

QUANTITATIVE ANALYSIS OF INFORMATIVE AND EMOTIONAL APPEALS OF
TELEVISION ADVERTISING ON PURCHASE INTENTION AND ATTITUDE

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XiaoFan Zhang
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要旨

我々は日常生活の中で、様々な広告媒体と接触し、互いに影響し合っている。広告は、新しい製品に関するメッセージを人に伝達することだけではなく、消費者行動の視点から人々のアイデンティティを高めることに役立っている。製品による説得は人々の関心を捉え、外部情報である新しい製品の説得を処理した後、意識的または無意識的に個人的態度が変容する。

本論文は、テレビ広告を通じて消費者の態度がどう形成されるか探る。また、高関与度製品あるいは低関与度製品を用いて、消費者の態度の形成過程を定量的に検討する。本論文は先行研究における態度の形成過程、態度と実際行動との間の関連や障害、および各モデルの長所と短所に関する実証的フレームワークを詳しく検討し、議論する。これらの原則に基づいて、メディアとしてテレビ広告を選択し、消費者の態度形成に関する要因を具体的に特定する。また、情動的あるいは情動的なテレビ広告に対して、それぞれの購買動機を決定付ける要因を調査する。

本研究では、テレビ広告の情動的あるいは情動的なアピールが、消費者の態度と購買意欲に対する寄与を定量的に測定するために、3つの実験（高関与製品、低関与製品および新製品）を行った。

回帰分析の結果は以下の通りである。まず、低関与製品における参加者の興味（情動的アピール）、広告に対する肯定的態度を有意に予測できることを示唆した。また、安心感（情動的アピール）は、偏回帰係数が0.7であったことから、購買動機を予測できる可能性を示唆した。次に、高関与製品では、製品の好ましさは参加者の興味と強く相関しており、製品特徴のような情動的アピールは購買動機と関連していることを示した。最後に、植物工場で生産されたものは新製品として、日本人消費者は広告における情動的アピールには関心がなく、購買動機として安心感が要因となることが示唆された。本研究より、購買動機とアピールが一貫しているときに広告効率が向上することは示された。しかし、広告に対する好感度は消費者の購買意欲を決定することはできない。

ABSTRACT

We are exposed and interacted with different aspects of consumptions in our daily life. The advertising not only brings the messages about new product but also helps to boost people's identities from consumer behavior perspective. The product persuasions capture our attention and we process this external information, which then shape personal attitude towards it consciously or unconsciously. This thesis explores how consumer attitude is formatted through television advertising and quantitatively examines the processing under both high/low product involvements. It first takes review and discuss previous empirical frameworks regarding attitude formation; connections and barriers between attitude and actual behaviors; merits and demerits of each models. Based on these principles, television advertising is chosen as a carrier to specifically identify factors that influence people's attitude formation and we also investigate motivational determinants of informational/emotional television advertising. Later, author designs and conducts three experiments (high involvement product, low involvement product and new product) to quantitatively measure the contribution of informational/emotional appeals of television advertising to consumer's attitude and purchase intention.

In the case of low involvement product, the result indicated that interesting, being as one of emotional appeals, significantly contributed to positive attitude and feeling of safety, another emotional appeal, explained more than 70% of the variance of purchase intention; In the case of high involvement product, it showed that favorability was significantly correlated to the interesting variable while informational appeal such as product features enabled the prediction of purchase intentions; In the case of new product, the result showed that none of informational variables contributed to attitude and purchase intention while feeling of safety significantly correlated to the dependent variables. Based on the result, it is concluded that advertising efficiency is enhanced when motivation and appeals are consistence. Moreover, favorability towards advertising cannot determine viewers' purchase intention.

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Chapter 1

1.1 Dissertation General Introduction

It is said that almost all behaviors that human engaged are directly or indirectly linked to consumption [1]. According to a report conducted by Media Dynamics, the number of advertising that an adult exposed to across five major mass media (TV, radio, Internet, newspapers and magazines) is about 360 per day. Of these, only around 150 are even noted, and far fewer make a strong enough impact to be recalled, make an impression, and ultimately, make a sale [2]. Even though advertising can not produce sales directly, because price, quality, packaging, availability and other factual market factors will also manipulate the final profit. But it can enable consumers to recognize the product and build a brand image and this capability is profound and incomparable. Corporations invest billions and make decision about market promotion relied on the prediction of consumer behavior. Many consulting companies are thus established to observe and gather the information regarding consumer attitude and actual behavior. Nowadays many new format advertising emerged, such as mobile format advertising and online retargeting advertising, it becomes exceptionally easy for consumers to live in the moment and take quick action on the advertising. However, Nielsen published a report on global trust in advertising in 2015[3], the data indicated that 68% respondents in Asia-Pacific area completely or somewhat trust advertising on television, among them generation between 21 years-old till 34 years-old trust most.

On the other hand, as Dan Ariely described consumption behaviors in his book to explain the hidden forces that shape our decisions, intention is triggered without consciousness in many cases. One of these is herd behavior [4]. This behavior points out an interesting phenomenon that human sometimes triggered by others behavior to evaluate alternatives and make decision. Such as choosing restaurants on street and number of people waiting in the queue in front of one restaurant becomes an anchor to make final decision. This phenomenon is also often observed in stock market. In this paper, author is interested in finding out the anchor in television advertising that can trigger viewers' attitude change and motivate purchase intention.

1.2 The Goal of Dissertation

This study is based on attitude and advertising literature reviewed and examines the conclusion through experiment by psychological analysis methods. Although there are many researches discussed empirical principles about interaction issues between attitude and intentional consumer behaviors, seldom of them applied into advertising research study, especially television advertising, and quantitatively examine practicability of these models. Moreover, one of goals of this study is to provide mutual understanding between psychologists and advertisers. Chapter 2 provides the frame of reference for advertisers to understand attitude and make evidence-based market strategies. Chapter 3 provides the knowledge for psychologists to understand actual evaluation means of advertising and viewers' response towards different types of appeals. At last, author is also orientated to investigate key driver of advertising on purchase intention for low-and high-involvement products and new products.

1.3 Research Objectives

The research objectives are as follows:

1. To identify the characteristic of attitude and processing of attitude formation.
2. To identify the characteristic of advertising appeals.
3. To identify the key drivers of advertising appeals on shaping viewers' attitude and impact on purchase intention.

1.4 General Structure

Chapter 2 reviews literatures about attitude evaluation models and compares the merits and demerits between each model. Meanwhile author discusses the limitation and inconsistent between attitude and actual behavior. It also aims to figure out the fit theoretical model on understanding attitude formation through advertising message processing. Chapter 3 reviews literatures on advertising research. It aims to figure out the characteristic of advertising appeals based on motivations. Chapter 4 intends to find out key driver of positive attitude and purchase intention in television advertising by implementing experiments on different involvement level of products. General structure of this thesis presents in Figure 1.

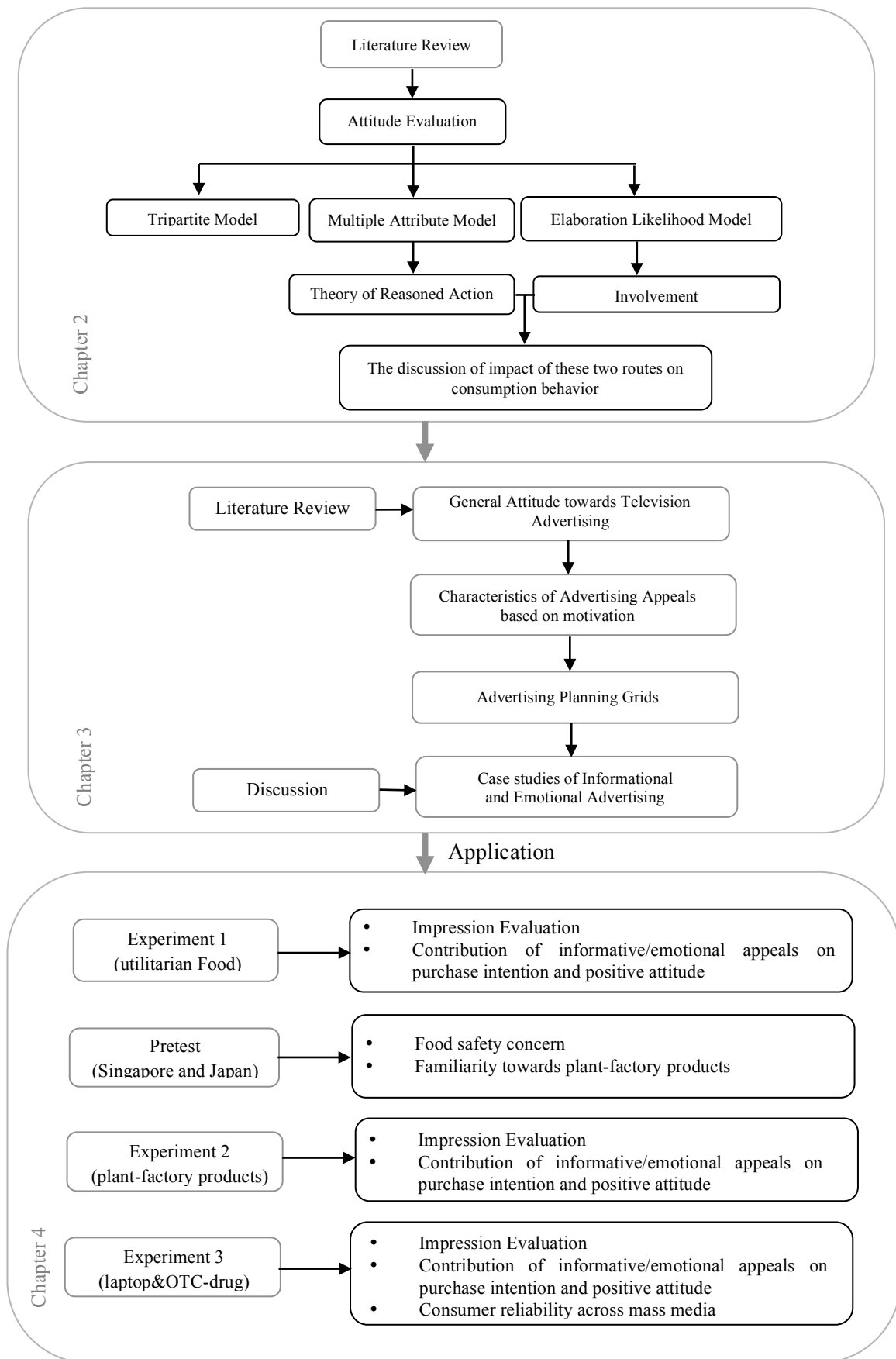


Figure 1. General Structure of Dissertation

Chapter 2

2.1 Introduction

When I was a master student, back in 2009, learning marketing in Stockholm School of Economics. Professors introduced us a real world of business and students discussed the practical solution methods for each up-to-date case work. At that time, we were often directed to consider from a macroscopically point of view. They helped us to understand the position of the business in a value chain and how a company was engaged in marketing activities. Porter's five forces and SWOT was two traditional but powerful economic frameworks as analysis tools at that time. The former one attempted to identify the level of competition among different relationships in an industry so the firms could apply their core competencies to achieve a profit. The later one, SWOT, enabled a product or a company to evaluate the strengths, weakness, opportunities and threats from internal and external, which would help the decision-makers to build attainable strategies.

As Normann et al mention in their review paper, business strategy is the art of creating value. It provides the intellectual frameworks, conceptual models, and allows the decision makers to identify opportunities for bringing value to consumers [5]. In another word of saying, the key of business strategy is to explore the right business or right product and place it on the value chain.

Here the question comes. What is a right product? How can we know what consumer needs? What is the key driver for consumers to purchase certain product rather than the other? These questions keep on knocking at my head and make me reexamined from consumers' point of view. But actually, I am a consumer in everyday life. I'm a big fan of Apple and I like drinking carbonated beverages after sport.

A research regarding in-store consumer behavior showed that comparing with American consumers, Japanese consumers tended to be more impulse and unplanned

consumption in supermarket due to high purchase frequency and limited house space [6]. The authors then assumed that POP(Point-of-purchase) advertising in-store would make great contribution on consumer's purchase plan and the result confirmed that price-type POP advertising greatly effected consumption decision and encouraged rational behavior. I think it is a good example to deem that motivational determinants of consumer behavior could be change and could be create. Therefore, in the beginning of my dissertation thesis, I think it is necessarily to address the questions:

1. How attitude towards products is formed;
2. How to change them to affect choice;
3. How attitude influence behavior.

2.2 Attitude

The fundamental purpose of consumer behavior research is about understanding why and how people engaged in consumer activities and predict their behavior [7,8].In service of this, consumer psychologists have long recognized the importance of understanding how attitudes are generated and determinants of positive/negative attitudes. It could be considered as one of most basic concepts in consumer psychology research [9]. It exists as an essential parameter to predict consumer action.

At least 100 definitions about attitude has been proposed since it has been studied for over one century [10]. One of classic ones is that attitudes is a mental and neural state of readiness to respond, organized through experience, and exerting a directive and/or dynamic influence on behavior [11]. There are three features about it. Attitude is learned; it predisposed action; it consistently favorable and unfavorable toward the object. For example, many people hold favorable attitude towards Mac. They might like the modern design of the appearance by watching commercials or they learned the features of Mac by word-of-mouth from closed friends. Both internal/external elements provide the sources by building attitude in someone mind before interact with it. Then he/she is likely to choose Mac than other computer brand if they need to buy a new one.

2.3 Attitude Evaluation

Initially, the tripartite model is proposed to understand attitude formation. Triandis et al. propose three elements that combined to attitude: affect, conation/behavior and cognition [12]. Thus, the model was also called ABC model. Affect is related to positive or negative evaluation of the object; Cognition is related to knowledge about the object; Conation/behavior is related to intention or actual behavior.

Later, a great deal of researchers focuses on consumer's beliefs about multiple products. Of this context, Martin Fishbein's Multi-Attribute Model, Petty and Cacioppo's Elaboration likelihood model are considered as most influential and widely supported among consumer psychologists.

2.3.1 Multi-Attribute Model

The essential of Fishbein's model is that the evaluation salient beliefs cause overall attitude [13]. Overall attitude toward an object is a function of two factors: the strength of the salient beliefs associated with the object and the evaluations of those beliefs [14]. Formally, the model proposes that:

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

Where

A_o = attitude towards the object

b_i = strength of the belief that the object has attribute i

e_i = evaluation of attribute i

n = number of salient beliefs about the object

Comparing with ABC model, this model has the benefit of quantitative analysis on attitude and could evaluate among multiple products or brands.

2.3.1.1 Theoretical Attitude Change through Multiple-attribute Model

Multiple-attribute model helps understanding consumers overall attitude and also identify which attribute is most important to target group. Lutz proposed three methods based on this model to change attitude [15].

1. Increase the strength of existing positive salient beliefs or decrease the strength of existing negative salient beliefs;
2. Improve the evaluation of an existing, strongly held salient belief;
3. Change the evaluation of an existing, but unfavorable salient belief.

Later, other researchers offered fourth method to change attitude [14].

4. Add a new salient belief.

2.3.2 Gap between attitude and behavior: Theory of Reasoned Action(TRA)

After understanding attitude and how it is formed and altered, a great deal of researchers tried to build relationship between attitude and behavior in order to predict action. At the same time, drawback of Multiple-attribute model began to show up and that was the inconsistency of attitude and actual behavior [16]. For example, even though consumers held extreme favorable attitude towards one product's advertising, overall profit of the product decreased. As a result, Fishbein et al modified and extended his Multiple-attribute model to better predict people's behavior [9, 14, 17]. He recognized the fact that people's behavior not only conducted by personal attitude towards his actual behavior but also involved the issue of social relevant beliefs of others, such as religion and law. General speaking, the former one refers to personal cognition about the object and beliefs about prospective results; the later one refers to others' expectation regarding the action. Formally, this model usually presents as following:

$$B \sim I = (A_o) \omega_1 + (SN) \omega_2$$

Where

B= a specific behavior

I = intention to engage in that behavior

A_o = attitude toward that behavior

SN= subjective norm regarding whether other people think the consumer should engage in that behavior. It is decided by two elements: normative beliefs(NB) and motivation to comply(MC). $SN = \sum_{j=1}^n NB_j MC_j$

ω_1 and ω_2 = standardized coefficients

The overall relationship between each factor could be presented as figure 2.

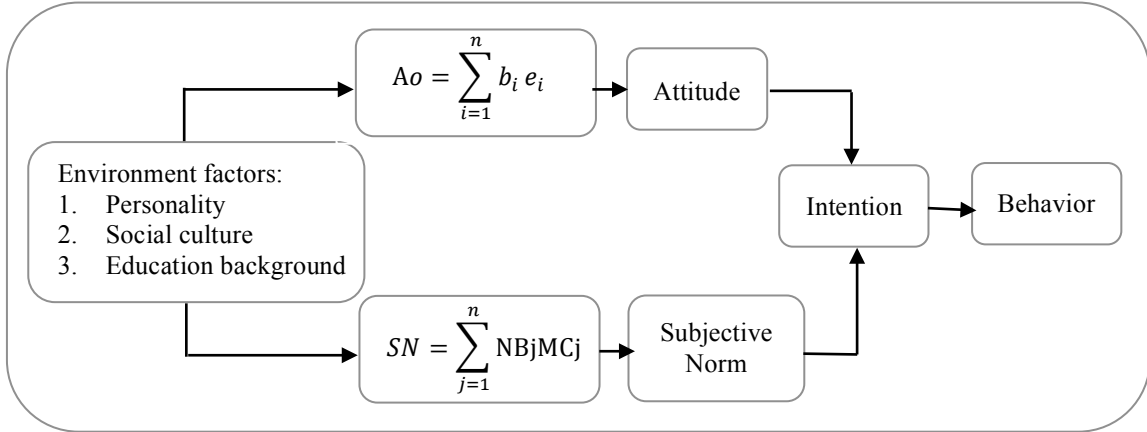


Figure 2 Theory of Reasoned Action

2.3.2.1 What is missing in TRA?

However, later many scholars deemed that this model didn't comprise the weight of emotion on decision-making. From the variables to relationship, it was considered as a model that cognition-based conducted behavior [18-20]. French et al implemented an experiment on predicting intention to increase physical activity. The study proved that theory of perceived behavior (which added the construct of perceived behavioral control to theory of reasoned action as a predictor of both intention and behavior itself) was not sufficient in eliciting affective behavioral beliefs and also provided the evidence that behavioral beliefs elicited by more affective questions [21].

2.3.3 Elaboration Likelihood Model

Petty and Cacioppo then proposed ELM: elaboration likelihood model to identify how consumers process persuasive messages [22, 23]. According to this model, see figure 3, it is understood that there are two routes when people communicate with external information. When the information is strongly related to receiver, people are

likely to process the information under Central Route. When the information has little connection with receiver, people are likely to process it under peripheral route.

Involvement here refers to personally relevance to a specific product. A consumer's level of involvement depends on the strength of connection between product knowledge level and self-knowledge level [14].

High-involvement processing. For example, the first thing for a smoker after a long flight is to find a convenience store and buy a pack of cigarette. This time he landed Singapore. The packages of cigarette in Singapore are all printed by the images of serious illness suffering from heavy smoking. He hesitates in front of counter and thinks maybe his wife is correct. He should quit smoking and live a health life to get away from these terrible diseases. In the end, he gives up purchase that day.

Low-involvement processing. For example, a girl doesn't know anything about perfume and is not a habitual user of it. But one day, she sees a perfume commercial performed by Charlize Theron. She is stunned by it but forget about it soon after. Till the other day, she happens to see it in a tax-free shop when hanging around the airport and within minutes she purchases it as a gift to herself. She is satisfied with the price as well as she feels pleasure that she is now using the same perfume as Charlize Theron.

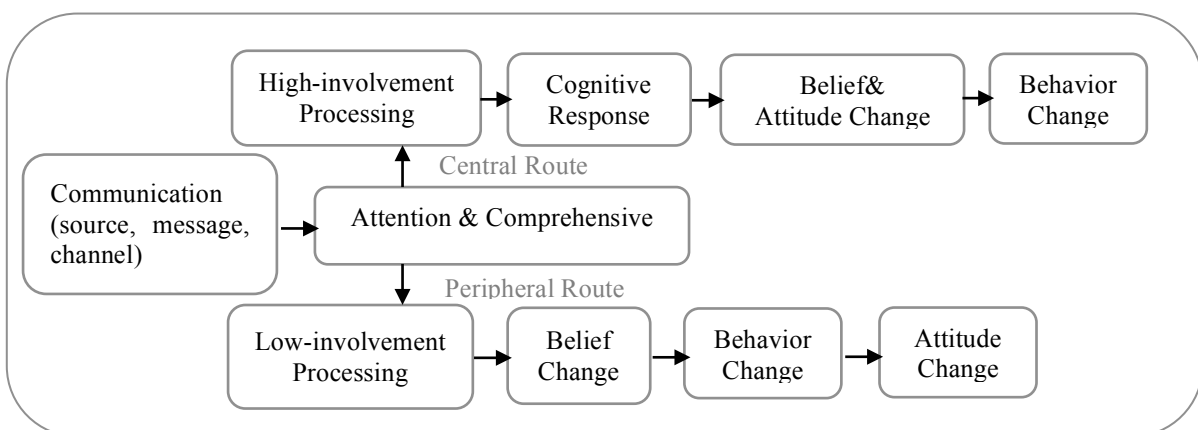


Figure 3 Elaboration Likelihood Model

2.3.3.1 Behavior and Attitude Change through Elaboration Likelihood Model

Consumers' attention and comprehension processes are strongly influenced by their motivation, ability and opportunities to process salient information in their environment[24]. Motivation to process information reflects consumer's involvement with information stimulus.

When people are in high-involvement processing with a specific product, they will pay more attention to the advertising that related to the product. Likely, they will put more effort on understanding the advertising and focus on the product-relevant messages. These types of consumers are more easily to change attitude and take action.

When people are in low-involvement processing, consumers are lack of motivation and unconcerned about external stimulus. One simple and efficient way to change attitude is to utilize the mere exposure effect. Zajonc explored this effect based on Gustav Fechner who built it at first and theorized that the more often individuals came into contact with a given stimulus, the more likely they would be to recognize the object and must form their own attitude about the stimulus by thinking about it [25]. In the other word of saying, attitude change can be brought about by more frequency exposure. Moreover, research grounded on mere exposure effect verified that the impact of stimuli perceived without awareness produces larger exposure effect than do stimuli that are consciously perceived [26].

2.4 Attitude scales

Many kinds of rating scales have been developed to measure attitude, of which two standard attitude-scaling methods are as following shows:

2.4.1 Likert scale

A Likert scale is the sum of responses on several Likert items. Likert items are series of statements about a topic, in terms of the extent to which participants agree with them, and refer the cognitive and affective components of attitudes. [27]. The Likert Scale is usually a five (or seven) point scale which is used to

allow the individual to express how much they agree or disagree with a particular statement.

2.4.2 Semantic differential scale

The semantic differential technique asks a person to rate an issue or topic on a standard set of bipolar adjectives, each representing a seven-point scale [28]. Thus, a number of words with opposite meanings that are applicable to describe the subject of the test are necessary.

The semantic differential technique reveals information on three basic dimensions of attitudes: evaluation, strength and activity. Evaluation is concerned with whether a person thinks positively or negatively about the attitude topic (e.g. dirty – clean, and ugly - beautiful); Strength is concerned with how powerful the topic is for the person (e.g. cruel – kind, and strong - weak); Activity is concerned with whether the topic is seen as active or passive (e.g. active – passive).

2.5 Conclusion

Consumer's attitude is considered as one of the core research disciplines in consumer behavioral study since it reflects personal preferences and it is often assumed that attitude will ultimately influence consumer decision. Attitude could be shaped before and after interact with products. In this Chapter, author mainly talk about how attitude is formed before experiencing the actual objects.

The tripartite model is proposed initially and the main underlying idea of it is built on the relationship among consumer's affect, behavior and cognition. But this model could only helps to understand attitude towards a specific product rather than comparison between multiple objects. In this context, multiple-attribute model is aroused and the main idea of it contains two factors on evaluation overall attitude. One is the strength of salient belief and another is the evaluation of these beliefs. Relative theoretical means are also discussed subsequently on changing attitude based on this model. It then followed by the theory of reasoned action on proposing a

possible processing to predict intentional behavior based on the model as well. Finally, elaboration likelihood model provided a more precise processing that implicated personal involvement in attitude formation.

Attitude has many kinds in consumer behavior study. Highest level is called brand loyalty. Consumer ethnocentrism could be seen as an interesting phenomenon of domestic brand loyalty. Bias against foreign products and in favor of domestic ones enable a long-term positive attitude [29]. Of this context, intentional behavior could be predicted by attitude more accurately.

In the end, there are also many other important principles and models regarding attitude that are not mentioned in this chapter. Such as cognitive dissonance theory [30] and affective-cognitive consistency theory [31]. Author enumerates the previous models according to the significance in the development of social psychology study.

Chapter 3

3.1 Introduction

Markets have plenty ways to communicate with consumers, such as through package design, store display and promotion. Along with the growth of market development, different industry sectors tend to be more and more mature. Attribute to the evolution of high technologies, diversity of products also dramatically upgrade. Marketers and researchers soon reach a consensus that quality and price about a product are no long the only drivers to persuade consumers. They begin to recognize that consumers' emotion and involvement between consumers and products also play an important role to determine intention. There into, advertising could be considered as one of most powerful way to shape and influence consumption habits regardless of time and geography.

As mentioned in the beginning of last Chapter, the key for a company to survive is to explore the right business or right product and put it in the value chain. Then to a successful advertising campaign, the key is not only showing them to the right consumer, it has to enable everyone who see it emotional stimulated to buy or at least investigate the product. In this chapter, author would employ the advertising as the carrier to understand people's attitude concretely at first and follow by analysis of how people perceived advertising appeals.

3.2 Television advertising

Television advertising, as one of promotion means, is also an epitome of times. It greatly influences society and culture and absolute needs technic to represent message that is easy to follow and leave impression. Comparing with other types of media, advertisers and research scholars both strongly believed that television ads had more appealing to enhance purchase intension and increase the level of recall at first in virtue of its covering force and entertainment. As to print media, two senses are involving during television ads watch ---visual and audio.

However, ten years after the its arrival, people tend to realize the limitation of television ads and that consumers held low-attention towards it [32]. Ads irritation had been widely discussed in relevant research later, particularly in affective reaction to television ads. Clancey's study uncovers the fact that two thirds were doing some other activities when watching television [33]. From the survey implemented by Sakaki [34], it is also known that proportion of Japanese audiences who would change channel when ads emerge increased from 49.2% to 64.6% between 2002 and 2010.

Does television ads become less efficient? We have different opinion. Firstly, its effects might be operating below the level of consciousness. According to elaboration likelihood model [22], viewers process the ads in central route during high involvement condition while peripheral route during low involvement condition. Pelsmacker et al. support the conclusion that ads irritation always evoked negative attitude but it more likely leaded to less effective communication in peripheral route. When viewers are in central route, likability towards television ads is unable to influence purchase intention directly. Secondly, many advertising scholars agree the statement that if a product merely promotes in pursuit of exposure and brand awareness, the result will be end in producing famous trademark. And only in the context of building substantial emotional connection with viewers, brand is shaped and that would whet a higher level of purchase intention [35, 36]. Comparing with other media choices, television ads take the benefit on building brand's ability to maintain and enhance brand loyalty [37].

3.3 How people process advertising

AIDMA is a classic principle that describes how consumer process advertising information. It represents the list of events as Attention→Interest→Desire→Memory→Action. The model consists of three levels. Attention functions within cognition level, interest, desire and memory belong to emotion level and the last event belongs to action level. This is a traditional model to analysis how people process advertising. These years Japanese advertising agency Densu proposes AISAS which is a new model based on AIDMA that reflects the transformation of consumer behavior with

the development of Internet and boom of social media. It represents the list of events as Attention→Interest→Search→Action→Share. The new approach manifests the trend that consumers intend to search related information online before purchase and intend to share the experience with other users or potential users through blogs or other word-of-mouth websites.

3.4 Advertising Testing Techniques

When design and create television advertising, advertisers will first discuss with clients to identify the target groups at which the advertising is aimed, determine and measure people's purchase motivation, then determine advertising content and especially catch slogans, and finally decide advertising placements and broadcast times. As a matter of fact, advertising effectiveness can be tested at any stage of advertising process and many methods have been developed to make evaluation. Table 1 indicates an overview of advertising testing techniques and shows the typical quantitative methods under each stage.

Table 1. An Overview of Advertising Testing Techniques

Pretesting (Copy-Testing)	<ol style="list-style-type: none"> 1. Day after recall Test 2. Recognition Test 3. Communication and Persuasion Test 4. Direct Response Test 5. Continuous Measurement Test 6. Physiological Measurement Test (Eye-movement analysis and Brain-wave analysis)
Concurrent Testing	<ol style="list-style-type: none"> 1. Co-incidental Telephone Method 2. Electronic Devices
Post Testing	<ol style="list-style-type: none"> 1. Penetration Test 2. Impact Test

Pretesting or copy-testing is implemented before advertising broadcasted to public. It can reduce the risk of advertisers and save advertising expense. Moreover, it helps to decide the final launching out of many alternative advertisement executions and to make adjustments to improve comprehensions [38]. Concurrent testing is done while the advertising campaign is running in the market. It helps to account the actual number of advertisements which consumer contact with in daily life and evaluate their impact towards the examined advertisement. Post testing is implemented after the promotion campaign. It helps to track brand awareness and consumer attitude in order to evaluate effect of media weight. It needs to note that the methods listed in Table 1 are universal tests for all types of advertisements on print and broadcast

media. Meanwhile, there are some other methods that are especially suitable and efficiency is better for broadcast media, eg. In home projector Test, Theatre Test.

Compared to evaluate consumer attitude towards informative persuasive messages, it is obviously much more difficult to measure their emotional response and unconscious action. Nowadays many advertising researches utilize technique from neuroscience and provide objective evidences. Eye tracking technology is developed to measure consumers' visual attention. It helps to draw the pathway of spontaneous eye movement and account eye gaze time [39]. More importantly, it reveals the starting point of visual track, which is considered crucial to reflect consumer interest on advertising effectiveness assessing [40]. But eye tracking technology is usually used for print advertising evaluation according to author's review. Brain-wave analysis is considered suitable for testing "feeling" based advertising [41]. Electroencephalography (EEG) is widely used to measure brain electrical activity to advertising message processing for both print advertising and television advertising [42-44]. The neuroimaging tool for tracking brain emotional response towards television advertising can also be magneto encephalography (MEG) [45, 46], which using sensitive magnetometers to record magnetic fields produced by electrical current of brain. However, neuroimaging methods often involve cumbersome equipment that make it far away from the natural setting in which advertisements are usually sprcessed.

3.5 Understand Consumer's Needs

3.5.1 Maslow's Need Hierarchy

Consumer behavior is best understood as problem-solving oriented or goal-directed behavior [47]. Psychologists seek to identify the category of people's goals in different context and recognize structure relations between different levels.

One of most famous models about people' motivation is Maslow's need hierarchy[48]. Five levels of needs are addressed in the principles. As the figure 4 indicates, physiological needs are considered as human basic needs, such as need for air and need for water. Meanwhile, need for self-actualization represents the highest level in

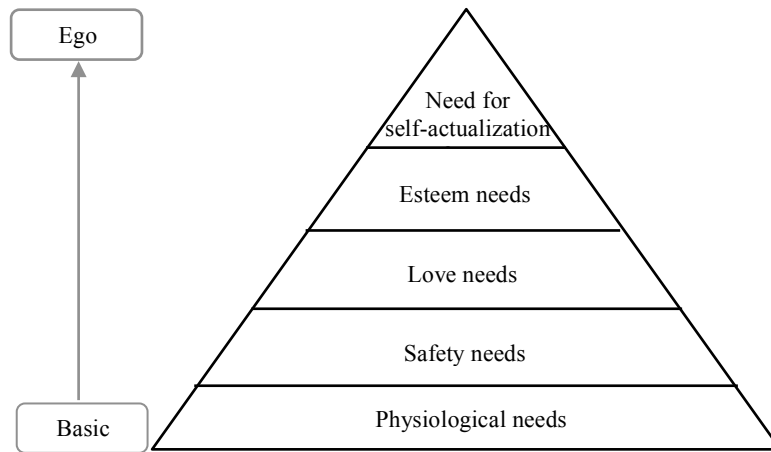


Figure 4. Maslow's Need Hierarchy

the framework. It is a personal ideal of being status. Each individual's needs must be satisfied at the lower levels before they process into higher level [9].

Via this framework, it is understood that lower levels play as functional needs, which create utilizable motivations. Higher levels emphasis on mental status and pursue in order to reach personal values and social identity which create experiential or hedonic motivations. Thus, we believe that consumer's goal drive the desired psychosocial consequences of product consumption and in turn, it will also influence product preferences [47].

3.5.2 Appeals depending on products attribute: Utilitarian needs and hedonic needs

According to the classic Maslow's need hierarchy, motivation could separate into low and high involvement level by the attribute of products. Vaughn first proposes a planning model(called the FCB grid) which explains advertising effectiveness based on the matrix of consumer thinking-feeling and high-low involvement behaviors [49]. With the assumption of this, "think" is translated into utilitarian needs where "feel" is translated into hedonic needs. It helps to understand information processing towards different product categories. Three scales define involvement of the grid: 1.Decision importance; 2.Degree of thought required; 3.Perceived risk of choosing the wrong brand. Details see figure 5. Typical reaction processing is also illustrated under each quadrant.

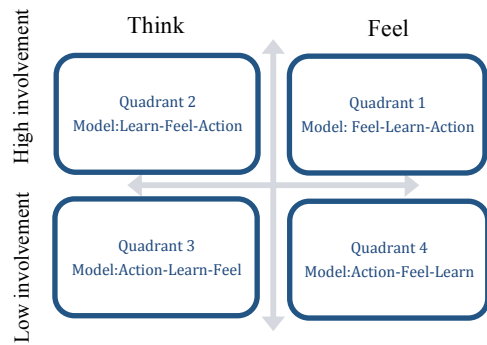


Figure 5. The FCB Grid

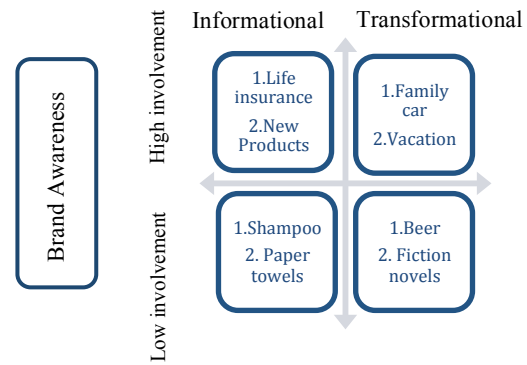


Figure 6. Rossiter-Percy Grid

Later, Rossiter and Percy improved this planning grid and proposed an alternative advertising grid that is called Rossiter-Percy grid. Details see Figure 6 and typical product categories are also demonstrated. They believed that advertising is expected to be more comprehensive and more persuasive when advertising appeals match people's motivation and satisfy these needs [50]. They argued that FCB grid is an attitude-only model but Rossiter-Percy grid emphasizes brand awareness (which consist of brand recognition at point of purchase and brand recall prior to purchase) is a necessary objective before brand attitude is formed. In addition, they indicated that involvement in FCB grid was not defined clearly and the approach confused product category involvement, brand choice involvement and the differential perceived risk. But in fact, brand choice motives can be different from product choice motives. For example, A wants to buy a mobile phone due to its design for elder people but cares about the judgment of others when selecting a brand under the same category. Hence, Rossiter-Percy grid purely defined involvement in term of perceived risk. Besides, the classification of "think-feel" in FCB grid is considered not sufficient to demonstrate the complexity of consumer purchase motivations which heavily related to consumer attitude. Rossiter-Percy grid adopted informational and transformational motivation to replace the old dimension, where informational motivation was negatively originated such as to solve problems or satisfy utilitarian needs; transformational motivation was positively originated such as to achieve social approval and sensory gratification. When informational appeals prevail, it is likely to shape an attitude towards the product rather than towards the advertising itself. In contrast to it, when triggered by

transformational appeals, the attitude towards the advertising mediate the attitude towards the product.

The FCB grid and Rossiter-Percy grid both recommend that advertising appeal should be consistent with motivation. However, some scholars debate this normative recommendation and claim that appeals of advertising that mismatches, rather than matches the motivation is more effective[51, 52]. Loef et al. belonged to one of those and they implemented a 2(purchase motivation) \times 2(advertising type) experiment[53]. Both utilitarian and hedonic product descriptions of deodorant and chewing gum were used to elicit the main purchase motivation associated with the product category. The result supported his assumptions and it was explained that people process the advertising more extensively when the appeals were incongruent with the attribute of product, but the degree of incongruity between advertising appeals and brand perceptions can not be too high, a moderate degree of incongruity could results in a favorable attitude more likely.

3.6 Informational Advertising and Emotional Advertising

Advertising usually reaches us through a hard-sell approach or a soft-sell approach. A hard-sell approach contains direct and information-based content while a soft-sell approach contains indirect and image-based content.

It is not difficult to identify an informational advertising because it is a ramification of initial advertising content. It usually contains the cues including: price/value, quality, performance, components, availability, taste, package/format, warranties, safety, nutritional value, independent research results, research results by the company itself, and new ideas[54]. Meanwhile, emotion advertising seems more complex because it not only associates with the emotional content of a stimulus but also reflects emotional reaction of a consumer who exposed to advertising. Pelsmacker & Geuens[55] proposed an emotional category and deemed that advertising belonged to emotional as long as it included one or more than one emotional characteristics as following: humor, warmth, eroticism, nostalgia, fear and provocation.

It should be noted that information and emotion contents are not mutually exclusive in one advertising and thus, advertising content usually can be classified in to one of four basic categories: 1. Low emotion/low information; 2. High emotion/high information; 3. High information/low emotion; 4. Low information/high emotion.

3.6.1 Case Study of Informational and Emotional Advertising

3.6.1.1 Perceived information utility of drug advertising by cross-media.

This paper is reviewed here because it associates with informational advertising research. The authors examines perceptions of information utility of direct-to-consumer advertising(referred as DTCA hereafter) with a focus on Korean-Americans and compared the usage of six DTCA media(newspaper, magazines, television, radio, internet, and brand web sites) as a drug information source[56].

For the reason that the authors use direct-to-consumer pharmaceutical advertising(referred as DTCPA) as research object but this type of advertising is not allowed in Japan so that I shortly do the introduction here. America and New Zealand are the only countries that allow DTCPA [57] and it can be defined as an effort made by a pharmaceutical company to promote its prescription products directly to patients, rather than healthcare professionals. Figure 7 shows an example of it [58].

AMBIEN CR is the only 2-layer sleep aid with a controlled-release formula:

The first layer dissolves quickly to help you get to sleep fast.
The second layer dissolves slowly to help you stay asleep.*

For a limited time only, get 7 days of AMBIEN CR FREE.
Visit www.AmbienCR.com or call 1-800-797-6138.

With AMBIEN CR, getting to sleep fast and staying asleep helps you wake up and get ready for the day. AMBIEN CR is a treatment option you and your healthcare provider can consider along with lifestyle changes and can be taken for as long as your healthcare provider recommends. Ask your healthcare provider about the best AMBIEN, AMBIEN CR — and don't forget to mention the CR. *Proven effective for up to 7 hours in clinical studies. **Individual results may vary.

Important Safety Information

AMBIEN is indicated for the short-term treatment of insomnia.

When you first start taking AMBIEN, use caution in the morning when engaging in activities requiring complete alertness until you know how you will react to this medication. In rare instances, memory problems can be noticed if you take AMBIEN only when you are able to get a full night's sleep. If it forgets before you need to be active again, as with any sleep medication, do not use alcohol while you are taking AMBIEN.

Prescription sleep aids are often taken for 7 to 14 days — or longer as advised by your healthcare provider. Like most sleep medicines, it has some risk of dependency.

There is a low occurrence of side effects associated with the short-term use of AMBIEN. The most commonly observed side effects in controlled clinical trials were: drowsiness (7%), dizziness (1%), and nausea (1%).

AMBIEN CR is indicated for treating insomnia.

It is a treatment option you and your healthcare provider can consider along with lifestyle changes and can be taken for as long as your healthcare provider recommends. Use as directed.

AMBIEN CR will affect you, you should not drive or operate machinery. Be sure you're able to devote 7 to 8 hours to sleep before being active again. Side effects may include: next-day drowsiness, dizziness and headache. It's non-habit-forming. However, like most sleep medicines, it has some risk of dependency. Don't take it with alcohol.

sanofi aventis

Not without your doctor. Please see important patient information on adjoining page. ©2006-2007 sanofi-aventis U.S. LLC. All rights reserved. USACR10.12.09 December 2006. Printed in USA.

Figure 7. An example of DTCPA from *Good Housekeeping* magazine(April,2007)

First, the authors confirm the opinion that information is crucial for consumers to make pharmaceutical decision. Emotional cues of advertising thus have been seldom discussed while authors mainly describe issues regarding the influence of information and how consumers perceive it. From the paper it is known that television advertising is the most widely used media for DTCA in the US. The authors agree with the statement that informativeness and entertainment are the subjective value of advertising to consumers. Consumers hold positive attitude about DTCPA information utility in general, especially women and those in poor health. Perception towards prescription drug information of advertising might be varied by knowledge and consumer characteristics, particularly ethnicity. But few research discussed consumer reaction of DTCA information utility among different ethnic groups.

An experiment is implemented through mailing questionnaire, which included 217 participants. The result of ANOVA reveals that television advertising is considered as the most reliable information resource compared with other four mainstream media(newspaper, magazine, radio, and internet). Moreover, the result of regression points out that even though brand web sites are highly perceived as a useful media for health information search but rated lowest in actual behavior. Plus, the study also

finds that the longer consumers exposure by television DTCPA, the more likely they will choose it for information search. Last, the study uncovers that Korean-American tended to perceive higher DTCPA information utility than While Americans across the six media, particularly for television, newspaper and Internet.

3.6.1.2 The impact of advertising on emotional responses and behavioral intention

This paper is reviewed here because it associates with emotional advertising research. Authors of this study strongly believed that advertising could influence behavioral intentions, particularly those could induce emotional responses are more likely lead to attitude change in chain restaurant business. They thus examine the impact of advertising on patrons' emotional response, perceived value and behavioral intentions within the chain restaurant industry [59]. They first select evaluation criteria to assess advertising content according to literature review. Six dimensions, which authors deem could arouse emotional response, are derived. They are *relevant news*, *brand reinforcement*, *stimulation*, *empathy*, *familiarity* and *confusion*. It is assumed that these elements could induce and influence viewers' emotional reaction via advertising. There into,

- *Relevant news* reflects information regarding the product;
- *Brand reinforcement* refers to the level of positive attitude towards the brand achieved by viewing the advertising;
- *Stimulation* refers to entertainment and humor;
- *Empathy* refers to a state of high emotional involvement;
- *Familiarity* refers to the high frequency of advertising exposure;
- *Confusion* refers to the degree to which viewers feel that content of advertising is difficult to follow.

The valid data is collected from 433 participants out of 11790 initial qualified samples through an online questionnaire. The requirement of participants need to be at least 18 years old, dine out at a chain restaurant at least once per week and more importantly, they has to be exposed to the advertising of chain restaurant in three months prior to the study because authors agree with the viewpoint that people tend to

loose the emotional memories gradually three months later after the exposure of advertising[60].

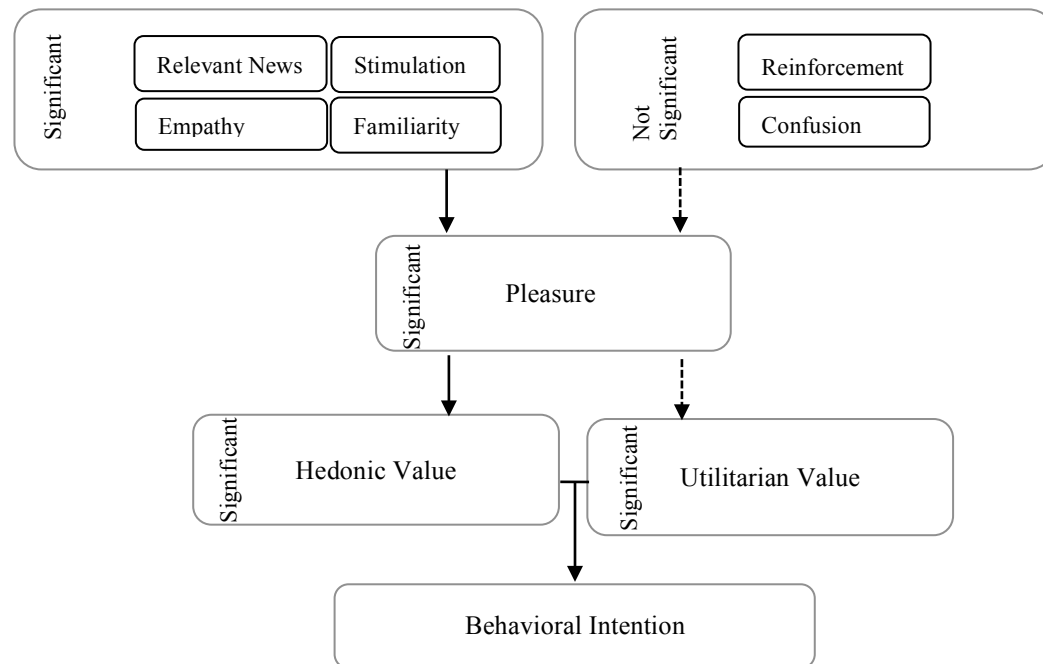


Figure 8. Construct of proposed model(Revision)

As Figure 8 indicated, the result of factor analysis showed that relevant news, stimulation, empathy and familiarity propose positive relationship with pleasure. Pleasurable responses towards advertising positively influence viewers' perceived hedonic value and utilitarian value. Furthermore, authors assume that different levels of arousal will behave discrepancy on influencing pleasure on perceived value. A multiple-group analysis thus is conducted in order to separate participants into low-arousal group and high-arousal group. Chi-square test is used to examine the differential effects of arousal between high-arousal and low-arousal groups. The result of it reveals that the effect of pleasure on utilitarian value is not significantly different across arousal levels while pleasure is more effective in enhancing the perceived hedonic value in high-arousal group rather than in the low-arousal group. Last, it is also understand that consumers' perceived value (utilitarian and hedonic) is positive significantly related to behavioral intentions.

3.7 Conclusion

The study on effectiveness of advertising has been prevalent for decades. Because most of scholar and marketers believe that it produce sales by changing attitude consciously or unconsciously. Advertising definitely works as an information source when consumers highly involve with the product or brand. It describes product features and also help to sharp brand differentiation. Even when lack of involvement, as Krugman described in one of his papers, advertising exposure enables consumer to repeatedly learn and though sooner it is repeatedly forgotten, people move some of information from advertising out of short-term and into long-term memory systems[61].

Chapter 3 first reviews previous studies about consumer general attitude towards television advertising and how they process and interact with advertising information. Followed by the description on advertising appeals on the base of understand people's utilitarian needs and hedonic needs. Two classic advertising planning models, The FCB grid and Rossiter-Percy grid, are proposed and discussed in order to figure out attitude to different types of appeals more detailed. Finally, two case studies regarding informational and emotional advertising are discussed in depth. It verifies the statement that advertising effectiveness is enhanced when appeals match the attribute of products. In the first case study, we learn that claims of the product in television advertising influence attitude mostly when consumer make pharmaceutical decision. In the second case study, it reveals that both information and emotional appeals could induce pleasure attitude and thereafter lead to behavioral intention.

Chapter 4

Experiment One: Low-involvement Product.

Case Study Of Utilitarian Food Television Advertising

4.1 Introduction

Many empirical studies have indicated that advertising appeals influence customers' attitudes and decisions through mainly cognitive and affective processing [62, 63, 59]. Advertising agencies have also long recognized that influence, so they tend to reach the target market by different formats of ad execution. In many studies, advertising content is usually divided into informational appeals and emotional appeals [64-66]. According to Puto and Wells (1984), informational appeals provide consumers with factual, relevant brand data in a clear and logical way. Emotional appeals enable consumers to feel the experience of using the advertised product [64]. Recent advertising campaigns in Japan for such products as Coca-Cola I LOHAS ("eco bottle") and Nissan LEAF ("zero emissions") appear to persuade consumers through predominantly informational appeals. Advertising invoking emotional appeals has been seen for such products as Toyota ReBorn ("fun to drive, again") and Apple iPad ("every inch an iPad").

The elaboration likelihood model (ELM) has usually been referred to as an important theory to demonstrate the two routes by which people process informational/emotional appeals [22]. It asserts that attitude change results from a thoughtful process (central route) or is associated with positive/negative cues and leads to a nonthoughtful process (peripheral route). When consumers are highly involved, they will positively seek and process product-relevant information. Attitude is determined only after they comprehend the content of advertisements and fully address personal benefits with or without possession of the product [67]. Ruiz and Sicilia (2004) have also examined consumers' responses toward different advertising appeals and concluded that those whose purchase motivation was cognition-oriented would more likely process the advertisements by the central route [62]. Attitude formed thereafter toward product-relevant information will enhance or weaken the

strength of motivation [68, 23]. The peripheral route, on the other hand, involves relatively low involvement and focus on product-irrelevant cues of adverts. By this route, customers would probably not make an effort to understand messages present in the ads but would be emotionally triggered by other aspects [22]. For example, not only background music and celebrity spokespeople but also the surrounding environment of viewing could induce the peripheral route and elicit different attitudes.

In addition, as suggested by the purchase model AISAS (Attention, Interest, Search, Action, and Share), advocated by Dentsu Inc., and understood as the framework of advertising processing, viewers' positive attitude is one of prerequisites of inspiring purchase behavior [69]. Therefore, the goal of this paper is to scrutinize the relationship between various elements of informational/emotional appeals and attitude formation. We emphasize quantitatively analyzing consumers' responses to food commercials in order to find out the key appeal(s) of advertisements that could lead to a positive attitude and purchase intention.

4.2 Motivation

Advertisements contain informational appeals providing meaningful facts to the consumer and transformational appeals that attempt to move the consumer emotionally to a point of greater product acceptance [70]. According to the Consumer Buying Trend Survey (2010), Japanese consumers consider television the most reliable info source when selecting products [71]. Therefore, television commercials are adopted in this paper to decline the interference of the advertising platform. Although a study has shown that informational advertisements are more effective for utilitarian brands, to alter purchase motivation, while emotional advertisements are more effective for hedonic goods [50], there have been few attempts to quantitatively measure the contribution of the two appeals in utilitarian food commercials. The majority of food products promoted through television commercials nowadays are those high in energy and low in nutrition, for example, fast food and sweets. The percentage of utilitarian food television commercials, such as for vegetables and fruits,

is relatively small [72]. For the purpose of advocating a better lifestyle and, more importantly, because according to our previous investigation [73], Japanese consumers have become more anxious about food safety issues since leaks of poisonous radiation from the Fukushima accident, we recognize the importance of how Japanese consumers perceive utilitarian food commercials.

Hence, this paper quantitatively evaluates the impact of informational/emotional appeals among utilitarian food television commercials. We predicted that emotional appeals—especially one of the components, feeling of safety—would play an important role for Japanese consumers because our previous studies also suggested that relevant knowledge of food did not have significant impacts on their purchase intention or food consumption [74].

4.3 Methodology

4.3.1 Participants

Survey one consisted of thirty Japanese university student-participants. Sixteen were male, with 81.25% in their twenties, and 14 were female, with 57.14% in their twenties.

4.3.2 Stimulus

There were 10 samples of utilitarian food television commercials, which had been broadcast on-air. We chose typical utilitarian food categories as themes for the commercials, and years of broadcast in Japan were as follows: orange (1992), milk (2006), melon (2008), vegetable juice (2008), pork (2009), rice (2009), tomato juice (2010), orange juice (2010), kiwi (2012), and vegetable juice (2012). Each sample lasted 30 seconds. Detail description of samples see appendix 1.

4.3.3 Experiment procedure

An Apple MacBook with a 13.3-inch, 1280×800-pixel display was used as the experimental apparatus, and viewing distance was fixed at 57 centimeters away from the display. Participants adjusted volume during the pretest commercial before the experiment. Participants watched each commercial sample individually in a random order and completed the survey thereafter. The survey had two parts. The first part contained questions related to impression evaluation and purchase intention. The impression evaluation included two aspects: the evaluation of informational appeals and the evaluation of emotional appeals. Informational appeals were considered as mainly product features and detailed descriptions. The former emphasized identical attributes compared with other products, and the latter stressed product-relevant information and level of information dominance. On the other hand, emotional appeals mainly included elements of loveliness, interest, and feeling of safety. The specific questions in this part are shown in Table 2. The second part of the survey contained demographic information that included gender, age range, and nationality. We employed a five-point Likert scale for the measurement (5: Very much; 4: Quite a bit; 3: Neither; 2: Not much; 1: Not at all). We obtained written informed consent for our research work, and the Chiba University ethical committee has approved it.

Table 2. Questions related to impression evaluation of experiment one

<i>N</i> = 30	List of Questions
Item 1	Do you think the commercial represents comprehensive production features?
Item 2	Is the description of the product detailed in the commercial?
Item 3	Do you think the commercial is lovely?
Item 4	Do you think the commercial is interesting?
Item 5	Do you have a feeling of safety toward the product?
Item 6	How much do you like the commercial?
Item 7	How much are you willing to purchase the product?

4.4 Analysis method

All statistics were computed with SPSS V20. Multiple regression analysis was

implemented to measure the correlation between a dependent variable and more than one independent variable [75]. Here, we treated informational/emotional appeals of commercials as independent variables and purchase intention and favorability as dependent variables.

4.5 Results of experiment one

4.5.1 Impression evaluation

As shown in Table 3, features of commercial samples were evaluated for five aspects. Commercial 1 (CM1) is considered to be the most emotional commercial sample (loveliness: $M = 3.83$, $SD = 0.83$; interest: $M = 3.60$, $SD = 0.67$; feeling of safety: $M = 3.83$, $SD = 0.75$), while CM2 is considered to be the most informative commercial sample (product features: $M = 3.70$, $SD = 0.95$; detailed description: $M = 3.47$, $SD = 1.07$).

Table 3. Comparative result among ten utilitarian food commercial samples

N = 30		Product Features		Detailed Description		Loveliness		Interest		Feeling of Safety	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CM1	Vegetable Juice	2.43	(0.90)	2.23	(0.82)	3.83	(0.83)	3.60	(0.67)	3.83	(0.75)
CM2	Vegetable Juice	3.70	(0.95)	3.47	(1.07)	2.87	(1.01)	2.83	(1.05)	3.97	(0.67)
CM3	Tomato Juice	3.13	(1.14)	3.23	(1.19)	2.37	(0.89)	2.63	(1.03)	3.10	(1.06)
CM4	Orange Juice	2.33	(1.09)	2.07	(0.74)	2.90	(0.96)	3.33	(0.92)	3.03	(0.81)
CM5	Kiwi	2.60	(1.19)	2.30	(0.99)	3.83	(0.99)	3.30	(0.92)	2.83	(0.99)
CM6	Melon	3.50	(0.94)	2.93	(1.01)	2.00	(0.91)	1.93	(0.78)	4.10	(0.80)
CM7	Milk	2.10	(1.24)	1.87	(0.86)	2.80	(1.16)	4.53	(0.68)	2.77	(0.94)
CM8	Orange	2.27	(0.91)	2.07	(0.83)	3.03	(0.96)	2.67	(1.03)	2.73	(0.98)
CM9	Pork	3.23	(0.94)	3.00	(0.95)	2.93	(1.01)	3.23	(1.17)	3.13	(0.97)
CM10	Rice	3.40	(0.93)	2.73	(0.83)	2.80	(0.92)	2.87	(0.90)	3.77	(0.86)

4.5.2 Multiple regression analysis

For each independent variable, the average rating of the ten commercials was obtained for each participant. The standardized regression coefficients, adjusted R^2 value, and p -values were reported in Table 4.

When the dependent variable was set as purchase intention, ANOVA is significant [$F(5, 24) = 5.82, p = .00 < .01$]. The function was able to account for 45% of the variance in purchase intention ($R^2 = .45$). Table 1 indicated that “feeling of safety” was the only independent variable that correlated to purchase intention ($p_{\text{feeling of safety}} = .00 < .01$), and its coefficient of regression was .70. Other informational and emotional independent variables did not contribute to the regression of the dependent variable, and the coefficients were less than significance level ($p_{\text{product feature}} = .14$; $p_{\text{detailed description}} = .84$; $p_{\text{loveliness}} = .25$; $p_{\text{interest}} = .69$). Emotional appeal consisted of three variables, and the results illustrated that only one of them, feeling of safety, affects purchase intention. Therefore, it cannot be simply determined whether informational appeal or emotional appeal was more effective in influencing purchase intention.

When analyzing the regression of favorability on different independent variables, it can be seen that the validity of the linear equation is significant [$F(5, 24) = 5.6, p = .00 < .01$]. It was able to account for 44% of the variance in purchase intention ($R^2 = .44$). Interest was the only valid independent variable to predict the change of customers’ favorability toward utilitarian food television commercials ($p_{\text{interesting}} = .01$), and its coefficient of regression was .47.

Table 4. Multiple regression analysis of pre-existing utilitarian food television commercials

Independent Variables <i>N</i> = 30	Dependent Variables (β)	
	Purchase Intention	Favorability
Product features	-.45	-.20
Detailed description	.06	-.05
Loveliness	.23	.11
Interesting	.07	.47*
Feeling of safety	.70**	.41
Adjusted R^2	.45	.44

* $P < .05$; ** $P < .01$

4.6 Discussion and conclusion

The primary focus of this study is to investigate the predictive appeal of food commercial films in forecasting customers' attitudes and purchase intentions. The results of our experiment indicate that a feeling of safety, one of the emotional variables, does indeed provide predictive capability in forecasting customers' purchase intention, for both utilitarian food commercials and plant factory commercials. Another emotional variable, interest, could influence customers' attitude toward utilitarian food television commercials. Hence, it is believed that Japanese customers would be likely to process utilitarian food commercials mainly through the peripheral route in Cacioppo and Petty's model. In particular, scenes presenting raw material and origin of production in the utilitarian food films, gain relative high scores when evaluated for feeling of safety. Although the scenes are product-related, the result suggests that viewers are generally not highly process adverts information and are unconscious of the messages that a commercial wants to deliver but focus more on affective response, such as visual aesthetic sense and user experience. To cope with this issue, visual communication is preferred in commercial films rather than presentation of the product-related message through text display.

Pretest About Consumer Familiarity Towards Plant-Factory Products

Vegetable Safety concern and attitude towards plant-factory in Singapore and Japan

4.7 Introduction

Before implementing experiment two, we conduct a pretest regarding consumer food safety concern and familiarity towards plant-factory products. For the reason that plant-factory project is a cooperation project of Chiba University and Nanyang Technological University, author carried on the surveys in both Singapore and Japan and made comparison on the results between these two countries as well.

A plant factory is a facility that aids the steady production of high-quality vegetables all year round by artificially controlling the cultivation environment (e.g., light, temperature, humidity, carbon dioxide concentration, and culture solution), allowing growers to plan production [76]. Images see figure 9. Currently, many agricultural producers have become interested in it in Japan because of its feature of stable production and labor savings. In addition, the potential market for high-quality vegetables and fruits from plant factories is expected to be lucrative. Due to the food self-sufficiency rate in Japan is limited by the reduction of labor work and cultivated area, the development of Plant Factory technique is blooming rapidly these years on account of its steady production of high-quality vegetables and pesticide-free environment[77]. Singapore, only 1% country total area is occupied for agriculture use, has a long history of hydroponic application. Therefore, our propose is to investigate general food safety concerns of the customers in these two countries as well as their attitude towards vegetables produced by Plant Factory are evaluated.



Figure 9. Interior images of Plant-Factory

4.8 Methods of pretest

We conducted the paper-based questionnaire in Singapore during the beginning of March, 2012. The survey was held in Nanyang Technological University campus and 89 students were invited to participate in paper-based questionnaires. 45 participants are male and 44 participants are female.

Later in May 2012, we conducted the research work by implementing the survey in Japan and 42 undergraduates Japanese students participant in the online-based questionnaire. 18 students are male and 24 students are female.

Both of the questionnaires contained the same questions. There were mainly three parts of the questionnaire and it consists of a total of 17 questions. The first part of survey contained 6 questions about general attitude towards vegetable safety and focus on particularly about the comparison of reliability degree among vegetables from specific imported countries. The second part of survey contained 5 questions about the degree of understanding as well as attitude towards Plant Factory. The third part of survey contained 6 questions about individual attributes.

4.9 Results

4.9.1 General Attitude Towards Food Safety.

From the Table 5, we knew that in Singapore, 91% participants claimed that they “Concern” or “Somewhat Concern” on food safety issues while only 1% participants

claimed that they were “Unconcern” on food safety issues. In Japan, the trend of general attitude among participants was the same as the result of Singapore.

At the same time, the result related to vegetable risk topics indicated that “Pollution of Origin of Production” and “Agricultural Chemicals” were listed as the main causes of vegetable risk concern in both countries.

Table 5. General attitude towards food safety

%		Singapore N=89	Japan N=42
General Attitude towards Food Safety	Concern	54	20.9
	Somewhat Concern	37	60.5
	Neither	7	4.7
	Somewhat Unconcern	1	11.6
	Unconcern	1	2.3
Vegetable Risk Topics (Multiple Choices)	Pollution of origin of Production	83.15	69.8
	Ag. Chemical	78.65	72.1
	Packaging Materials	28.1	0.0
	Genetically Modified	36	32.6
	Others	0.0	0.0

The country area restricts agriculture in Singapore in large degree and thus, the amount of soil-cultivated vegetable produced by Singapore is quite limited on market. The country relies on imported vegetables heavily from mainly China, Malaysia and Indonesia. From Table 6 we knew that participants considered vegetables produced in Singapore as more reliable than those imported from foreign countries while they worried about vegetables produced by China mostly ($F [7,88]=27.272$, $P<0.05$). Even though it was known that there was difference by statistical approach between the reliability degree of Singapore and reliability degree of Japan in Singapore questionnaire, it could be attribute to the regional tendency of Singaporeans. Japan was evaluated on the second highest of list among foreign countries.

In addition, it could be gained that participants in Japan trusted the vegetables produced in Japan mostly while had least confidence over the vegetables produced in China via the data of Japan in Table 6.

Table 6. Reliability degree of imported countries

Reliability Degree (Rating Average)	Singapore N=89	Japan N=42
1st	Singapore 4.12	Japan 4.74
2nd	Australia 3.83	France 3.59
3rd	Japan 3.49	Australia 3.58
4th	Malaysia 3.33	Singapore 3.19
5th	United States 3.3	United States 3
6th	France 3.16	Malaysia 2.97
7th	Indonesia 2.75	Indonesia 2.83
8th	China 2.17	China 1.53

4.9.2 Knowledge Background and Attitude towards Plant Factory

Plant Factories in Singapore was still on the initial stage and was recognized by few according to our investigation during our stay in Singapore. Although hydroponic vegetables are common on Singapore market, it's difficult to purchase vegetable produced from Plant Factory. According to our research, As Table 7 shows, 34% participants claimed that they had knowledge about Plant Factory while majority had no idea what Plant Factory was in Singapore. Meanwhile, among the participants who knew it, the impression towards Plant Factory was relative positive, "Eco and environment-friendly", "Pretty and Freshness" and "Pesticide-free" dominated the first three positions.

On the other side, Since Plant Factory technique was original invented and established in Japan, it's under expectation that 62.8% participants in Japan claimed that they had knowledge background about it. However, among participants who knew about plant factory, 74.1% participants had the impression of "Artificial" towards it.

Table 7. Attitude towards Plant Factory

%		Singapore N=89	Japan N=42
Knowledge Background of Plant Factory	Pretty Much	1	0
	A little bit	34	62.8
	No idea	65	37.2
Impression towards Plant Factory (Multiple Choices)	Pretty and Freshness	61.29	44.4
	Nutritional	35.48	3.7
	Pesticide-free	48.39	25.9
	Eco and environment-friendly	77.42	7.4
	Artificial	16.13	74.1
	Tasteless	12.9	7.4
	Others	9.68	0

4.10 Conclusion of pretest

In Singapore, people exhibit more attention than Japanese consumers on food safety issues. They have more confidence on vegetables quality made in Japan comparing with other main imported countries. Among small number of participants who know about Plant Factory, they all represent positive attitude towards vegetable production from it. Therefore, we can conclude that Plant Factory technique or vegetable productions from Plant Factory has great potential to develop in the future in Singapore if highly promotes the attribute of no pesticide use and the technique is originated from Japan.

From the responses we collect in Japan, it illustrates that the trend of general attitude towards vegetable safety in Japan is similar with the results of Singapore. Meanwhile, as mentioned above, it could be due to the regional tendency that Singaporean trust vegetables from Singapore mostly. In the survey of Japan, customers rely on vegetable made in Japan mostly as well. Therefore, it can be

concluded that local vegetable is always the first choice of residences. Moreover, majority participants in Japan claim that they have knowledge about plant factory and the number is around 2 times over the number in Singapore while their impression towards plant factory is relative realistic.

Experiment Two: Original Commercial Films of Plant-Factory Product

4.11 Motivation

None of the informational variables could predict change in purchase intention in experiment one. However, that result provides limited insight because the samples of experiment one were assembled by controlling only utilitarian food related themes and length of broadcast. It is possible that the result derived from sampling bias and occasionally unequal distribution of informational variables among the ten samples. From Table 3, it is also known that half of the samples were considered uninformative; those were CM1, CM4, CM5, CM7, and CM8. Moreover, another possible presumption is that because the themes of the commercials were typical of the utilitarian food category, it is possible that the familiarity of the category increased the benchmark of evaluation or the blindness of informational variables.

To improve on this point, we considered it necessary to manipulate the proportion of informational and emotional variables among television commercials in order to increase the diversity of informational variables. It is especially necessary to choose a new product to decrease the influence of familiarity. Consumer information search is likely to take place, and informational appeals for a new product are expected to play an important role in purchase intention [78]. Consequently, we tailored, designed, and shot eight samples of commercials for plant factory products.

4.12 Methodology of experiment two

4.12.1 Participants

Thirty-nine Japanese university students participated in the online questionnaire. Of those, 25 were male, with 72% in their twenties, and 14 were female, with 64.29% in their twenties.

4.12.2 Stimulus

We designed and made eight samples of original commercial films for plant-factory-produced tomatoes, since the tomato is currently the typical vegetable that hydroponics technique can cultivate. The inside scenes of a plant-factory located in Kashiwanoha, Chiba, were recorded during August 2012. During the initial stage of commercial design, the contents of informational variables were manipulated to enable even distribution along the informational aspect. CM1, CM5, CM6, and CM7 were designed to show a growth trend in the product feature aspect; CM2, CM3, CM4, and CM8 were designed to show a growth trend in the detailed-description aspect. In addition, in response to the artificiality attribute of the plant factory, we enabled more commercial samples (CM2, CM3, CM4, CM5, CM7, and CM8) to create a feeling of safety by introducing the cultivation environment and its advantages, such as stable production and high quality. Here, six representative screenshots from each commercial sample were captured and illustrated in Appendix.

4.13 Results of Experiment Two

4.13.1 Evaluation of Plant-Factory Commercial Films

In survey two, the experimental procedure and analysis method were consistent with those of survey one. From Table 8, it was seen that CM8 (product features: $M = 4.05$, $SD = 0.86$; detailed description: $M = 4.26$, $SD = 0.94$) acquired the highest scores of informative variables while CM4 (loveliness: $M = 3.54$, $SD = 1.12$; interest: $M = 3.13$, $SD = 1.00$; feeling of safety: $M = 3.10$, $SD = 1.02$) received the highest score among emotional variables. CM8 introduced the inside look of a plant factory by displaying images while dubbed the attributes simultaneous. CM4 emphasized the attribute of stable production by means of an animation.

Meanwhile, CM2, which present the cultivation environment of the plant factory through video with tender background music, was the commercial for which 60% of participants, who were rated on top of eight commercials, claimed that their impression of a plant factory improved after watching it. The result also indicated that CM2 ranked first for the evaluation item of feeling of safety (feeling of safety: $M =$

3.85, $SD = 1.01$). Hence, the result suggested that a feeling of safety played a positive role in changing attitudes toward plant-factory-produced goods.

Table 8. Comparative result among eight plant-factory commercial samples

$N = 39$	Product Features		Detailed Description		Loveliness		Interest		Feeling of Safety	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CM1	2.41	(1.04)	2.00	(0.73)	2.36	(0.87)	2.79	(1.10)	3.00	(1.03)
CM2	3.46	(1.02)	2.97	(0.96)	2.64	(0.84)	2.56	(0.88)	3.85	(1.01)
CM3	3.23	(0.96)	3.28	(0.92)	3.31	(1.13)	2.51	(0.94)	2.90	(1.10)
CM4	3.59	(1.14)	3.46	(1.19)	3.54	(1.12)	3.13	(1.00)	3.10	(1.02)
CM5	2.97	(1.16)	2.69	(0.83)	2.85	(0.93)	3.69	(0.95)	3.05	(0.89)
CM6	2.10	(1.07)	1.97	(0.67)	2.59	(1.12)	3.28	(1.23)	2.13	(0.95)
CM7	3.28	(1.10)	2.77	(0.93)	2.03	(0.87)	2.44	(1.07)	3.56	(0.97)
CM8	4.05	(0.86)	4.26	(0.94)	2.23	(1.04)	3.00	(1.19)	2.92	(1.11)

4.13.2 Multiple Regression Analysis

Table 9 demonstrated that when purchase intention is set as the dependent variable, independent variables were able to anticipate changes in it efficiently [$F(5, 33) = 16.73, p = .00 < .01$]. Here, for each independent variable, the average rating of the eight commercials was obtained for each participant. It was able to account for 67% of the variance in purchase intention ($R^2 = .67$). It revealed that the feeling-of-safety variable was extremely significantly correlated to purchase intention ($p_{\text{feeling of safety}} = .00$) while other independent variables did not contribute to the regression.

The regression of “favorability” on informational variables and emotional variables was then analyzed. According to the result of ANOVA, the regression equation achieved significance level [$F(5, 33) = 13.63, p = .00 < .01$]. It was able to account for 62% of the variance in purchase intention ($R^2 = .62$). It indicated that feeling of safety ($p_{\text{feeling of safety}} = .00$) possessed significant correlation to customers’ favorability. In other words, a feeling of safety decided customers’ attitudes toward plant factory commercials. From the result, it was known that none of variables of informational appeal correlated with purchase intention as well as favorability.

Table 9. Multiple regression analysis of plant-factory television commercials

Independent Variables <i>N</i> = 39	Dependent Variables (β)	
	Purchase Intention	Favorability
Product features	.07	-.19
Detailed description	.08	.15
Loveliness	-.11	.00
Interest	.09	.33
Feeling of safety	.78**	.55**
Adjusted R^2	.67	.62

* $P < .05$; ** $P < .01$

4.14 Discussion and Conclusion

In the plant factory commercials, participants were influenced by none of the informational variables and processed the commercials through the peripheral route as well. We had thought that utilitarian reasons, such as stable production and no agricultural pollution, would be the main motivation consideration, and consumers were expected to process the commercials with high involvement. However, the result was contrary to our expectation. Thus, it was reasonable to consider that purchase intention was not rational toward products from a plant factory because of its low customer familiarity and high anxiety level. However, with much deliberation on the background of participation, this conclusion might be clarified by the advertising

research work conducted by Obermiller, Soangenber, and MacLachlan (2005). The authors claimed that with increasing individual level of advertising skepticism, informational appeals became less persuasive than emotional appeals and that advertising skepticism likely increased when consumers were better educated [79]. In our case, both surveys employed university students as subjects, and the possibility of high advertising skepticism does exist. Besides, consumption style in Japan is transitioning from rational to emotional [6]. The technical capability within industry has reached a mature phase, so competitive price and product performance are becoming less attractive to potential consumers than the experience of mental comfort derived from advertisements.

Our work extends current focuses on advertising studies by applying a quantitative measure to commercials for utilitarian food and plant-factory-produced food. However, we cannot completely deny the influence of informational appeals on purchase intention and favorability. We addressed only two aspects of informational appeals in this paper while ignoring the influence of others, such as price and brand information. Future studies are needed to fully address these aspects in greater depth.

Experiment Three: High Involvement Products

Content analysis of laptop and over-the-counter drug television advertising

4.15 Introduction

Without advertisements (referred to as ads hereafter), a product remains unknown to the public. The first television ads, for a Seiko clock, in Japan were broadcast in 1953[80]. Since then, how viewers perceive ads has been a subject of discussion in research. Compared with other media choices, television ads have the benefit of building a brand's ability, the economic impact of which is substantial[37]. Nielsen Catalina Solution and CBS' joint study in 2014 stated that the long-term impact of television ads might well be greater than twice the short-term impact on revenues[81]. Based on copy testing, other scholars also suggested that advertising effectiveness is determined by three main factors[82-85]. First, it depends heavily on market share within the industry: the larger the market share, the better the advertising performance, accounting for around half of its effectiveness. Second, 80% of drivers underlie media

choices or other “unexplainable” factors. Third, only 20% of advertising effectiveness is determined by its persuasive message and distinctive content[84].

Thus, advertisers concentrate on designing the content of ads to fully utilize this 20% effectiveness. The content is usually categorized into informational and emotional appeal[64, 32]. Some scholars suggest that the former one functions as persuasion, arousing demand during the pre-purchase phase. The latter one functions as entertainment and reinforcement, possibly enhancing brand awareness and encouraging repeat purchases during the post-purchase phase[64]. Supporters of informational appeals claim that ads should persuade consumers by facts to improve their understanding and ultimately change their attitudes; while supporters of emotional appeals assert that it is more important to entertain viewers and stimulate aspirations to influence their experience of the product[32].

The level of involvement, reflecting the extent to which consumers are interested in purchasing a product, is recognized as a major variable during advertising communication [86]. Our previous study sampled vegetables ads, low-involvement products [87-89], to quantitatively examine Japanese consumer attitudes and purchase intentions[90]. The result indicated that Japanese consumers prefer emotional ads for low-involvement products. This was similar to the findings of You et al.[91], who tested how the informational and emotional appeals of logo design contributed to purchase intentions. Interestingly, Japanese consumers behaved rationally when evaluating alternatives but emotional variables played a decisive role in vegetable purchases[91]. Further, Cui et al. examined Chinese consumers’ attitudes to a variety of product categories and found that they preferred emotional over informational appeals for both low- and high-involvement products[92]. Therefore, it stands to reason that the appeal category is a critical incentive to Japanese consumers’ purchase intentions for high-involvement products. We believe research into this topic will help our understanding of Japanese consumer behavior.

In this study, we sample ads for laptops and over-the-counter drugs (referred to as *OTC* drugs hereafter), both being typical high-involvement products due to their value

and personal preference. *OTC* drugs also involve the issue of high personal risk, which requires a higher level of involvement.

Moreover, from Dentsu's annual report on advertising expenditure in Japan, it is known that television ads occupied the largest share of expenditure in 2014, while that on Internet ads rose significantly due to the growth in the smartphone market and new advertising technologies[93]. There are also indications that advertisers of laptops tend to reach their target group through, other than television, mainly magazines. In accordance with the data, we are also interested in examining consumers' reliability across the various media options.

Thus, this study addresses three research objectives:

1. Examining consumer attitudes and purchase intentions towards television ads for high-involvement products, with a focus on young Japanese consumers;
2. Quantitatively examining the attribution of the informational/emotional appeal of television ads;
3. Examining Japanese consumer perception of advertising, classified by medium.

4.16 Methods

4.16.1 Participants

The survey included 49 Japanese university students: 23 male, of which 19 were in their 20s, and 26 female, of which 16 were in their 20s. These students came from across the country and thus effectively represent the young consumer groups in Japan. Moreover, university students are also the main target group for laptops and potential consumers of self-medication. For the purpose of this study, medical school students were excluded.

4.16.2 Samples

There were twenty samples of on-air television ads for laptops and *OTC* drugs, all of which had been broadcast to the Japanese domestic market and lasted 30 seconds. According to the Pharmaceutical Affairs Act, revised by the Japan Ministry of Health,

Labour and Welfare and enforced in 2009, *OTC* drugs were categorized into three classes according to the degree of risk[94]: first-class *OTC* drugs carry the highest risk and third-class ones the lowest. We adopted second-class *OTC* drugs for our advertising samples, with information about the degree of risk displayed at the end of each ad. For laptop ads, we chose products that were for personal use, taking into consideration the background of our mainly young participants. Both Windows and Macintosh operating systems were included. Detail descriptions of samples see appendix 3 and appendix 4.

4.16.3 Experimental procedure

The procedure is the same as that used by Zhang et al.[90], a survey consisting of three parts and implemented in Japanese. The first part contained questions evaluating impression and purchase intention. An Apple MacBook with a 13.3-inch, 1280×800-pixel display was used for the viewing, at a distance fixed at 57 cm. After independently viewing the pre-selected samples in random order, each participant evaluated them using the survey questionnaire.

Evaluating impression included two aspects: that of informational and emotional appeals. Useful information, new information, and product features were three criteria against which informational appeal was evaluated: useful information referred to that which would affect purchasing decisions; new information explained understanding of the ads; description of product features highlighted the level of dominance of product-relevant messages. On the other hand, emotional appeal mainly included elements of loveliness, interest, and feelings of safety. We employed a five-point Likert scale as the measurement tool (5: Very much; 4: Quite a bit; 3: Neither; 2: Not much; 1: Not at all). A sample of the questions is presented in Table 10. The second part of the survey included the questions regarding consumers' reliability across three media for each product category, and the third part covered demographics such as gender, age range, and nationality. We obtained written informed consent for our research work, which was approved by Chiba University ethical committee.

Table 10. Questions related to impression evaluation of experiment three

Questions	
Item 1	Do you think the commercial contains useful information? (Useful Information)
Item 2	Do you think the commercial contains new information? (New Information)
Item 3	Is the description of the product detailed in the commercial? (Product Feature)
Item 4	Do you think the commercial is lovely? (Loveliness)
Item 5	Do you think the commercial is interesting? (Interest)
Item 6	Do you have a feeling of safety towards the product? (Feeling of Safety)
Item 7	How much do you like the commercial? (Favorability)
Item 8	How much are you willing to purchase the product? (Purchase Intention)

4.17 Analysis method

Multiple regression analysis was implemented to measure the correlation between a dependent variable and multiple independent variables [75]. Here, we treated the informational and emotional appeals of commercials as independent variables and purchase intention and favorability as dependent variables. In addition, the independent t-test analysis was used where there were two experimental conditions and different participants used in each [95]. Here, it was applied to represent customers' reliability across different media options.

4.18 Results

4.18.1 Multiple Regression Analysis For Laptop Advertising

For each independent variable, the average rating for the twenty ads was obtained from each participant. The standardized regression coefficients, R^2 value, and p -values are reported in Table 11.

The ANOVA for multiple linear regression test the significance of the independent variables at predicting the change in a dependent variable. Here, it was known that the model was a significant fit to the data [$F(6,42) = 5.6, p = .00 < .001$] when the dependent variable was set as purchase intention. The R^2 value measures how much of the variability in the outcome was accounted for by the predictors, and accounts for

44% of the variance in purchase intention ($R^2 = .44$) in this case. As the data showed, product feature is the only independent variable that correlated to purchase intention ($p_{product\ feature} = .00 < .01$), and its coefficient of regression is .81. When analyzing the regression of favorability on different independent variables, it can be seen that the validity of the linear equation is significant [$F(6,42) = 7.99, p = .00 < .001$], and is able to account for 53% of the variance in purchase intention ($R^2 = .53$). Interest is the only valid independent variable to predict the change in customers' favorability towards laptop advertising ($p_{interesting} = .00$), and its coefficient of regression was .51.

Table 11. Results of multiple regression analysis of experiment three

Independent Variables <i>N</i> = 49	Dependent Variables (B)			
	Purchase Intention		Favorability	
	Laptop	OTC Drug	Laptop	OTC Drug
Useful information	-.01	-.01	-.30	-.22
New information	-.17	-.24	.18	.06
Product features	.81**	.48*	.03	.22
Loveliness	-.13	.18	-.17	-.01
Interesting	.18	-.22	.51**	.49**
Feeling of safety	.31	.71**	.25	.27*
Adjusted R^2	.44	.44	.53	.59

* $p < .05$; ** $p < .01$

4.18.2 Multiple Regression Analysis For OTC-drug Advertising

This outcome describes whether the predictors made a significant contribution to assessing the change in the dependent variable in the model. When the dependent variable is purchase intention, we found that the ANOVA was significant [$F(6,42) = 5.44, p = .00 < .001$], accounting for 44% of the variance in purchase intention ($R^2 = .44$). Product feature and feeling of safety both correlated to purchase intention ($p_{product\ feature} = .04$; $p_{feeling\ of\ safety} = .00$).

When analyzing the regression of favorability on different independent variables, it can be seen that the validity of the linear equation was significant [$F(6,42) = 9.92, p$

= .00 < .001] , and accounted for 59% of the variance in purchase intention ($R^2 = .59$). Interest and feeling of safety were both valid independent variables to predict the change in customers' favorability towards *OTC* drug advertising ($p_{\text{interesting}} = .00$; $p_{\text{feeling of safety}} = .03$), with coefficients of regression as .49 and .27, respectively.

4.18.3 Consumer perceptions towards advertising classified by medium

Figure 10 demonstrated Japanese consumers' perception of the reliability of laptop and *OTC* drug ads broadcast on three media. On average, the internet ($M = 3.73$, $SD = .91$) was considered to be a higher credibility source than television ($M = 3.12$, $SD = .90$) for laptop ads. Equal variances were assumed between the groups [$F = .76$, $p = .39 > .05$] , and this difference was significant $t(96) = 3.34$, $p = .001 < .01$. Laptop ads in magazines ($M = 3.76$, $SD = .92$) were also considered more reliable than those on television. Again, equal variances were assumed between the groups [$F = .31$, $p = .58 > .05$] , and this difference was also significant $t(96) = 3.42$, $p = .001 < .01$.

Meanwhile, consumers' attitude towards the reliability of *OTC* drug ads was also depicted in the same figure. The values of reliability were: television ($M = 3.45$, $SD = 1.03$), magazine ($M = 3.06$, $SD = 1.11$), and internet ($M = 2.78$, $SD = .98$). Equal variances were assumed between reliability on television and internet [$F = .05$, $p = .82 > .05$] , and the difference was significant $t(96) = -3.32$, $p = .001 < .01$.

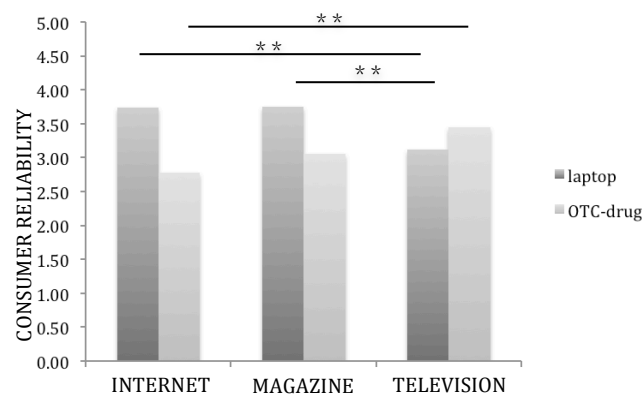


Figure 10. Consumer reliability on laptop and *OTC* drug ads across three media

4.19 Discussion and Conclusion

Results of the analysis show that young Japanese consumers experience a more emotional response when evaluating the favorability of ads but are rational when making purchasing decisions with regard to high-involvement products. The appeal of product features in the sample laptop ads displays a predictive capability in forecasting purchase intention; none of the emotional appeal affects that decision, however. When watching the sample *OTC* drug ads, the product features, an informational appeal, and the feeling of safety, an emotional appeal, both contribute to purchase intention. On the other hand, consumers' favorability depends mainly on the interesting aspect of the ad, rather than persuasive messages. This outcome is evidently consistent with the study of Pelsmacker et al., who showed that favorability towards ads cannot determine viewers' purchase intentions, which are induced by different variables[65].

Earlier studies focusing on information processing may also be helpful in explaining our results. These apply to the difference in advertising perceptions between people in Asian and Western nations[92,96]. Asians, such as the Chinese and Japanese, tend to be more holistic in their thinking, while Westerners, such as Americans, tend to be more analytical[97]. Many of these studies state that Asian consumers are more attracted to ads that they feel moved by, whereas Western consumers put more emphasis on persuasive facts used in ads[98].

It has been acknowledged that consumer choice could be influenced by the attributes of a product. For instance, fact-based ads are more persuasive for utilitarian goods (e.g., pain relievers, gasoline), while emotional ads are more attractive for hedonic goods (e.g., cigarettes, video games)[99]. However, as the purpose of consumption is not covered by our survey, it is not clear how participants perceive the attributes of products: whether the participants viewed laptops as tools for studying or devices for playing games; whether they regarded *OTC* drugs as pain relief or supplementary medicines. In addition, even though we defined the feeling of safety as an emotional criterion, it is difficult to determine whether the participants thought in

this way. As Krugman states, persuasion in advertising likely acts at an unconscious level, so that viewers assimilate the content without becoming involved[100]. In our case, we are not sure whether the feeling of safety derives from the description of the products or the ad itself, such as the storyline and background music. We therefore believe that the element in television ads that could create the feeling of safety is a topic worth discussing in the future.

Along with the results of our previous research, this study provides evidence that young Japanese consumers are more receptive to emotional appeals for low-involvement products and informational appeals for high-involvement products with regard to purchase intention. Our experiment simultaneously offers an overall view of Japanese consumer perceptions of media choice. *OTC* drug ads on television are the most reliable mass media resources, while consumers rely heavily on information on the internet to make decisions on laptop purchases.

4.20. Acknowledgment

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Chapter 5

5.1 Discussion

Dan Ariely mentioned in his book “Predictably Irrational” that under the same product category, consumers usually tend to purchase the item that tag the moderate price and he explained this phenomenon by referring to theory of relativity [4]. He declared a statement that we like to compare items and find some relationship between them in order to confirm the position of a specific item in our brain. For example, once consumers buy a product at a certain price for the first time, the price then becomes an anchor, consumers then associate this initial price with other brands of same product category over a period of time to make judgments. In fact, comparison is one of ways to evaluate objects, even people, and the outcome could lead to positive/negative attitude. In the real life attitude varies dramatically from one person to another and can be shaped by infinite factors such as personal beliefs, advertising, education, culture, etc.

This thesis begins with the introduction of attitude. Author illustrates three classic attitude evaluation models and discusses impact of each on individual behaviors. Multi-Attribute model could reflect individual salient beliefs towards multiple products and quantitatively analysis the overall attitude. By adjusting and improving the strength of existing salient beliefs, attitude is expected to change. However, scholars soon found the inconsistency between attitude and actual behavior. Favorable attitude might not always lead to purchase intention. The explanation then suggested that behavior is not only always about personal attention but also restricted by others’ expectation. For instance, whether I should buy a fancy mobile phone for my kid in primary school. Therefore, Theory of Reasoned Action emerged based on the principle of multiple-attribute model. This model also can quantitative analysis overall attitude on behavior. But the demerit is argued for losing the weight of emotion variable on decision-making. In the end of Chapter 2, author also reviews and discusses Elaboration Likelihood Model (ELM). Because previous models mainly talk about the elements that could influence attitude in one dimension, ELM seeks to explain different types processing of information according to personal involvement

level. The model supports the concept of a dual route perspective whereby one route will produce strong and long-lasting attitude while the other generates weak and short-lasting attitude. Nevertheless, attitude can not be quantitatively analysis through these two routes.

Literature review and case studies are done in Chapter 3. First, we learn how people perceive advertising, especially television advertising. Secondly, consumers' motivations are separated into utilitarian and hedonic according to the theoretical framework of Maslow's work. Advertising appeals thus are divided into informational and transformational to satisfy different consumers' needs. Thereafter, empirical framework regarding The FCB grid and Rossiter-Percy grid are learned and discussed. Founders of the two advertising planning grids both believed that the effectiveness of advertising would be enhanced when appeals match consumers' motivations. Even though there are some other scholars who debate against their opinions, author deems that incongruity between appeals and brand perception could draw attention but short-lasting in memory. It might be more suitable for advertising of new products. For most of brands, consistency will be more crucial. Because despite traditionally there are three types of memory from psychology perspective and that are sensory memory, short-term memory, long-term memory [101]. Norman presents a point that memory actually exists underneath knowledge in our brain [102]. The transfers of information into memory and processing to retrieval them then are adapted into one of the following three categories:

- To memory arbitrariness information;
- To memory relatively information through relationship in-between or connection with previous known information;
- To memory information through comprehension and learning.

Among these categories, the first one has least efficient to storage as long-term memory. Like remembering the multiplication table in mathematic lesson, it takes long time and we often make mistake. If persuasive messages of advertising have nothing to do with consumer motivations, appeals then become like arbitrariness information. Patrons might be attracted by advertising content but hard to remember

the brands.

In the end of this chapter, author does two case studies about consumer attitude towards informational advertising and emotional advertising. Informational advertising associates with prescription products and emotional advertising case study assess patrons' response towards chain restaurant advertising.

Based on the literature review, author adopts Elaboration Likelihood Model to quantitatively analysis consumer attitude and purchase intention towards information and emotional advertising. Therefore, utilitarian food is chosen as a typical low-involvement product category whereas laptop and *OTC*-drug are chosen as typical high-involvement products depending on their product attributes. In order to avoid sample bias, we also original make eight samples for plant-factory products and implement experiment later. This experiment also can be seen as research on consumer attitude towards new product. From the result of multiple-regressions, it is known that emotional variables can predict purchase intention and positive attitude significantly for utilitarian food. Informational variables contribute more on determining the dependent variables for laptop and *OTC*-drug. Feeling of safe is the key variable to influence consumers' purchase intention and favorable attitude for plant factory product. The outcome of experiments basically is consistent with our assumption. Purchase intention is enhanced when motivation match advertising appeals. Favorable attitude to advertising and purchase intention to product are triggered by different aspect of advertising.

One reason to understand why the result about purchase intention among three product categories is different can be found in product attribute itself firstly. Utilitarian food is a typical low involvement product due to its inexpensive price and high purchase frequency. In the other word of saying, the risk of wrong purchase decision is small. Buyers can turn into another brand easily. In addition, food involves the key issue of taste. In television advertising, emotional variables will apparently result in higher taste perception and be more persuasive through the display of colorful food images or the reaction of character(s) who taste the product and so on. Taste is also varied among people. In this way, consumers tend to remember the

brand after they experience and like the taste. Informative variables therefore become relatively powerful less to estimate purchase intention for utilitarian food category during commercial watch. Oppositely, informative variables in *OTC*-drug advertising can largely relieve the anxiety towards safety risk before experience it and another hands, they also help to introduce the latest techniques of laptop that will influence work efficiency. Moreover, laptop nowadays is no longer just a tool around us. More and more people buy it for personal identity. Buyers of these two products then would likely spending a lot of time on acquiring product related information and making alternative evaluation.

In our experiments, except experiment of plant factory products, overall data indicate that interesting is a vital variable to influence favorable attitude towards advertising. It can be understand that interesting advertising tends to be remembered more vividly and longer in consumers' memories [103]. We think interesting refers to the issues about humor and creativity. Humor is restricted by individual education level, religion beliefs and differ from place to place. So it needs to further discuss if a company want to start a global promotion campaign. Research has suggested that humor advertisements general work better under low involvement conditions and hence is more likely to function as a peripheral cue[104]. Creativity of advertising should posses the attributes of both original and appropriate [84]. Definition of appropriate varies depending on what kind of group marketers want to target. In this thesis, all of participants are university students. It has reason to believe that creativity of our advertising samples has more attractiveness to lure their attention. In addition, it is also suggested less-known brand is more suitable for creative advertising but too risky for the product in a dominant position[105].

During experiments, participants were asked to evaluate the degree of product feature and the level of product detail description as the criterion of judgment on determining attitude towards informational appeals of advertising. But by which aspect participants took account of product feature and detail description is unknown. We believe that there are mutual consideration aspects and more aspects that are related to personal relevance. From the result of our pretest, it was understood that pollution of origin of production (69.8%), agricultural chemicals(72.1%) and

genetically modified(32.6%) were main concerns of vegetable risk among Japanese consumers (see Table 5). We thus assume that origin of production and planting patterns are the main consideration for vegetable consumption. Participants might look for such information appeals as the criterion for experiment one and experiment two. In experiment three, informational appeals were divided into useful information, new information and product feature. Thus it is considered that participants evaluated these informational appeals more depended on personal experience and criterion of judgment might be varied.

5.2 Limitation

5.2.1 Limitation of Samples

A central limitation lies in the accessibility of experiment objects presented in this thesis. Firstly of all, television advertising samples in good quality are difficult to collect when we implement our experiments. Our first experiment adopts utilitarian food (e.g. rice, vegetables, fruits, etc.) as typical low-involvement product. But in fact this kind of product mainly promote through in-store advertising. The candidate number thus is small for us to choose from. Moreover, because investors spend a lot to produce and broadcast advertising, advertisers usually do not provide the copy to public. It also involves the issue of copyright, we are not permitted to record television advertising personally for academic usage.

It will be optimal if we have enough number of television advertising samples and the database allows us to classify them in series of broadcasted year, brands, product category. We believe it is an ideal condition to eliminate sample bias in largest degree.

5.2.2 Limitation of Participants

In utilitarian food experiment, our participants are university students. But in most of occasion, university students are not typical target group for utilitarian food in Japan. We think it needs to improve in further study and choose housewives instead as participants. Moreover, during experiment design stage, we chose low and high involvement products depending on product attributes, without considering

participants' personal purchase intention. It will be better if we pre-select participants and employ those who have actual purchase plans in real life.

5.3 Future Proposition

5.3.1 Future Study on Feeling of Safety

The result of experiment on plant-factory products shows that both consumers' purchase intention and favorable attitude is significant related to one of emotional variables, feeling of safety. During my pretest experiment, around 70% Japanese participants claimed that they concerned vegetable risk issues, such as pollution of origin and pesticide used. We have reason to assume that product features regarding plant-factory play an important role on Japanese purchase intention. But unfortunately, the assumption is not supported by statistics analysis. This outcome is consistence with You et al's study. He compared consumer attitude towards plant-factory products between Singapore and Japan and found that knowledge of hydroponic plants significantly enhanced Singaporeans' purchase intention but this connection was not disclosed among Japanese participants [74]. In our later experiment, it is also known that feeling of safety contributed significantly to purchase intention and favorable attitude of OTC-drug advertising.

In order to find out the reason why knowledge of plant-factory don't contribute to purchase intention among Japanese participants while feeling of safety does, author conducted simple regression analysis between informative variables and feeling of safety. The connection between independent variables and dependent variable is only found in utilitarian food experiment, where product feature is the only independent variable that can predict the change of feeling of safety. The validity of the linear equation is significant [$F(1,28) = 21.9, p = .00 < .001$], and accounts for 42% of the variance in purchase intention ($R^2 = .42$). The coefficient of regression is .66, $p = .00 < .001$. However, such relationship is not revealed neither in plant-factory experiment nor in high involvement experiments. Therefore, the factors that can create or change feeling of safety under these product categories become urgent to figure out.

In psychology, attitude can be explicit or implicit [106]. People consciously aware of explicit attitude while often ignore the existing of implicit attitude. In experiment of plant-factory and *OTC*-drug advertising, the former one is a new entrant as substitute in food industry and the latter faces high health risk and lose if wrong option is made. It is very possible that feeling of safety might be induced because viewers' held an implicit positive attitude towards informative variables of advertising. From this standpoint, it hints that description of products or other informative messages provide the source for feeling of safety. Nevertheless, explicit attitude is easy to measure but implicit attitude measurement can be difficult. In order to figure out whether level of information influence feeling of safety unconsciously, and consumer attitude towards informative variables, one possible solution is to apply Implicit Association Test(IAT) for further study. It is a useful tool to measure attitudes and beliefs that people may be unwilling or unable to report [107]. It has been widely used by social psychology researchers to investigate people's real preference and applied as an efficient approach to varies of research areas [108].

Consequently, It remains a challenge for future research to verify feeling of safety in advertising. Why people can acquire safe feeling through advertising view? And what kind of advertising elements could active and maintain this emotion? Whether feeling of safety and purchase intention for utilitarian food can be enhanced at the same time? Applying research of feeling of safety in future studies would give better insights into advertising design.

5.3.2 Future Study of Application on Advertising Design

In You et al.'s study, he adopts mascot-like images and colors (green, brown, blue and red) to represent vivid impression on logo design for plant-factory products [91]. These are the typical elements to arouse emotional response on graphic design. Based on our experiment, it will worth to investigate elements in advertising design in creating overall brand emotion or different skills to evoke emotional response across various of product categories. For example, advertising campaign utilizes consumer ethnocentrism to design advertising content, such as symbol of country, to enhance brand image and approach consumers who prefer domestic products. In addition,

surrogate advertising, which is a form of advertising to promote banned products (eg. alcohol) in the disguise of another product (eg. Soda water) or objects(eg. Blue ocean and sky), utilize consumer favorable attitude towards another product and hint relevance to actual promoted product.

In addition, we consider that background music and color are two important elements on advertising design. Without them, television advertising might become less competitive than advertising in other media. It will worth to find out to which extent these two elements could arouse consumer emotional response. Besides, the result of our experiments indicates that interesting and feeling of safety are key factors to stimulate purchase intention and positive attitude. But for utilitarian food, laptop and OTC-drug, I believe the elements that decide the level of interest and feeling of safety is different. Therefore, further study is also expected to identify these elements separated by product categories.

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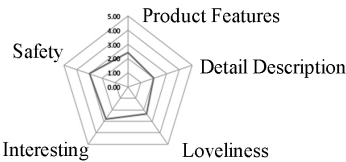
APPENDIX

1. Description of Utilitarian Food Television Advertising Samples

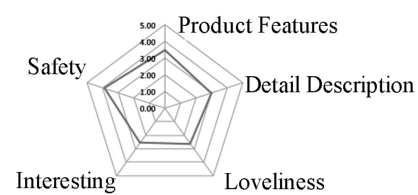
	Product	Brand	Way of Expression
Commercial 1	Vegetable Juice	Kagome	Life style
Commercial 2	Vegetable Juice	Kagome	Life moment
Commercial 3	Tomato Juice	Kagome	Life style
Commercial 4	Orange Juice	Tropicana	Life Style
Commercial 5	Kiwi	Zespri	Life style; celebrity
Commercial 6	Melon	Hiroka	Life style; place of production
Commercial 7	Milk	Meiji	Technique of production
Commercial 8	Orange	Nishiuwa	Cartoon Characters
Commercial 9	Pork	Yamanobe	Mascot
Commercial 10	Rice	Mezamashi Gohan	Scientific data; celebrity

2. Images of *Plant-Factory* advertising samples

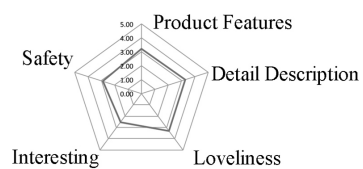
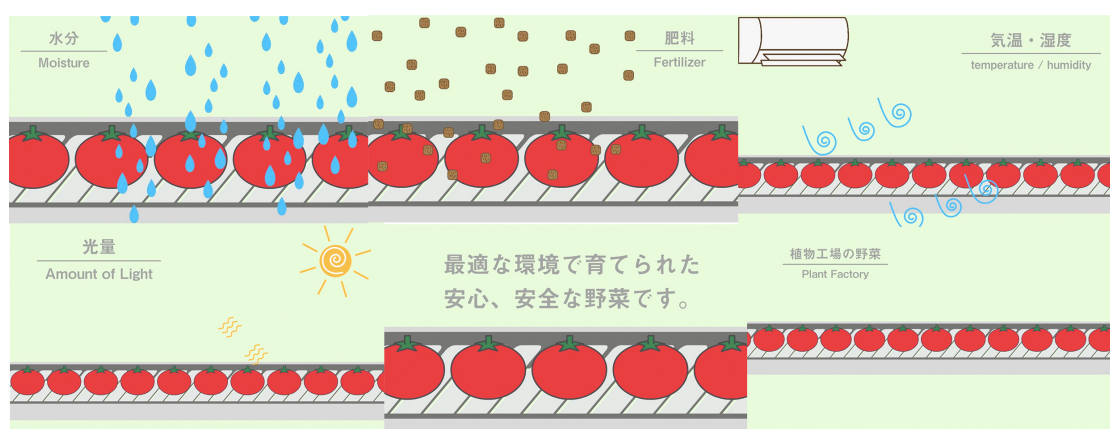
plant-factory advertising 1



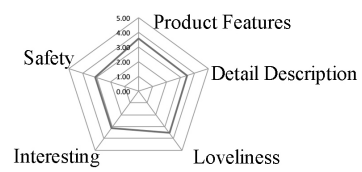
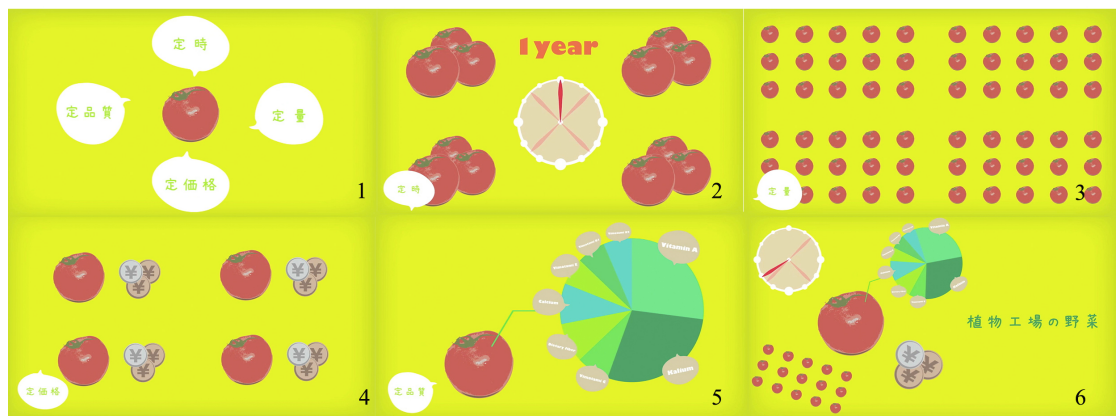
plant-factory advertising 2



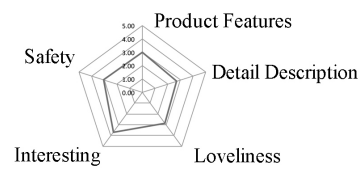
plant-factory advertising 3



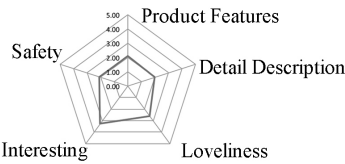
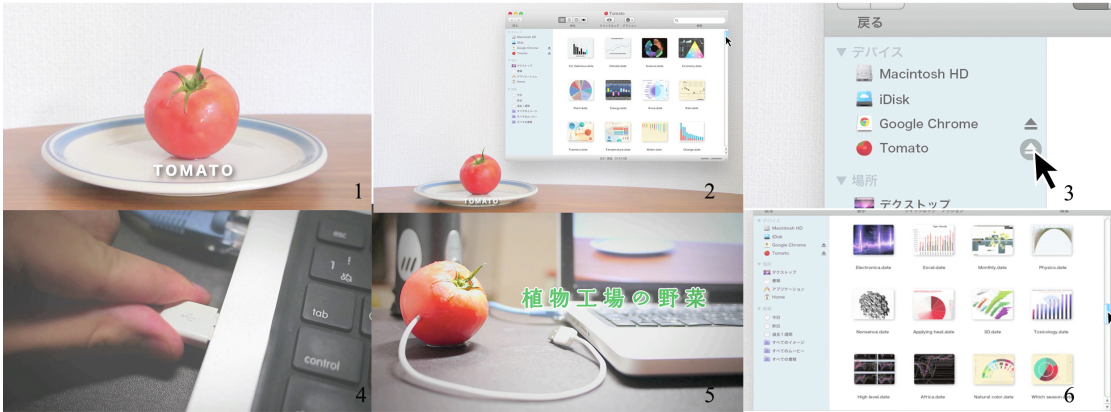
plant-factory advertising 4



plant-factory advertising 5



plant-factory advertising 6



plant-factory advertising 7

美味しさと、安心のために

1



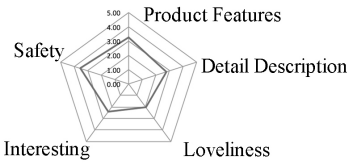
科学技術と、愛情を。

4

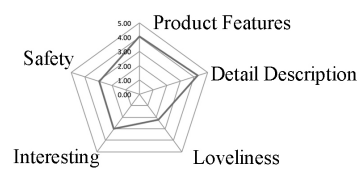


安心な野菜ができました。

6



plant-factory advertising 8



3. Description of Laptop Television Advertising Samples

	Product	Brand	Way of Expression
Commercial 1	Macbook Pro	Apple	Music
Commercial 2	Ultrabook R632	Toshiba	Celebrity; technique introduction
Commercial 3	Ultrabook	Panasonic	Technique introduction; celebrity
Commercial 4	Dynabook R731	Toshiba	Celebrity; technique introduction
Commercial 5	Dynabook	Toshiba	Celebrity; music
Commercial 6	LaVieL	NEC	Celebrity; technique introduction
Commercial 7	Macbook air	Apple	Music
Commercial 8	FMV NX95T	Fujitsu	Celebrity; Creative
Commercial 9	VAIO type C	SONY	Music
Commercial 10	Dynabook	Toshiba	Celebrity
Commercial 11	VersaPro	NEC	Technique introduction
Commercial 12	HP ENVY6-100	Hewlett-Packard	Celebrity; music
Commercial 13	Dynabook SS	Toshiba	Technique introduction
Commercial 14	Ultrabook U310	Lenovo	Music; celebrity
Commercial 15	Qosmio	Toshiba	Celebrity
Commercial 16	FMV Ultrabook	Fujitsu	Technique introduction; celebrity
Commercial 17	HP Pavilion dm 1-4100	Hewlett-Packard	Celebrity;
Commercial 18	Dynabook R822	Toshiba	Technique introduction; celebrity
Commercial 19	FMV	Fujitsu	Celebrity
Commercial 20	Collection	Hewlett-Packard	Celebrity; music

4. Description of *OTC*-drug Television Advertising Samples

	Product	Brand	Way of Expression
Commercial 1	Cold medicine	Takeda	Celebrity
Commercial 2	Stomach medicine	ROHTO	Life moment; celebrity
Commercial 3	Stomach medicine	Bufferin	Life moment
Commercial 4	Headache medicine	Bufferin	Celebrity
Commercial 5	Headache medicine	Taisho	Celebrity
Commercial 6	Cold medicine	Takeda	Celebrity
Commercial 7	Cold medicine	Taisho	Celebrity; life moment
Commercial 8	Stomach medicine	Ohta	Celebrity; music
Commercial 9	Stomach medicine	Ohta	Music
Commercial 10	Cold medicine	Bufferin	Celebrity
Commercial 11	Cold medicine	Taisho	Life moment
Commercial 12	Stomach medicine	Taisho	Life moment
Commercial 13	Daily supplement medicine	Shionogi	Creativity
Commercial 14	Cold medicine	Kaigen	Celebrity
Commercial 15	Cold medicine	Hapycor	Life style; music; celebrity
Commercial 16	Intestine supplement medicine	Ohta	Atmosphere; music
Commercial 17	Laxative	Kracie	Celebrity; music
Commercial 18	Arthralgia supplement medicine	Ohta	Celebrity
Commercial 19	Headache medicine	SSP	Celebrity
Commercial 20	Herbal Liqueur	Yomeishu	Atmosphere