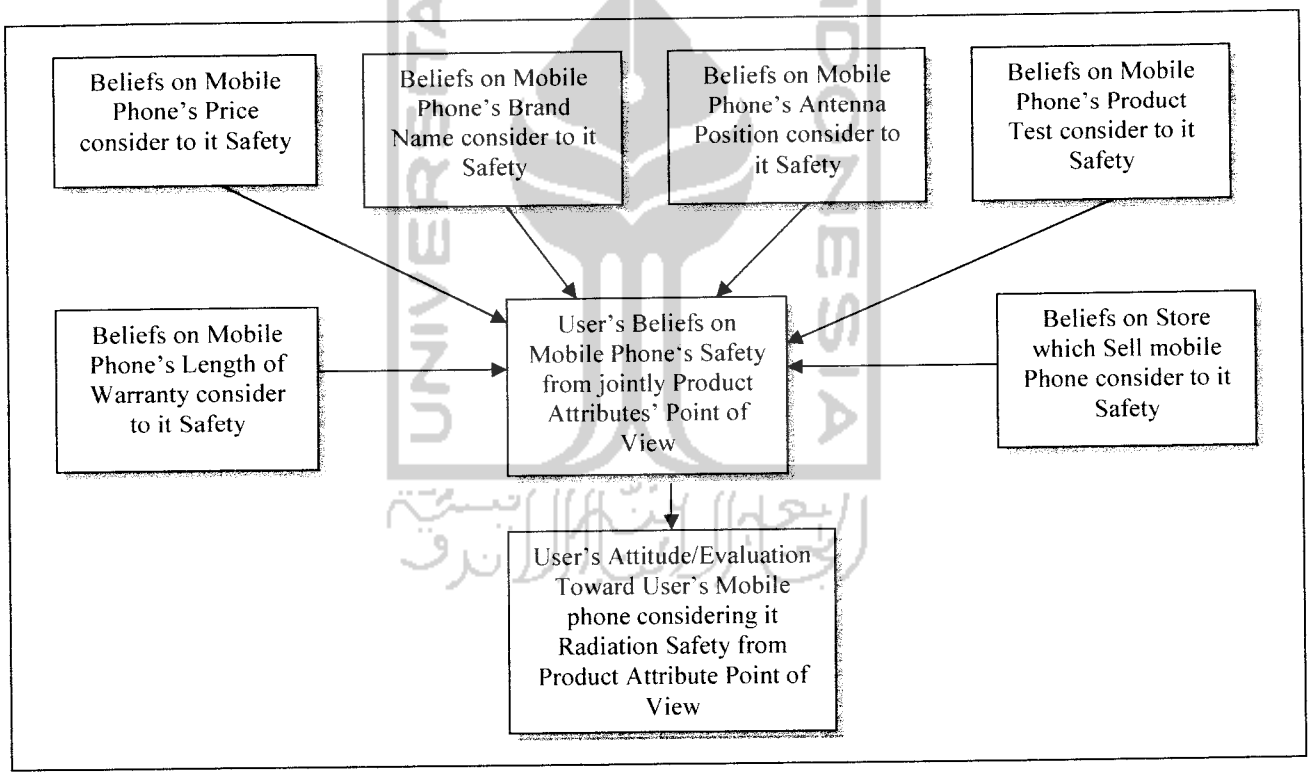

Figure 2.6. Relationship Between Beliefs on Mobile Phone's Product Attributes Regarding It's Radiation Safety to the User's Attitudes/Evaluation from Product Attribute Point of View

Source : Adapted from "A Contemporary View of the Relationships among Beliefs, Feeling, Attitude, Behavioral Intention and Behavior" by James F. Engel, Roger D. Blackwell and Paul W. Miniard. *Consumer Behavior 8th Edition*. 1995. pp. 365. Orlando. Dryden Press

Since, in general speaking, the safety reflects the quality of the product, there are some indicators that the consumer's perceptions are having relationships to the quality of such a product. According to Schiffman and Kanuk (2000:193) there are some indicators that can influence the consumer's perception of the quality of the product. Price is one of the most influential indicators that indicate the degree of the product's quality. Many studies support the view that consumers rely on price as an indicator of product quality. Several studies also show that consumer attribute different qualities to identical product that carry different price. It means that there is a positive relationship between the price and the quality of the product. On the other hand, it gives negative relationship to the perceived value and willingness to buy.

Second indicator according to Schiffman and Kanuk is store image. The stores have images of their own that serve to influence the perceived quality of the products they carry. It also means that this influences the decision of the consumers in deciding where to shop. When the image of such store is considered as excellent the consumer will perceive that certain store has excellent quality also. Thus, it means that there is also a positive relationship between the store image and the perceived quality, perceived value and willingness to buy. Those relationships can be seen in Figure 2.7 on the next page.

This research is trying to find out what kind of product attributes that shape the perception on product safety of the mobile phone which then reflects the quality of the product researched. The writer sets up the product attributes which may influence the perception on mobile phone radiation safety which are: price of the product (mobile phone), brand name of the product, store image, product test, length of warranty and position of antenna. The last factor which is the position of mobile phone's antenna is added based on some facts gained from the actual condition supported by some information that the position of antenna can influence the user's perception on the effect of mobile phone's radiation. This factor is the specific characteristic own by the product/mobile phone compared to other factors.

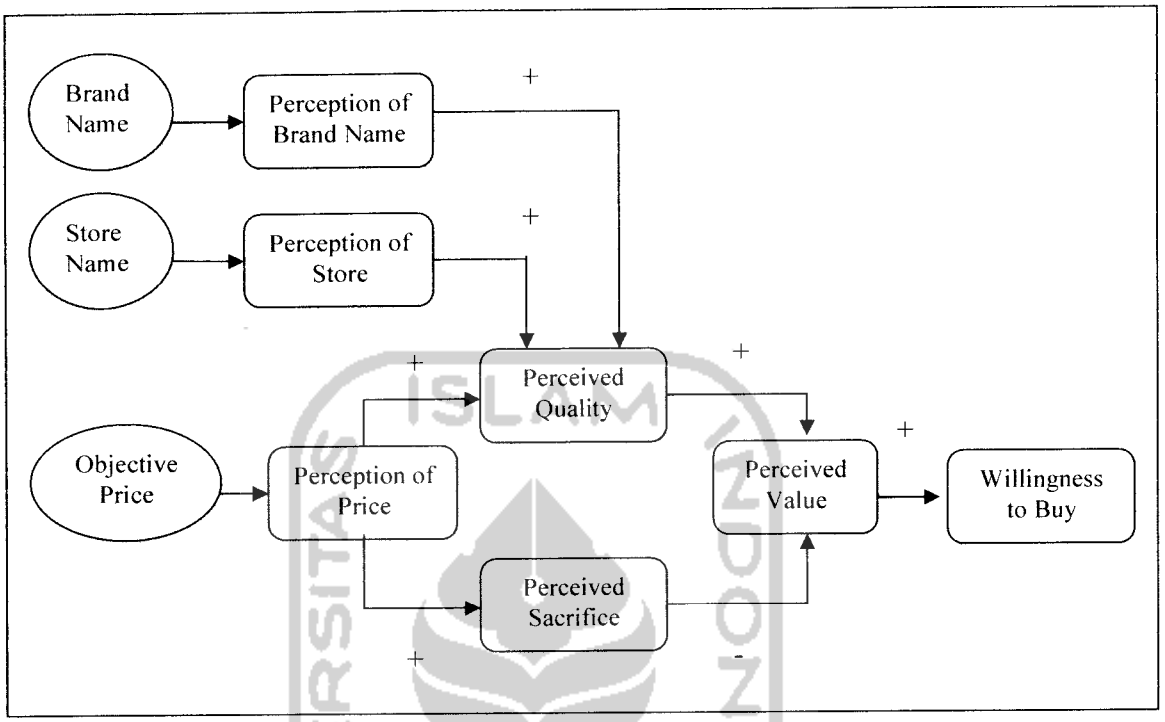

Figure 2.7. Extended Conceptualization to Include Store Name and Brand Name
Source : Schiffman, Leon G. and Leslie Lazar Kanuk. (2000). *Consumer Behavior 7Th Edition.* New Jersey. Prentice-Hall. pp. 194.

From Figure 2.8 in the page 43, it can be observed that there are several product attributes by which then influence the perception on product safety which is mobile phone safety. The perception on product safety can also be called as the consumer evaluation/attitudes which are shaped from the user's experience in using the product (mobile phone). This research is trying to find out what factors that may influence the perceived product safety by comparing the perceived product safety or the user's experience in using a certain product (mobile phone) he/she owned which is related to the safety aspect to his or her perceptions of the mobile phone safety based on the

product attributes above. If there is any relationship between a certain perception of his/her on one factor to the perception on his/her mobile phone in that factor, it means that this certain factor can influences the perception on product safety. The discussion of the perception on product quality, perceived sacrifice and also the perceived product value is out of this research area. This research only focuses on the factors which can build the perception to that factor and then influence the perception on product safety.

2.3. HYPOTHESIS

The writer has setup the hypotheses of this research:

1. There is a strong influence between the overall product's attributes to the user's risk perception on the mobile phone's radiation altogether.
2. The dominant product attribute that can influence the user's risk perception on the mobile phone's radiation (Y) is the position of mobile phone's antenna (X_6).

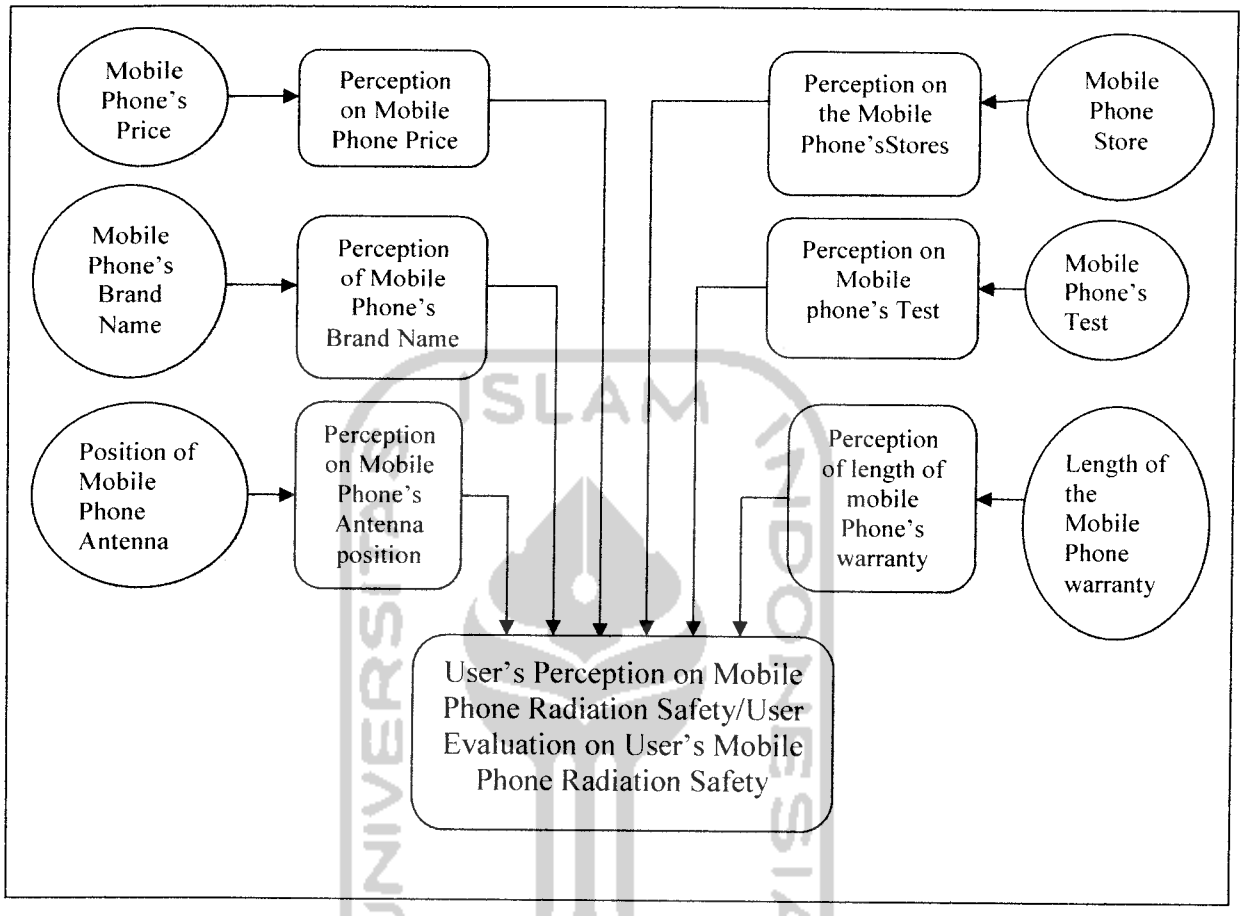

Figure 2.8. Relationship among the Perception on Mobile Phone's Product Attributes which Influencing the Perception on Mobile Phone Safety/User's Evaluation.

Source: Adapted from "Extended Conceptualization to Include Store Name and Brand Name" by Leon G Schiffman and Leslie Lazar Kanuk .(2000). *Consumer Behavior 7Th Edition.* New Jersey. Prentice-Hall. pp. 194.

CHAPTER III

RESEARCH METHOD

3.1. RESEARCH METHOD

This research is considered as a descriptive research because it has a clear statement of the problem, specific hypotheses, and need detailed information (Naresh K. Malhotra; 1993: 96). This research is a survey-based research which about the study of the consumer behavior which has important role for the intended parties to observe. Finding out the product attributes which can influence the perception of the consumer about the product safety will lead to better strategies for the company and will also give new point of view for the academics in describing the quality of the product and also the attitudes of the consumer about the product safety.

3.2. RESEARCH SUBJECT

3.2.1. POPULATION

Population is the entire group under study as defined by research objectives (Alvin C. Burns and Ronald F. Bush; 2000:365). For this research the population is the undergraduate students (S-1) of Faculty of Economics of Islamic University of Indonesia who own/use and are considered as the first users of mobile phone (not second hand mobile phone users).

3.2.2. SAMPLE AND SAMPLING METHOD

This research is only taking the sample from the population which is undergraduate students (S-1) of Faculty of Economics, Islamic University of Indonesia who use/own and is considered as the first users of the mobile phone. The sample used in this research is 100 respondents with "mall intercept" in collecting data and convenience sampling as the sampling method. The reasons are the writer does not know the real number of the population and the writer considers that this number already represents the population as a whole.

This research does not concern with the respondent's major but it concerns more with the respondents who own mobile phone and the field interviewer should judge whether the candidate respondents fulfill the requirement to be respondent. There is no quota for each major and if the respondents who fulfill the requirements are already reach 100 respondents the distribution of the questionnaire is stopped.

The product attributes available is derived from the previous research and the additional product attributes are derived from the specific characteristics of the product researched. Those product attributes may influence the user's risk perception on mobile phone radiation safety. By testing the available attributes, defining whether there are any influences between the product's attributes to the user's perception on product radiation safety, it can be concluded that the specific product attribute has contributions

in shaping the risk perception of the mobile phone radiation. If there are not any influences it means that the product attributes do not have any contribution in shaping the risk perception of the mobile phone radiation. Thus, the samples taken for this research do not concern whether the samples are aware to the mobile phone radiation risk or are not aware to it. And the other risk types which are will asked in the questionnaire explain the user's intention regarding the risks in using mobile phone and it can also explain the reasons behind the behavior of the samples.

3.3. RESEARCH SETTING

This research was conducted in the Economics Faculty, Universitas Islam Indonesia, Condong Catur, Sleman, Yogyakarta during April and August 2004.

3.4. RESEARCH INSTRUMENTS

3.4.1. DATA COLLECTION

This research is conducted along with an interesting topic to know further about the results. These results can represent an idea and theory. This research collects data through:

3.4.1.1. PRIMARY DATA

The data gathered for the research is from the actual size of occurrence of some events. In this case, the writer gathers information directly from the product users through interview which is the process

of gathering data and information directly from the mobile phone users by giving a set of questions (questionnaire).

The questionnaire consists of four parts which each of the part has it main purposes in order to gain the appropriate sample and data. Those parts are:

a. The Respondents' Profiles and Knowledge Part (First Part) is consists of questions revealing the respondents' profiles and also their knowledge about mobile phone's radiation.
b. The Respondents' Primary Avoided Product's Risks Part (Second Part) is to find out the risks that the consumer will primarily avoid in choosing and using mobile phone.
c. The Student's Beliefs on Mobile Phone Radiation Safety is to measure the level of the student's/sample's/respondents' believe about mobile phone radiation safety from product attributes point of view in general.
d. The Students'/Users' Perception on Mobile Phone's Radiation Safety is the respondents'/users' evaluation on their mobile phone radiation safety.

3.4.1.2. SECONDARY DATA

The data are gathered through such existing sources and they support the primary data. The secondary data are taken from magazines literature, books, journals, etc.

3.4.2. VALIDITY

Validity is the extent to which a scale or a set of measurements accurately represent the concept of interest (Joseph F. Hair; 1998:118). In other words, the validity test is the test that can show how far a measurement tool can measure what the researcher need to measure. In the questionnaire method to collect data, the questionnaire must be able to collect all information which then processed into data and used those data into the next process which is data analysis process. Therefore, the questionnaire must gives data which then can answer the problem by a certain measurement.

In this research, 30 questionnaires are distributed first in order to find out its validity. Then, the questionnaire result is tested by using Product Moment Correlation technique through statistical computer program SPSS for Windows Release 10.0 Program.

3.4.3. RELIABILITY

Reliability is an assessment of the degree of consistency between multiple measurements of a variable (Joseph F. Hair; 1998:117). The first objective of the reliability test is to ensure that responses are not too varied across time periods resulted a measurement taken at any point in time is reliable. The second objective is to measure the consistency among the variables in a summated scale or the individual items or indicators of the scale should all be measuring the same construct and highly inter correlated. In this research the researcher used Alpha-Cronbach Method which was calculated

through computer statistical program SPSS for Windows Release 10.0 Program.

3.5. VARIABLES IN THIS RESEARCH

3.5.1. INDEPENDENT VARIABLES

Variables in this research are based on the Tse and Siu's work in association with Han research with any modification and revision to keep the relevancy of the product researched. According to the Alan Ching Biu Tse, who observed the safety of PC monitor, the variables that Alan Ching Biu Tse used are: price of the PC monitor, brand of the PC monitor, store which sold the PC monitor, the product's country of origin, promotion in a specialize media, personalities that promote the product, product test, and the length of the product warranty.

The second reference is Noel Yee Man Siu and Hon Yan Wong research. It considered the factors which affect the perception of the consumer toward the cosmetics' safety. Variables used in their research are: price, brand name, country of origin, store name, source credibility, product testing, promotion channels, discount offered and packaging. This research studied the cosmetics as the product researched. For the promotion channel, discount offered and packaging, which were determine through discussions from three focus groups set by the researchers, these variables indicated the specific characteristics of the product researched (cosmetics).

In addition to maintain the relevancy of the research, since the product being researched here is mobile phone, any revisions are needed. The variables that should be omitted are: source credibility, promotion, promotion channels, country of origin, discount offered and packaging. Those variables are not relevant to be considered in this research. The promotion channel, discount offered and packaging, which are the result of Noel Yee Man Siu and Hon Yan Wong research, are the specific characteristics of the cosmetics' product related factors. Of course their discussion is different from this research which is mobile phone as the research object. Thus, those three variables are not relevant in this research and should be omitted.

The country of origin in the mobile phone market is becoming unclear since many mobile phone vendors set up assembly factories out of the country of origin of the mobile phone vendors. As a result, the consumers are not literate entirely to the kind of mobile phone whether this mobile phone is made in the country of the brand or it is an assembled product from another country. The discussion of whether the country of origin of the vendors which classified into developed and less developed country may lead misunderstanding to the respondents. The standard whether a country is considered as developed country or not is depends to the many factors. Meanwhile, each country has different advantages which then differing to the other country. From the explanation above, the discussion of the country of origin of the mobile phone is not included into this research.

The source of credibility variable, which separated into the public figures and unfamiliar figures as the persons who promote the product, cannot be considered as the variable in this research since not all mobile phone vendors are using public figure in wide promotion of their product. Most of the wide promotions which are usually done by the mobile phone vendors in printed media or electronic media are not using a certain public figure or they are usually using unfamiliar person and their promotion is categorize as world wide promotion i.e. world wide television ads. The used of public figure in promoting the mobile phone is rare and if it is already done the scope is very small so that only few people are informed about it i.e. the product launch party.

The writer adds a new variable which is more specific to the characteristics of the product being researched. This variable is the position of the mobile phone's antenna. Based on an article in Selular Magazine June 2002 edition, there are some cases which correlate the antenna position to the health disturbance of the users. The radiation emission from external antenna pointed has higher radiation which can endanger the user's health compared to internal antenna and clamshell mobile phone. The opinion that is spread in the society, the position of the antenna harms the user's brain and even can create erection dysfunctional/impotence and also reduce the sexually hormone quality. Based on the preceding facts, the writer sets up the position of the mobile phone as one of the specific variable discussed further in this research.

Finally, the writer decides to setup independent variables (X) which have been revised and modified based on the real condition of the product researched. Those independent variables are:

a. Price of the mobile phone.
b. Brand name of the mobile phone.
c. Specialty and reputable stores which sell the mobile phone.
d. Product test
e. The length of the mobile phone warranty.
f. Position of mobile phone's antenna

The independent variables used in this research, mentioned above, have indicators and those indicators were taken from the previous research with any necessary revision to keep the relevancy of the product researched. That product related factors and their attribute's levels are shown in the Table 3.I. below.

3.5.2. DEPENDENT VARIABLE

The dependent variable for this research is the user's perception on mobile phone's radiation safety (Y). It means that user's perception on mobile phone's radiation safety is the perception/attitude/evaluation of the users toward their mobile phone's radiation safety comprises from the given variables and given attribute's levels.

3.6. RESEARCH PROCEDURES

This research will be undertaken through several phases of process which are:

a. The independent variables and attribu.es level were taken from the Alan Ching Biu Tse research as well as Noel Yee Man Siu in association with Hon Yan Wong research. Then, those variables and attributes levels were revised based on the real situation and condition of the product researched. Any omission may occur to keep the relevancy of the product researched.

b. Setting the questionnaires and followed by validity and reliability test which should be done in order to get the proper questionnaire to be proposed to the respondents in order to get the valid and reliable data for the analysis process.

c. Distributes the questionnaires to the respondents in order to get the primary data for the further analysis.

d. Analyze the primary data to become interpreted data which can give benefit to the society and to the development of knowledge

Table 3.1. Independent Variables Studied and It Attributes Levels

No	Variables/Attributes of the Product	Indicators
1.	Price of the product (X_1)	High price mobile phone (> Rp. 2.000.000,00) Medium price mobile phone (Rp. 1.000.000,00–Rp 2000.000,00) Low price mobile phone (<Rp 1.000.000,00)
2.	Brand name (X_2)	Popular brand name of the mobile phone Less popular brand name of the mobile phone
3.	Specialty and reputable stores (X_3)	The authorized dealer from the mobile phone producers/vendors Mobile phone specialty stores Counters in the department store/mall/other stores
4.	Product test (X_4)	Tested by reputable specialty magazine and other reputable media Tested by less reputable magazine and other media
5.	Length of the mobile phone warranty (X_5)	More than 1 year warranty 1 year warranty Less than 1 year warranty No warranty
6.	Position of mobile phone antenna (X_6)	Internal antenna External antenna

3.7. TECHNIQUES OF DATA ANALYSIS

In this research, the writer uses both qualitative data analysis and quantitative data analysis. The quantitative data analysis means that data can be measured directly, based on number and the data have exact science characteristics by using method and some formulas to obtain the result from some calculations. The qualitative data analysis will support the findings of the quantitative data analysis results.

3.7.1. QUALITATIVE ANALYSIS

The qualitative analysis in this research is aimed to explain the results of the quantitative analysis that will be conducted. It means that, the quantitative results can be more understood by including the qualitative results from the qualitative analysis that will be done.

The questionnaires are separated into four parts. The first part, The Respondents' Profiles and Knowledge part, is questioned about the respondent's demographic, filter questions and whether the respondents know the existence of mobile phone radiation and whether they believe that the radiation is endanger to their health. Data acquired from the Respondents' Profiles and Knowledge part will be converted into percentage and presented in the form of data tabulation.

The second part of the questionnaire, The Respondents' Primary Avoided Product's Risks part, is to find out the user's priority about the risks that they will reduce and/or avoid in using mobile phone. It also has a purpose

to explain the intention/user emphasize regarding the risk they will receive as a result of the consumption/using mobile phone.

Those first two parts will contribute in the qualitative analysis. The result of this set of questions will contribute in supporting and can explain the final results of the quantitative analysis further.

3.7.2. QUANTITATIVE ANALYSIS

The rests of the parts are used for the quantitative analysis and each has measurements. For the third part, The Student's Beliefs on Mobile Phone Radiation Safety part, was designed to measure the level of user's believes toward the mobile phone radiation safety in general from product's attributes and attributes level point of view. A 1 to 5 Likert scale is used to give the price of each of the variables as well as the attributes level. The description of the scale is "1" means "strongly disagree", "2" means "disagree", "3" means "neutral", "4" means "agree" and "5" indicates "strongly agree". This scale is applied in each variables and each of the attributes level.

The fourth part, The Students'/Users' Perception on Mobile Phone's Radiation Safety part, was designed to measure the degree of evaluation on product safety of the user's mobile phone from product attributes point of view. Likert scale is used and the scale is same as the previous part.

After that, the data is processed through statistical measurement with the aids of statistical computer program. The data are process by using:

3.7.2.1. Multiple Linear Regressions and Multiple Correlation Analysis

(1) Multiple Linier Regression Analysis

This analysis describes about the product attributes affecting user's evaluations on product safety direction in form of regression coefficient and R^2 value (A Aker and Kumar; 1998:500). A regression coefficient evaluates the strength and direction of relationship and also represents the effect of an independent variable when other independent variables are constant (t-value)

The general formula is:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + e$$

Then the estimation multiple linier regression models are:

$$Y = b_o + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + b_6 X_6$$

Where:

Y = User's perception on mobile phone's radiation safety

b_0 = constant

$b_1 - b_n$ = coefficient of the independent variable

X_1 = Price of the mobile phone.

X_2 = Brand name of the mobile phone.

X_3= Specialty and reputable stores which are sell the mobile phone.

X_4 = Product test.

X_5 = Length of the mobile phone's warranty.

X_6 = Position of mobile phone's antenna

(2) Multiple Correlation Analysis

The outputs of Multiple Correlation Analysis is Multiple Coefficient of Determination (R^2) which measure of overall explanatory power which identifies the degree of correlation and also effect of the overall independent variables (X) altogether to dependent variables (Y).

3.7.2.2. F - Test

This test is to find out the relationship significance of the F value which represent whether the values and equation is trusted or not. This test answers the first hypothesis which is to observe whether there are any strong significance influences between the product's attributes (X_1-X_6) toward the user's perception on the mobile phone's radiation safety.

First, setting the hypotheses of the regression line as follows:

- Ho : $b_1 = b_2 = b_3 = \ldots\ldots = b_6 = 0$ → There is no significant relationship between Y and at least one of the independent variable (b_1-b_6) and that the regression equation as a whole is not significant.
- Ha : one or more of the b is not equal to zero → There is a significant relationship between Y and at least one of the independent variable (b_1-b_6) and that the regression equation as a whole significant.

Then, the formula for this test is

$$F = \frac{MSR}{MSE}$$

Where, MSR represents the mean square resulting from regression and MSE represents mean square resulting from sampling error.

3.7.2.3. t-Test

This test is for testing each parameter estimator (b_1-b_n) values received from that samples that exactly represent estimation parameter of the prices of regression coefficient (b_1-b_n). By using this test, we expect to know how far the statistics represent that parameter or the significance of each t-value. The t-value can suggest the extent of association or influence that an independent variable has on the

dependent variable (A. Aker and Kumar, 1998:500). This statistical test (for example) b_1 is as follows:

Determining the hypothesis for b_1:

- Ho : $\beta_1 = 0$ → variable X_1 has no effect to variable Y when other variables remain constant
- Ha : $\beta_1 =/= 0$ → there is an effect between variable X_1 to variable Y when other variables remain constant

The formula,

$$t = \frac{b_1}{Sb_1}$$

Where, Sb_1 is the standard error of b_1

This t-test analysis is done to identify whether the t-value, which is an indicator of an effect of each of the product attributes toward the user's perception on the mobile phone's radiation, is significant or not.

The first hypothesis can be concluded from the results of Multiple Coefficient of Determination (R^2), the significance of the F-value and the significance of each t-value. The second hypothesis can be concluded from the amount of t-value of each variable and its significance.

CHAPTER IV

RESEARCH FINDINGS, DISCUSSION AND IMPLICATIONS

4.1. QUESTIONNAIRE DESIGN

The data of this research was collected in Faculty of Economics, Indonesia Islamic University by distributing questionnaires to the relevant respondents or samples that represent the population target. This research analyzes whether there are any influence between the product's attributes to the consumer's perception about product safety. Therefore, the questionnaires were distributed to the students who have specifications: students of S-1 program and who used new mobile phone (not the second hand mobile phone). The subject of the research is the students and the objects of the research are the users' perception on mobile phone's radiation safety and their beliefs on mobile phone's safety through product attributes point of view.

The questionnaire, one of the data gatherer, in this research was designed in such way so that it can fulfill the information needed for this research. The questionnaire is divided into four parts. The first part of questionnaire is The Respondents' Profiles and Knowledge part; it consists of questions revealing the respondents' profiles and their knowledge about mobile phone's radiation. The respondent's profiles consist of respondent's gender, respondent's major and their academic year. Then the respondent's knowledge is about the respondents'

knowledge on mobile phone radiation. The others questions are designed to filter the respondents in order to find out the relevant samples for this research. Those filter questions are: respondents' mobile phone condition when they bought it and it frequency operation system. The filter questions are as the parameter to judge whether the respondents are acceptable to become samples in this research or not. The respondents required in this research are the respondents who bought their mobile phone in new condition which means that second hand mobile phones owners are not considered to be samples in this research. The second requirement is the respondent's mobile phone frequency operation system which must be in GSM operation system. The respondents who have mobile phone instead of the GSM operation system (CDMA, AMPS and NMT) are not included in this research.

The questions about the respondents' knowledge about the mobile phone radiation are giving an insight to the results regarding the respondents' awareness to the mobile phone radiation. This section's result indicates the degree of respondent's knowledge about the existence of mobile phone radiation and also the degree of respondent's awareness toward the radiation emitted by mobile phone regarding its danger to the human health. If this section's results indicate that respondents are aware to the mobile phones' radiation, it would influence the behavior of the respondents when they are going to buy mobile phone. Thus, the outcome is the respondents would choose the mobile phone which they think does not have harmful radiation nor has high degree of radiation safety. The result of this research is to find out whether there are influences between mobile phone

product's attributes to the perception of the respondents toward mobile phone radiation safety. Thus, this research is looking for a correlation between the respondent's perceptions on the mobile phone's radiation safety to the behavior in choosing mobile phone through its product attributes point of view.

The second part of the questionnaire is The Respondents' Primary Avoidance on Product's Risks part, it is to find out the risks that the consumers will primarily avoid in choosing and using mobile phone. The result of this second part of the questionnaire would contribute in supporting and explaining the final results of the further quantitative analysis by giving description about respondent's tendency in choosing and using mobile phone. Those first two parts are contributed in the descriptive qualitative analysis.

The third and fourth parts of the questionnaire (The Student's Beliefs on Mobile Phone Radiation Safety and The Students'/Users' Perception on Mobile Phone's Radiation Safety respectively) are used for the quantitative analysis and each part has its measurements. The questions in the third part were designed to measure the level of the student's believe toward the mobile phone safety in general. There are 16 questions and each of them represents the independent variables (X_1-X_6) or product attributes and its attribute levels. A 1 to 5 Likert scale is used to give the price of each of the questions. The descriptions of the scale are: "1" means "strongly disagree", "2" means "disagree", "3" means "neutral", "4" means "agree" and "5" indicates "strongly agree".

In the fourth part there are 6 question statements which represent the perception on mobile phone radiation safety of the respondent's mobile phone or

the dependent variable (Y). The all questions cover the respondent's mobile phone product attributes. A 1-5 Likert scale is also used and the scales and prices are the same as the questions in the third part.

Table 4.1. The Description of the Questionnaire Statements by which Represent the Variables Used in this Research.

Variables	Statements Represent to Variables
Price of the mobile phone (X_1)	Third Part statements no. 1 – 3
Brand name of the mobile phone (X_2)	Third Part statements no. 4 - 5
Specialty and reputable store which sell the mobile phone (X_3)	Third Part statements no. 6 - 8
Product test (X_4)	Third Part statements no. 9 -10
Length of mobile phone warranty (X_5)	Third Part statements no. 11 - 14
Position of mobil phone antenna (X_6)	Third Part statements no. 15 - 16
User's perception on mobile phone's radiation safety (Y)	Fourth Part statements no. 1 – 6

4.2. VALIDITY AND RELIABILITY TEST

Getting the appropriate and relevant data is very important for the researchers who use those data for the research effectively. The validity and reliability test is strongly needed to find out whether the questionnaire is appropriate to be a data gatherer tool or not. About 30 questionnaires were distributed to the population to become the initial samples for the validity and reliability tests. The measurement of validity test was using Product Moment technique while for the reliability test was using Alpha Cronbach technique. These tests are done both to the third part and fourth part of the questionnaire by using statistical computer program SPSS for Windows release 10.0. Those

techniques results can explain whether the questionnaire is valid or not and/or reliable or not. If the results are valid and reliable, the questionnaire is appropriate as data gatherer tool and it is ready to be distributed to the remaining 70 samples. It means that the preceding samples are acceptable for data analysis process since the samples needed in this research are 100 samples.

4.2.1. VALIDITY TEST

The validity tests in this research instrument tested each of the questions, whether in part three and part four, related to the variables and its attribute levels. By using 95% significance level (r=5%), the validity test for all questions was done by using Product Moment Correlation technique

The statement is considered valid or significance if the value of calculation which is Corrected Item-Total Correlation Value is greater than coefficient of the table (r-table) corresponds to the samples used (Sutrisno Hadi; 1991:27). Regarding to the significance level and the samples used which is 28 (the actual samples used is 30 but in reading the table using formula N-2 for the number of sample), the coefficient of the table (r-table) is 0,239. Thus, if the Corrected Item-Total Correlation Value of each question are greater than 0,239 means that the question is considered valid and vice versa. The next page tables are showing the Corrected Item-Total Correlation Value of each question and its status. Tables 4.2.1 up to 4.2.6 are for the questions in part three and Table 4.3 is for the questions in part four.

Table 4.2.1. The Validity Test Result for Price of the Mobile Phone (X_1) Question Statements

Price of the Mobile Phone (X_1)		
Items	**Corrected Item-Total Correlation**	**Status**
No. 1.	0.5150	Valid
2.	0.7529	Valid
3.	0.4977	Valid

Table 4.2.2. The Validity Test Result for Brand Name of the Mobile Phone (X_2) Question Statements

Brand Name of the Mobile Phone (X_2)		
Items	**Corrected Item-Total Correlation**	**Status**
No. 4.	0.4341	Valid
5.	0.4341	Valid

Table 4.2.3. The Validity Test Result for Specialty and Reputable Store which Sell the Mobile Phone (X_3) Question Statements

Specialty and Reputable Store which Sell the Mobile Phone (X_3)		
Items	**Corrected Item-Total Correlation**	**Status**
No. 6.	0.5089	Valid
7.	0.5366	Valid
8.	0.4596	Valid

Table 4.2.4. The Validity Test Result for Product Test (X_4) Question Statements

Product Test (X_4)		
Items	**Corrected Item-Total Correlation**	**Status**
No. 9.	0.5142	Valid
10.	0.5142	Valid

Table 4.2.5. The Validity Test Result for Length of the Mobile Phone Warranty (X_5) Question Statements

Length of the Mobile Phone Warranty (X_5)		
Items	**Corrected Item-Total Correlation**	**Status**
No. 11.	0.3958	Valid
12.	0.4727	Valid
13	0.6940	Valid
14.	0.4467	Valid

Table 4.2.6. The Validity Test Result for Position of the Mobile Phone Antenna (X_6) Question Statements

Position of the Mobile Phone Antenna (X_6)		
Items	**Corrected Item-Total Correlation**	**Status**
No. 15.	0.5376	Valid
16.	0.5376	Valid

Source: Primary Data Calculation (for all tables above)

The tables above indicate that the values of each of question in part three are valid. It means that those questions are appropriate for analysis and also appropriate for the remaining respondents.

Table 4.3. The Summary of Validity Test Result to the Question Statements in The Students'/Users' Perception on the Mobile Phone's Radiation Safety (Part Four of the Questionnaire)

The Users' Perception on the Mobile Phone's Radiation Safety (Y)		
Items	**Corrected Item-Total Correlation**	**Status**
No. 1	0.5036	Valid
2	0.6113	Valid
3	0.5646	Valid
4	0.4198	Valid
5	0.5555	Valid
6	0.3778	Valid

Source: Primary Data Calculation

Table 4.3. above indicates that the values of each of question in part four are valid. It means that those questions are appropriate for analysis and appropriate for the remaining 70 respondents.

Table 4.4. Valid Statements of Product Attributes and Attribute Level in Student's Beliefs on Mobile Phone Radiation Safety (Part Three)

Valid Statements of Product Attributes and Attribute Levels
I. Price of the Mobile Phone
No. 1. High price mobile phone 2. Medium price mobile phone 3. Low price mobile phone
II. Brand Name of the Mobile Phone
No. 4. Familiar name of mobile phone 5. Unfamiliar mobile phone
III. Specialty and Reputable Store which Sell the Mobile Phone
No. 6. The authorized dealer from mobile phone producers/vendors 7. Mobile phone specialty store 8. Counters in the department store/mall/other store
IV. Product Test
No. 9. Tested by reputable specialty magazine and other reputable media. 10. Tested by less reputable specialty magazine and other reputable media
V. Length of Mobile Phone Warranty
No. 11. More than 1 year warranty 12. One year warranty 13. Less than 1 year warranty 14. No warranty
VI. Position of Mobile Phone Antenna
No. 15. Internal antenna 16. External antenna

4.2.2. RELIABILITY TEST

This test is important to judge whether the questionnaire is consistent or not. Reliability refers to the extent to which a scale produces consistent results if measurements are made repeatedly (Naresh K. Malhotra 1993: 281). It means that if the questionnaires are redistributed to the other respondents, the results are almost the same as the previous survey. In that case, the questionnaire can be said as reliable questionnaire. On the other side, if the results of the latter survey have significantly different to the preceding survey, it can be said that the questionnaires are not reliable and inappropriate to be used.

The reliability test of the questionnaires is calculated by using Alpha Cronbach technique and this technique is applied for each of the variable. The same as the validity test; the reliability test is calculated is by finding out the Alpha coefficients by using a specific formula. Then, if those coefficients are greater than 0.6 means that those coefficients are satisfactory internal consistency reliability and if those value of coefficients are less than 0.6 means that those coefficients are unsatisfactory internal consistency reliability (Naresh K. Malhotra 1993:282). The significance level used in this research is 95% (r=5%) and the sample taken is 30 samples. The reliability test is done by using software SPSS for Windows release 10.0.

Regarding to the sample used which is 28 (the actual samples used in this test are 30 samples but in reading the table is using formula number

of sample – 2 or N-2), the coefficient of the table (r-table) is 0,239. Thus, if the Alpha coefficients of each variable are greater than 0,239 it means that the variable is considered reliable and vice versa. The next table is showing the coefficient values of the questions and it status.

Table 4.5. The Summary of Reliability Test Result to the Variables Used

No	Variables	Alpha coefficient	Status
1	Users' Perception on Mobile Phone's Radiation Safety (Y)	0.7610	Reliable
2	Price of the mobile phone (X_1)	0.7509	Reliable
3	Brand name of the mobile phone (X_2)	0.5684	Not Reliable
4	Specialty and reputable stores which sell mobile phone (X_3)	0.6852	Reliable
5	Product test (X_4)	0.6649	Reliable
6	Length of the mobile phone warranty (X_5)	0.7045	Reliable
7	Position of mobile phone antenna (X_6)	0.6894	Reliable

Source: Primary Data Calculation

The results shown on the table above indicates that all variables, instead Brand Name of the Mobile Phone variable, are reliable. Since variable Brand Name of the Mobile Phone is not reliable, although this variable has satisfactorily valid statement, this variable must dropped off for the further analysis. It means that the questions asked about the mobile phone's brand name are not included for the remaining 70 respondents and this preceding variable's scores are omitted.

4.3. RESEARCH FINDINGS

After the validity and reliability test, the questionnaires were distributed in order to get the remaining 70 respondents to fulfill the requirements as the research samples. Any respondents who did not fulfill the requirement were not included and the distribution of questionnaires was stopped until the quota of 70 samples was fulfilled. Then, results were recapitulated and then analyzed by using several methods. This research analysis consists of two analysis methods, they are: qualitative analysis and quantitative analysis. The qualitative analysis results support the quantitative analysis results. It means that, the quantitative analysis results, which are in the form of number, are explained by the qualitative analysis results which provides insights and understanding of the problem setting.

4.3.1. DESCRIPTIVE QUALITATIVE ANALYSIS

The qualitative analysis in this research was based on the result of The Respondents' Profiles and Knowledge part and The Respondents' Primary Avoidance on Product's Risks part. Those two parts cannot be interpreted quantitatively but they are analyzed qualitatively.

4.3.1.1. THE RESPONDENTS' PROFILES AND KNOWLEDGE PART

This section consists of the respondents' profile and respondents' knowledge on mobile phone radiation. The respondents' profile results are shown below.

The respondents who contributed in this research consist of 53 female respondents (53% of the whole sample) and 47 male respondents (47% of the whole sample). Those respondents mostly come from students of the department of Management (32 students or 32% of the sample) followed by from the students of Accounting Department (25 students or 25% of the sample). Meanwhile, the samples from the IP-Management students are 24 persons (24%), Economic Development students are 9 persons (9%), IP-Accounting students are 7 persons (7%) and IP-Economic Development students are 3 persons (3%). From those respondents there are 23 students (23%) come from 2003 Academic Year, 20 students (20%) of 2000 Academic Year, 19 students (19%) of 2002 Academic Year, 16 students (16%) of 2001 Academic Year, 15 students (15%) of 1999 Academic Year, 7 students (7%) of 1998 Academic Year. The next tables summarize the results of the respondent's profile.

The results of the respondent's knowledge about mobile phone radiation show that there are 13 respondents (13%) who do not know the existences of mobile phone radiation. Thus, there are 87 respondents (87%) who know about mobile phone radiation. This number indicates that in general most of the people believe that mobile phones emit radiation regardless the quantity of the radiation itself.

Table 4.6. Group of Respondents Based on Student's Major

Major	Number	Percentage (%)
Accounting	25	25%
Management	32	32%
Economic Development	9	9%
IP-Accounting	7	7%
IP-Management	24	24%
IP-Economic Development	3	3%
Total	100	100%

Source: Primary Data Calculation

Table 4.7 Group of Respondents Based on Student's Academic Year

Academic Year	Number	Percentage (%)
1998	7	7%
1999	15	15%
2000	20	20%
2001	16	16%
2002	19	19%
2003	23	23%
Total	100	100%

Source: Primary Data Calculation

Whether the mobile phone's radiation endangers human health or not is then questioned. This question is dedicated for the respondents who believe the existence of mobile phone radiation. The results are: there were 3 respondents (3.45%) who believe that the mobile phone radiation does not endanger human health. Those 3 students have opinion that the mobile phone's radiation exists but there are no significant consequences by that radiation to human

health. Meanwhile, there are 84 respondents (96.55%) who believe that mobile phone radiation endangers human health. The rest of the respondents are not included since they do not know the existence of the mobile phone radiation. Thus, the results above indicate that most of the people believe that the radiation emitted by mobile phone can endanger the human health.

4.3.1.2. THE RESPONDENTS' PRIMARY AVOIDANCE ON PRODUCT'S RISKS

This section is questioning the respondents about their risks that they primarily avoid when they are going to choose and/or use mobile phone. The writer then refers the perceived risks toward the product from Leon G. Schiffman and Leslie L. Kanuk book which are: functional risk, physical risks, financial risks, social risks, time risks, and psychological risk. Each of the risk is then numbered and the description of each of the risk is explained. Then, the respondents are asked to rank those risks from the most avoided risk to the least avoided risk by giving number from 1 (for the most avoided risk) to 6 (the least avoided risk) to each of the product risks.

The result of this section yields to an understanding about the risk that the respondents prioritize to avoid. It means that, this section's results are giving explanations further about the tendency

of the respondents in choosing and using mobile phones. The results of this section are described below.

The respondents who give first priority to avoid the financial risks are about 31 respondents (31%). It is the same as the previous number, the respondents who give first priority to avoid the functional risks are about 31 respondents also (31%). Followed by the respondents who give first priority to avoid the psychological risks and the number is about 13 respondents (13%) and the respondents who give first priority to avoid the physical risks are about 11 respondents (11%). The rest of the respondents who give first priority to avoid social risks and time risks are about 8 respondents (8%) and 6 respondents (6%) respectively.

Table 4.8. The Respondents' Primary Avoidance on Product's Risks

Ranking	Types of Product Risks	Percentage (%)
1	Functional Risks and Financial Risks	31%
2	Psychological Risks	13%
3	Physical Risks	11%
4	Social Risks	8%
5	Time Risks	6%
	Total	100%

Source: Primary Data Calculation

The data above can be interpreted that most of the respondents consider the financial risks and functional risks as the risks that they avoided most in using and choosing mobile phone. Thus, the tendency of the respondents in using and choosing

mobile phone is still influenced by the functional and financial factors. It is true since students are considered as active intellectual people who have many activities and are open minded to the change of technology. It means that, students are literate to the functions of their mobile phone and then they demand the maximum performance of their mobile phone to support their activities. Any dysfunction the mobile phone's performance is considered as the risks that the students are mostly avoided.

Students are categorized into people who relatively understand the condition of the mobile phone market since mobile phones have become their life style. Such conditions are: mobile phone's market price, spare part and battery prices, re-le price, used mobile phone price, and also service costs, etc. Students are also relatively literate to the condition of their own mobile phone. Thus, they know how to deal with their mobile phone especially when it is correlated to their financial condition since mobile phone has specific prices/financial values.

The second rank of the risk in this section is the psychological risks. The psychological risks are the risks that a poor product choice will disturb the consumer's psychological condition. It means that the factor influenced by the product is the respondents' psychological aspect such as respondent's self-confidence and feelings which then influence their behavior. One

of the examples is that if the respondent is using an old model of mobile phone that will lower the respondent's self-confidence or disturb their feeling about the product. Thus, this risk is more an inside factor of the respondents. Since mobile phones have become a life style among students, the demand of mobile phones' excellences is greater. It means that the mobile phones' excellences are demanded to satisfy the respondent's psychological factor. That is why; the psychological risks are placed in the second priority after functional and financial risks.

The third rank in this section is the physical risks that specifically related to the danger of the radiation emitted by mobile phones. Following the general assumption that radiation is harmful to the physical health, the issues that mobile phones' radiation is harmful have spread to the mobile phone's users. People and also students are trying to overcome this danger by many ways. One of them is by using radiation reducer lamps and avoiding using the mobile phone which they think is having harmful radiation. Since the effects are not directly visible, the awareness to the danger of radiation seems low although the respondents state that they are aware of the existence of mobile phones' radiation and think that the radiation endangers their physical health (see The Respondents' Profiles and Knowledge part's result). But, in this section, the physical risks are only placed in the third rank of the overall

product risks that the respondents are primarily avoided. It means that the respondents are not really aware of the physical health disturbances caused by the mobile phones' radiation since it is not directly visible and it is simple to be overcome.

The fourth rank and fifth rank is social risks and time risks. The social risks are more to the outside factor condition of the respondents that are influenced by the ownership of respondent's mobile phone. The example of social risk is when the respondent's mobile phone is considered as an old mobile phone, the respondent's relations/colleagues react negatively upon that mobile phone. It means that the social risks are the negative reaction of the social circumstances of the respondents regarding the respondent's mobile phone ownership. Since mobile phones have become an important communication tool today, the mobile phones' functional aspects are the most important to be considered. In addition to that, they have become a life style among students. Thus, the mobile phones' excellences are highly demanded and then it can drive to the appreciation from others. Therefore, the appreciations from others are the impact of both functional and excellences of the mobile phone. Those factors might explain why only a small number of respondents choose this risk as their first priority to be avoided.

The Time Risks means the time wasted if the product does not perform as expected. It is generally understood that the operation of the mobile phone depends on the signal emitted from the base station. In some regions, there are not any cell towers built. And at the end, it will disturb the users' communication process. The users usually try to find the signal or wait until the signal reaches their mobile phone which then is wasting their communication time. This is called time risks in this research. Since there are still many public phones available, the time risks problems are simply solved. In addition, many cellular providers are building new base stations to enlarge their range of signal to satisfy their users. That is why only a small number of respondents who choose this risk as their first priority to be avoided.

4.3.2. QUANTITATIVE ANALYSIS

The second analysis is Quantitative Analysis. This method of analysis is using some statistical measurement tools that are used to test the two research's hypotheses determined previously In this research, the writer is using Multiple Linier Regression to find out the equation. This equation reflected the existence of relationship patterns among the variables. The F-test is done to find out the significance of relationship between overall independents variables to dependent variables while the t-test is done to find out the significance of the relationship of each independent variable to

the dependent variable. Those calculations were done by using statistical computer program SPSS for Windows Release 10.00

4.3.2.1. MULTIPLE LINIER REGRESSION

This analysis tries to find out the relationship pattern among the variables. By using some calculation, the data acquired are then processed and the results are mentioned below.

Table. 4.9 Multiple Linier Regression Analysis Result and Its Outputs

Predictor Variables	Coefficient Values	t-values
Constant	25.733	7.341
X1	-0.668	- 2.748
X3	0.111	0.418
X4	1.155	3.784
X5	-0.473	- 2.692
X6	-0.287	- 1.397

Source: Primary Data Calculation

R	: 0.438
R^2	: 0.192
F stat	: 4.466

Those coefficients values above are indicating the pattern of the relationship between these independent variables and dependent variables. Recall from the Multiple Linier Regression equation in the previous chapter, the equation is:

$$Y = b_0 + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + b_6 X_6$$

Where:

Y = User's perception on product radiation safety

b_0 = constant

$b_1 - b_n$ = coefficient of independent variable

X_1 = Price of the mobile phone.

X_2 = Brand name of the mobile phone.

X_3= Specialty and reputable stores which are sell the mobile phone.

X_4 = Product test.

X_5 = Length of the mobile phone's warranty.

X_6 = Position of mobile phone's antenna

Thus, those coefficient variables in the table are tnen plug in to the equation above so that the Multiple Linier Regression equation is:

$$Y = 25.733 - 0.668X_1 + 0.111X_3 + 1.155X_4 - 0.473X_5 - 0.287X_6$$

The explanation about the pattern of the relationship between the variables above is as follows.

a. **Constant (b_o) = 25.733** it is the constant value which explain when the information about the other independent variables (Price of the mobile phone, Specialty and reputable stores which are sell the mobile phone, Product test, Length of the mobile phone's warranty, Position of mobile phone's antenna) are equal

to zero or none. There is a value in the amount of 25.733 of the perception on the mobile phone radiation safety. In other words, if there is no information about the independent variables (product attributes knowledge), the perception about mobile phone radiation safety exists.

b. **Coefficient variable of X_1 (b_1) = – 0.668** it means that there is an opposite direction between the variable X_1 (Price of the mobile phone) to the Y (User's Perception on Mobile Phone's Radiation Safety). It means that, the change in price of certain mobile phone is followed by the change of the radiation perception on that certain mobile phone oppositely. In other words, if there is a beliefs that the price of the mobile phone increases, the radiation safety perception on that mobile phone decreases and vice versa.

c. **Coefficient variable of X_3 (b_3) = 0.111** it means there is a same direction between the variable X_3 (Specialty and reputable stores which sell the mobile phone) to the Y (User's Perception on Mobile Phone's Radiation Safety). Thus, if the beliefs on the stores which sell the mobile phone increases, the radiation safety perception

on that mobile phone positive/increases as well and vice versa.

d. **Coefficient variable of X_4 (b_4) = 1.155** it means that there is a same direction between the variable X_4 (Product Test) to the Y (User's Perception on Mobile Phone's Radiation Safety). Thus, if the beliefs on product test is done by more reputable specialty media then the radiation safety perception on that mobile phone positive/increases as well and vice versa.

e. **Coefficient variable of X_5 (b_5) = - 0.473** it means that there is an opposite direction between the variable X_5 (Length of mobile phone warranty) to the Y (User's Perception on Mobile Phone's Radiation Safety). Thus, if the belief on the length of the mobile phone increases, the radiation safety perception on that mobile phone decreases and vice versa.

f. **Coefficient variable of X_6 (b_6) = - 0.287** it means that there is an opposite direction between the variable X_6 (Position of mobile phone antenna) to the Y (User's Perception on Mobile Phone's Radiation Safety). Thus, if the belief on the position of the mobile phone's antenna is increases, the radiation safety perception on that mobile phone decreases and vice versa.

4.3.2.2. FIRST HYPOTHESIS

The first hypothesis in this research is "there is a strong influence between the overall product's attributes to the users' perception on the mobile phone's radiation safety altogether". This hypothesis has two objectives. The first is to find out the significance of the Multiple Linier Regression equation and the coefficients of the variables which indicating the relationship or influence. The second is to determine the power of the relationship or, in other word, the influence power of the overall product attributes altogether and also each/partially product attributes to the user's perception on the mobile phone's radiation safety. Thus, to achieve these objectives, it needs some calculation based on the data acquired in order to decide the answers of the hypothesis.

The first method of calculation used is by using Multiple Correlation Analysis to find the value of Multiple Correlation Coefficient (R) and then followed by Multiple Coefficient of Determination (R^2). After that, the coefficient is tested its significance of the model or its overall explanatory power (R^2) significance by using F-test.

a. Multiple Correlation Analysis

The output of the Multiple Correlation Analysis calculation is Multiple Correlation Coefficient (R) which reflects the existence of relationship. This coefficient then

can be derivates to get Multiple Coefficient of Determination (R^2). This coefficient indicates the explanatory power of overall independent variables (X_1-X_6) to the dependent variables (Y) or the closeness of the relationship which reflect the influence of the overall independent variables to the dependent variables.

From Table 4.9, the value of R is 0.438. This value indicates that there is a positive relationship between the dependent to the independent variables. Then the value of R^2 is 0.192. Since the interpretation of the value of R^2 is in percent, the number above is then interpreted as 19.2%. It means that, 19.2% of the dependent variable (Y) is explained by overall independent variables (X_1-X_6). Thus, the rest (80.8%) is explained by other factors instead of the overall independent variables. In other word, the independent variables (X_1-X_6) have weak/small influence to the dependent variables Y or the beliefs on overall product attributes have a small relationship or weak influence to the users' perception on mobile phone's radiation safety since most of the factor which explained the perception on mobile phone radiation safety explained by other factors instead of product attributes.

b. Statistical Significance of Overall Explanatory Power Test (F Test)

The next analysis is F-test, which measures the significance values of the overall independent variables to the dependent variable. The steps of this test are:

i) Set the hypothesis, which are:

Ho: b1= b3 =.....= b6 = 0 → There is no significant relationship between Y and at least one of the independent variable (b1-b6) and that the regression equation as a whole is not significant

Ha: one or more of the b is not equal to zero → There is a significant relationship between Y and at least one of the independent variable (b1-b6) and that the regression equation as a whole is significant

ii) The result decision based on the test is as follows:

F statistic < F table → Ho is accepted (Ha is rejected)

F statistic > F table → Ho is rejected (Ha is accepted)

iii) The result of the F-test calculation is as follows:

Significance level	: 5%
Numerator (N variable – 1)	: 5 (6 - 1)
Denumerator (N cases – N variable)	: 94 (100 - 6)
F table	: 2.3113
F statistic	: 4.466

iv) Decision: Since the F statistic is greater than F table (F statistics > F table), Ho is rejected and Ha is accepted.

v) Interpretation from the decision made above is: There is a significance relationship between Y and at least one of the independent variable (b1-b6) and that the regression equation as a whole is significant

From the calculation above, it can be concluded that the Multiple Linier Regression equation is significance or in other word the equation is appropriate for estimation. The coefficients of the variable which indicating the overall relationship or influence power of the independent variables (mobile phone product attributes) to the dependent variable (user's risk perception on the mobile phone's radiation) is considered significant.

c. Statistical Significance of t-value (t-test)

This test is done to find out whether the t-values of the variables are significant or trusted or not. This test is done to each of the t-value of the variable.

i) The t value of variable X_1

a) Set the hypothesis, which are:

Ho: $\beta_1 = 0$ → variable X_1 has no effect to variable Y when other variables remain constant

Ha: $\beta_1 =/= 0$ → variable X_1 has no effect to variable Y when other variables remain constant

b) The result decision based on the test is:

t statistic < t table → Ho is accepted

t statistic > t table → Ho is rejected

c) The result of the t-test calculation is as follows:

Significance level	: 5%
Degree of Freedom (N -2)	: 98 (100-2)
t table	: 1.984
t statistic (see Table 4.9)	: - 2.748

d) Decision: Since the t statistic is greater than t table (t statistics > t table) the decision is rejecting Ho and accepting Ha.

e) Interpretation from the decision made above is that: variable X_1 (Price of the mobile phone)

significantly affects Y (the user's perception on the mobile phone's radiation safety) when other variables remain constant

ii) The t value of variable X_3

a) Set the hypothesis, which are:

Ho: $\beta_3 = 0$ → variable X_3 has no effect to variable Y when other variables remain constant

Ha: $\beta_3 =/= 0$ → variable X_3 has no effect to variable Y when other variables remain constant

b) The result decision based on the test is:

t statistic < t table → Ho is accepted

t statistic > t table → Ho is rejected

c) The result of the t-test calculation is as follows:

Significance level	: 5%
Degree of Freedom (N -2)	: 98 (100-2)
t table	: 1.984
t statistic (see Table 4.9)	: 0.418

d) Decision: Since the t statistic is lesser than t table (t statistics < t table) the decision is accepting Ho and rejecting Ha.

e) Interpretation from the decision made above is that: variable X_3 (Specialty and reputable stores which sell mobile phone) **does not significantly**

affect Y (the user's perception on the mobile phone's radiation) when other variables remain constant

iii) The t value of variable X_4

a) Set the hypothesis, which are:

Ho: $\beta_4 = 0$ → variable X_4 has no effect to variable Y when other variables remain constant

Ha: $\beta_4 =/= 0$ → variable X_4 has no effect to variable Y when other variables remain constant

b) The result decision based on the test is:

t statistic < t table → Ho is accepted

t statistic > t table → Ho is rejected

c) The result of the t-test calculation is as follows:

Significance level	: 5%
Degree of Freedom (N -2)	: 98 (100-2)
t table	: 1.984
t statistic (see Table 4.9)	: 3.784

d) Decision: Since the t statistic is greater than t table (t statistics > t table) the decision is rejecting Ho and accepting Ha.

e) Interpretation from the decision made above is that: variable X_4 (Product Test) **significantly** affects Y (the user's perception on the mobile

phone's radiation safety) when other variables remain constant.

iv) The t value of variable X_5

a) Set the hypothesis, which are:

Ho: $\beta_5 = 0$ → variable X_5 has no effect to variable Y when other variables remain constant

Ha: $\beta_5 =/= 0$ → variable X_5 has no effect to variable Y when other variables remain constant

b) The result decision based on the test is:

t statistic < t table → Ho is accepted

t statistic > t table → Ho is rejected

c) The result of the t-test calculation is as follows:

Significance level	: 5%
Degree of Freedom (N -2)	: 98 (100-2)
t table	: 1.984
t statistic (see Table 4.9)	: - 2.692

d) Decision: Since the t statistic is greater than t table (t statistics > t table) the decision is rejecting Ho and accepting Ha.

e) Interpretation from the decision made above is that: variable X_5 (Length of the mobile phone warranty) **significantly** affects Y (the user's

perception on the mobile phone's radiation safety) when other variables remain constant

v) The t value of variable X_6

a) Set the hypothesis, which are:

Ho: $\beta_6 = 0$ → variable X_6 has no effect to variable Y when other variables remain constant

Ha: $\beta_6 =/= 0$ → variable X_6 has no effect to variable Y when other variables remain constant

b) The result decision based on the test is:

t statistic < t table → Ho is accepted

t statistic > t table → Ho is rejected

c) The result of the t-test calculation is as follows:

Significance level	: 5%
Degree of Freedom (N -2)	: 98 (100-2)
t table	: 1.984
t statistic (see Table 4.9)	: - 1.397

d) Decision: Since the t statistic is lesser than t table (t statistics < t table) the decision is accepting Ho and rejecting Ha.

e) Interpretation from the decision made above is that: variable X_6 (Position of mobile phone antenna) **does not significantly** affect Y (the user's perception on the mobile phone's

radiation safety) when other variables remain constant.

From the results above indicates that the influence of the overall product attributes is considered weak (R^2 result) even though the overall coefficients of product attributes are considered significant or overall product attributes can significantly affect the user's perception on mobile phone safety (dependent variable) altogether.

The partial significance test (t-test) indicates that not all t-values of the independent variables are considered significant or not all product attribute is having significant influences to the user perception on mobile phone safety when other product attributes are considered constant. There are 2 variables which are not significant which are: Specialty and reputable store which sell the mobile phone variable and Position of mobile phone antenna. It means that the product attributes are not simultaneously affects the user perception on mobile phone safety. Based on the R^2 value and the t-test results, **the first hypothesis should be rejected.**

4.3.2.3. SECOND HYPOTHESIS

The second hypothesis in this research is "the dominant product attributes that can influence the user's perception on the mobile phone's radiation safety (Y) is the position of antenna

(X_6)". To answer this hypothesis, the dominant influence of the product attributes can be observed from the multiple linier regression result and then followed by testing the significance of each of the coefficient by using t-test to determined whether the coefficient is significance/trusted or not.

From Table 4.9, it is showed that coefficient of variable X_4 (1.155) is the biggest value among others variable's coefficients value. The same is true for the value of t which reflects the value of the variable partially from other variables. The t-value of X_4 is 3.784 which is the biggest value among other variable t-values. Thus, the product attributes which have the dominant power influencing the user's risk perception on mobile phone's radiation safety is Product Test.

From the results of the significance test of t-values above, it indicates Product Test t-value is considered significance which means that the coefficient and the model are appropriate to be used for prediction or estimation. Regarding to those results above, **the second hypothesis is rejected** since the hypothesis stated that the dominant product attribute which influences the user's perception on mobile phone's radiation safety is The Position of Mobile Phone Antenna.

4.4. IMPLICATIONS OF THE RESULTS

Based on the analysis's results above there are some points that should be considered in order to take the final conclusions. Those points are stated below.

4.4.1. THE RESPONDENTS' KNOWLEDGE ABOUT MOBILE PHONE'S RADIATION

The result of the Descriptive Qualitative Analysis in the first part of the questionnaire, which is The Respondents' Profile and Knowledge about mobile phone's radiation, indicates that **most of the respondents are literate to the existence of the mobile phone radiation.** There are about 87 percent of the overall respondents who convince about the existence of the mobile phone's radiation and there are only 13 percent of the respondents who do not be convincing about the existence of the mobile phone's radiation. It means that, people generally know that the mobile phone is emitting radiation in its operation.

People believed that the radiation, in general, has bad effect to human health. Thus, the respondents who believed the existence of the radiation are then asked about whether the radiation of the mobile phone endangers the human health. The result is about 96.55 percent of the respondents believed that the existing radiation of the mobile phone endangers human health. The rest 3.45 percent do not believe that the radiation endangers human

health which means that they claim the mobile phone is emitting a safe radiation to human health. The number above indicates that **most of the respondents are convinced that the mobile phone's radiation endangers to human health**.

4.4.2. THE PRODUCT'S RISKS THAT THE RESPONDENTS ARE PRIMARILY AVOIDED

The Respondents' Primarily Avoidance on Product's Risks part's result indicates that **most of the respondents place the Functional Risks and Financial Risks as their first priority of product's risks that they avoid the most**. There is about both 31 percent of the overall respondents who choose the functional risks and financial risks as their first priority to be avoided. The next rank is Psychological Risks (13%), followed by Physical Risks (11%), Social Risks (8%), and the last risk is Time Risks (5%). Those numbers indicate that the respondents are not really aware to the physical risks caused by the mobile phone radiation even though most of them are literate to the existence of the mobile phone's radiation (see preceding result) and perceived that radiation affect their health. They consider more on the functional excellences of their mobile phone and avoid the mobile phone that does not function well. Most of them also regard the financial values which relate to their mobile phone. They avoid the mobile phone which can give financial lost in the future.

4.4.3. THE RELATIONSHIP BETWEEN THE PRODUCT'S ATTRIBUTES (X_1-X_6) TO THE USER'S PERCEPTION ON MOBILE PHONE'S RADIATION SAFETY (Y)

The first objective of this research is to find out whether the relationship between the product attributes that the product have to the perception of the users on the mobile phone's radiation safety exist or not. Any explanation on how such relationship exist and the description about the relationship it self is not based on the analysis result done before but it comes from the observation, knowledge and also logical thinking which may raise arguments. Actually, this explanation is out of the main research objective, thus, the writer only gives several opinions about it.

1. Multiple Regression Equation

The Multiple Linear Regression Analysis results above indicate that there are **two patterns of direction of the relationship between the variable independents (product attributes) to the dependent variable (user's perception on mobile phone's radiation safety) altogether**. Those relationship patterns are negative pattern and positive pattern. The negative pattern belongs to the variable Price of the Mobile Phone, Length of the Mobile Phone's Warranty and Position of Mobile Phone's Antenna.

a. **Coefficient regression variable of Price of the Mobile Phone = – 0.668** it means that there is an opposite direction between the variable X_1 (Price of the mobile phone) to the Y (User's Perception on Mobile Phone's Radiation Safety). Thus, if the beliefs on the price of the mobile phone are increases, the radiation safety perception on that mobile phone decreases and vice versa. The higher price of the mobile phone does not indicate that this mobile phone has a higher degree of radiation safety and the lower price of the mobile phone is perceived as having higher safety. This is interesting since, generally speaking, most of the products which people perceived as having high degree of safety also have high prices as well. This phenomenon can be explained since the product (mobile phone) has its own characteristics which are distinctive to the other products regarding to its safety. The first characteristic is that there is more effort to develop the operational functions of mobile phone such as: mobile phone's features, mobile phone's shape and extensive service provided by cellular telecommunication provider, etc. Meanwhile, the safety regarding to the radiation does not significantly change. As a result, users have perception that mobile phone emitting the same degree of radiation regardless their prices. Secondly, the more features provided by the mobile phone make the users

utilize their mobile phone more frequent. It means that frequent usage of the mobile phone causes the users to be exposed to more radiation emitted by the mobile phone. Thus, the higher the price of mobile phones, the more features they provide.

b. **Coefficient regression variable of Length of Product Warranty =-0.473** it means that there is an opposite direction between the variable X_5 (Length of mobile phone warranty) to the Y (User's Perception on Mobile Phone's Radiation Safety). Thus, if the belief on the length of the mobile phone increases, the radiation safety perception on that mobile phone decreases and vice versa. This result shows that the mobile phone is covers the guarantee on functional values. The warranty of the mobile phone does not cover the guarantee whether the product endangers or disturbances human health or not. As a result, whether the warranty of the mobile phone is longer or not, it does not reflect that the product will be safe to be used or not.

c. **Coefficient regression variable of Position of Antenna = - 0.287** it means that there is an opposite direction between the variable X_6 (Position of mobile phone antenna) to the Y (User's Perception on Mobile Phone's Radiation Safety). It means that, if the belief on position of the mobile phone's antenna increases then the radiation safety perception on that mobile phone decreases and vice versa. As mentioned before,

the mobile phone vendors still put more consideration to the functional values of the mobile phone they produce. Several years ago, mobile phone vendors design their mobile phones to have internal antenna. They claimed that this new model reduced the radiation emitted by the mobile phone. Yet, the market also found that the external antenna was not ergonomic and the trend at that time was internal antenna mobile phone. Thus, when the internal antenna mobile phone was tested, the mobile phone radiation still existed although the position of the antenna had been changed. The radiation exists by the operation of the mobile phone in emitting its communication signal. Thus, the radiation always exists when the mobile phone works well regardless the different position of the antenna.

The variables that have positive pattern belong to Specialty and Reputable Store which sell the Mobile Phone and Product Test. This direction means that the change of the belief on each the product's attribute is followed by the change of the perception on the product's radiation safety in the same direction.

a. **Coefficient regression variable of Store which Sell the Product = 0.111** it means there is the same direction between the variable X_3 (Stores which sell the mobile phone) to the Y (Perception on Product Safety). Thus, if the beliefs on the

stores which sell the mobile phone increases then the radiation safety perception on that mobile phone positive/increases and vice versa. This result shows that the specialist store and the store which have high reputation are the indicators of their intention and commitment in maintaining the quality of the store. The authorized stores of the mobile phone vendors, for example: Grha Nokia Yogyakarta, compared to the other mobile phone store, for example: Macell, is having higher reputation and Grha Nokia must keep its advantage in order to keep their image and customers. Thus, for this kind of mobile phone store, selling genuine and appropriate products instead of fake and inappropriate product is one of the ways in maintaining their reputation. At the end, the consumers will have positive perception to this kind of store. They believe that the store only offers high quality of product. Thus, the high quality product means high degree of product safety including its radiation safety.

b. **Coefficient regression variable of Product Test = 1.155** it means that there is the same direction between the variable X_4 (Product Test) to the Y (User's Perception on Mobile Phone's Radiation Safety). Thus, if the beliefs on product test which done by more reputable and specialist media increases, it will causes the radiation safety perception on that mobile phone

becomes positive/increases and vice versa. It is common for the media, magazine or tabloid, to test a certain new model of a product to give an illustration and facts about the real condition of the product tested. The product test done by the more popular and reputable mobile phone media having indicates that the test is done in a professional way. It means that, qualified parties are involved the test. This is important to be implemented since the mobile phone specialty media must keep their reputation by giving valid and qualified information from its experts for public consumption. Thus, people will trust this media because its intention in maintaining the good quality of information. The product test regarding the safety of the mobile phone toward its radiation done by popular and reputable media is highly trusted by the people rather than the less popular and less reputable media.

2. Multiple Coefficient of Determination, Statistical Significance of Overall Explanatory Power Test (F Test) and Statistical Significance of t-value (t-test).

From the value of the Multiple Coefficient of Determination, the closeness of the relationship between the overall product's attributes to the user perception on mobile phone safety is only 0.192. It can be interpreted that there is only 19.2%

of User's Perception on Mobile Phone's Safety Radiation (Y) is explained by the overall Product Attributes (X_1-X_6).

And from the F-test result, the model and also the coefficient are considered significant although the relationship between the overall products' attributes to the user perception on mobile phone safety is considered weak. From the results of the significance of F indicates that the overall independent variables are significantly affect the dependents variable altogether. This result indicates also that the equation of the multiple linier regressions is appropriate for estimation.

From the significant t-value test indicates that not all t-value of each independent variable is significant. There are two variables, Specialty and reputable store which sell the mobile phone variable and Position of mobile phone antenna, which are not considered significant. Based on the R^2 value and t-test results done above, the first hypothesis is rejected.

3. The Dominant Influence of the Product Attribute to the Users' Perception on Mobile Phone's Radiation Safety.

The Multiple Regression Coefficients and its t-values analysis answering the second hypothesis which is "the dominant product attributes that can influence the user's risk perception on the mobile phone's radiation (Y) is the position of mobile phone antenna (X_6)". Based on the result of the Multiple Regression

Coefficients and it t values indicates that the Position of Mobile Phone Antenna (X6) has less coefficient regression value and t-value compared to the Product Test t-value (-0.287 compared to 1.155 and -1.397 compared to 3.784 respectively).

Then the t-value of each independent variable is tested to find its significance. The independent variables which are considered having significant t-values are: Price of the Mobile Phone (X_1), Product Test (X_4) and Length of Mobile Phone Warranty (X_5). While the other coefficients of each independent variable are considered as having insignificant value (Specialty and Reputable Store which sell the Mobile Phone variable and Position of Mobile Phone Antenna variable).

The explanation above indicates that the t-value and model of the variable Product Test (X_4) is significant compared to the Position of Mobile Phone Antenna (X_6) variable which is not significant. In conclusion, the product attribute which dominantly influence the user's perception on mobile phone safety is product test. It means that **the second hypothesis is also rejected.**

4.5. LIMITATION OF THE RESEARCH

There is no research without limitations bring on it. This research is considered as social research which investigates the behavior of the people. Since this research is investigating people, any changes and

uncertainty can happen which is caused by the dynamic of the people and their social life. Of course it will limit the research and the researcher should try to overcome those limitations in order to get the appropriate results. There are some points that this research considers as the research limitations. Those points are:

a. This research has limited references since the theme of this research emphasizes the role of the perception on the product attribute of a certain product to the product risk which the product has. Similar to the previous studies, which is Tse research and Siu associates with Han's research, this research is trying to relate the product risk to the product quality which had already been studied more. The limitation of references and also the effort to relate the product risk to the product quality may raise arguments in it.

b. The previous studies (Tse's research and Siu's research) were using MANOVA method in analyzing the data acquired while in this research the writer was using Multiple Linier Regression which may give different results. It is suggested, for the next study, to apply the similar method or other method for giving new point of view of the phenomenon.

c. The writer is having difficulties in determining the exact number of the population because the population is having unknown number. As a result, the writer finds it difficult to determine the proportion of the students who would be selected as respondents based on their

Academic Year and Major. The respondents who came from Academic Year and Major which have small number of members are not covered in this research since the method of collecting data is 'mall intercept" and the sampling method is by convenience sampling and filter the respondents by giving filter questions.

d. Some of the respondents had difficulties in filling in the questionnaire since the this research's theme is about mobile phone radiation whereas most of the respondents are not really dealing with or are not about aware it when they choose and use mobile phone.

e. Some of the respondents failed to identify their mobile phone frequency operation (GSM/AMPS/NMT/CDMA). Since the mobile phone frequency operation is considered as one of the filter question to get respondents needed, the writer had to give assistance in filling in this question.

f. The question in Part Two or The Respondents' Primary Avoidance on Product's Risks are slightly difficult to be understood by some of the respondents since the terminology of the product risks are still odd for them. They are also difficult to identify whether an items being questioned belongs to what part of product risks.

g. Not all of the respondents' mobile phones are tested by media. As a result, some of the respondents are failed to fill in the question especially in part 4 of the questionnaire (The Student's/Users' Evaluation about Their Mobile Phone Radiation Safety).

h. There is one variable which previously set in the questionnaire which considered not reliable. This variable is Brand name of the Mobile Phone. Although from the validity test this variable is considered valid, this variable is not reliable for the analysis. This result indicates that the structure of the questionnaires have to be revised in order to include the Brand name variable since this variable is one of the variables proposed by the previous studies (Tse's and Siu's) and also this variable is one of the important product attribute of such a product.

i. The method of collecting data is 'mall-intercept" and the sampling method by convenience sampling and filter the respondents by giving filter questions may give a bias. This usually happens because of specific characteristics of the data collecting method being used.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

5.1. CONCLUSIONS

Based on the calculation result and analysis on the previous chapter and by relating them to the research objectives set before, it can be concluded that:

a. **The overall mobile phone's product attributes do not have a strong influence to the users' perception on the mobile phone's radiation safety altogether.** It is shown from the result of the Multiple Coefficient of Determination (R^2), the significance of F, t-values and it significance.

The result of Multiple Coefficient of Determination is 0,192. In other words there is only 19.2% of the user's perception on mobile phone radiation safety is explain by the overall mobile phone product attributes altogether. This number indicates that the influence of the overall product attributes is considered weak or it does not have a strong influence to the user's perception on the mobile phone's radiation safety since the rest value which is 80.8% is explain by other factors instead of mobile phone's product attributes.

The result of significance test of F which reflects the significance of the coefficients and equation of multiple regressions indicates that

the F-value is considered significant. This fact indicates that the coefficient and equation of multiple regressions is appropriate for estimation and there is a significant influence of overall independent variables (product attributes) to the dependent variable.

The result of t-value significance test indicates that not all of the t-values of independent variables are considered significant. Those independent variables are Specialty and reputable store which sell the mobile phone and position of mobile phone antenna. This means that the t-value or partial coefficient, which indicates the individual influence of each variable, cannot significantly affect the dependent variable simultaneously since there are independent variables (product attributes) which considered insignificant influences the dependent variable (user's perception on mobile phone radiation safety).

Although the users are literate and they realize the existence of radiation which endangers their health, the users are unaware of the radiation. The users emphasize in avoiding the functional risks and financial risks of the mobile phone rather than the physical risks that they will experience in using the mobile phone. This fact may become the factor which explained the weak influences of the product attributes to the users' perception on the mobile phone's radiation safety.

b. **The mobile phone's product attribute which dominantly affects the user's perception on mobile phone radiation safety is Product Test by media.** It is shown from the Multiple Linier Regression Coefficient result which shows that Product Test coefficient value is the greatest values among other variables' values (1.155). Then, the t-value of the Product Test coefficient also has the greatest value among other variables' t-values (3.784). This is true, since a media which perform product test to a certain product must pay attention in maintaining the credible information to be presented to the society. By using qualified experts, the information from the test can be gained properly. In the end, the readers or the information's recipients are believed and influenced by the information they got since the media is giving credible and accurate information about the product.

5.2. RECOMMENDATIONS

A research is useful when it gives some points to be implemented and also gives recommendation to the society for better condition. Considering the results, analysis and the implications of the research above, the writer tries to give some recommendations to the intended parties.

a. Although in some countries the discussion about the danger of the mobile phone radiation has increased in these recent years, the mobile phone vendors would consider that the mobile phone users in Indonesia are still unaware of it. Thus, the vendors develop their products without paying

attention to the safety of their products. For example, they only develop the products on its functional factors i.e. developing the mobile phone features, durability, model and technology. This is because the users consider these factors in avoiding the functional risks of the operation of mobile phone.

b. The financial risks factors are also the risks that the users are avoided most. That is why, the vendors develop the mobile phone that can reduce or minimize the financial loss experienced by the users. For example: by designing the similar battery shape, providing warranty, spreading the spare part distribution, etc.

c. The vendors should maintain good relationship to more media specialist that are reputable in order to shape the perception of the consumers through the media's product test or others media's articles/news. This perception is not only about the product's radiation safety but also others aspects of the product such as: the quality, features offered services, etc.

d. The mobile phone store must develop its reputation among the society. The reason is that the consumers have good perception to the stores which have higher reputation within the business. The good reputation may come from the quality of the product and service given by the stores.

e. For the students and academicians, this research is based on the actual condition of the fields that reflects the actual condition of the mobile phone users. Considering this condition, the results gained from this research may not confirm the theories and also the general truth which

research may not confirm the theories and also the general truth which people believed. The people condition is dynamic and it is possible to find the unusual condition within them.

f. There are not many studies about the product safety compare to the studies which investigate the product quality. This can be a motivator for others to try another investigation related to the product safety in order to find the best conclusion of the factors which truly influence the product users regarding the product safety. Those investigations may be implemented to the more various products and by using various relevant research methods.

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APPENDICES

APPENDIX 1
QUESTIONNAIRE

(Studi Kasus Pada Persepsi Mahasiswa Universitas Islam Indonesia
Mengenai Keamanan Telepon Genggam Terhadap Radiasi Telepon Genggam)

KUISIONER

ıssalamualaikum wr.wb.

Kami adalah mahasiswa Universitas Islam Indonesia yang sedang mengerjakan tugas akhir dengan judul "Atribu 'roduk yang Mempengaruhi Persepsi Resiko Konsumen Terhadap Keamanan Produk". Kuesioner ini adalah salah satu da ıetode kami untuk mengumpulkan data yang diperlukan untuk analisa di penelitian tersebut diatas. Kami sang: ıengharapkan bantuan dan partisipasi anda untuk mengisi kuesioner ini agar proses penelitian kami dapat berjalan denga ancar. Atas segenap perhatian dan partisipasinya kami ucapkan terimakasih.

Vassalamualaikum wr.wb.

Haryo Sastomo Sejati
(99 311 273)

A. Profil dan Tingkat Pengetahuan Responden

Petunjuk: Berilah tanda silang (x) pada jawaban yang tersedia sesuai dengan keadaan anda yang sebenarnya!

1. Gender (jenis kelamin) anda:
   a. Pria
   b. Wanita

2. Jurusan anda:
   a. Akuntansi
   b. Manajemen
   c. Ekonomi Pembangunan
   d. IP-Accounting
   e. IP-Management
   f. IP-Economic Development

   Angkatan:.....

3. Apakah anda membeli telepon genggam anda dalam kondisi baru (bukan telepon genggam second hand/ bekas)?
   a. Ya
   b. Tidak

4. Apakah anda yakin bahwa telepon genggam beradiasi?
   a. Yakin (lanjut ke pertanyaan no 5)
   b. Tidak yakin (langsung ke pertanyaan no 6)
   c. Tidak tahu (langsung ke pertanyaan no 6)

5. Apakah anda yakin bahwa radiasi telepon genggam dapat mengganggu kesehatan?
   a. Yakin
   b. Tidak Yakin
   c. Tidak tahu

6. Sistem jaringan operasi telepon genggam anda....
   a. GSM
   b. AMPS
   c. CDMA
   d. Tidak tahu
   e. Lainnya, sebutkan.....

B. Resiko Produk yang Paling Dihindari Pengguna Telepon Genggam

Petunjuk: **Rangkinglah** faktor–faktor resiko dalam penggunaan telepon genggam dibawah ini (rangking 1 s/d 6) yang akan **anda prioritaskan untuk anda kurangi dan/atau hindari** dalam memilih dan menggunakan telepon genggam! (angka 1 menunjukkan yang paling anda hindari dan/atau kurangi sampai dengan angka 6 yang menunjukkan rangking yang paling tidak anda hindari dan/atau kurangi).

Contoh pengisian:

Nomor Faktor Resiko	**1**	**2**	**3**	**4**	**5**	**6**
Rangking/Prioritas	...4...	...2...	...5...	...1...	...6....	...3...

Faktor-faktor resiko dalam penggunan telepon genggam antara lain:

Faktor Resiko	**D e s k r i p s i R e s i k o**
Resiko No. 1 Resiko Finansial	Resiko kerugian secara ekonomis setelah memiliki telepon genggam tersebut
Resiko No. 2 Resiko Unjuk Kerja	Resiko kegagalan/kerusakan dalam unjuk kerja/performa dari telepon genggam tersebut ketika digunakan
Resiko No. 3 Resiko Fisik	Resiko penggunaan telepon genggam terhadap kesehatan fisik anda sebagai pengguna telepon genggam dan/atau orang lain
Resiko No. 4 Resiko Psikologis	Resiko imej diri negatif yang muncul ditimbulkan dari kepemilikan telepon genggam tersebut
Resiko No. 5 Resiko Imej Sosial	Resiko pandangan orang lain/imej sosial negatif terhadap anda yang muncul ditimbulkan dari kepemilikan telepon genggam tersebut
Resiko No.6 Resiko Waktu	Resiko kehilangan waktu dalam menggunakan telepon genggam dalam berkomunikasi

Isilah dalam tabel dibawah ini prioritas anda dalam mengurangi dan/atau menghindari resiko dalam kepemilikan dan penggunaan telepon genggam!

Nomor Faktor Resiko	**1**	**2**	**3**	**4**	**5**	**6**
Rangking/Prioritas Anda	.....	.....	.....	.....	.....	.....

C. Tingkat Kepercayaan Mahasiswa Terhadap Radiasi Telepon Genggam Dilihat dari Atribut Telepon Genggam Tersebut.

Petunjuk: Berilah tanda cek (√) pada kolom yang menggambarkan tingkat kepercayaan anda terhadap tingkat keamanan dari radiasi telepon genggam dilihat dari atribut-atribut yang terdapat dalam telepon genggam.

STS = Sangat Tidak Setuju S = Setuju N = Netral

TS = Tidak Setuju SS = Sangat Setuju

No	Tingkat Kepercayaan terhadap HARGA	STS	TS	N	S	SS
1	Saya percaya bahwa harga telepon genggam yang **mahal** (>Rp 2.000.000,00) dapat mengindikasikan aman tidaknya radiasi yang ditimbulkan oleh telepon genggam tersebut.					
2	Saya percaya bahwa harga telepon genggam yang **medium** (Rp 1.000.000,00–Rp 2.000.000,00) dapat mengindikasikan aman tidaknya radiasi yang ditimbulkan oleh telepon genggam tersebut.					
3	Saya percaya bahwa harga telepon genggam yang **murah** (<Rp 1.000.000,00) dapat mengindikasikan aman tidaknya radiasi yang ditimbulkan oleh telepon genggam tersebut.					
No	**Tingkat Kepercayaan terhadap MEREK**	**STS**	**TS**	**N**	**S**	**SS**
4	Saya percaya bahwa **merek telepon genggam yang sering saya dengar** dapat mengindikasikan aman tidaknya radiasi yang ditimbulkan oleh telepon genggam tersebut.					
5	Saya percaya bahwa **merek telepon genggam yang jarang saya dengar** dapat mengindikasikan aman tidaknya radiasi yang ditimbulkan oleh telepon genggam tersebut.					
No	**Tingkat Kepercayaan terhadap TOKO**	**STS**	**TS**	**N**	**S**	**SS**
6	Saya percaya bahwa telepon genggam yang dijual di **dealer resmi dari vendor/produsen telepon genggam tersebut** (contoh: Grha Nokia, Grha Sony-Erricson) dapat mengindikasikan aman tidaknya radiasi yang ditimbulkan oleh telepon genggam tersebut.					
7	Saya percaya bahwa telepon genggam yang dijual di **toko khusus telepon genggam** dapat mengindikasikan aman tidaknya radiasi yang ditimbulkan oleh telepon genggam tersebut					

	Saya percaya bahwa telepon genggam yang dijual di **konter-konter yang berada di pusat perbelanjaan, gedung atau mall** dapat mengindikasikan aman tidaknya radiasi yang ditimbulkan oleh telepon genggam tersebut.					
No	**Tingkat Kepercayaan terhadap TES PRODUK**	**STS**	**TS**	**N**	**S**	**SS**
	Saya percaya bahwa **tes produk yang dilakukan oleh media yang bereputasi baik** dapat mengindikasikan aman tidaknya radiasi yang ditimbulkan oleh telepon genggam tersebut.					
0	Saya percaya bahwa **tes produk yang dilakukan oleh media yang bereputasi kurang baik** dapat mengindikasikan aman tidaknya radiasi yang ditimbulkan oleh telepon genggam tersebut.					
No	**Tingkat Kepercayaan terhadap GARANSI**	**STS**	**TS**	**N**	**S**	**SS**
1	Saya percaya bahwa telepon genggam yang **bergaransi lebih dari 1 tahun** dapat mengindikasikan aman tidaknya radiasi yang ditimbulkan oleh telepon genggam tersebut.					
2	Saya percaya bahwa telepon genggam yang **bergaransi 1 tahun** dapat mengindikasikan aman tidaknya radiasi yang ditimbulkan oleh telepon genggam tersebut.					
3	Saya percaya bahwa telepon genggan yang **bergaransi kurang dari 1 tahun** dapat mengindikasikan aman tidaknya radiasi yang ditimbulkan oleh telepon genggam tersebut.					
14	Saya percaya bahwa telepon genggam yang **tidak memberikan garansi** dapat mengindikasikan aman tidaknya radiasi yang ditimbulkan oleh telepon genggam tersebut.					
No	**Tingkat Kepercayaan terhadap LETAK ANTENA**	**STS**	**TS**	**N**	**S**	**SS**
15	Saya percaya bahwa telepon genggam yang **berantena internal/built in antenna** dapat mengindikasikan aman tidaknya radiasi yang ditimbulkan oleh telepon genggam tersebut					
16	Saya percaya bahwa telepon genggam yang **berantena eksternal** dapat mengindikasikan aman tidaknya radiasi yang ditimbulkan oleh telepon genggam tersebut.					

D. Sikap/Evaluasi Mahsiswa/Pengguna Telepon Genggam Terhadap Radiasi Telepon Genggam yang Mahasiswa/Pengguna Miliki Dilihat dari Atribut Produk Telepon Genggam Tersebut.

Petunjuk: Berilah tanda cek (√) pada kolom menggambarkan sikap/evaluasi anda terhadap tingkat keamanan dari radiasi telepon genggam yang anda miliki dilihat dari atribut-atribut dari telepon genggam anda

Sikap/evaluasi saya terhadap telepon genggam saya	STS	TS	N	S	SS
Harga dari telepon genggam saya dapat menunjukkan tingkat keamanan dari radiasi yang ditimbulkan oleh telepon genggam saya					
Merek dari telepon genggam saya dapat menunjukkan tingkat keamanan dari radiasi yang ditimbulkan oleh telepon genggam saya					
Tempat saya membeli telepon genggam saya dapat menunjukkan tingkat keamanan dari radiasi yang ditimbulkan oleh telepon genggam saya.					
Tes produk yang dilakukan terhadap telepon genggam saya yang dilakukan oleh berbagai media dapat menunjukkan tingkat keamanan dari radiasi yang ditimbulkan oleh telepon genggam saya					
Garansi telepon genggam saya dapat menunjukkan tingkat keamanan dari radiasi yang ditimbulkan oleh telepon genggam saya					
Posisi antena pada telepon genggam saya dapat menunjukkan tingkat keamanan dari radiasi yang ditimbulkan oleh telepon genggam saya					

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APPENDIX 2
VALIDITY AND RELIABILITY RESULTS

Case Summaries for Validity and Reliability Tests

Resp	Y						X1			X2		X3			X4		X5				X6	
	1	2	3	4	5	6	1	2	3	1	2	1	2	3	1	2	1	2	3	4	1	2
1	3	2	2	2	2	3	4	4	5	3	2	4	3	3	4	3	4	3	3	4	3	3
2	1	2	1	5	1	3	5	4	3	4	3	4	3	3	4	3	3	3	2	1	4	5
3	4	4	4	5	4	5	5	4	3	3	3	4	3	3	5	3	4	2	3	2	2	4
4	3	4	3	4	3	4	3	4	2	3	3	4	3	3	4	3	5	4	3	3	4	3
5	3	3	2	3	3	3	4	4	3	3	3	3	3	3	5	3	4	3	3	3	3	3
6	3	4	3	4	5	4	3	2	2	4	3	4	4	3	1	1	5	4	1	1	2	1
7	4	3	3	4	4	4	3	3	3	4	3	3	3	3	3	2	4	3	2	2	4	3
8	4	4	4	4	4	4	4	4	3	4	3	4	3	3	5	3	4	4	2	2	4	4
9	1	2	3	2	1	3	3	3	2	3	3	5	5	3	4	4	5	5	5	4	4	4
10	4	4	4	5	5	4	4	4	3	5	3	5	4	4	5	4	4	3	2	1	5	5
11	4	5	4	5	4	5	3	4	2	2	2	3	4	2	5	3	3	3	2	1	5	5
12	3	5	4	4	4	5	2	3	3	4	2	4	4	3	4	3	4	4	3	2	5	4
13	4	4	5	2	3	1	4	4	3	3	2	5	4	4	3	3	4	3	2	1	2	2
14	2	3	2	3	4	3	4	3	2	3	3	3	2	2	2	2	4	3	2	2	4	2
15	3	2	2	2	3	4	2	2	2	3	3	3	3	2	3	2	2	3	2	1	4	4
16	4	5	2	3	3	1	4	4	3	2	3	3	2	1	4	4	2	4	2	3	4	4
17	3	4	4	4	3	4	3	2	2	4	3	4	2	2	3	3	3	2	2	2	2	2
18	4	4	4	4	4	4	4	3	2	4	3	4	2	3	3	2	4	3	2	2	2	2
19	4	4	3	4	4	4	4	2	1	3	3	3	3	3	4	2	2	2	2	2	2	2
20	3	4	4	4	4	3	3	3	3	2	2	4	3	2	2	2	4	3	3	4	4	4
21	3	3	2	3	3	4	3	2	2	2	2	3	3	2	3	2	3	3	3	3	4	4
22	1	4	1	4	2	4	3	3	3	4	3	3	3	3	4	2	3	2	1	1	1	3
23	3	1	1	2	4	3	5	4	3	3	3	3	3	3	3	2	4	3	3	3	3	3
24	1	4	3	4	2	5	5	4	4	5	4	3	3	1	5	2	4	4	2	1	2	4
25	4	5	4	5	3	5	5	4	3	5	4	3	3	3	5	3	5	4	2	1	1	1
26	5	3	4	1	4	4	5	4	3	5	3	3	3	3	4	2	3	2	2	1	1	3
27	5	4	4	5	4	5	4	3	2	5	3	4	3	1	5	4	4	4	2	1	1	2
28	5	5	3	5	4	5	4	3	2	4	1	3	3	3	5	2	4	3	2	1	1	4
29	3	3	3	5	5	4	3	3	3	3	3	3	3	3	4	1	5	4	2	1	4	3
30	1	4	1	5	2	5	3	3	3	4	3	3	3	3	4	2	3	2	1	1	1	4

Reliability

R E L I A B I L I T Y A N A L Y S I S - S C A L E (A L P H A)

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Alpha if Item Deleted
PE.PRO1	17.5000	14.2586	.5036	.7265
PE.PRO2	17.0667	14.4092	.6113	.6992
PE.PRO3	17.7000	14.2172	.5646	.7092
PE.PRO4	16.9333	15.0989	.4198	.7491
PE.PRO5	17.3000	14.6310	.5555	.7127
PE.PRO6	16.8333	16.0057	.3778	.7567

Reliability Coefficients

N of Cases = 30.0 N of Items = 6

Alpha = .7610

Reliability

R E L I A B I L I T Y A N A L Y S I S - S C A L E (A L P H A)

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Alpha if Item Deleted
PRICE1	5.9667	1.8264	.5150	.7552
PRICE2	6.3667	1.7575	.7529	.4709
PRICE3	7.0000	2.1379	.4977	.7548

Reliability Coefficients

N of Cases = 30.0 N of Items = 3

Alpha = .7509

Reliability

R E L I A B I L I T Y A N A L Y S I S - S C A L E (A L P H A)

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Alpha if Item Deleted
PE.PRO1	17.5000	14.2586	.5036	.7265
PE.PRO2	17.0667	14.4092	.6113	.6992
PE.PRO3	17.7000	14.2172	.5646	.7092
PE.PRO4	16.9333	15.0989	.4198	.7491
PE.PRO5	17.3000	14.6310	.5555	.7127
PE.PRO6	16.8333	16.0057	.3778	.7567

Reliability Coefficients

N of Cases = 30.0 N of Items = 6

Alpha = .7610

Reliability

R E L I A B I L I T Y A N A L Y S I S - S C A L E (A L P H A)

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Alpha if Item Deleted
PRICE1	5.9667	1.8264	.5150	.7552
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PRICE3	7.0000	2.1379	.4977	.7548

Reliability Coefficients

N of Cases = 30.0 N of Items = 3

Alpha = .7509

Reliability

R E L I A B I L I T Y A N A L Y S I S - S C A L E (A L P H A)

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Alpha if Item Deleted
BRAND1	2.8000	.3724	.4341	.
BRAND2	3.5333	.8782	.4341	.

Reliability Coefficients

N of Cases = 30.0 N of Items = 2

Alpha = .5684

Reliability

R E L I A B I L I T Y A N A L Y S I S - S C A L E (A L P H A)

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Alpha if Item Deleted
STORE1	5.7667	1.4264	.5089	.5802
STORE2	6.2333	1.4264	.5366	.5479
STORE3	6.6667	1.3333	.4596	.6517

Reliability Coefficients

N of Cases = 30.0 N of Items = 3

Alpha = .6852

Reliability

R E L I A B I L I T Y A N A L Y S I S - S C A L E (A L P H A)

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Alpha if Item Deleted
PROTEST1	2.5667	.6678	.5142	.
PROTEST2	3.8333	1.1092	.5142	.

Reliability Coefficients

N of Cases = 30.0 N of Items = 2

Alpha = .6649

Reliability

R E L I A B I L I T Y A N A L Y S I S - S C A L E (A L P H A)

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Alpha if Item Deleted
WARANTY1	7.3333	4.2989	.3958	.6971
WARANTY2	7.9000	4.3000	.4727	.6528
WARANTY3	8.8000	3.7517	.6940	.5248
WARANTY4	9.1667	3.6609	.4467	.6819

Reliability Coefficients

N of Cases = 30.0 N of Items = 4

Alpha = .7045

Reliability

R E L I A B I L I T Y A N A L Y S I S - S C A L E (A L P H A)

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Alpha if Item Deleted
ANTENNA1	3.2333	1.2195	.5376	.
ANTENNA2	2.9333	1.8575	.5376	.

Reliability Coefficients

N of Cases = 30.0 N of Items = 2

Alpha = .6894

APPENDIX 3
MULTIPLE LINIER REGRESSION RESULTS

Case Summaries of Primary Data

Respondents	Users' Perception on Mobile Phone Radiation Safety (Y)	Price of the Mobile Phone (X1)	Specialty and Reputable Store which Sell Mobile Phone (X3)	Product Test (X4)	Length of Mobile phone Warranty (X5)	Position of Mobile Phone Antenna (X6)
1	14	13	10	7	14	6
2	13	12	10	7	9	9
3	26	12	10	8	11	6
4	21	9	10	7	15	7
5	17	11	9	8	13	6
6	23	7	11	2	11	3
7	22	9	9	5	11	7
8	24	11	10	8	12	8
9	12	8	13	8	19	8
10	26	11	13	9	10	10
11	27	9	9	8	9	10
12	25	8	11	7	13	9
13	19	11	13	6	10	4
14	17	9	7	4	11	6
15	16	6	8	5	8	8
16	18	11	6	8	11	8
17	22	7	8	6	9	4
18	24	9	9	5	11	4
19	23	7	9	6	8	4
20	22	9	9	4	14	8
21	18	7	8	5	12	8
22	16	9	9	6	7	4
23	14	12	9	5	13	6
24	19	13	7	7	11	6
25	26	12	9	8	12	2
26	21	12	9	6	8	4
27	27	9	8	9	11	3
28	27	9	9	7	10	5
29	23	9	9	5	12	7
30	18	9	9	6	7	5
31	22	11	6	7	11	6
32	15	11	10	6	10	7
33	25	10	10	5	7	9
34	19	11	10	6	11	7
35	21	10	10	6	11	8
36	27	9	9	8	9	10
37	25	8	11	7	13	9
38	19	11	13	6	10	4
39	17	9	7	4	11	6
40	16	6	8	5	8	8
41	18	7	8	5	12	8
42	16	9	9	6	7	4
43	14	12	9	5	13	6
44	19	13	7	7	11	6
45	26	12	9	8	12	2
46	14	13	10	7	14	6
47	13	12	10	7	9	9
48	26	12	10	8	11	6
49	21	9	10	7	15	7
50	17	11	9	8	13	6
51	21	12	9	6	8	4
52	27	9	8	9	11	3
53	27	9	9	7	10	5

54	23	9	9	5	12	7
55	18	9	9	6	7	5
56	22	11	6	7	11	6
57	15	11	10	6	10	7
58	25	10	10	5	7	9
59	19	11	10	6	11	7
60	21	10	10	6	11	8
61	14	13	10	7	14	6
62	13	12	10	7	9	9
63	26	12	10	8	11	6
64	21	9	10	7	15	7
65	17	11	9	8	13	6
66	23	7	11	2	11	3
67	22	9	9	5	11	7
68	24	11	10	8	12	8
69	12	8	13	8	19	8
70	26	11	13	9	10	10
71	27	9	9	8	9	10
72	25	8	11	7	13	9
73	19	11	13	6	10	4
74	17	9	7	4	11	6
75	16	6	8	5	8	8
76	18	11	6	8	11	8
77	22	7	8	6	9	4
78	24	9	9	5	11	4
79	23	7	9	6	8	4
80	22	9	9	4	14	8
81	18	7	8	5	12	8
82	16	9	9	6	7	4
83	14	12	9	5	13	6
84	19	13	7	7	11	6
85	26	12	9	8	12	2
86	21	12	9	6	8	4
87	27	9	8	9	11	3
88	27	9	9	7	10	5
89	23	9	9	5	12	7
90	18	9	9	6	7	5
91	22	11	6	7	11	6
92	18	7	8	5	12	8
93	21	12	9	6	8	4
94	14	13	10	7	14	6
95	27	9	9	8	9	10
96	23	7	11	2	11	3
97	22	9	9	5	11	7
98	24	11	10	8	12	8
99	12	8	13	8	19	8
100	26	11	13	9	10	10

Regression

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	ANTENNA, PRICE, STORE, WARRANTY, TEST[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: PERCEIVE

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.438[a]	.192	.149	4.09

a. Predictors: (Constant), ANTENNA, PRICE, STORE, WARRANTY, TEST

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	372.893	5	74.579	4.466	.001[a]
	Residual	1569.617	94	16.698		
	Total	1942.510	99			

a. Predictors: (Constant), ANTENNA, PRICE, STORE, WARRANTY, TEST

b. Dependent Variable: PERCEIVE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	25.733	3.506		7.341	.000
	PRICE	-.668	.243	-.283	-2.748	.007
	STORE	.111	.265	.041	.418	.677
	TEST	1.155	.305	.399	3.784	.000
	WARRANTY	-.473	.176	-.263	-2.692	.008
	ANTENNA	-.287	.206	-.136	-1.397	.166

a. Dependent Variable: PERCEIVE

APPENDIX 4
TABLES

STUDENT t-TABLE

df	0.01	0.025	0.05	0.1
1	63.66	25.45	12.71	6.314
2	9.925	6.205	4.303	2.92
3	5.841	4.177	3.182	2.353
4	4.604	3.495	2.776	2.132
5	4.032	3.163	2.571	2.015
6	3.707	2.969	2.447	1.943
7	3.499	2.841	2.365	1.895
8	3.355	2.752	2.306	1.86
9	3.25	2.685	2.262	1.833
10	3.169	2.634	2.228	1.812
11	3.106	2.593	2.201	1.796
12	3.055	2.56	2.179	1.782
13	3.012	2.533	2.16	1.771
14	2.977	2.51	2.145	1.761
15	2.947	2.49	2.131	1.753
16	2.921	2.473	2.12	1.746
17	2.898	2.458	2.11	1.74
18	2.878	2.445	2.101	1.734
19	2.861	2.433	2.093	1.729
20	2.845	2.423	2.086	1.725
21	2.831	2.414	2.08	1.721
22	2.819	2.405	2.074	1.717
23	2.807	2.398	2.069	1.714
24	2.797	2.391	2.064	1.711
25	2.787	2.385	2.06	1.708
26	2.779	2.379	2.056	1.706
27	2.771	2.373	2.052	1.703
28	2.763	2.368	2.048	1.701
29	2.756	2.364	2.045	1.699
30	2.75	2.36	2.042	1.697
31	2.744	2.356	2.04	1.696
32	2.738	2.352	2.037	1.694
33	2.733	2.348	2.035	1.692
34	2.728	2.345	2.032	1.691
35	2.724	2.342	2.03	1.69
36	2.719	2.339	2.028	1.688
37	2.715	2.336	2.026	1.687
38	2.712	2.334	2.024	1.686
39	2.708	2.331	2.023	1.685
40	2.704	2.329	2.021	1.684
41	2.701	2.327	2.02	1.683
42	2.698	2.325	2.018	1.682
43	2.695	2.323	2.017	1.681
44	2.692	2.321	2.015	1.68
45	2.69	2.319	2.014	1.679
46	2.687	2.317	2.013	1.679
47	2.685	2.315	2.012	1.678
48	2.682	2.314	2.011	1.677
49	2.68	2.312	2.01	1.677
50	2.678	2.311	2.009	1.676

df	0.01	0.025	0.05	0.1
51	2.676	2.31	2.008	1.675
52	2.674	2.308	2.007	1.675
53	2.672	2.307	2.006	1.674
54	2.67	2.306	2.005	1.674
55	2.668	2.304	2.004	1.673
56	2.667	2.303	2.003	1.673
57	2.665	2.302	2.002	1.672
58	2.663	2.301	2.002	1.672
59	2.662	2.3	2.001	1.671
60	2.66	2.299	2	1.671
61	2.659	2.298	2	1.67
62	2.657	2.297	1.999	1.67
63	2.656	2.296	1.998	1.669
64	2.655	2.295	1.998	1.669
65	2.654	2.295	1.997	1.669
66	2.652	2.294	1.997	1.668
67	2.651	2.293	1.996	1.668
68	2.65	2.292	1.995	1.668
69	2.649	2.291	1.995	1.667
70	2.648	2.291	1.994	1.667
71	2.647	2.29	1.994	1.667
72	2.646	2.289	1.993	1.666
73	2.645	2.289	1.993	1.666
74	2.644	2.288	1.993	1.666
75	2.643	2.287	1.992	1.665
76	2.642	2.287	1.992	1.665
77	2.641	2.286	1.991	1.665
78	2.64	2.285	1.991	1.665
79	2.639	2.285	1.99	1.664
80	2.639	2.284	1.99	1.664
81	2.638	2.284	1.99	1.664
82	2.637	2.283	1.989	1.664
83	2.636	2.283	1.989	1.663
84	2.636	2.282	1.989	1.663
85	2.635	2.282	1.988	1.663
86	2.634	2.281	1.988	1.663
87	2.634	2.281	1.988	1.663
88	2.633	2.28	1.987	1.662
89	2.632	2.28	1.987	1.662
90	2.632	2.28	1.987	1.662
91	2.631	2.279	1.986	1.662
92	2.63	2.279	1.986	1.662
93	2.63	2.278	1.986	1.661
94	2.629	2.278	1.986	1.661
95	2.629	2.277	1.985	1.661
96	2.628	2.277	1.985	1.661
97	2.627	2.277	1.985	1.661
98	2.627	2.276	1.984	1.661
99	2.626	2.276	1.984	1.66
100	2.626	2.276	1.984	1.66

THE F-TABLE

	Numerator								
Denominator	1	2	3	4	5	6	7	8	9
50	4.0343	3.183	2.79001	2.5572	2.4004	2.2864	2.199	2.12992	6.041
51	4.0304	3.179	2.78623	2.5534	2.3966	2.2826	2.195	2.12602	6.041
52	4.0266	3.175	2.7826	2.5498	2.393	2.2789	2.192	2.12228	6.041
53	4.023	3.172	2.77912	2.5463	2.3894	2.2754	2.188	2.11868	6.041
54	4.0195	3.168	2.77576	2.5429	2.3861	2.272	2.185	2.11522	6.041
55	4.0162	3.165	2.77254	2.5397	2.3828	2.2687	2.181	2.1119	6.041
56	4.013	3.162	2.76943	2.5366	2.3797	2.2656	2.178	2.10869	6.041
57	4.0099	3.159	2.76644	2.5336	2.3767	2.2625	2.175	2.1056	6.041
58	4.0069	3.156	2.76356	2.5307	2.3738	2.2596	2.172	2.10262	6.041
59	4.004	3.153	2.76077	2.5279	2.371	2.2568	2.169	2.09975	6.041
60	4.0012	3.15	2.75808	2.5252	2.3683	2.2541	2.167	2.09697	6.041
61	3.9985	3.148	2.75548	2.5226	2.3657	2.2514	2.164	2.09429	8.8452
62	3.9959	3.145	2.75297	2.5201	2.3631	2.2489	2.161	2.0917	8.8452
63	3.9934	3.143	2.75054	2.5177	2.3607	2.2464	2.159	2.08919	8.8452
64	3.9909	3.14	2.74819	2.5153	2.3583	2.244	2.156	2.08676	8.8452
65	3.9886	3.138	2.74591	2.513	2.356	2.2417	2.154	2.08441	8.8452
66	3.9863	3.136	2.74371	2.5108	2.3538	2.2395	2.152	2.08213	8.8452
67	3.984	3.134	2.74157	2.5087	2.3517	2.2373	2.15	2.07992	8.8452
68	3.9819	3.132	2.7395	2.5066	2.3496	2.2352	2.148	2.07778	8.8452
69	3.9798	3.13	2.73749	2.5046	2.3475	2.2332	2.145	2.07571	8.8452
70	3.9778	3.128	2.73554	2.5027	2.3456	2.2312	2.143	2.07369	8.8452
71	3.9758	3.126	2.73364	2.5008	2.3437	2.2293	2.142	2.07173	8.8452
72	3.9739	3.124	2.73181	2.4989	2.3418	2.2274	2.14	2.06983	8.8452
73	3.972	3.122	2.73002	2.4971	2.34	2.2256	2.138	2.06798	8.8452
74	3.9702	3.12	2.72828	2.4954	2.3383	2.2238	2.136	2.06619	8.8452
75	3.9685	3.119	2.72659	2.4937	2.3366	2.2221	2.134	2.06444	8.8452
76	3.9668	3.117	2.72495	2.4921	2.3349	2.2204	2.133	2.06274	8.8452
77	3.9651	3.115	2.72334	2.4904	2.3333	2.2188	2.131	2.06109	8.8452
78	3.9635	3.114	2.72178	2.4889	2.3317	2.2172	2.129	2.05947	8.8452
79	3.9619	3.112	2.72026	2.4874	2.3302	2.2157	2.128	2.0579	8.8452
80	3.9604	3.111	2.71879	2.4859	2.3287	2.2142	2.126	2.05637	8.8452
81	3.9589	3.109	2.71734	2.4844	2.3273	2.2127	2.125	2.05488	8.8452
82	3.9574	3.108	2.71594	2.483	2.3259	2.2113	2.123	2.05343	8.8452
83	3.956	3.107	2.71456	2.4817	2.3245	2.2099	2.122	2.05201	8.8452
84	3.9546	3.105	2.71323	2.4803	2.3231	2.2086	2.121	2.05063	8.8452
85	3.9532	3.104	2.71192	2.479	2.3218	2.2072	2.119	2.04928	8.8452
86	3.9519	3.103	2.71065	2.4777	2.3205	2.2059	2.118	2.04796	8.8452
87	3.9506	3.101	2.7094	2.4765	2.3193	2.2047	2.117	2.04667	8.8452
88	3.9493	3.1	2.70819	2.4753	2.3181	2.2034	2.115	2.04541	8.8452
89	3.9481	3.099	2.707	2.4741	2.3169	2.2022	2.114	2.04419	8.8452
90	3.9469	3.098	2.70584	2.4729	2.3157	2.2011	2.113	2.04299	8 8452
91	3.9457	3.097	2.7047	2.4718	2.3146	2.1999	2.112	2.04181	8.8452
92	3.9445	3.095	2.70359	2.4707	2.3134	2.1988	2.111	2.04066	8.8452
93	3.9434	3.094	2.70251	2.4696	2.3123	2.1977	2.11	2.03954	8.8452
94	3.9423	3.093	2.70145	2.4685	2.3113	2.1966	2.109	2.03844	8.8452
95	3.9412	3.092	2.70041	2.4675	2.3102	2.1955	2.108	2.03737	8.8452
96	3.9402	3.091	2.69939	2.4665	2.3092	2.1945	2.106	2.03632	8.8452
97	3.9391	3.09	2.6984	2.4655	2.3082	2.1935	2.105	2.03529	8.8452
98	3.9381	3.089	2.69742	2.4645	2.3072	2.1925	2.104	2.03429	8.8452
99	3.9371	3.088	2.69647	2.4636	2.3063	2.1915	2.103	2.0333	8.8452
100	3.9362	3.087	2.69554	2.4626	2.3053	2.1906	2.103	2.03233	8.8452

TABEL r SATU-EKOR

db	Taraf Signifkansi 1%	5%	15%	30%	db	Taraf Signifkansi 1%	5%	15%	30%
1	0.985	0.929	0.814	0.649	21	0.327	0.275	0.219	0.157
2	0.881	0.770	0.640	0.486	22	0.320	0.269	0.214	0.154
3	0.776	0.663	0.542	0.404	23	0.313	0.263	0.210	0.150
4	0.695	0.590	0.479	0.353	24	0.307	0.258	0.206	0.147
5	0.634	0.536	0.433	0.317	25	0.301	0.253	0.201	0.144
6	0.586	0.495	0.399	0.290	26	0.295	0.248	0.198	0.141
7	0.548	0.462	0.371	0.270	27	0.290	0.244	0.194	0.139
8	0.516	0.434	0.349	0.253	28	0.285	0.239	0.191	0.136
9	0.489	0.411	0.330	0.237	29	0.280	0.235	0.187	0.134
10	0.465	0.392	0.314	0.227	30	0.275	0.231	0.184	0.132
11	0.445	0.375	0.300	0.216	40	0.239	0.201	0.160	0.114
12	0.427	0.360	0.288	0.207	60	0.196	0.165	0.131	0.093
13	0.411	0.346	0.277	0.199	120	0.139	0.117	0.093	0.066
14	0.397	0.334	0.267	0.192	tth	0.048	0.041	0.032	0.023
15	0.384	0.323	0.258	0.186					
16	0.373	0.310	0.250	0.180					
17	0.362	0.305	0.243	0.175					
18	0.352	0.296	0.237	0.170					
19	0.343	0.289	0.230	0.165					
20	0.335	0.282	0.225	0.161					