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A Test of the Hierarchy of Advertising Effects via a Panel Data Set on Email Advertising

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Dedication

This dissertation is dedicated to my parents, Jin-Young Chung and Eun Joo Song, who have shown me the endless love and have encouraged me to move forward. Also, I wish to express my appreciation to my sister, Young Eun, and my puppy, Andy.

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Abstract

A Test of the Hierarchy of Advertising Effects via a Panel Data Set on Email Advertising

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Advertising changes the consumer. Through advertising exposures, a consumer becomes aware of the advertised product, becomes interested in it, develops a desire, and makes a purchase decision (the hierarchy of effects model). However, despite a wide use of email advertising by advertisers, how email advertising persuades and how it changes the consumer have not been studied. This dissertation focuses on the measurement of email advertising effectiveness based on the hierarchy of effects (awareness – interest – desire – action, AIDA) model which highlights each email advertising recipient’s journey towards a purchasing decision.

This dissertation investigates the following research questions: which factors influence the open rate of email advertising (study 1); which factors influence the click rate of email advertising (study 2); and which factors influence the overall purchase behavior (study 3; or company sales). First, study 1 analyzes the factors that influence the open rate of email advertising and identifies five factors including subject line with price discount promotion, subject line stated in a loss frame, utilitarian product attribute, subject line

describing a company's social responsibility and socially responsible actions, and subject line describing holiday celebration that have positive impacts on the email recipient's opening rate. Also, study 1 finds out that the short interval between email sendings decreases the open rate. Study 2 investigates the effects of email advertising body contents and finds that body contents with price discount promotion, body contents stated in a loss frame, and body contents describing seasonal appeal increase the recipient's click rate when they open the email advertising. Finally, study 3 examines which factors influence the overall purchase behavior and finds that one factor, body contents with price discount promotion, increases most the purchase rate.

This dissertation contributes to the understanding of the effects of email advertising on consumer behaviors. Notably, the three studies in this dissertation examining the factors that influence on the email advertising recipient's opening, clicking, and purchasing actions contribute to empirical testing of the hierarchy model of advertising effects. The findings of this dissertation can also help advertisers and marketers strategically plan their advertising to achieve their goal.

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Chapter 1: Introduction

THE FUNCTION OF ADVERTISING (GENERAL)

Advertising has an important role for both consumers and marketers in our society. Advertising delivers information about a product or service and compels consumers to acknowledge an offered product or service (Stigler, 1961). In addition, advertising provides information about the quality of a product or service which allows consumers to differentiate brands and companies (Nelson, 1970; 1974). Advertising also signals the level of quality of a product or service to the advertising message recipients (Nelson, 1974) and helps consumers form attitudes toward a product, advertising, or brand (Mitchell & Olson, 1981). Favorable attitudinal changes in consumer's minds caused by advertising messages may trigger motivation and desire to purchase the product or service, which may result in more sales and higher profits for the firm (Spears & Singh, 2004). Therefore, through advertising, the modern consumer becomes aware of, interested in, develops a desire, and as a consequence, makes a purchase decision (Lavidge & Steiner, 1961).

THE RISE OF DIGITAL ADVERTISING

Recently, the rapid development and widespread use of Internet communication technologies (ICT) have changed the consumer's media consumption (time spent) and consumer behavior. First, consumers have begun to spend more time on digital media. According to Advertising Age Marketing Fact Pack (Ad Age Datacenter, 2015), people spend 5 hours 29 minutes per day on average on digital media channels (via desktop/laptop and mobile devices) which is more than the time they spend on traditional media channels such as television (4 hours, 11 minutes in 2015), print media (30 minutes; magazine and newspaper), and radio (1 hour 27 minutes).

Also, the widespread usage of the Internet has changed consumer behavior, especially their purchasing behavior. People visit webpages, compare products and services, search and read other consumer's feedbacks and reviews, and make a purchase decision directly through the company's webpage or through Internet retailers such as Amazon. According to a survey by Pew Research Center (Smith & Anderson, 2016), eight out of ten Americans purchase something from online webpages and 40% of American adults check other customer's reviews before making their purchase decision. The amount of online sales has increased year over year, which indicates that people buy more and more products through online webpages. Thus, marketers and retailers should be ready to sell their products/services online.

Because of these recent changes, advertising and marketing practitioners have begun to deliver more advertising messages in digital advertising channels and it is expected that this trend will continue and they will spend more money on digital advertising in the future (Ad Age Datacenter, 2017).

DIGITAL ADVERTISING AS MARKETING COMMUNICATION

Along with changes in consumer media consumption and consumer purchasing behavior, advertisers and marketers have begun to measure the return on advertising expenditures by click-throughs (Ha, 2008). Although advertising has served as a primary marketing communication method for marketers, it is still unclear how advertising really works (Vakratsas & Ambler, 1999). In the past, advertising and marketing scholars used to develop consumer psychology measurements such as attitude toward advertising, attitude toward the brand, and purchase intention of consumers as a proxy of the effect of advertising (Poels & Dewitte, 2019). However, Internet technologies embedded in digital advertising allow for tracking who is exposed to an advertising message and provide a unique measurement of consumer behavior. Cookies inserted in digital advertising allow tracking each Internet user's response such as click-throughs. These measurements allow advertising and marketing practitioners to calculate the effectiveness of their

advertising on each customer level, thus they can provide more tailored advertising messages to the recipients. Therefore, advertisers and marketers may have a clearer picture of their target customers' reactions to advertising on the Internet.

THE FOCUS OF THIS DISSERTATION: CONSUMER DECISION JOURNEY

With increased digital media consumption and advertisements, it is important to understand how each firm should plan its digital advertising strategy and what they should do to deliver their advertising messages effectively. This dissertation focuses on email advertising, one of the most widely-used digital advertising formats, for the analysis of the ways how digital advertising works in the real world in terms of the hierarchy model of advertising effects. According to an eMarketer's survey (2017), nine out of ten marketers are reaching their customers by email and the survey also reported that such a practice generates a strong return on investment. In fact, advertisers and marketers now use email advertising widely. Nevertheless, there is a very limited amount of research on email advertising, especially on its effects on consumer's decision journey and a company's resulting sales.

Recipients of email advertising are individuals who have shown their interest in the company/brand/product/service mostly by agreeing to receive email advertising from a company. Because of their interest in being subscribers, we can assume that those consumers are aware of the company/brand/product/service. If we apply Lavidge's hierarchy of effects model to their behavior, we can conclude that they are in the cognition stage (Lavidge & Steiner, 1961). Considering the heterogeneity of email recipients, each recipient may develop his/her interest and desire in the product at different levels, again according to the hierarchy of effects model. After being exposed to several email advertising messages, a consumer may be fully informed about company/brand/product/service (Krugman, 1972), may increase or lose his/her interest in that product. While some researches have focused on the effects of advertising messages on consumer behavior, no study so far has been conducted to investigate the effect of email advertisements on

consumer behaviors (opening, clicking, and purchasing). This dissertation is an effort to fill this gap in academic advertising research. Furthermore, as email advertising provides a good window of opportunity to look into all the steps involved in the customer's journey from receiving an advertising to making a purchasing decision, this dissertation is also an effort to empirically test the hierarchy of effects model via a big panel data set.

The main body of this dissertation is composed of literature review, methodology, and three case studies which correspond to each consumer behavior in email advertising recipients' journey towards purchasing decision: opening, clicking, and purchasing. We did an extensive literature review on email advertising and the hierarchy of effects model and developed hypotheses (Chapter 2). In chapter 3, data cleaning and statistical methodology are discussed. The study #1 (Chapter 4) is focused on identifying the factors which have influence on the recipients' opening rate. The study #2 (Chapter 5) is an analysis of the factors that influence on the click rate. The study #3 (Chapter 6) investigates factors that influence the overall purchasing behavior. This sequence matches with the hierarchy model in advertising research (AIDA model: awareness-interest-desire-action) so that these studies put together in this dissertation can constitute an empirical test of the model. Lastly, final discussions will present findings, limitations, and future studies of this dissertation (Chapter 7).

Chapter 2. Literature Review

INTERNET ADVERTISING AND EMAIL ADVERTISING

Internet advertising can be defined as an advertising message which uses the “Internet” as a medium (Arens & Weigold, 2017). Following the definition by Richards and Curran (2002), Internet advertising can be defined as a paid mediated form of communication from an identifiable source, designed to persuade the receiver to take some action, now or in the future in the Internet space. Internet advertising has diverse formats (Arens & Weigold, 2017): rich electronic mail (which contains the product and service information and image); search engine advertising (sponsored product and service suggestion based on search keywords); websites (company websites which advertise the product and service or endorsed reviewers webpage which promote and recommend the product); banner advertising (advertising which is placed in the space of webpage); video (including pre-roll); interstitial (short advertising message on the screen in transition to the destination webpage); and native advertising (advertising message between user-generated social media posts). Among these internet advertising, one of the most widely used forms of Internet advertising is email advertising. According to the Radicati group’s marketing research (2019), there are about 269 billion consumer and business emails per day and they projected that the volume of emails sent and received would increase 4.4% annually. In spite of this enormous exchange of emails between advertisers and consumers, there is only a handful of research about email advertising (Table 1).

Email advertising is defined as “*a type of marketing done via email whereby the recipient has consented to receive promotional messages from a brand*” (SendPlus, n.d.). Some email advertising’s characteristics are important in view of the different data used in this dissertation: (1) permission-based direct advertising and (2) email recipient’s decision making (the existence of hierarchy). First, unlike other Internet advertisings which a user must be exposed to the Internet advertising to use the webpage, email advertising is delivered to the individual email account based

on the permission of each consumer (Arens & Weigold, 2017; Kumar, Zhang, & Luo, 2014; Martin, van Durme, Raulas, & Merisavo, 2003). A consumer is aware of and is interested in the product already; therefore, he/she subscribes in the email list to get further product information in the future.

Second, as the email advertising recipient receives the message from the brand, he/she could decide to open the email advertising in his/her inbox. It is important to note that Internet users must pay or must be exposed to advertising(s) to use the Internet-based service, but this is not required in email advertising since the message is delivered to the recipient's inbox. Therefore, the receipt of email advertising should be notified and some level of cognition and involvement of the email recipient are necessary before the decision to open the email message. Also, when the email advertising is open, clicking and/or purchasing would be a result or a consequence of the email message. For the purposes of this dissertation, that consumer behavior as a result of receiving an email message from a company is called the email advertising purchase decision journey, based on the application of the hierarchy of effects to the behavior of consumers resulting from email advertising. Therefore, two unique characteristics of email advertising should be considered to understand the impact of email advertising: the decision to open the email message received and the resulting purchase behavior.

DIRECT ADVERTISING: PREVIOUS STUDIES RELATED TO EMAIL ADVERTISINGS AND FINDINGS FROM THAT RESEARCH STREAM.

Email advertising has similar characteristics to those of direct advertising. Direct advertising (American Marketing Association, n.d.) is "(1) a mass or quantity promotion, (2) not in an advertising medium, but issued from the advertiser by mail or personal distribution to (3) individual customers or prospects." Email advertising, on the other hand, can be classified as direct advertising because (1) it is the mass promotion message, a consumer directly gets information through (3) personal email address, as opposed to through (2) Internet advertising channels such as banner advertising. In addition to these three characteristics, catalog (email) must be read

(opened) by the recipient after the receipt. Without catalog-reading decision (email-opening/reading), persuasive message is not delivered to the message recipient. Thus, it can be considered as one type of direct advertising

Direct advertising has been a widely studied areas and its strengths and weaknesses have been discussed and studied. Regarding the strength, Roberts and Berger (1989, p. 219) argued that advertisers and marketers could select the target audience based on their target segment and positioning, have an unlimited choice of formats and can personalize the contents under their control without direct competition so that it can persuade the prospective customer. Therefore, they argue that direct advertising is a powerful marketing tool. On the other hand, it is important to underscore that the cost to reach individual consumers is a problem, and the biggest weakness of direct advertising. Since direct advertising messages are printed and are sent to a limited target audience, there are the inevitable cost of printing and sending, and companies may not have enough budget to cover the entire population of interest. Also, those consumers who are not the recipients of direct advertising may not get any information about the product and/or service; therefore, a company may miss the opportunity of providing important information to them and, as a consequence it may miss the opportunity for additional sales. Finally, as discussed above, catalog must be read by the recipient after the receipt. Without catalog-reading decision, persuasive message is not delivered to the message recipient. Despite of these weaknesses, marketing scholars have considered direct advertising as a method that optimizes returns on investments because of its ability to target specific consumers and the potential frequency with which it can reach them. (Bult & Wansbeek, 1995; Elsner, Krafft, & Huchzermeier, 2004; Gönül & Hofstede, 2006; Gönül & Shi, 1998; Roberts & Berger, 1989).

In this sense, marketing scholars have studied the methods to prioritize and target the customer segment which is likely to generate the maximum profit (Bitran & Mondschein, 1996; Colombo & Jiang, 1999; Elsner et al., 2004). To decide which customers should receive direct advertising, a widely used model by scholars is the Recency-Frequency-Monetary Value model (RFM model). In the RFM model, advertisers and marketers collect information about customers

and determine the likelihood of a customer's purchase and customer lifetime value based on recency (the time since the last purchase), frequency (the frequency of purchase), and monetary value (the average dollar spent per purchase). From the RFM model, Elsner and colleagues (2004) developed the dynamic multilevel model (DMLM) and split a mail recipient list into three groups based on recency and delivered the targeted messages. They argued that companies might experience a short-term loss by sending the advertising messages to the high (large) recency group which does not respond to the firm's advertising, but ultimately, those high recency customers may return and purchase goods which result in higher sales and profits in the long-term. On the other hand, Gonul and Ter Hofstede (2006) reported that recency of orders (catalogs) does not impact the order volume of a customer, but they found that conditional order probability of purchase increases up to 4 months after the customer receives the catalog and then decreases slightly over time. They found that the direct advertiser and marketer should resend a brochure/catalog to bump up the response rate after a certain period.

However, there are some unique characteristics of email advertising as a type of direct advertising that other direct advertisings do not have. First, the advertising channels are different. In the past, direct advertising messages were printed catalogs or flyers and were sent through the mail system, but an email advertising message may have a different message framework than previous direct advertising. Second, targeting audience is different. In the past, some catalogs or flyers were sent based on subscription, zip codes information, or on past purchase behavior to the target population of interest. However, email advertising is generally sent to subscribers who are interested in and wish to get updated about products and services from a company or companies. Since their target audiences are different, email advertising messages may be different from those generated by other direct advertisings. Third, advertisers and marketers can measure the open behavior and click behavior of the email message with inserted computer code (cookie). In the past, advertisers and marketers could measure the response rate of direct advertising (response over the number of direct advertising message sent), but they could not measure the intermediate behaviors such as mailbox checking and reading the catalog before a consumer's purchase action.

Therefore, an analysis of email advertising data can provide a more accurate measurement of message recipients' behaviors (reactions). Based on the differences between email advertising and other direct advertising, it is important to explore the consumers' behaviors resulting from the receipt of email advertising.

ADVERTISING AND HOW IT WORKS: THE HIERARCHY OF EFFECTS MODEL

Advertising is defined as “a paid mediated form of communication from an identifiable source, designed to persuade the receiver to take some action, now or in the future” (Richards & Curran, 2002). This paid mediated form of communication has been widely used to persuade target audiences of advertisers and marketers, and it has been studied by many advertising and marketing scholars who focused on understanding how advertising works. Vakratsas and Amber (1999) classified advertising studies into seven model categories: market response model, cognitive information model, pure affect model, persuasive hierarchy model, low-involvement hierarchy model, integrative model, and hierarchy-free model¹. These diverse models suggest that there are many ways to study and interpret how advertising works in the consumer's mind and to understand the consumer's decision journey.

Among advertising models, the persuasive hierarchy models (hereafter, hierarchy of effects models) have been widely used to explain the advertising and its impact (Colley, 1961; Lavidge & Steiner, 1961). Lavidge and Steiner (1961) argued that the effects of advertisings are “long-term” and contribute to develop consumer loyalty rather than an instant one-time purchase. According to the hierarchy of effects model, when receiving an advertisement, a consumer may

¹ According to Vakratsas and Amber's classification (1999), market response models have studied the effect of advertising on sales and profits; cognitive information model studied the impact of advertising on consumer's choice based on the assumption that consumers are rational and make only economic decisions; pure affect model studies the effect of advertising on consumer's attitudes and beliefs based on the assumption that consumer forms the attitude and beliefs after exposures to the advertising; persuasive hierarchy models (the hierarchy of effects model) studied the effect of advertising based on the assumption that advertising receivers first do cognitive process, cognition influences the effect of each individual, and each individual's affect influences the purchase behavior; low-involvement hierarchy model studies the effect of advertising when it does not require a high level of involvement; integrative models studied the effect of advertising on the basis of the assumption that the required level of involvement and type of affection is different from product to product; hierarchy-free model argues that cognition and affect interacts together because it perceives the advertising through our shared sensory organs.

become aware of the product and service (hereafter product); then, a receiver may learn about the advertised product (up to here, awareness stage); then, a receiver may like the advertised product; then, a receiver may prefer the product over the competitor's (interest and desire stage); then, a receiver may have conviction about the product; and then, he/she may finally purchase the advertised product (action stage).

The core idea of the hierarchy of the effects model is the consumer's purchase decision journey (Awareness – Interest – Desire - Action) by advertising. Regarding this journey, Lavidge and Steiner (1961) also argued that each consumer might have a different gap between stages in the hierarchy and might take a shorter or longer time to move on to the next stage in the hierarchy depending on his/her psychological and economic commitment. Krugman (1965) argued about the importance of involvement as a mediator of advertising. He claimed that a consumer without involvement might be attracted to a product/service if he/she were able to try it and his/her attitude toward the product might be gradually changed with repeated exposure to advertising. However, a consumer with high involvement might change the attitude first and might purchase the item based on the changed attitude after.

Petty and Cacioppo (1986) introduced the elaboration likelihood model to explain the effect of persuasion on consumer behavior. The main argument of the elaboration likelihood model is (Petty & Cacioppo, 1986) that a consumer might enhance his/her positive or negative attitude when he/she has enough motivation and ability to process persuasive information from advertising (central route), whereas a consumer uses his/her heuristics or impressions or moods when they have a little or no motivation and ability to process the information (peripheral route). Elaboration likelihood model added the explanatory power of the hierarchy of effects model because it shows how the cognition of a consumer (based on motivation and ability) works and changes the consumer's attitude toward the advertising.

Although the hierarchy of effects model provides a robust explanation framework about the impact of advertising on the consumer decision journey, it has some weaknesses (Barry & Howard, 1990; Vakratsas & Ambler, 1999; Weilbacher, 2001). Weilbacher (2001) argued that the

hierarchy of effects model assumes that the effect of advertising is identical and recipients may receive the same amount of information or may have same attitudinal change through two different advertisements. However, advertisements are all different, and it is hard to expect that those different messages cause the same impact on the consumer. Second, as the low-involvement hierarchy model suggests, there are certain products which a consumer experiences before the exposure to advertising, and as a consequence, the consumer forms attitudes towards the product/service even before receiving advertising messages. (Ehrenberg, 1974). This model argues that previous experience may shape the attitude and this attitude may impact on the future purchase decision. Also, this prior experience moderates the effect of advertising and may strengthen the attitude towards the brand (Hoch & Ha, 1986). In addition to that, Vaughn (1980; 1986) proposed the Foote-Cone-Belding (FCB) grid (2 by 2 grid with emotional and think dimension and high and low involvement dimension; this grid is used to place the product in consumer's mind based on 2 dimensional spaces) and argued that different product categories might require different levels of consumer's involvement and affect in order to result in a purchase decision. For example, Vaughn stated that some product categories such as food and stapled goods need first to have trial before developing the future purchase habit, and advertising strategies for those low-involvement category products should be different from those of high-involvement category. Thus, advertising messages and stimuli for high and low involvement products are different, and advertising's effects as they affect consumers at different stages in the purchase process might be different.

Although there are some weaknesses, the beauty of the hierarchy of effect model is the description of consumer's consequent changes through exposures to the advertising. In the past studies of the hierarchy of effect model (Barry & Howard, 1990; Holbrook & Batra, 1987), measured variables such as attitude toward the advertising, attitude toward the brand, and behavioral intention to test the level of interest and the level of desire, and purchase action respectively. However, when relating the hierarchy of effects model to email advertising, it is important to note that the effects of email advertising can be measured based on the recipient's behaviors such as opening, clicking, and purchasing. Note that each behavior requires previous

conditions: more specifically, email open behavior is conditioned on the notification of email receipt; email click behavior is conditioned on open behavior of email recipient, and the email recipient's purchase is conditioned on click behavior (and open behavior) of email recipient. Without doing prior stage behavior, the following action cannot be done, and a consumer cannot move to the next stage on email advertising.

A feasible assumption when comparing the variables in the hierarchy of effects model with the data available for email advertising is whether email opening is the proxy of interest and whether email clicking is the proxy of desire. Email opening can be a good proxy of consumer's interest in the hierarchy of effect model. Ellis-Chadwick and Doherty (2012, p. 845) highlighted that *"The subject line in the e-mail is the first point of contact and acts as a trigger to encourage the message recipient to open the e-mail. There are two main components in the subject line: e-mail sender and the subject matter."* Also, Ellis-Chadwick and Doherty (2012) reported that 56% of email samples in their study gave an incentive to open email advertising. These incentives function as motivations for certain segments of customers and may make those segments to process the persuasive information (Petty & Cacioppo, 1986). Thus, persuasive elements in the subject line can generate the interest of email recipients.

Similarly, clicking can be a good proxy of consumer's desire in the hierarchy of effects model. Martin and colleagues (2003) surveyed cosmetics products customers' responses to advertising emails and they found that email's usefulness motivates its recipients to visit the physical store. Another finding from their study was that email usefulness decreases the likelihood of website visits. Considering the product category (cosmetic product), visiting the store and trying the product can be considered as an expression of consumer's desires. However, in the case of product categories which do not require the actual trial and in the case of no physical store, website visit after the email exposure can be a good proxy of consumer desire.

Therefore, an application of the hierarchy of effects model to the analysis of consumer behaviors resulting from exposure to email advertising is very appropriate. With the advance of Internet technology, advertiser and marketer can track whether email recipients open the message;

whether email recipients click the email message; whether email recipients purchase the advertised item.

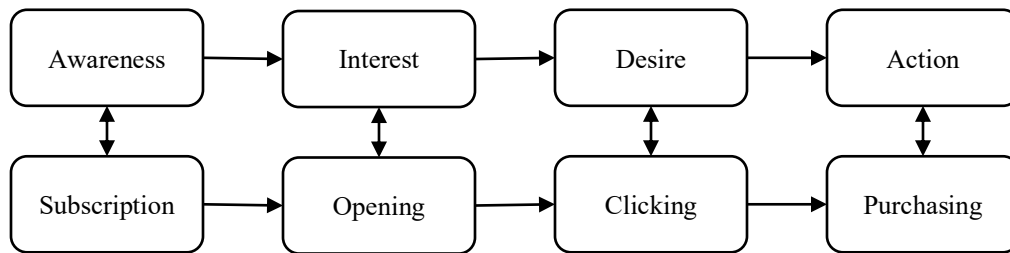


Figure 1. The Hierarchy of Effects Model and Email Advertising

EMAIL ADVERTISING STUDIES

Two streams of research on email advertising can be found which focus on email contents and their influences on consumer behaviors and other factors influencing consumer behaviors. First, there is a research stream focusing on email contents and their impacts on opening or clicking or purchasing behaviors. In this stream, researchers have examined on two email advertising features: subject line and email body contents. Regarding the subject line, the study by Kent and Brandal (2003) would be the earliest empirical research on email advertising. They conducted a field experiment by changing the subject line and found the email subject line personalization does not change the open rate. Also, they discovered that a neutral title (not like advertising) make open rates higher. Similarly, Micheaux (2011) conducted a field experiment and found that “advertising-like” subject line lower the open rate of the email recipients than “non-advertising-like” subject line. In addition to these findings, contrary to Kent and Brandal (2003), Sahni and colleagues (2018) reported that personalization, merely putting the recipient's name on the subject line, increases the open rate of the email recipients. They conducted three field experiments by randomizing the subject line that the recipients received and found consistent increases in open rates of email advertising messages when recipients received a personalized subject line. Although there are few studies which investigated the impact of subject line on opening behavior, further investigation of email subject line’s impact should be necessary.

Other advertising researchers focused on the impact of email body contents. Ansari and Mela (Ansari & Mela, 2003) argue that customized email contents by changing links' locations on the email body text could improve the click-through rate by 56%. However, this study couldn't reveal which email contents increase the email recipient's clicking behavior and the contents used in the study were not advertising of product and service. Two studies (Martin, van Durme, Raulas, & Merisavo 2003; Merisavo & Raulas, 2004) surveyed a company's email recipients and reported that information about "sales," "new product information," and "competition and events" were useful to the email recipients. In addition, Ellis-Chadwick, & Doherty (2012) interviewed 9 U.K. retail marketing managers and identified 11 execution tactics in the email advertising messages (Length of email, Frequency and timing of email, Illustration, Subject line, Headline, Message content, Brand log, hyperlink, Interactive features, Animation, and Personalization). However, these three studies didn't explore the impact of those email body contents on email recipients' clicking behaviors.

Regarding the impact of advertising email body contents, there are two field experiment studies. Micheaux (2011) conducted field experiment and compare the impact of advertising-like and non-advertising-like email body contents on opening and clicking behaviors. She found that advertising-like contents increase the click rate among those who opened the message. Sahni and colleagues (2017) reported the result of field experiments and found that targeted discount offer through email advertisings can increase the sales by 37%. Also, they found that customers purchased the item without a discount offer and purchased even the offer is expired. Although these field experiment studies investigated the impact of advertising-like vs. non-advertising-like contents and discount coupons, many parts of email advertising contents and their impacts on consumer behavior remain unknown; thus, further investigation is necessary.

Other email advertising research stream focused on external factors which influence the performance of the email advertising. Bonfrer and Dreze (2009) studied the effect of time when an email is delivered using the split hazard model and found that email the specific time in which emails are sent influences the open behavior and click behavior. This finding is not surprising

because during the working time, for example, 8AM-5PM or 9AM-6PM, people may be away from their email accounts and may not be able to open the email advertising. Kumar and colleagues (2014) reported that a marketing program's intensity (frequency of direct marketing messages) and the availability of coupons on other marketing channels resulted in fewer customers to opt-in to the email advertising program. However, interestingly, they found that when a customer opted-in to the email list, coupons in email advertising message make customers opt-out less. Moreover, email open and click behaviors by the consumer were negatively related to opt-out of email service subscribers. Finally, Zhang and colleagues (2017) found that low and medium frequency purchase customers do not respond and do not purchase the item when there is no email advertising. However, when there are email advertisings, low-frequency purchase customers become medium frequency purchase customers, while high-frequency purchase customers become medium frequency purchase customers. They concluded that email advertising functions as an engaging medium for early stage subscribers, low and medium frequency purchase customer.

The following table is the summary of email advertising studies:

Table 1. Previous Email Advertising Studies

Authors	Research Method	“Key” Findings from Research	Repetitive Measure of Consumer Response	Changes in Email Contents
Kent & Brandal (2003)	Natural Experiment and Survey (Response rate to the survey)	<ul style="list-style-type: none"> Personalization by including the email recipient's name does not generate a statistically significant difference. ‘Neutral’ text in the heading generates a higher response than a ‘beneficial’ heading. 	No	Yes
Ansari & Mela (2003)	Panel Data with random effects logistic regression	<ul style="list-style-type: none"> Customization of email advertising contents (body text and links of email advertising) may improve the click-through rate up to 62% 	Yes	Yes

Table 1 (continued)

<p>Martin, van Durme, Raulas, & Merisavo, M. (2003)</p>	<p>Survey (logistic regression)</p>	<ul style="list-style-type: none"> • Useful and relevant email advertising message has a negative relationship with website visits, but make them visit the physical store. 	<p>No</p>	<p>No</p>
<p>Merisavo & Raulas (2004)</p>	<p>Survey</p>	<ul style="list-style-type: none"> • The single brand user thinks that brand email is useful than the brand switcher. • The single brand user thinks that the brand needs to send email advertising regularly than the brand switcher. • Brand email advertising can enhance customer loyalty. 	<p>No</p>	<p>No</p>
<p>Bonfrer & Dreze (2009)</p>	<p>Split Hazard Model using Panel Data</p>	<ul style="list-style-type: none"> • Sending an email between 13:00 and 19:00 takes a shorter time to check the efficiency of email campaign than sending an email advertising at the different time. 	<p>No</p>	<p>Yes</p>
<p>Micheaux (2011)</p>	<p>Two field experiments (1 email sending with 16 different groups; 6 email campaigns controlling the number of messages that recipient receive)</p>	<ul style="list-style-type: none"> • The advertising like sender name lower the open behavior and make more unsubscriptions. • Advertising like subject line dropped the open rate of the email but increased click-through rate and unsubscription rate. • Advertising like body layout caused more opening but decreased unsubscription rate. • More message sending causes pressures on the consumer's mind and harms the open rate. • When the email recipient receives more email advertising, they open less. • When advertising contents are irrelevant to the consumer, it moderates the 	<p>Yes (but only six times)</p>	<p>Yes</p>

Table 1 (continued)

		perceived pressure and makes consumers unsubscribe.		
Ellis-Chadwick, & Doherty (2012).	Email Contents Analysis	<ul style="list-style-type: none"> • There are 11 email advertising tactics executed by email advertisers (Length of email, Frequency and timing of email, Illustration, Subject line, Headline, Message content, Brand log, hyperlink, Interactive features, Animation, and Personalization). • 56% of email subject lines include incentives; among them, 28% include discount and saving; among them, 10% include the announcement of occasion or seasonal appeal. • 99% of emails had a brand logo; 91% of emails had illustration; there were many embedded hyperlinks; 50% of companies used personalization. 	No	No
Kumar, Zhang, & Luo (2014)	Multivariate Copula Models using company transaction data and email panel data	<ul style="list-style-type: none"> • Coupons in email advertising make opt-out probability lower. • Open and click behaviors make opt-out probability lower. • Customer segment shows a different pattern of opt-out. • After the previous transaction, there is a positive-diminishing effect of email open behavior on transaction amount in the next purchase. 	Yes	No
Sahni, Zou, & Chintagunta (2017)	Panel Data + Field Experiment	<ul style="list-style-type: none"> • Targeted advertising can increase the spending of the consumer by 37% compared to the control group. 	Yes	Yes

Table 1 (continued)

		<ul style="list-style-type: none"> • The effect of discount offer carries over even the discount offer expires. • The discount offer causes another spending on different categories which are not in the discount/promotion section. 		
Zhang, Kumar, & Cosguner (2017)	Panel Data + Hidden Markov Model	<ul style="list-style-type: none"> • When there is no email advertising, low and medium frequency purchase customers do not respond and purchase the item. • When there are more email advertisings, low-frequency purchase customers make more frequent purchases, while high-frequency purchase customers become medium frequency purchase customers. • Email advertising functions as an engaging medium for early stage subscribers, low and medium frequency purchase customer. 	Yes	No
Sahni, Wheeler, & Chintagunta, (2018)	Field Experiment + Meta-analysis	<ul style="list-style-type: none"> • The addition of email recipient name on the subject line increases the open rate of the email recipient by 20% which leads to the increase of sales by 31%. (unsubscribe rate is decreased by 17%). • Addition of personalization and discount on the body of the email advertising increases sales. 	No	Yes

Based on the studies and findings above, email advertising is a vehicle of persuasive communication that leads the customer to a brand/product and influences their decision to purchase. However, there were no studies which investigated the effect of various advertising/marketing tactics and contents which can be used in email advertising (Ellis-Chadwick & Doherty, 2012) and of the individual customer’s purchase decision journeys following the

hierarchy of effects model with repeated emails. Especially, previous studies focused on consumer behaviors at different stages of the hierarchy of effects, but did not investigate the impact of email advertising contents along with the hierarchy of effects. Thus, this study investigates which factors influence the open behaviors of email recipient (study 1), which factors influence the click behaviors of email recipients when they opened (study 2), and which factors influence the purchase decision of email recipient when the opened and clicked (study 3).

EMAIL CONTENTS AND APPEALS

Rodgers and Thorson (2012, p. 5) argued that advertising contents can be categorized by features (e.g., print, video, audio, or image) and by appeals contained in the message (e.g., sex, taste, emotion, rational argument, or problem solution). Among those appeals, advertising and marketing scholars rigorously investigated the effect of rational argument appeal (as known as thinking appeal, factual appeal, informational appeal or argument-based appeal; hereafter rational appeal) and emotional appeal (Chandy, Tellis, MacInnis, & Thaivanich, 2001; Golden & Johnson, 1983; S. S. Liu & Stout, 1987; Stafford & Day, 1995; Teichert, Hardeck, Liu, & Trivedi, 2018).

Rational appeal is the persuasion method using argument or information showing the product's quality, economy, value, and performance (Kotler & Armstrong, 1994, p. 468). Rational appeal assumes that consumer processes the information in advertising and make a rational and logical decision (Albers Miller & Royne Stafford, 1999; Stigler, 1961). Rational appeal in advertising may positively change the advertising likability (Golden & Johnson, 1983) and recommendation intention (Stafford & Day, 1995) Therefore, email advertising could include detailed information such as a picture or description of the product in order to allow consumers to rationalize their purchase decision. For example, after reading the subject line and opening the email, an email recipient would read the email contents that would include the utilitarian attributes of the product with an image of the product and the technical specifications of the product. Also, some consumers may also decide to check further available information through the company's webpage. Thus, a rational appeal in the content of an email is designed to provide information

about the product or service to the recipient and, if necessary, the recipient might want to have additional information by visiting the company webpage or a retail store before making a decision to buy the product/service (Martin et al., 2003). The recipient's clicking action will indicate whether the rational appeal has succeeded in providing the recipient with the rational information he/she may need.

In addition to rational appeal, emotional appeal could be part of the content of an email advertising. Emotional appeal is a persuasion method used to create emotional feedback or response from the recipient. Emotional responses triggered by advertising contents are known to mediate or moderate the effects of advertising messages on attitude toward the advertising (Batra & Ray, 1986; Holbrook & Batra, 1987; Liu & Stout, 1987), attitude toward the brand (Batra & Ray, 1986; Edell & Burke, 1987; Liu & Stout, 1987), advertising recall (D. A. Aaker, Stayman, & Hagerty, 1986), and purchase intention (Morris, Woo, Geason, & Kim, 2002). For example, Aaker, Stayman, and Hagerty (1986) reported that warmth appeal (emotional appeal) strongly improves the recall, and in the case of nostalgia appeal, when people view nostalgic advertising, they have good memories and this feeling results in having a more positive attitude toward the advertising and attitude toward the brand (Muehling & Pascal, 2011; Muehling & Sprott, 2004; Muehling, Sprott, & Sultan, 2014). In this sense, email advertisers may include emotional appeal to trigger an emotional response and to achieve the desired action: clicking.

Although email advertising has been widely used as a marketing communication method, the impact of appeals in email advertising have not been studied yet. There are several ways in which one can research the results of the use of rational or emotional content in email advertising. In the case of a rational appeal, the presence of information can be coded by content analysis and therefore the effect of rational appeals on targeted dependent variables can be tested (Chandy, Tellis, MacInnis, & Thaivanich, 2001). However, in the studies of emotional appeal and its effects, advertising scholars have explored the effect of emotional appeals with one of three research methodologies, self-report, autonomous responses, and brain-image scanning. However, these methodologies are not proper to measure the emotional appeals in 162 email advertisements since

there are chances that participants of these methodologies may understand the hypotheses through repeated exposures. In addition to those three methodologies, some scholars asked coders to code their emotion based on coding book and it was used to analyze the effect of emotion (Batra & Ray, 1986; Chandy, Tellis, MacInnis, & Thaivanich, 2001; Holbrook & Batra, 1987). However, this methodology on emotional appeal might cause a problem because emotional responses from the recipients are all different and it is hard to generalize the effect of an emotional appeal in the advertising from small size of coders. Thus, emotional appeal measurement through computer program LIWC is conducted.

PANEL DATA ANALYSIS

Three research methodologies have focused on the recipient's psychological or physiological changes as the effect of emotional appeal in advertising content. Although each methodology has its unique weakness and limitations as described above, these research methodologies empirically extend our understanding about the effects of advertising. Poel and Dewitte (2019) suggested that advertising scholars should study the effect of emotion on behavioral change in the future. They argued that previous studies have heavily relied on the proxy of behavior, attitude toward the advertising and behavioral intention; therefore, behavior change research is still needed (Poels & Dewitte, 2019, p. 85). Also, they suggested that theory-based field experiments testing the effect of emotion in advertising are also needed to extend our understanding of the effects of emotional appeals in advertising.

However, there are many practical difficulties in conducting theory-based field experiments. Since a company is competing with many rivals in the market, there is a risk that theory-based field experiment may result in negative marketing outcomes; therefore, companies are wary of this research technique. Since advertising is repeatedly delivered and new advertising campaigns are launched periodically by brands (Nan & Faber, 2004), one measurement of the effects of advertising on psychological or physiological changes is not enough; repeated

measurements are necessary. This may be a reason why such field-experiments have yet to be conducted.

As an alternative approach to field experiments, panel data analysis can be implemented. Chandy and colleagues (2001) conducted panel data analysis with advertising data from medical service providers and they did conducted content analysis to check the effect of advertising appeals on referrals (toll-free phone call to the service provider). To conduct this study, they assessed the content of advertising messages used by the providers (emotion types, argument types, 800-number appearance, positive-goal frame, negative-goal frame, service provider, and service endorser) and linked the performance of those advertising messages in 27 different markets. The messages analyzed were television advertising messages. However, authors could not identify the individual consumers who were exposed to the advertising in the advertised market.

By utilizing the email advertising data, advertising exposure and consequent behaviors by consumer can be tracked. This is the methodology used in this dissertation it is necessary to choose the email advertising contents which should be analyzed.

TYPES OF CONTENTS TESTED IN THIS STUDY:

Price Discount Promotion

The effect of price discount promotion has been widely studied by advertising and marketing scholars. Guadagni and Little (1983) reported that price-sensitive customers would switch to the brand with the price discount promotion, while brand loyal customers remain insensitive to the price changes. Gupta (1988) further investigated the psychology and behaviors of consumers after exposure to the promotion message and found that 16% of customers purchased another item in advance for future consumption. On the other hand, Inman and McAlister (Inman & McAlister, 1993) identified that negligible price cuts caused consumers' brand switching behaviors. Therefore, we can know there are price-sensitive customers in the market and they are responding to the price discount. In this sense, email advertisings with price discount may generate

the response (opening, clicking, and purchasing) from price sensitive customers. By using a longitudinal data base in this dissertation, we wish to find the effects of a price discount promotion in subject line and email body contents. Therefore, this study will consider the following hypothesis:

H1.a: Email advertising with a subject line containing the price discount promotional element(s) are opened less (compared to plain subject email advertising(s)).

H1.b: Email advertising with a body contents containing the price discount promotional element(s) are clicked more (compared to plain contents email advertising(s)).

H1.c: Email advertising with a subject line containing the price discount promotional element(s) will generate more sales than plain subject email advertising(s).

H1.d: Email advertising with a body contents containing the price discount promotional element(s) will generate more sales than plain contents email advertising(s).

Gain and Loss

One of the widely used persuasive message frames would be the gain and loss frame. Based on the prospect theory (Kahneman & Tversky, 1979), gain and loss frame studies argue that people will behave differently when they encounter a potential gain situation and a potential loss situation. Detweiler and colleagues (1999, p. 190) provided an excellent example of a gain-framed message and a loss-framed message; an example of a gain-framed message would be “if you follow the surgeon general’s recommendation, you will increase your chances of living a long healthy life”, and an example of a loss frame message would be “if you do not follow the surgeon general’s recommendation, you will increase your chance of dying early.” Like these message examples, gain and loss framed messages highlight potential gain and potential loss as an outcome of promoting or preventing the specific behaviors described in the message.

Most of researches on gain and loss framing are done in risk or health context and mixed results are reported. Meyerowitz and Chaiken (1987) found that loss-framed breast self-examination pamphlet is more positively evaluated by the reader than gain-framed one. Levin and

Gaeth (Levin & Gaeth, 1988) reported that the meat ingredient of a product (75% lean; gain-framed) is more positively evaluated than a product marked with 25% fat (loss-framed). In addition, several mixed results are reported in health communication researches. O'Keefe and Jensen conducted several meta-analysis in health contexts and reported that gain-frame message is effective in disease prevention, dental hygiene behaviors (O'Keefe & Jensen, 2007); gain-frame message generates more engagements (O'Keefe & Jensen, 2008); loss-frame message is persuasive in the case of breast cancer, but not for other diseases (O'Keefe & Jensen, 2009). Lee and Aaker (2004) found that gain frame messages are more persuasive in promotion settings with low-risk presence, but loss-framed messages work better in a prevention setting with high-risk presence.

In this dissertation, I wish to shed light on the effect of gain and loss frames in email advertising. Especially, email advertising with potential gain or potential loss frame may generate a better response (opening, clicking, and purchasing) from the customer. By using a longitudinal data base in this dissertation, we wish to find the effects of a gain and loss frame used in subject line and email body contents. Thus, the following hypotheses will be tested in this dissertation:

H2.a: Email advertising with a subject line stated in a gain frame will be more likely to be opened by consumers than plain subject email advertising(s).

H2.b: Email advertising with a body contents stated in a gain frame will be more likely to be clicked than plain contents email advertising(s).

H2.c Email advertising with a subject line stated in a gain frame will generate more sales than a plain subject email advertising.

H2.d: Email advertising with a body contents stated in a gain frame will generate more sales than plain contents email advertising(s).

H3.a: Email with a subject line stated in a loss frame will be more likely to be opened by consumers than plain subject email advertising(s).

H3.b: Email advertising with a body contents stated in a loss frame will be more likely to be clicked than plain contents email advertising(s).

H3.c: Email advertising with a subject line stated in a loss frame will generate more sales than plain subject email advertising(s).

H3.d: Email advertising with a body contents stated in a loss frame will generate more sales than plain contents email advertising(s).

Utilitarian and Hedonic attributes

In addition to gain and loss framing, presenting product attributes (hedonic or utilitarian characteristics of products) in advertising messages may enhance the effectiveness of advertising. Hedonic goods are “those which are highly dependent on their sensory character for their appeal”, whereas utilitarian goods are “those which provide rational and cognitive oriented benefits” (Woods, 1960 page. 18). In an attempt to develop their hedonic and utilitarian attitude toward the brand, Batra and Ahtola (1991) argued that consumers make purchase for two basic reasons: “(1) consummatory affective (hedonic) gratification (from sensory attributes)”, and “(2) instrumental, utilitarian reasons concerned with expectations of consequences.” Presenting one of two product attributes or both attributes may function as a reason for email open behavior and further product investigation (or trial). Thus, the following hypotheses will be tested in this dissertation:

H4.a: Email advertising with a subject line containing utilitarian product attribute frame will be more likely to be opened by consumers than plain subject email advertising(s).

H4.b: Email advertising with a body contents containing utilitarian product attribute frame will be more likely to be clicked than plain contents email advertising(s)).

H4.c: Email advertising with a subject line containing utilitarian product attribute frame will generate more sales than plain subject email advertising(s).

H4.d: Email advertising with a body contents containing utilitarian product attribute frame will generate more sales than plain contents email advertising(s).

H5.a: Email with a subject line containing hedonic product attribute frame will be more likely to be opened by consumers than plain subject email advertising(s).

H5.b: Email advertising with a body contents containing hedonic product attribute frame will be more likely to be clicked than plain contents email advertising(s)).

H5.c: Email advertising with a subject line containing hedonic product attribute frame will generate more sales than plain subject email advertising(s).

H5.d: Email advertising with a body contents containing hedonic product attribute frame will generate more sales than plain contents email advertising(s).

Corporate Social Responsibility

Recently, consumers' interests in corporate social responsibility have soared. Along with consumers' increased interest in corporate social responsibility, many companies have become involved in cause-related marketing and have opted for socially responsible campaigns. Ellen and colleagues (Ellen, Mohr, & Webb, 2000) found consumers evaluated more positively cause-marketing products and Sen and Bhattacharya (2001) also found that a company's CSR record has a positive influence on the company's evaluation. Moreover, Luo and Bhattacharya (2006) reported that corporate responsibility, along with product quality and the company's innovation capability, could impact on customer satisfaction and customer satisfaction eventually would influence the firm's valuation. In this sense, email advertising message with stories about the brand's socially responsible behaviors would generate more interest and information inquiries.

Based on the above research, the following hypotheses will be tested in this dissertation:

H6.a: Email with a subject line describing a company's social responsibility and the socially responsible actions will be more likely to be opened by consumers than plain subject email advertising(s).

H6.b: Email advertising with a body contents describing a company's social responsibility and the socially responsible actions will be more likely to be clicked than plain contents email advertising(s).

H6.c: Email advertising with a subject line describing a company's social responsibility and the socially responsible actions will generate more sales than plain subject email advertising(s).

H6.d: Email advertising with a body contents describing a company's social responsibility and the socially responsible actions will generate more sales than plain contents email advertising(s).

Seasonal Appeal

Seasonal consumption fluctuation (seasonality) for some product is well reported (Franke & Wilcox, 1987; Kinnucan & Forker, 1986). It is reasonable to assume that advertising campaigns which focus on specific seasonal demands for a product may have different consequences for the company's sales. Given that assumption, it is hypothesized advertising messages which include the appeals that focus on specific seasonal demand may interest recipients more than messages not focused on seasonal demand. Hence, the following hypothesis will be tested in this dissertation:

H7.a: Email with a subject line describing seasonal appeal will be more likely to be opened by consumers than plain subject email advertising(s).

H7.b: Email advertising with a body contents describing seasonal appeal will be more likely to be clicked than plain contents email advertising(s).

H7.c: Email advertising with a subject line describing seasonal appeal will generate more sales than plain subject email advertising(s).

H7.d: Email advertising with a body contents describing seasonal appeal will generate more sales than plain contents email advertising(s).

Holiday Appeal

According to the National Retail Federation, on average, the holiday seasons represent 20% or more of a retailer's annual sales (National Retail Federation, n.d.; Oh & Kwon, 2009; Weston,

Gladstone, Graham, Mroczek, & Condon, 2018). The gifting tradition among other factors influences a higher level of spending. Some scholarly articles have explored reasons for this phenomenon, but the reality has shown that year after year holiday consumer spending exceeds retail revenues for every other time of the year. Thus, advertising messages may appeal more strongly to consumers during the holiday season. This dissertation will test the following hypothesis regarding holiday season email advertising.

H8.a: Email with a subject line describing holiday celebration will be more likely to be opened by consumers than plain subject email advertising(s).

H8.b: Email advertising with a body contents describing holiday celebration will be more likely to be clicked than plain contents email advertising(s).

H8.c: Email advertising with a subject line describing holiday celebration will generate more sales than plain subject email advertising(s).

H8.d: Email advertising with a body contents describing holiday celebration will generate more sales than plain contents email advertising(s).

Specific Product Type

Email advertising may provide information about the product and service which they wish to promote. According to the Ellis-Chadwick and Doherty's study, 56% of email advertisings give an incentive to open the email advertising and they found that product details (20% of their contents analysis samples) were given in the subject line to attract the recipient to open. On the other hand, email advertiser may place that information in the center or customize the email contents so that email recipient may easily find out that information or feel interest in (Ansari & Mela, 2003). This will lead to the click behavior. Thus, email advertising message highlighting specific product about the brand's socially responsible behaviors would generate more interest and information inquiries.

This dissertation will test the following hypothesis regarding holiday season email advertising.

H9.a: Email with a subject line with specific product type/description will be more likely to be opened by consumers than plain subject email advertising(s).

H9.b: Email advertising with a body contents with specific product type/description will be more likely to be clicked than plain contents email advertising(s).

H9.c: Email advertising with a subject line with specific product type/description will generate more sales than plain subject email advertising(s).

H9.d: Email advertising with a body contents with specific product type/description will generate more sales than plain contents email advertising(s).

THE GAP (TIME) BETWEEN EMAIL ADVERTISINGS

Zhang and colleagues (2017), and Micheaux (2011) reported that sending the optimal number of emails is critical in overall email campaign performance. Specifically, Zhang and colleagues found that sending more emails may cause more email open behaviors by low- and medium-frequency shoppers, but will generate less email open behaviors from high-frequency shoppers. Similarly, Micheaux (2011) reported that sending more email advertising might negatively impact people's open rate because another email advertising made the recipient perceive the pressure. The key finding from these two studies is sending the optimal number of emails to the recipient is a critical factor for email advertising success. These studies investigated the optimal number of email sending by counting the number of emails in a given period of time. But, in order to measure the frequency of email sending, the gap (time) between email advertising is measured. When the gap is small, they are sending emails frequently.

Thus, the following hypothesis regarding email advertising open behavior by email recipients will be tested in this dissertation:

H10: A short interval between email advertising (frequent email sending in a short period) may decrease the open rate of the following email advertising.

RECENCY

The recency of the email advertising following purchasing behavior by the recipient (last time that the email recipient purchased) may impact the email recipient's open behavior. In the direct marketing literature, scholars found that a customer with high recency (when the time elapsed since last purchase is long) is more likely to buy another item than consumers who bought a product shortly after receiving the promotional email (Elsner et al., 2004; Gönül & Hofstede, 2006; Roberts & Berger, 1989). However, they also argued that consumer's interest and desire would recover after a certain period (differently from consumer to consumer). This finding is not surprising because people's needs and wants are satisfied with the purchase behavior, and he/she may not need it until another need/want.

Although the direct marketing literature introduced the concept of "recency" to explain and predict customer's next purchase, they did not have access to the open and click behavior data at the time of those publications. For the purposes of this study, we will consider the concept of recency as being divided into three different categories: open recency, click recency and purchase recency. Purchase recency is the recency which the direct marketing literature investigated. Open recency is the construct which refers to the time elapsed since the previous email was opened, and click recency is the construct which is the time elapsed since the customer the last clicked on a promotional email from the same source. Based on the findings from the direct marketing literature, it can be expected that the email recipient who purchased a product shortly before receiving the promotional email will be less likely to open the new promotional email and less likely to click on it, both prerequisites of purchase behavior in email advertising.

This dissertation therefore will test the following hypothesis:

H11: The recency (open recency, click recency, and purchase recency) of each email recipient negatively impacts the open behavior of email advertising (click behavior and purchase behavior) for a short time period. After that short time period elapsed, individual customers may build-up interest-desire for the product until their next purchase.

EMOTION

Emotional responses triggered by advertising contents are known to mediate or moderate the effects of advertising messages on attitude toward the advertising (Batra & Ray, 1986; Holbrook & Batra, 1987; Liu & Stout, 1987), attitude toward the brand (Batra & Ray, 1986; Edell & Burke, 1987; Liu & Stout, 1987), advertising recall (D. A. Aaker et al., 1986), and purchase intention (Morris et al., 2002). In email advertising, emotional appeal in the email body may trigger interest and desire about product and make them click and purchase the item from the company.

This dissertation therefore will test the following hypothesis:

H12: Email advertising with a body contents with stronger emotional appeal may increase (a) click and (b) purchase from the email recipient than plain subject email advertising(s).

Chapter 3. Methodology

DATA

The data used in this dissertation was provided by a company located in the Southwestern region of the United States. This company was founded in 2013 and has sold items such as socks, blankets, backpacks, and clothing. This company also donates a percentage of their sales of socks and blankets to homeless people in the United States. This company relies on two marketing channels to deliver their advertisements: Facebook (including Instagram) and email advertising. They have spent about \$10,000 per year to deliver their messages through Facebook. On the other hand, their email campaigns are delivered through a third-party email service provider (mailchimp.com which charges subscription fee based on the volume of emails), which allows its users to track their email recipients' behaviors such as open, click, purchase after they received the advertising emails. The company kindly provided its email campaign data which includes each customer's email address, date of email sent, time of email open, time of email clicked, the number of email clicks in each email campaign, customer purchase history for the purposes of this dissertation. As of July 19th, 2018, 264 email messages were sent from the company to its customers.

Among those 264 email campaigns, the initial 162 email advertising sets (email advertising campaign #1 to #162) and the recipients' response behavior after receiving the emails were utilized in this research. The company conducted the A/B test with slightly different email subject line and email body contents from their email advertising campaign #163. They sent two different emails to 10% of email recipients (10% of recipients in each email group) to test the recipients' response to them. The advertisements with better results were sent to the rest of the email recipients (80%). Thus, 90% of email recipients (10% in test + 80% remaining audiences) received the same message, while 10% of email recipients received slightly different email advertising. Since the purpose of this dissertation is to measure the effects of email advertising through the use of longitudinal data, it was hypothesized that different subject lines and different email advertising

contents would generate different outcomes from the recipients. To control the effect of email advertising, only first 162 email campaigns were used.

DATA JOINING

Each email advertising campaign has seven different sub data sets: (1) email recipient information, (2) email recipient information about those who opened the email advertising, (3) email recipient information about those who did not open the email advertising, (4) email recipient information about those who clicked on the email advertising, (5) email recipient information on those subjects whose email account bounced the email advertising, (6) email recipient information about those who purchased the item(s) through the email advertising, and (7) email recipient information on those who complained about the email advertising. For the purposes of this research, the following data were merged, by using Python and Pandas, into four different sets: email recipient, email recipient who opened the email advertising, email recipient who clicked the email advertising, email recipient who purchased the item(s) from email advertising, were merged. It is important to note there are new customers who subscribed to the email list between the two email campaigns and there are other customers who unsubscribed from the email list. Therefore, a campaign number was labeled for each campaign dataset and each campaign dataset were joined based on the email address and campaign number. In this joining process, email recipients who opened, clicked, or purchase the items were marked as 1, while email recipients who didn't open, didn't click, or didn't purchase through email advertisings were marked as 0; thus, customers' behaviors on email advertising can be used for further analysis.

CONTENT ANALYSIS

The contents of email advertisings were coded by two graduate students who were not informed of the purpose of the study. The coders coded both the emails subject lines and emails body contents and a third subject acted as a referee when there was a disagreement between the two coders. The contents of the email subject line and email body were coded as follows:

Price Discount Promotion (PDP)

Based on the literature (Chintagunta, 1993; Guadagni & Little, 1983; Gupta, 1988; Inman & McAlister, 1993), a promotion may change the consumer choice at the time of purchase. For the purposes of this research, the promotion is the short-term price reduction or activities that boost the sales of the product and service. When there is an indication of price discount promotion such as “% off” or "deal" or "sale" on the email subject line, it is coded as 1; otherwise 0.

Gain-framed Message Element (Gain)

Based on Detweiler and colleagues (1999, p. 190) gain-framed messages (as an example: "if you follow the surgeon general's recommendation, you will increase your chances of living a long healthy life"), may have following pattern, "if you do something (recommendation), you will get/gain something (benefits)." Therefore, for the purposes of this research, email titles that provide a guarantee of benefit given a condition; it is coded 1; otherwise 0.

Loss-framed Message Element (Loss)

Based on Detweiler and colleagues (1999, p. 190) loss-framed messages (as an example: “if you do not follow the surgeon general's recommendation, you will increase your chance of dying early”), may have the following pattern, "if you do not do something (recommendation), you will lose something." Email titles that provide a warning of loss given a specific condition are coded 1; otherwise 0.

Utilitarian Attribute Included Message (Util)

Based on a definition provided by Woods (Woods, 1960), utilitarian goods are “those which provide rational and cognitive oriented benefits.” Thus, a message with words that highlight rational and cognitive oriented benefits such as “performance gear," it is coded as 1; otherwise 0.

Hedonic Attribute Included Message (Hedonic)

Based on a definition provided by Woods (Woods, 1960), hedonic goods are “those which are highly dependent on their sensory character for their appeal.” Thus, if a message contains words that highlight sensory attributes such as "new color," it is coded as 1; otherwise 0.

Corporate Social Responsibility (CSR)

Based on the existing marketing and communication literature, a message that contains descriptions of corporate social responsibility may influence a consumer’s purchasing behavior. Therefore, if an email message contains descriptions of corporate socially responsible behaviors included in the subject line, the email message is coded as 1; otherwise 0.

Season Included Message (Season)

Based on the literature review, when different mentions of seasonality are included in an advertising message, they may result in differences in consumer behavior. Therefore, if the email advertising message contained (a) word(s) describing the season of the year, it was coded accordingly: spring is coded as 0; summer is coded as 1; fall is coded as 2; winter is coded as 3; and otherwise 4. After then, the variable, season, is recorded as 1 if a coded value is less than 4; otherwise 0.

Holiday Included message (Holiday)

Based on literature review, the mention of holidays in advertising messages can affect t consumer behavior. Therefore, if mentions of holidays and/or holidays celebrations were included in the subject line of the emails, it is coded as 1; otherwise 0.

Specific Product Type (SPT)

Based on the literature review, the mention of specific product types in advertising messages can changes consumer behavior. Therefore, if mentions of holidays and/or holidays celebrations were included in the subject line of the emails, it is coded as 1; otherwise 0.

DATA MERGING

After 162 email contents were coded, the resulting data was merged into the data reporting whether the email recipients opened, clicked on and/or purchased products as a result of each email campaign. Each consumer's behavior resulting from each email campaign was matched and merged with the email contents data described above. For example, a customer action resulting from email campaign #150 is paired with the email campaign # 150 content. By combining these two datasets, the author can have each email recipient's unique behaviors based on email contents. This is by far the first repeated measure of advertising recipient's behaviors on advertising exposure. Python script used for data merging is attached as an appendix.

OTHER VARIABLES

Time Gap between Email Advertisings (GBD)

The time gap between two email advertisings was calculated in days. After the first analysis, the time elapsed between emails is rescaled. Due to the difference between scales of units ($(X^T X)^{-1} X^T Y$) becomes harder to calculate than other variables t were coded using binary units (either 1 or 0) (Simoiu & Savage, 2016). Thus, as recommended by Simoiu and Savage (2016), for the purposes of this research, the variable was standardized to z-score $z = \frac{x-\mu}{\sigma}$ for the analysis.

Open Recency (OR), Click Recency (CR), Purchase Recency (PR)

Based on the direct marketing literature, recency, or the time elapsed since the last purchase, is important in that it provides marketers with another criterion for customer selection for the purpose of optimizing the profits resulting from direct marketing activities. However, when considering email advertising, there are three possible types of recencies that can be measured: open recency (the elapsed time since the last open), click recency (the elapsed time since the last click), and purchase recency (the elapsed time since the last purchase). Each of these three recencies were calculated for each customer in the database. For example, customer A opened the

email campaign sent on November 14th, 2014 and December 12th, 2014, but did not open the email sent on November 25th, 2014; then it was concluded that the open recency was equivalent to 28 days. In addition, when a recipient opens consecutively email advertising messages, then the recency is considered 0. After coding the recencies in days, the data was standardized.

Emotional Appeal (Emotion)

When the recipient opens an email advertising message, the contents of the email advertising are processed. Some of email advertising content may include emotional appeals which may trigger emotional responses from the consumer. (Chandy, Tellis, MacInnis, & Thaivanich, 2001; Holbrook & Batra, 1987). Emotional appeals in the email contents were coded by using the text analysis program, LIWC (Tausczik & Pennebaker, 2010). LIWC counts words in psychologically meaning categories and returns the scores of the text's psychological dimensions. Among the returned values from LIWC, emotional tone represents the sentiment of text and shows whether the emotion of text is positive or negative in a scale ranging from 0 to 100. Rather than subjective human content analysis of emotional appeal, LIWC can provide a stable emotional appeal content analysis score (Tausczik & Pennebaker, 2010).

ANALYSIS METHOD: MIXED EFFECTS LOGISTIC REGRESSION.

Mixed effects logistic regression is used to test the hypotheses. Since the differences among individual consumers and the difference from the number of previous opens (clicks and purchases) need to be considered, random effects (random intercepts) should be included. Other advertising effects are fixed effects and are used to predict open behavior. To run mixed effects logistic regression, Statistics software R and its package "lme4" is used (Bates, 2010).

Also, it is important to note that this dissertation model was built based on two assumptions. First, all of email advertising recipients in this study are exposed to the email advertising subject line. In reality, email advertising message can be disregarded/ignored due to the volume of emails which he/she receives per day. Second, those who open the email advertising read the message

carefully and processed the information included. With this assumption, the step-wise regression method is implemented to build up the final model.

SAMPLE USED IN THE STUDIES

In this dataset, there are 6,632 customers and 428,649 observations. Among 428,649 emails sent, 25.73% of emails (110,319 emails) were opened, 3.57% of emails (15,314) were clicked, and 0.20% of emails (878 emails) led to the purchase behavior of email recipient. All of these customers opened the email at least once; 48.32% of customers (3,205) clicked at least once when they received and when opened the email message; 9.15% of customers (607) purchased at least once when they received, opened, and clicked the email message from the company.

Among these 428,649 observations from 6,632 customers, only customers for whom there was gender information available were included in the final analysis. In this dataset, there are 4,384 customers, and 346,618 observations are utilized in this dataset. Since the dataset lacked gender information for 2248, when gender information was used as a control variable, the sample size decreased, and the baseline to compare the models was lost. To prevent this, customers with gender information are utilized for final analysis. After removal, there are 346,618 observations: 24.3% of emails in this dataset were opened; 3.7% of emails were clicked; and finally, 0.2% of emails led a customer to the purchase in this dataset.

Table 2. Descriptive Statistics of Email Opening, Clicking, and Purchase

	<i>N</i>	Mean	St. Dev	Min	Max
Opening	346,618	0.243	0.429	0	1
Clicking	346,618	0.037	0.188	0	1
Purchase	346,618	0.002	0.047	0	1

Since customers subscribe in the email list at different times (it ranges from 1 to 162), the total number of email messages a customer received is different. Average number of emails that a customer received is 79.06 (*SD* = 41.30). Between the email campaign, there were 40.93 new subscribers to the email list on average (*SD* = 66.88).

After subscription, the average time to open the first email message sent from the company is 6.47 emails ($SD = 13.50$). However, as we can see in figure below, most of the email is opened directly: 52.94% of customers (2,321) opened his/her first email when the first email was delivered, and about 85.10% of customers (3,731) opened the first ten emails that he/she received after subscription. Most interestingly, all of the email subscribers opened the email from the company at least once in their customer lifetime. Therefore, we can assume that email subscription is made based on a consumer's awareness and interest in the product and service. The following section describes the 3 research studies of this dissertation.

Table 3. Descriptive Statistics of Opening Behavior.

	Sent Count	Freq	Prop	Cum. Freq	Cum. Prop
1	1	2321	0.53	2321	0.53
2	2	550	0.13	2871	0.65
...
10	10	56	0.01	3731	0.85
...
124	124	1	0.001	4384	1.00

STUDY 1

In study 1, all of 346,618 observations (from 4,384 email recipients) were used to study the email opening behavior of the customers.

STUDY 2

In study 2, the data comprising consumers who opened the email advertising was utilized to study the email clicking behavior of each customer. Clicking behavior is the behavior the results from email opening behavior; thus, filtering the emails which were opened was a prerequisite for developing the analysis in study 2.

STUDY 3

Consumers who clicked the on the email advertising provided the base data for study 3. Study 3 analyzed the purchasing behavior of consumers who clicked on the emails. Purchasing is a consequent consumer behavior of email clicking behavior; thus, filtering the emails which were clicked was necessary for the analysis of data in study 3. For this study, email campaigns from 61 to 162 were used because customer purchase information is only available from campaign 61.

Chapter 4. Study 1: The Effects of Email Advertising Body Contents on Email Advertising Recipient's Opening

INTRODUCTION: EMAIL ADVERTISING AND ITS SUBJECT LINE

This dissertation is designed to test whether or not the hierarchy of effects (AIDA model) can be applied to test the effectiveness of email advertising. For this reason, the dissertation is divided into three different studies. Study 1 employs all the data available. Study 2 utilize the data obtained from study 1. Finally, study 3 has as its data input the results obtained from study 2.

“The subject line in the e-mail is the first point of contact and acts as a trigger to encourage the message recipient to open the e-mail. There are two main components in the subject line: e-mail sender and the subject matter (Ellis-Chadwick & Doherty, 2012).”

Ellis-Chadwick and Doherty highlighted the importance of the subject line. Emails will not be opened without cognition of email receipt and without a conscious decision made after reading the subject line. Ellis-Chadwick and Doherty reported that 56% of email samples in their study opened the email advertising. It is important to note that the email advertising utilized in their study contained, in its subject line, an incentive to open the email. These incentives function as motivations for certain segment of customers, and consumers may process the persuasive communication based on their motivation and ability, as Petty and Cacciopo (1986) argued. Thus, persuasive elements in the subject line can influence the individual recipient's motivations, and are investigated in this dissertation's first study.

MODEL BUILDING PROCEDURE

In addition to the independent variables that were included in this study and open behavior, some control variables which may influence the performance of the model were also included. Although 162 email campaigns were used in the hypotheses testing, campaign 166 was designed to target the different gender of the email recipient. The email service provider reported the consumers' gender (variable name in the model: *gender*). Two-thirds of the email recipients were sorted as either male or female while the remaining 1/3 was coded as non-responsive or not

available. Just as gender may influence the open behavior of consumers, the level of interests on the product may affect the number of emails that are coded as received by the consumers. Subscription to emails can be considered as an indicator of interest or desire on the product. By giving permission to send the email to the company, email recipients keep updating their knowledge about the product from the company and company can keep the relations with those customers.

Krugman (1972) argued that three successive exposures to advertising are enough to inform a consumer of the brand and product. According to other research sources, after a consumer is fully informed, he/she may still not be responsive to the advertising message (wear-out) and/or may lose his/her interest in the brand or product until the new information is provided (Tellis, 2009). Thus, the number of emails received (variable name in the model: ***S.Count***) by each customer may play a role in the open behavior of each customer. Moreover, according to Bonfrer and Dreze (2009), there is a specific time when customers are more responsive; according to Smart Insights (2017), emails (including both B2B and B2C) are most likely to be opened around 10 AM and then the open rate after that slowly decreases. In the case of B2C retail email advertising, it is expected that during the working hours such as 8-5PM or 9-6PM, people may not check personal email due to working hours and there is a high chance that email can be disregarded. By controlling the hour, the author may have a better accurate model to explain the effect of the subject line (variable name in the model: ***Hour***). Moreover, according to Smart Insights (2017), sending an email advertising on Friday is a good strategy because there are fewer competitions to get email recipient's attention and many recipients check their personal email on Saturday. By controlling the day in which an email is sent, a more accurate model may be developed (variable name in the model: ***Weekday***). Finally, previous open rate of each user (variable name in the model: ***POR***) may play an important role in the model. If the recipient doesn't open email advertising from the brand, the odd of his/her next opening will be low. On the other hand, if the recipient opens email advertising frequently, that recipient's odd of email opening will be high.

Since the model from this dissertation estimates individual customers' open behavior based on the elements in the subject line and the control variables (gender, recency, days between a previous email and last email, daytime when it was sent, and date) the model will have the following equation formula:

$$\begin{aligned}
 open_{it} = & \beta_0 + \beta_1 PDP_t + \beta_2 Gain_t + \beta_3 Loss_t + \beta_4 Util_t + \beta_5 Hedonic_t + \beta_6 CSR_t \\
 & + \beta_7 Season_t + \beta_8 Holiday_t + \beta_9 GBD_t + \beta_{10} SPT_t + \beta_{11} OR_{it} \\
 & + \beta_{12} gender_i + \beta_{13} S.Count_{it} + \beta_{14} Hour_t + \beta_{15} Weekday_t + \beta_{16} POR_{it} + \mu_i \\
 & + \varepsilon_{it}
 \end{aligned}$$

where i is each customer and t is the email campaign number. Here, dependent variable $open_{it}$ is the measurement of open behavior by consumer i in time t ; and the element of advertising exposed and the effect of control variables to the consumer i in time t are included in the model. Also, omitted (unobserved) heterogeneity should be caught by individual customer's random effects term, μ_i . Since this email dataset does not have demographic information about the individual customer, the individual difference among the customer should be controlled by individual level.

Each customer has a different background in terms of ethnicity, income, education, interest in fashion, etc. Since each customer is different, their open behaviors might be influenced by omitted/unobserved characteristics of each customer as per this model. Therefore, it is necessary to control differences among customers by utilizing random effect terms. Since each customer's unique open behaviors are recorded repeatedly, we can differentiate and control for that difference.

Correlation

Correlation between matrix is calculated in order to check multicollinearity. Previous open rate is highly correlated with previous open rate which is ratio of the number of messages opened to the number of message received (sent) ($r = 0.58, p < 0.001$); price discount promotion is highly

correlated with gain-frame ($r = 0.95, p < 0.001$); open recency is highly correlated with previous message open rate ($r = -0.470, p < 0.001$); open recency is highly correlated with click recency $r = 0.61, p < 0.001$; sent count is highly correlated with purchase recency ($r = 0.91, p < 0.001$); and click recency is highly correlated with purchase recency ($r = 0.72, p < 0.001$). Therefore, careful modeling is required: to avoid the multicollinearity, variance inflation factor was checked in the final model building.

Forward Stepwise Regression

To build the final model and check the significance of the model, a base-line random effects model with fixed effects intercept was tested (Table 5, column (1)). After that, one independent variable (Table 5 column (2)-(11)) or one control variable (Table 5 column (12)-(15)) were tested. After applying the mixed effects logistic regression model with one variable, it was possible to identify the variable with strongest explanatory power. Based on random effects intercept and fixed effect intercept, the forward stepwise regression methodology was used to build the final model. Individual effects of email subject line elements were tested, and the variables with stronger explanatory power are identified (Table 5), open recency, followed by promotion, holiday, CSR, etc. Based on these explanatory powers of variables, the final model was built by using stepwise regression methodology (Table 6).

RESULTS

Table 5 reports the final outcome of mixed effects logistic regression model in the odd ratio. Baseline model with only control variables is model (Table 5. (1)) and variable with strongest explanation is added one after another (forward stepwise regression). Addition of one variable (open recency) to the baseline mixed effects logistic regression model with control variables was statistically significant ($\chi^2(2, N = 346,618) = 5389.5, p < 0.05$); addition of another variable (promotion) to the mixed effects logistic regression logistic regression model with control variables and promotion was statistically significant ($\chi^2(2, N = 346,618) = 54.39, p < 0.05$);

addition of a subsequent variable (holiday) to the mixed effects logistic regression model with control variables and independent variables (open recency and promotion) was statistically significant ($\chi^2(2, N=346,618) = 275.67, p < 0.05$); addition of a subsequent variable (gain) to the mixed effects logistic regression model with control variables and independent variables (open recency, promotion, holiday) was statistically significant ($\chi^2(2, N=346,618) = 14.33, p < 0.05$); addition of the variable (CSR) to the mixed effects logistic regression model with control variables and independent variables (open recency, promotion, holiday, and gain) was statistically significant ($\chi^2(2, N=346,618) = 33.50, p < 0.05$); addition of variable (season) to the mixed effects logistic regression model with control variables and independent variables (open recency, promotion, holiday, gain, and CSR) was NOT statistically significant ($\chi^2(2, N=346,618) = 3.34, p > 0.1$); addition of variable (GBD) to the mixed effects logistic regression model with control variables and independent variables (open recency, promotion, holiday, gain, and CSR) was statistically significant ($\chi^2(2, N=346,618) = 31.24, p < 0.05$); addition of variable (Util) to the mixed effects logistic regression model with control variables and independent variables (open recency, promotion, holiday, CSR, and GBD) was statistically significant ($\chi^2(2, N=346,618) = 110.67, p < 0.05$); addition of variable (loss) to the mixed effects logistic regression model with control variables and independent variables (open recency, promotion, holiday, gain, CSR, GBD, and utilitarian) was statistically significant ($\chi^2(2, N=346,618) = 46.39, p < 0.05$); addition of variable (hedonic) to the mixed effects logistic regression model with control variables and independent variables (open recency, promotion, holiday, gain, CSR, GBD, utilitarian, and loss) was NOT statistically significant ($\chi^2(2, N=346,618) = 1.22, p > 0.05$); finally, addition of variable (specific product type) to the mixed effects logistic regression model with control variables and independent variables (open recency, promotion, holiday, gain, CSR, GBD, utilitarian, loss, hedonic) was statistically significant ($\chi^2(2, N=346,618) = 145.37, p < 0.05$).

Among 11 independent variables, 9 variables – open recency, promotion, holiday, gain, CSR, time between emails, utilitarian, loss, and SPT – are included to explain the open behavior of email recipients and two variables. However, season (low explanatory power) and hedonic were

excluded for hypothesis testing because of marginal addition of explanatory power to the final model. The final model has an explanation power .0716 in Pseudo R^2 (McFadden, 1974).² While McFadden introduced the Pseudo R^2 , he argued that “Excellent” model would have Pseudo R^2 between 0.2 and 0.4. The final model could not reach the parameters in the excellent model claimed by McFadden. However, since this research assumed the recipient's full exposure to the subject line, inevitable noises were included in the dataset. More specifically, the author cannot know who was exposed to the email advertising subject line and who was not. For example, email recipient who was exposed to the advertising but decided not to open is recorded as 0, while email recipient who was not exposed to the email subject line is also recorded as 0 in this dataset. Without knowing the email recipient who was exposed to the subject line and email recipient who was not exposed, accurate measurement of the effect of the email advertising subject line is hard to achieve. To alleviate this concern/problem, an additional study was done (An explanatory section is provided after Study 1 discussion).

Regarding the first hypothesis, the subject line with the price discount promotion element increases the likelihood of email recipient’s email advertising open behaviors ($e^{\beta_{PDP}} = 1.120, p < 0.01$) and the first hypothesis is supported (H1.a). In other words, when there is a price discount promotion This result is not surprising because previous marketing scholars (Guadagni & Little, 1983; Gupta, 1988; Inman & McAlister, 1993) reported customer’s choice change due to the price discount promotion.

The second hypothesis predicted that email advertising with a subject line stated in a gain frame will be opened more than a plain-text email advertising subject line. However, the odd of opening in the final model ($e^{\beta_{gain}} = 0.963, p < 0.01$) is decreased by 3.7% when email subject line is stated in gain-frame; thus, hypothesis is rejected (H2.a). However, the subject line of the email advertising with the loss frame increase the odd of email recipient’s open behaviors ($e^{\beta_{loss}} = 1.283, p < 0.01$) and second hypothesis (H3.a) is supported. Also, the subject line with utilitarian

² Pseudo $R^2 = 1 - \frac{\text{Loglikelihood of Full model}}{\text{Loglikelihood of Intercept model}}$

product attribute ($e^{\beta_{util}} = 1.387, p < 0.01$), the subject line with corporate social actions ($e^{\beta_{CSR}} = 1.187, p < 0.01$), and the subject line with holiday celebration description ($e^{\beta_{holiday}} = 1.223, p < 0.01$) increased the likelihood of email recipient's open behavior; Thus, H4.a, H6.a, and H8.a, are supported respectively. However, the odd of email advertising opening is decreased with subject line containing the specific product type/description ($e^{\beta_{SPT}} = 0.842, p < 0.01$) and H9.a is rejected.

On the other hand, when the time elapsed between two emails is longer, the odd of email recipient's opening behavior is increased when one unit increases in GBD ($e^{\beta_{GBD}} = 1.035, p < 0.01$). In other words, when an email is sent within next 10.41 days, the possibility of email recipient's open behavior increases by 3.5%. This finding is similar to what Micheaux (Micheaux, 2011), and Zhang and colleagues (2017) found. Both studies reported that frequent email sending might decrease the open rate of email advertising recipients and the balanced/appropriate amount of email sending is the key to success. Moreover, we could find that email open likelihood is increasing as time elapsed from the last email is longer. Thus, H10 is supported.

In addition to the time elapsed between emails, open recency was tested. The odd of opening is decreased when there was one unit increases in open recency ($e^{\beta_{OR}} = 0.289, p < 0.01$). Mean of open recency is 88.78 days and a standard deviation of open recency is 128.84. Based on the information, we can know that that one standard deviation above from the mean is 217.62 days in open recency and the customer who didn't open the email for 217 days are about 75% less likely to open the email advertising comparing to the customer who didn't open for about 88.78 days. However, we cannot tell their level of interest and desire is restored after some period of time.

Hypotheses about hedonic attribute and season appeal are rejected (H5.a and H7.a) because they are not statistically significant.

Table 4. Correlation Table.

	opened	PDP	gain	loss	Util	Hedonic	CSR	Season	Holiday	GBD	SPT	OR	S.Count
opened													
PDP	0.02***												
Gain	0.02***	0.95***											
Loss	0.01***	-0.06***	-0.17***										
Util	0.01***	0.13***	0.12***	-0.04***									
Hedonic	-0.01***	-0.04***	-0.04***	-0.05***	-0.05***								
CSR	0.02***	-0.22***	-0.22***	-0.05***	-0.05***	-0.07***							
Season	0.01***	0.14***	0.13***	-0.07***	0.04***	-0.09***	-0.09***						
Holiday	0.02***	0.15***	0.14***	-0.02***	-0.10***	-0.12***	0.00	-0.11***					
GBD	0.01***	0.17***	0.15***	0.10***	0.00**	0.05***	-0.07***	0.00	0.08***				
SPT	0.00	0.23***	0.17***	0.18***	0.07***	0.28***	-0.06***	-0.18***	-0.18***	0.07***			
OR	-0.32***	-0.03***	-0.02***	0.00	0.00	0.00	-0.02***	-0.02***	0.02***	0.02***	-0.04***		
S.Count	-0.12***	-0.07***	-0.06***	-0.01***	0.03***	-0.04***	-0.05***	-0.05***	0.05***	-0.02***	-0.13***	0.38***	
POR	0.58***	0.01***	0.01***	0.00	0.00*	0.00*	0.01***	0.01***	-0.01***	0.01***	0.02***	-0.47***	-0.14***

* p < 0.05; ** p < 0.01; *** p < 0.001.

Table 5. The Impact of Email Advertising's Subject Line on Opening.

	<i>Dependent variable:</i>																
	opened																
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
OR		0.950*** (0.001)															
Gain			1.173*** (0.010)														
Loss				1.147*** (0.026)													
PDP					1.203*** (0.010)												
Util						1.182*** (0.026)											
Hedonic							0.905*** (0.019)										
Holiday								1.240*** (0.013)									
Season									1.144*** (0.016)								
POR										23.316*** (0.033)							
GBD											1.037*** (0.005)						
CSR												1.317*** (0.021)					
SPT													1.030*** (0.012)				
S.Count														0.984*** (0.0002)			
Gender																1.334***	

Table 5 (continued)

	(0.064)
Hour: 8AM	2.164*** (0.027)
Hour: 9AM	1.142*** (0.024)
Hour: 10AM	0.990*** (0.025)
Hour: 11AM	1.183*** (0.026)
Hour: 12PM	0.906*** (0.033)
Hour: 1PM	1.083*** (0.027)
Hour: 2PM	1.033*** (0.031)
Hour: 3PM	0.660*** (0.042)
Hour: 4PM	2.473*** (0.063)
Hour: 5PM	0.718*** (0.052)
Hour: 6PM	1.306*** (0.064)
Hour: 7PM	1.196*** (0.054)

Table 5 (continued)

Weekday: Mon																		0.773*** (0.021)
Weekday: Sat																		0.620*** (0.023)
Weekday: Sun																		0.755*** (0.021)
Weekday: Thu																		0.740*** (0.013)
Weekday: Tue																		0.684*** (0.015)
Weekday: Wed																		1.003*** (0.020)
Constant	0.215*** (0.028)	1.288*** (0.004)	0.196*** (0.029)	0.188*** (0.037)	0.193*** (0.029)	0.183*** (0.037)	0.235*** (0.033)	0.180*** (0.030)	0.190*** (0.032)	0.080*** (0.019)	0.214*** (0.028)	0.166*** (0.034)	0.210*** (0.030)	0.399*** (0.029)	0.199*** (0.033)	0.190*** (0.035)	0.265*** (0.029)	
Observations	346,618	346,618	346,618	346,618	346,618	346,618	346,618	346,618	346,618	346,618	346,618	346,618	346,618	346,618	346,618	346,618	346,618	
Log Likelihood	-135,307.500	-123,809.900	-135,184.300	-135,293.800	-135,142.000	-135,287.100	-135,295.100	-135,168.700	-135,273.400	-130,968.400	-135,281.300	-135,223.100	-135,304.500	-130,710.500	-135,297.500	-134,059.800	-134,744.100	
Akaike Inf. Crit.	270,619.000	247,627.700	270,374.600	270,593.500	270,290.100	270,580.100	270,596.100	270,343.400	270,552.800	261,942.900	270,568.600	270,452.100	270,615.000	261,427.100	270,601.000	268,147.500	269,504.100	
Bayesian Inf. Crit.	270,640.500	247,670.700	270,406.900	270,625.800	270,322.300	270,612.400	270,628.400	270,375.700	270,585.000	261,975.200	270,600.900	270,484.400	270,647.300	261,459.400	270,633.200	268,298.100	269,590.200	

Note:

*p<0.1; **p<0.05; ***p<0.01

Table 6. The Impact of Email Advertising's Subject Line on Opening.

The email open behavior											
<i>Dependent variable:</i>											
	Opened										
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
OR			0.289*** (0.020)	0.288*** (0.020)	0.290*** (0.020)	0.289*** (0.020)	0.290*** (0.020)	0.288*** (0.020)	0.288*** (0.020)	0.288*** (0.020)	0.290*** (0.020)
PDP				1.084*** (0.011)	1.051*** (0.011)	1.174*** (0.032)	1.171*** (0.032)	1.157*** (0.032)	1.135*** (0.032)	1.061*** (0.034)	1.120*** (0.034)
Holiday					1.270*** (0.015)	1.270*** (0.015)	1.263*** (0.015)	1.256*** (0.015)	1.276*** (0.015)	1.270*** (0.015)	1.223*** (0.015)
Gain						0.889*** (0.031)	0.902*** (0.031)	0.903*** (0.031)	0.908*** (0.031)	0.985*** (0.034)	0.963*** (0.034)
CSR							1.161*** (0.026)	1.176*** (0.026)	1.178*** (0.026)	1.180*** (0.026)	1.187*** (0.026)
GBD								1.034*** (0.006)	1.034*** (0.006)	1.030*** (0.006)	1.035*** (0.006)
Util									1.338*** (0.028)	1.344*** (0.028)	1.387*** (0.028)
Loss										1.229*** (0.031)	1.283*** (0.031)
SPT											0.842*** (0.014)
Constant	0.215*** (0.028)	0.160*** (0.037)	0.110*** (0.035)	0.104*** (0.036)	0.085** (0.039)	0.085** (0.039)	0.073 (0.046)	0.072 (0.047)	0.057 (0.052)	0.046 (0.062)	0.052 (0.063)
Observations	346,618	346,618	346,618	346,618	346,618	346,618	346,618	346,618	346,618	346,618	346,618
Log Likelihood	-135,307.500	-128,663.000	-125,968.300	-125,941.100	-125,803.200	-125,796.100	-125,779.300	-125,762.000	-125,706.700	-125,683.500	-125,610.800
Akaike Inf. Crit.	270,619.000	257,372.000	251,984.500	251,932.200	251,658.500	251,646.200	251,614.700	251,582.100	251,473.400	251,429.000	251,285.600
Bayesian Inf. Crit.	270,640.500	257,619.400	252,242.700	252,201.100	251,938.100	251,936.600	251,915.800	251,894.000	251,796.100	251,762.400	251,629.800

Note:

*p<0.1; **p<0.05; ***p<0.01

DISCUSSION AND LIMITATION

This study first investigated the effects of the email title in the panel data set. This dissertation study identified the impact of several elements in the email advertising subject line on consumer's email open behavior. Although in the previous studies, the importance of the subject line was discussed (Ellis-Chadwick & Doherty, 2012), but no study before investigated the effect of email subject line with repetitive measurement of an individual customer. This study's finding supported that advertising elements such as price discount promotion ($e^{\beta_{PDP}} = 1.120$) or loss attribute ($e^{\beta_{loss}} = 1.283$) in the subject line increase each recipient's likelihood of open behavior, but listing the specific product type ($e^{\beta_{SPT}} = 0.842$) on the subject line decrease the open rate by about 16%.

This study provided the baseline to investigate the effect of email advertising. Without an investigation of the email subject line and open behavior, following consequent behavior such as click and purchase cannot be discussed because those actions are based on the recipient's open behaviors. Previous studies focused on different consumer behaviors such as click (Bonfrer & Dreze, 2009) or sales (Zhang et al., 2017) or opt-out (Kumar et al., 2014). On the other hand, Micheaux (2011) investigated the effect of email subject line which looks like advertising, but he didn't consider what types of advertising like elements influence the recipient's open behavior. This study investigated various advertising elements' effects on consumer behaviors with repetitive measurements.

However, this study has certain limitations and spaces for future research. First, it is about the assumption. In this study, we assume that every customer is exposed to email advertising and read the subject line of email advertising. However, it may not be true. Although email advertising message was delivered to the customer, it may be labeled as advertising and automatically sorted and forwarded to the advertising or junk or delete folder.

It is assumed that the consumer learned enough about the company's product and service; therefore, he/she may not need to open the email advertising to learn (wear-out effect). Besides

that, considering the volume of emails that he/she received per day (The Radicati Group, INC., 2019), the email advertising received from the company that provided the data set used in this dissertation can be just one of many emails that he/she received every day and might be disregarded. Therefore, it is critical to investigate the factors that might determine consumers' perception and their decision to open email advertising.

Second, there are many other psychological factors which are not included in this study but may influence the consumer's open behaviors. For example, brand loyalty may moderate the effect of advertisements on consumer's behavior (Tellis, 2009). Recipient's brand loyalty may moderate the consumer's decision to open the email advertising. More specifically, if the recipient has strong brand loyalty, he/she may open the email and read the email advertising more frequently. On the other hand, elements in the subject line echoed with the individual recipient and made them open the email advertising. For example, as tested, the corporate social responsibility element in the subject line may trigger the email recipient's interest to open the email advertising and make him/her wish to know what the company did. Similarly, price discount element in the subject line may echo the price-sensitive customer's mind and make them open the email advertising to know the deal that the company offers. Like these examples, the effects of consumer psychology on consumer's decision to open the email is an interesting research area which this research does not cover. Understanding how a short subject line (sentence or summary) of email advertising motivates the email recipient's open behavior may increase the explanatory power of email subject line and recipient's open behaviors further.

Although there are some weaknesses in this study, this study contributes to this stream of research because it is the first study which investigated the effect of email advertising subject line with repetitive measurements.

ADDITIONAL STUDY

Additional studies were conducted to solve the low Pseudo R^2 (.0633). First, based on the assumption that all advertising emails' subject lines are not exposed to the consumers, author

control the group of email recipients who might be consistently exposed to the email advertisements and might decide to open the email advertisement.

First, mean of emails that an average customer opens is 19.22 emails ($SD = 25.14$). However, since the email recipient's subscription is made at a different time, the number of emails received is different ($M = 79.06$, $SD = 41.30$). Therefore, rather than using the open count by each recipient, it is reasonable to check the open rate of each email recipient and the number of messages that he/she received to control. The customers at the email campaign 162 whose cumulative open rate (total number of opens / total number of emails received) is larger than the average open rate of entire customers (0.243) are included in the sample. In addition to this condition, email recipients who just subscribed in would be more responsive to the email advertising message. Thus, email recipient who received less than median or median number of emails (93 emails) are excluded, and author investigated the changes of log likelihood of the models with baseline model to check the improvement of Pseudo R^2 .

Table 7 summarizes the two different data sets (mean group: customers who received more than 79 emails vs. median group: people who received more than 93 emails) and effects of the advertising element in subject lines. The specific product type is still decreasing the open behavior of the email recipient. After controlling, Pseudo R^2 is increased to the level, 0.099 (mean: Table 7. Column (1) vs. (2)) and 0.101 (median: Table 7. Column (3) vs. (4)).

Table 7. The Email Open Behavior with Recipients Who Received more Emails than Mean / Median

	<i>Dependent variable:</i>			
		opened		
	(1)	(2)	(3)	(4)
Open Recency		0.012*** (0.071)		0.012*** (0.073)
Promotion		1.073*** (0.019)		1.054*** (0.020)
Holiday		1.185*** (0.023)		1.199*** (0.025)
CSR		1.237*** (0.042)		1.214*** (0.044)
GBD		1.108*** (0.009)		1.109*** (0.010)
Utilitarian		1.362*** (0.043)		1.358*** (0.045)
Loss		1.390*** (0.045)		1.357*** (0.047)
Hedonic		1.082** (0.039)		1.041 (0.041)
SPT		0.873*** (0.024)		0.878*** (0.025)
Constant	1.437*** (0.046)	0.064*** (0.118)	1.408*** (0.048)	0.071*** (0.124)
Observations	89,278	89,278	80,406	80,406
Log Likelihood	-52,151.370	-46,955.460	-47,119.340	-42,339.120
Akaike Inf. Crit.	104,306.700	93,972.920	94,242.690	84,740.250
Bayesian Inf. Crit.	104,325.500	94,264.300	94,261.270	85,028.390

Note:

*p<0.1; **p<0.05; ***p<0.01

Chapter 5. Study 2: The Effects of Email Advertising Body Contents on Email Advertising Recipient's Clicking

INTRODUCTION

After an email is open by the email recipient, contents in the email advertising (hereafter, email contents) may be consumed by the recipient. Email contents are the elaboration of email subject line, and they are aligned in the purpose of email (Ellis-Chadwick & Doherty, 2012). Email contents may provide the information about the product and service; may generate recipient's interests and desires; may generate clicking actions which lead to the company's website visit for further information inquiry and purchase actions. This purchase driving is one of the goals that email advertisers have wished to achieve (Rodgers & Thorson, 2012, p. 5). The aim of this study is identifying the email contents which influence the clicking behaviors on email advertising.

MODEL BUILDING PROCEDURE

In addition to independent variables, click behavior (dependent variables), and study 1's control variables (such as gender, weekday, hour, previous open rate (POR), and the number of email which a recipient has received), two control variables which may influence the performance of the model were included: the number of previous open and previous click rate (the number of clicks divided by the number of emails opened).

Based on the hierarchy of effects model and email advertising persuasion process, people may open more email advertising when he/she has interest and desire in the products. As an outcome of those previous email opens, the customer is more informed about the advertised products and he/she may develop his/her interest and desire further. When enough interest and desires are in the customer's mind, he/she is expected to click the email contents to be redirected to the company's webpage. Thus, the number of previous email advertisings open and individual customer's previous click rate can be a good proxy of the customer's level of interest.

Since the model is estimating the individual customer's click behavior based on the elements in the email contents and control variables (gender, open recency, click recency, elapsed

days between a previous email and last email, daytime when it was sent, and weekday), the model would have the following equation formula:

$$\begin{aligned}
 click_{it} = & \beta_0 + \beta_1 PDP_t + \beta_2 Gain_t + \beta_3 Loss_t + \beta_4 Util_t + \beta_5 Hedonic_t + \beta_6 CSR_t \\
 & + \beta_7 Season_t + \beta_8 Holiday_t + \beta_9 SPT_t + \beta_{10} OR_{it} + \beta_{11} CR_{it} \\
 & + \beta_{12} Emotion_t + \beta_{13} gender_i + \beta_{14} S.Count_{it} + \beta_{15} O.Count_{it} + \beta_{16} Hour_t \\
 & + \beta_{17} Weekday_t + \beta_{18} POR_{it} + \beta_{19} PCR_{it} + \mu_i + \varepsilon_{it}
 \end{aligned}$$

where i is each customer and t is the email campaign number. Here, dependent variable $click_{it}$ is the measurement of click behavior by consumer i in campaign t . Independent variables used in study 1 are tested in test 2 as well (except gap between days). In addition to variables from study 1, one independent variable and two control variables are added: independent variable, $Emotion_t$, is the emotional tone of text in email contents and it is measured by LIWC; control variable PCR_{it} (previous click rate) is the measurement of each customer's previous open rate (the number of emails clicked divided by the number of emails that a customer has opened); and control variable open count ($O.Count_{it}$) is the number of email advertising contents exposures.

Also, omitted (unobserved) heterogeneity should be caught by individual customer's random effects term, μ_i . Since this email dataset does not have demographic information about the individual customer, the individual difference among the customer should be controlled by individual level. Each customer has a different background such as ethnicity, income, education, interest in fashion, etc. Since each customer is different, their open behaviors might be influenced by omitted/unobserved characteristics of each customer. Therefore, it is necessary to control differences among customers by having random effect terms. Since each customer's unique open behaviors are recorded repeatedly, the author can differentiate and control that difference.

Correlation

Correlations among variables were measured to check multicollinearity (Table 8). Previous click rate is highly correlated with click behaviors ($r = 0.55, p < 0.001$); gain frame message is highly correlated with price discount promotion appeal (PDP; $r = 0.82, p < 0.01$); previous open

recency is highly correlated with previous open rate ($r = 0.42, p < 0.01$); click recency is highly related with purchase recency ($r = 0.61, p < 0.01$), number of email sent ($r = 0.52, p < 0.01$), and previous click rate ($r = 0.36, p < 0.01$); purchase recency is highly correlated with the number of email received ($r = 0.86, p < 0.01$) and the number of email which a customer has opened ($r = 0.62, p < 0.01$); the number of email received is highly correlated with the number of emails opened ($r = 0.77, p < 0.01$). Based on these high correlations, Variance Inflation Factor is checked while building the final model.

Stepwise Regression

To build the final model and check the significance of the model, based line random effects model with fixed effects intercept was tested (Table 9, column (1)). After then, one independent variable (Table 9 column (2)-(13)) or one control variable (Table 9 column (14)-(20)) was tested. Then, independent variables with largest explanation power was chosen and added to the model (forward stepwise regression). After the addition of independent variable, the increased explanation power was checked for validity of the model.

RESULT

Table 10 reports the final outcome of mixed effects logistic regression model in the odd ratio. Addition of one variable (click recency) to the baseline mixed effects logistic regression model with control variables was statistically significant ($\chi^2(2, N=84,295) = 90.72, p < 0.01$); addition of Specific Product Type to the mixed effects logistic regression model with control variables and promotion was statistically significant ($\chi^2(2, N=84,295) = 87.29, p < 0.01$); addition of price discount promotion variable to the mixed effects logistic regression model with control variables and independent variables (open recency and promotion) was statistically significant ($\chi^2(2, N=84,295) = 38.65, p < 0.01$); addition of season variable to the mixed effects logistic regression model with control variables and independent variables was statistically significant ($\chi^2(2, N=84,295) = 19.02, p < 0.01$); addition of emotion variable to the mixed effects logistic

regression model with control variables and independent variables was statistically significant ($\chi^2(2, N=84,295) = 28.39, p < 0.01$); and finally, addition of loss frame variable to the mixed effects logistic regression model with control variables and independent variables was statistically significant ($\chi^2(2, N=84,295) = 6.73, p < 0.01$).

Among 11 independent variables, 6 variables (click recency, specific product type, price discount promotion, season, emotion, and loss frame) were included in the final model. McFadden's pseudo R^2 was measured to check the explanation power of the final model (McFadden, 1974): Pseudo R^2 of the final model ($R^2 = 1 - \frac{\text{Loglikelihood of Full model}}{\text{Loglikelihood of Intercept model}}$) was 0.2392 which means the final model could explain the 23.92% of the clicking behaviors of the email recipient. However, the pseudo R^2 of the model with only control variables were 0.235 and surprisingly, the explanation power of the independent variables was minimal (0.42%). Among those control variables (gender, sent count, open count, previous open rate, previous click rate, weekday, and daytime), the log-likelihood of previous click rate is -24,701 (loglikelihood of baseline intercept model is 31,847.020) and it has pseudo R^2 , .2243. Although rest of independent and control variables have small explanation power about consumer's click behaviors on email advertising, it is still necessary to investigate which email contents influence the consumer behaviors.

Based on the final model, the email advertising with a body contents (1) describing price discount promotion ($e^{\beta_{PDP}} = 1.316, p < 0.01$), (2) describing specific product types ($e^{\beta_{SPT}} = 1.152, p < 0.01$), (3) with seasonal appeal ($e^{\beta_{season}} = 1.137, p < 0.01$), (4) stated in loss-frame ($e^{\beta_{Loss}} = 1.189, p < 0.01$), and (5) emotional appeal ($e^{\beta_{Emotion}} = 0.997, p < 0.01$) are statistically significant. More specifically, (1) when there is a price discount promotion description in the email body contents, the odd of clicking is increased by 15.2% than plain contents email advertising (H1.b is supported); (2) when there is a specific product type description in the email body contents, the odd of clicking is increased by 31.6% than plain contents email advertising (H9.b is supported); (3) when there is the email body contents with season appeal, the odd of clicking is increased by 13.7% than plain contents email advertising (H7.b is supported); (4) when there is

the email body contents stated in loss-frame, the odd of clicking is increased by 18.9% than plain contents email advertising (H3.b is supported); (5) when there is one unit increase in the emotional appeal of stated email body contents, the odd of clicking is decreased by 0.3% than plain contents email advertising (H12.a is rejected due to the direction of coefficient). Finally, recency was checked and email advertising is likely to be clicked more ($e^{\beta_{CR}} = 1.276, p < 0.01$) when email was not recently clicked by the customer. In other words, when one unit increases in recency, there is odd of email clicking is increased by 27.6% (H11 is supported). On the other hand, other hypotheses - email contents in gain-frame (H2.b), email contents describing utilitarian attributes (H4.b), contents describing utilitarian attributes (H5.b), email contents describing company's socially responsibility (H6.b), and email contents describing holiday celebration (H8.b) – are rejected.

Table 8. Correlation Table

	<i>clicked</i>	<i>PDP</i>	<i>Gain</i>	<i>Loss</i>	<i>Util</i>	<i>Hedonic</i>	<i>CSR</i>	<i>Season</i>	<i>Holiday</i>	<i>SPT</i>	<i>Tone</i>	<i>OR</i>	<i>CR</i>	<i>S.Count</i>	<i>O.Count</i>	<i>POR</i>
<i>clicked</i>																
<i>PDP</i>	0.01***															
<i>Gain</i>	-0.01*	0.82***														
<i>Loss</i>	0.01**	-	-													
<i>Utilitarian</i>	0.00	-0.01*	-	0.01***												
<i>Hedonic</i>	0.03***	0.23***	0.11***	-	0.07***											
<i>CSR</i>	0.01*	-	-	0.05***	-	0.13***										
<i>Season</i>	0.01***	0.09***	0.06***	-	0.01***	-	0.07***									
<i>Holiday</i>	0.00	0.21***	0.21***	0.13***	-	0.17***	-	-								
<i>SPT</i>	0.06***	-	-	0.12***	-	0.19***	-	0.09***	0.11***							
<i>Tone</i>	-0.01**	0.10***	0.12***	-	0.04***	-	0.18***	-	-	-						
<i>OR</i>	0.03***	0.16***	0.16***	0.20***	-	0.09***	-	0.29***	-	-	-					
<i>CR</i>	-	0.03***	0.03***	-	-0.01**	0.05***	-0.01*	0.06***	0.17***	0.26***	-	-				
<i>S.Count</i>	0.03***	0.05***	0.07***	0.01***	-	-	-	0.04***	0.01***	0.00	0.01***	-	0.01***			
<i>O.Count</i>	-	0.17***	0.04***	-	-	-	-	0.11***	-	-	-	-	0.28***			
<i>POR</i>	0.17***	0.08***	0.15***	0.04***	0.07***	0.03***	0.02***	0.02***	0.02***	0.18***	0.02***	0.04***	0.04***	0.13***	0.52***	
<i>PCR</i>	0.06***	0.07***	0.12***	-	-	-	-	0.14***	-	-	-	-	-	-	-	-
	0.08***	-	0.06***	0.08***	0.14***	0.04***	0.03***	-	0.02***	0.02***	0.07***	0.09***	-	0.28***	0.77***	
	0.06***	0.02***	0.11***	0.06***	0.01***	0.02***	0.02***	0.14***	-0.01**	0.06***	0.07***	0.19***	-	0.19***		
	0.06***	0.02***	0.02***	0.02***	0.01***	0.01***	0.00	-	0.01**	-0.01**	0.02***	-	-	0.42***	0.44***	
	0.55***	-0.01**	-	0.02***	0.03***	0.03***	0.01***	0.02***	0.00	0.04***	0.02***	0.03***	-	-	-	-
			0.03***	-	-	-	-	0.03***	-	0.04***	0.02***	0.03***	0.36***	0.09***	0.12***	0.08***

*p<0.05.; **p<0.01; ***p<0.001

Table 9. The Impact of Email Advertising Contents and Control Variables on Clicking

The Email Click behavior																				
Dependent variable:																				
clicked																				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
PDP		1.134*** (0.025)																		
Gain			0.970 (0.023)																	
Loss				1.147*** (0.051)																
Util					1.018 (0.036)															
Hedonic						1.225*** (0.024)														
Holiday							0.991 (0.023)													
Season								1.117*** (0.024)												
CSR									1.074 (0.047)											
SPT										1.574*** (0.026)										
OR											1.014 (0.011)									
CR												0.703*** (0.020)								
Emotion													0.998*** (0.0004)							

Table 9 (continued)

gender	0.898*	
	(0.058)	
S.Count	0.994***	
	(0.0004)	
)	
O.Count	0.989***	
	(0.001)	
POR	0.997***	
	(0.001)	
PCR	1.086***	
	(0.001)	
Weekday : Mon		1.067
		(0.044)
Weekday : Sat		1.056
		(0.048)
Weekday : Sun		0.738***
		(0.047)
Weekday : Thu		0.754***
		(0.029)
Weekday : Tue		0.901***
		(0.033)
Weekday : Wed		0.659***
		(0.044)
Hour: 8AM		1.786***
		(0.057)

Table 9 (continued)

Hour: 9AM																				1.240*** (0.054)
Hour: 10AM																				1.120** (0.057)
Hour: 11AM																				0.868** (0.059)
Hour: 12PM																				0.849** (0.077)
Hour: 1PM																				0.713*** (0.062)
Hour: 2PM																				1.216*** (0.068)
Hour: 3PM																				0.441*** (0.124)
Hour: 4PM																				0.868 (0.138)
Hour: 5PM																				1.160 (0.119)
Hour: 6PM																				0.791 (0.152)
Hour: 7PM																				0.287*** (0.168)
Constant	0.127***	0.115***	0.130***	0.126***	0.127***	0.110***	0.127***	0.123***	0.119***	0.090***	0.126***	0.127***	0.144***	0.131***	0.155***	0.150***	0.143***	0.020***	0.144***	0.115***

Table 9 (continued)

	(0.028)	(0.033)	(0.032)	(0.028)	(0.028)	(0.032)	(0.028)	(0.029)	(0.053)	(0.034)	(0.028)	(0.025)	(0.042)	(0.032)	(0.030)	(0.028)	(0.036)	(0.035)	(0.031)	(0.056)
Observations	84,295	84,295	84,295	84,295	84,295	84,295	84,295	84,295	84,295	84,295	84,295	84,295	84,295	84,295	84,295	84,295	84,295	84,295	84,295	84,295
Log Likelihood	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Akaike Inf. Crit.	31,847.020	31,834.000	31,846.150	31,843.440	31,846.900	31,809.560	31,846.940	31,836.230	31,845.880	31,685.900	31,846.270	31,683.480	31,839.450	31,845.340	31,715.080	31,673.330	31,834.850	24,701.480	31,743.850	31,467.790
Bayesian Inf. Crit.	63,698.040	63,674.000	63,698.310	63,692.870	63,699.790	63,625.120	63,699.870	63,678.450	63,697.760	63,377.800	63,698.540	63,372.960	63,684.900	63,696.680	63,436.160	63,352.650	63,675.700	49,408.950	63,503.700	62,963.580
Bayesian Inf. Crit.	63,716.730	63,702.030	63,726.330	63,720.900	63,727.820	63,653.150	63,727.900	63,706.480	63,725.790	63,405.830	63,726.570	63,400.980	63,712.930	63,724.710	63,464.190	63,380.680	63,703.720	49,436.980	63,578.440	63,094.360

Note:

*p<0.1; **p<0.05; ***p<0.01

Table 10. The Effect of Email Advertising's Body Contents on Clicking

The email click behavior								
<i>Dependent variable:</i>								
clicked								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PCR		1.086*** (0.001)	1.092*** (0.001)	1.092*** (0.001)	1.092*** (0.001)	1.092*** (0.001)	1.092*** (0.001)	1.092*** (0.001)
CR			1.283*** (0.023)	1.284*** (0.023)	1.282*** (0.023)	1.278*** (0.023)	1.278*** (0.023)	1.276*** (0.023)
SPT				1.325*** (0.031)	1.349*** (0.031)	1.381*** (0.032)	1.301*** (0.034)	1.316*** (0.034)
PDP					1.207*** (0.031)	1.175*** (0.031)	1.150*** (0.031)	1.152*** (0.031)
Season						1.146*** (0.031)	1.128*** (0.031)	1.137*** (0.031)
Emotion							0.997*** (0.001)	0.997*** (0.001)
Loss								1.189*** (0.068)
Constant	0.127*** (0.028)	0.013 (0.085)	0.012 (0.088)	0.010 (0.090)	0.009 (0.092)	0.009 (0.092)	0.012 (0.108)	0.011 (0.109)
Observations	84,295	84,295	84,295	84,295	84,295	84,295	84,295	84,295
Log Likelihood	- 31,847.02 0	- 24,362.91 0	- 24,317.55 0	- 24,273.90 0	- 24,254.58 0	- 24,245.07 0	- 24,230.87 0	- 24,227.51 0
Akaike Inf. Crit.	63,698.04 0	48,775.82 0	48,687.10 0	48,601.81 0	48,565.16 0	48,548.14 0	48,521.74 0	48,517.01 0
Bayesian Inf. Crit.	63,716.73 0	49,009.37 0	48,929.99 0	48,854.04 0	48,826.74 0	48,819.06 0	48,802.01 0	48,806.62 0

Note:

*p<0.1; **p<0.05; ***p<0.01

DISCUSSION AND LIMITATION

This study investigated the effects of the email contents in the panel data set. Although findings of this study supported that some elements in email contents are influencing the consumer's click behaviors (Pseudo $R^2 = .2392$), but surprisingly, email contents have a marginal explanation power to explain the email recipients' click behaviors. Also, it found that previous click rate (the number of previous email click(s) divided by the number of previous email open(s)) significantly explains the most of consumer's click behaviors on the email advertising (Pseudo $R^2 = .2243$)³.

The low explanation power of the model is the limitation of this study and it is necessary to find the reason why low Pseudo R^2 occurs in the model. First possible reason could be the characteristics of the product. According to FCB grid (Vaughn, 1980; 1986), fashion clothing is placed on the third quadrant of the grid and Vaughn argued that consumer "feel"- "learn"- "do" the product on this quadrant. However, email advertising does not provide any feeling experience to the email recipient and this advertising message relies on the product images and descriptions in email advertising. Thus, email advertising may not be a proper communication channel for Internet-based clothing company since customers only experience the product through their purchases or customers guess the quality of the produced based on their similar brand product experience.

Second possible explanation can be found in the hierarchy of effects model. Consumers are exposed to the advertising several times and can develop his/her interests and desires in his/her own pace. In other words, focusing on several exposures, if the effects of previous advertisings' statements and appeals are cumulative and remains in consumer's memory, then it can influence the current recipient's click behaviors with current advertising message. It may explain the low explanation power of the advertising contents variables; further investigation should made in the future study.

³ $1 - \frac{\text{Loglikelihood}_{PCR}}{\text{Loglikelihood}_{Intercept}} = 1 - \frac{-24701.81}{-31847.02} = .2243$

Third possible explanation might be the problem of data. 40.44% of recipients who opened the email advertising didn't make a click in his/her customer lifetime. Also, 18.54% of customers made only one click during his/her customer (while they opened 12.15 email advertisings in average) and 10.74% of customers made two clicks (while they opened 17.86 email advertisings in average). Therefore, dependent variable, click behavior, is dominated by zeros and there is occasional click behavior marked with one. Thus, the previous click rate which is close to zero is likely to explain most of click behavior by the message recipient. Then as a follow-up study, what kinds of email advertising contents have influenced the customer's first click was investigated with second possible explanation above.

Final possible explanation might be the psychology of email recipient. Especially, in this dissertation, the effects of email advertising on recipient's psychology such as attitude toward the advertising, attitude toward the brand, or skepticism toward the advertising were not investigated. These variables may function as a mediator or a moderator and may increase/decrease the effect of email contents on clicking behavior. Further investigation of the psychology of email advertising recipient is required in the future study.

Chapter 6. Study 3. The Effects of Email Advertising Body Contents on Email Advertising Recipient's Purchase Action

INTRODUCTION

After email opening and clicking, the customer will be at the company's webpage at which an email marketer wished to lead him/her. There will be more detailed information about the product, and the customer make his/her purchase decision there. Prior information given on the email advertising to the customer and customer's interest and desire will formulate the purchase decision. Some previous studies investigated the effects of elements in email advertising (such as personalization (Sahni, Wheeler, & Chintagunta, 2018), frequency of email delivery (Zhang et al., 2017), targeted coupons (Sahni et al., 2017)) on the purchase decision. However, the effects of other advertising elements on purchase decisions are not investigated yet. Thus, following Chandy and colleagues' methodology (2001) and previous two studies in this dissertation, study 3 examines the effect of email contents on purchase.

MODELING BUILDING

All independent variables in study 1 and study 2 were used to test its impact on the purchase. Each independent variable's impact on purchase was examined and then forward stepwise regressions were used to final model building. First, the effect of control variables on the purchase was investigated. Surprisingly, the number of emails sent (S.Count), previous click rate, weekday (when it was sent), and hours (in a day when it was sent) were significant. The explanation power of weekday was strongest, followed by hours, S.Count, and PCR. Weekdays and hours are used for control variables since the addition of S.Count and PCR do not significantly contribute to the explanation power; therefore, two control variables (weekday and hours) are used for the final model.

First, elements in the subject line were tested (Table 12). Price Discount Promotion ($e^{\beta_{PDP}} = 0.554$; $p < 0.01$), Utilitarian attribute ($e^{\beta_{util}} = 0.652$; $p < 0.05$), Hedonic attribute ($e^{\beta_{Hedonic}} = 0.526$; $p < 0.01$), Gain-frame ($e^{\beta_{gain}} = 0.555$; $p < 0.01$), Loss-frame ($e^{\beta_{loss}} = 1.788$; $p < 0.01$), specific product type ($e^{\beta_{SPT}} = 0.825$; $p < 0.05$), description about corporate social responsibility ($e^{\beta_{CSR}} = 0.825$; $p < 0.05$), and holiday appeal ($e^{\beta_{holiday}} = 0.825$; $p < 0.01$) were statistically significant. Interesting findings are the loss-framed subject line and the subject line's statement about corporate social responsibility increased the odd of purchase while other elements decreased the odd of purchase when it is used in the subject line. The explanation power of price discount promotion was the strongest, followed by gain-frame, hedonic attribute, holiday appeal, etc.

Moreover, elements of email body contents were examined (Table 13). Click recency ($e^{\beta_{CR}} = 0.836$; $p < 0.05$), purchase recency ($e^{\beta_{PR}} = 0.905$; $p < 0.05$), gain-frame ($e^{\beta_{gain}} = 1.689$; $p < 0.01$), price discount promotion ($e^{\beta_{PDP}} = 2.488$; $p < 0.01$), hedonic attribute ($e^{\beta_{Hedonic}} = 1.248$; $p < 0.05$), holiday appeal ($e^{\beta_{holiday}} = 1.814$; $p < 0.01$), season appeal ($e^{\beta_{Season}} = 0.592$; $p < 0.01$), description about corporate social responsibility ($e^{\beta_{CSR}} = 0.563$; $p < 0.01$), description about specific product type ($e^{\beta_{SPT}} = 1.257$; $p < 0.05$), and emotional appeal ($e^{\beta_{emotion}} = 0.996$; $p < 0.01$) were statistically significant. Interesting finding is loss-framed subject line and subject line's statement about corporate social responsibility increased the odd of purchase while other elements decreased the odd of purchase when it is used on the subject line. The explanation power of each variable on purchase behavior is following: price discount promotion, gain frame, season appeal, description about corporate social responsibility, etc.

Based on individual variable's explanation power, forward stepwise regression was conducted and independent variable was added to the model and the effect of variable

addition was measured (Table 12). Addition of email contents with price discount promotion ($\chi^2(2, N=10,516) = 50.23, p < 0.05$) was statistically significant to the model; addition of subject line stated in gain frame ($\chi^2(2, N =10,516) = 7.77, p < 0.05$) was statistically significant; addition of email contents with season appeal $\chi^2 (2, N=10,516) = 17.93, p < 0.05$) was statistically significant; addition of email subject line with hedonic attribute description ($\chi^2(2, N =10,516) = 17.93, p < 0.05$) was statistically significant; addition of email subject line with holiday celebration description ($\chi^2(2, N =10,516) = 8.07, p < 0.05$) was statistically significant; and addition of all other variables were **NOT** statistically significant.

RESULT

After forward stepwise regression process, baseline model (table 14 column (1)) is used to calculate McFadden's Pseudo R^2 of the final model. The final model has Pseudo R^2 , 0.0397, while control variables only model (Table 14 column (2)) has Pseudo R^2 , 0.0222. Although Pseudo R^2 of independent variables final model is not large, there are some interesting findings. First, price discount promotion in email contents increased the likelihood of purchase by 101% (Table 14 (7)) and supported H1.d. Email subject line with PDP increased the odd of email opening by 12% (Study 1; Table 6 (11)) and email body with PDP increased the odd of email click by 15% when email was opened (Study 2; Table 10 column (8)). Thus, price discount promotion certainly drives the email recipient to open the email, click the email contents, and make them motivated to purchase the item through email advertising.

On the other hand, email advertising with a gain-framed subject line ($e^{gain^{subject}} = 0.693$), email body contents with season appeal ($e^{season^{body}} = 0.693$), a subject line with hedonic attribute appeal ($e^{hedonic^{subject}} = 0.543$), a subject line with holiday appeal

($e^{holiday^{subject}} = 0.742$), lower the odd of purchase. Thus, the hypotheses — H2.c, H6.c, H7.d, H8.c — are rejected due to the direction of coefficient and all other hypotheses related to purchase are rejected because they were not statistically significant.

Table 11. The Impact of Email Advertising Control Variables on Purchase

The email purchase behavior (Control Variables)									
<i>Dependent variable:</i>									
purchased									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
gender		0.974 (0.105)							
sentCount			0.996*** (0.001)						
openCount				0.996* (0.002)					
totalEmailClicked					0.996 (0.006)				
openRate.100						1.000 (0.001)			
clickRate.100							1.004** (0.002)		
Monday								0.737** (0.153)	
Saturday								0.742* (0.163)	
Sunday								0.668** (0.174)	
Thursday								0.547*** (0.116)	
Tuesday								0.568*** (0.126)	
Wednesday								1.440*** (0.136)	
8AM									0.770 (0.234)
9AM									1.110 (0.212)
10AM									0.646* (0.225)
11AM									0.907 (0.227)
12PM									1.182 (0.270)
1PM									0.772

Table 11 (continued)

									(0.244)
2PM									1.329 (0.245)
3PM									0.409 (0.630)
4PM									0.761 (0.517)
5PM									0.385* (0.556)
6PM									3.428*** (0.395)
7PM									0.00002 (54.580)
Constant	0.057*** (0.069)	0.058*** (0.075)	0.066*** (0.084)	0.062*** (0.079)	0.059*** (0.077)	0.058*** (0.100)	0.048*** (0.101)	0.073*** (0.086)	0.062*** (0.208)
Observations	10,516	10,516	10,516	10,516	10,516	10,516	10,516	10,516	10,516
Log Likelihood	-2,677.149	-2,677.118	-2,673.176	-2,675.317	-2,676.931	-2,677.139	-2,673.981	-2,645.751	-2,648.131
Akaike Inf. Crit.	5,358.297	5,360.236	5,352.352	5,356.634	5,359.861	5,360.279	5,353.963	5,307.502	5,324.262
Bayesian Inf. Crit.	5,372.818	5,382.018	5,374.134	5,378.416	5,381.643	5,382.061	5,375.745	5,365.587	5,425.911

Note:

*p<0.1; **p<0.05; ***p<0.01

Table 12. The Impact of Email Advertising's Subject Line on Purchase

The email purchase behavior (Subject line)										
Dependent variable:										
purchased										
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
PDP		0.554*** (0.081)								
Utilitarian			0.652** (0.177)							
Hedonic				0.526*** (0.134)						
gain					0.555*** (0.081)					
loss						1.788** (0.283)				
SPT							0.825** (0.090)			
CSR								1.760** (0.238)		
Season									1.045 (0.117)	
Holiday										0.669*** (0.092)
Constant	0.057*** (0.069)	0.075*** (0.075)	0.086*** (0.180)	0.103*** (0.137)	0.075*** (0.075)	0.033*** (0.286)	0.066*** (0.094)	0.033*** (0.241)	0.055*** (0.123)	0.079*** (0.098)
Observations	10,516	10,516	10,516	10,516	10,516	10,516	10,516	10,516	10,516	10,516
Log Likelihood	-2,677.149	-2,649.929	-2,674.455	-2,666.813	-2,650.038	-2,674.681	-2,674.883	-2,673.868	-2,677.078	-2,668.038
Akaike Inf. Crit.	5,358.297	5,305.858	5,354.909	5,339.625	5,306.075	5,355.362	5,355.767	5,353.735	5,360.156	5,342.075
Bayesian Inf. Crit.	5,372.818	5,327.640	5,376.691	5,361.407	5,327.857	5,377.144	5,377.549	5,375.517	5,381.938	5,363.857

Note:

*p<0.1; **p<0.05; ***p<0.01

Table 13. The Impact of Email Contents and Consumer's Recencies on Purchase

The email purchase behavior														
Dependent variable:														
purchased														
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
OR		0.959 (0.040)												
CR			0.836** (0.071)											
PR				0.905** (0.050)										
Gain					1.689** (0.094)									
Loss						1.325 (0.193)								
PDP							2.488** (0.117)							
Utilitarian								0.750* (0.159)						
Hedonic									1.248** (0.087)					
Holiday										1.814** (0.081)				
Season											0.592** (0.095)			
CSR												0.563** (0.136)		
SPT													1.257** (0.099)	
Emotion														0.996** (0.001)
Constant	0.057** (0.069)	0.057** (0.069)	0.054** (0.075)	0.058** (0.067)	0.039** (0.102)	0.057** (0.070)	0.027** (0.125)	0.058** (0.070)	0.049** (0.093)	0.046** (0.079)	0.065** (0.072)	0.097** (0.140)	0.048** (0.106)	0.078** (0.126)
Observations	10,516	10,516	10,516	10,516	10,516	10,516	10,516	10,516	10,516	10,516	10,516	10,516	10,516	10,516

Table 13 (continued)

Log Likelihood	-	-	-	-	-	-	-	-	-	-	-	-	-
	2,677.1	2,676.5	2,673.7	2,675.1	2,660.5	2,676.1	2,640.6	2,675.3	2,673.8	2,650.4	2,660.6	2,669.1	2,672.9
d	49	75	02	81	47	47	31	88	12	74	68	18	59
Akaike Inf. Crit.	5,358.2	5,359.1	5,353.4	5,356.3	5,327.0	5,358.2	5,287.2	5,356.7	5,353.6	5,306.9	5,327.3	5,344.2	5,354.7
	97	50	04	61	93	93	63	76	24	47	35	36	18
Bayesian Inf. Crit.	5,372.8	5,380.9	5,375.1	5,378.1	5,348.8	5,380.0	5,309.0	5,378.5	5,375.4	5,328.7	5,349.1	5,366.0	5,376.4
	18	32	86	43	75	75	45	58	06	29	17	18	99

Note:

*p<0.1; **p<0.05; ***p<0.01

Table 14. The Effect of Email Advertising's Subject Line and Body Contents on Purchase.

The effect of email advertising's subject line and body contents on purchase behavior							
<i>Dependent variable:</i>							
	Purchased						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
PDP ^{body}			2.432*** (0.142)	1.737*** (0.146)	1.962*** (0.149)	1.953*** (0.150)	2.019*** (0.150)
Gain ^{subject}				0.623*** (0.097)	0.675*** (0.101)	0.670*** (0.102)	0.693*** (0.102)
Season ^{body}					0.626*** (0.114)	0.660*** (0.115)	0.693*** (0.117)
Hedonic ^{subject}						0.570*** (0.176)	0.543*** (0.178)
Holiday ^{subject}							0.742*** (0.105)
Constant	0.057*** (0.069)	0.110*** (0.238)	0.063*** (0.274)	0.125*** (0.272)	0.107*** (0.279)	0.195*** (0.338)	0.277*** (0.356)
Observations	10,516	10,516	10,516	10,516	10,516	10,516	10,516
Log Likelihood	-2,677.149	-2,617.658	-2,592.543	-2,588.656	-2,579.688	-2,574.876	-2,570.839
Akaike Inf. Crit.	5,358.297	5,275.316	5,227.086	5,221.313	5,205.376	5,197.752	5,191.678
Bayesian Inf. Crit.	5,372.818	5,420.529	5,379.560	5,381.047	5,372.371	5,372.008	5,373.194

Note: *p<0.1; **p<0.05; ***p<0.01

DISCUSSION AND LIMITATION.

Although some previous researches investigated the effect of email advertisements on purchase behaviors, what elements in email advertising drive the purchase decision was not yet studied. This study tested the impact of factors in the subject and email body contents on purchase behavior of the individual customer and gave some managerial implications for the clothing company's managers. Price discount promotion increases the odds of purchase by 101%, and this finding is consistent with previous literature on email advertising coupon (Sahni et al., 2017). On the other hand, email advertising with a gain-framed subject, email body contents with season appeal, a subject line with hedonic attribute appeal, and subject line with holiday appeal lowered the odd of purchase. These findings will provide directions for the clothing company's managers, and these findings can be tested with their own company's customer purchase data through email advertising.

This study also may extend our knowledge in email advertising and contribute to academic research. Micheaux (Micheaux, 2011) investigated the effect of advertising-like email advertising (vs. non-advertising-like email advertising) but didn't investigate the impact on message recipient's purchase actions. There is no study which examined the customer's final purchase, and this study shed light on the area where little attention was given in email advertising studies.

Like the previous two studies, study 3 suffers from low Pseudo R^2 . Considering the purchase decision journey, a consumer may consider the value of the product or may purchase later after consideration. As argued in study 2 discussion, regarding the product type, a consumer may be more cautious about making a purchasing decision on clothing product type through the Internet company because he/she couldn't feel the product before. Thus, valuing the product is extremely difficult for the consumers, and he/she may make a

decision later on. On the other hand, there are sales generated through the search engine and direct website visits. In other words, email subscribers can search the company's name through the search engine, visit the webpage, and purchase the item later which are not caught by a third-party email service provider and should be investigated in the future study. Therefore, the next research should examine the effect of email advertisings with company's website visiting logs.

Chapter 7. Discussion

This dissertation is designed to apply the hierarchy of effects (AIDA model) to the test of the effectiveness of email advertising. The three studies in this dissertation follow the processes and stages of the AIDA model and measure email advertising recipients' responses in each stage and changes in his/her behavior in their journey throughout the hierarchy. This dissertation shows that email advertising is a good testing ground for the existence and workings of the hierarchy of advertising effects.

A key finding of this dissertation from the perspective of email advertisers and marketers is the importance of price discount promotion. It is found that price discount promotion not only increases the odds of opening and clicking but also increases the odds of purchasing. This finding is in line with the existing literature showing that price discount motivates consumers to switch the brand (Chintagunta, 1993; Guadagni & Little, 1983; Gupta, 1988; Inman & McAlister, 1993). In this sense, price discount information included in email advertising motivates message recipients to investigate the product and go up the hierarchy further.

This dissertation provides a guide for the future study in email advertising and, more generally, digital advertising. The effects of advertising used to be measured in terms of proxy variables which were believed to represent the potential customer behaviors. With the aid of technology, advertisers and marketers nowadays can measure not only the target outcome variable but also intermediate consumer decision journey behaviors (such as opening and clicking on email advertising) directly and accurately. Thus, in this study, we can match the previous proxy variables with the behavioral outcomes of email advertising: opening behavior for the proxy of interest and clicking behavior for the proxy of desire.

Previous email advertising studies did not consider the whole persuasive information processing and focused on one or two outcomes of advertising. By providing the theoretical background and an empirical test on all the stages in email advertising's persuasion process, this dissertation has shown a pathway for exploring the whole effects of advertising in the hierarchy model in total. Thus, this dissertation can serve as a future guide for further research in this important subject of advertising research.

This dissertation also has two important implications for advertisers and marketers. First, the hierarchical structure of email advertising effects requires companies to adopt different advertising strategies for a different stage or kind of a product. Admittedly, each company has a diverse portfolio of products, and its advertising strategy for the product should be different and carefully implemented. For example, if a product is about to be introduced to the market, an advertiser may adopt a strategy focusing on email subject line to increase the open rate. By opening more, customers are informed more about the new product and may increase his/her desire on it. In this way, each company may have a different marketing goal to achieve and may find the best persuasive communication strategy that drives customers' opening, clicking, and purchasing behaviors. This dissertation has proposed potential email advertising strategies which each company may take advantage of.

Second, email advertisers and markets would better provide the right messages to the right customers at their different stages in the hierarchy of effects model. Email advertising is permission-based advertising (Godin, 1999). This means that email advertising recipients are aware of the existence of a product/service/brand/company. Through email advertising, therefore, advertisers can communicate with large numbers of prospective and existing customers who have already passed the initial stage of the hierarchy model. From the customer relationship management perspective, advertisers and

marketers can have a better chance to retain the customers and strengthen the relationship between the brand and customers through repeated email advertisings (Reinartz & Kumar, 2003). However, advertisers and marketers are to be strategic in their choice of email advertising messages by taking account of the characteristics of targets. As is indicated in this dissertation, email opening and clicking can be proxies which gauge the level of interest and desire of the customer. As is found in study 1 of this dissertation, if the customer does not open the email advertising more than 100 days, then advertisers can motivate them by providing special price discount promotion in the subject line or in the email body contents for that specific customer. By way of this kind of strategy, advertisers and marketers can level up their customer's stages in the hierarchy of advertising effects leading up to future sales (Ansari & Mela, 2003). In this way, email advertisers can target their customers and enhance their relationships with customers by delivering the right messages to the right customers at the right moments.

Limitations of this Dissertation and Suggestions for Future Studies

This dissertation certainly has some limitations. First of all, the small Pseudo R² values of the studies here in this dissertation make it hard to generalize its findings. In the three studies contained in this dissertation, the prediction power of advertising elements for the outcomes of email advertising (opening, clicking, and purchasing) is not exceeding 10%. Certainly, there are many other unknown outcomes of advertisings which are not included in the model such as attitude toward the advertising, attitude toward the brand, and skepticism toward the advertising. The inclusion of those consumer psychological variables may improve the prediction power of the model. This is a pathway to be pursued in the future study to improve the model.

Second, there is also a data limitation of this dissertation. The data set used here is from a clothing company's email advertising campaigns. As such, it is doubtful to generalize the findings of this study to other product categories. It is well known that the FCB grid (Vaughn, 1980; 1986) proposed four dimensions of product and service classifications based on both the level of consumer's involvement and the level of consumer's think/feel. Clothing is located in the third quadrant, which requires customer's low involvement but some thinking (Vaughn, 1986). Therefore, it is questionable whether the findings from this dissertation can be applicable to the products in other FCB grid quadrants. It would be much better if there would be further studies on email advertising for the products in other quadrants. Besides, even within the clothing category, consumer's level of involvement and thinking might be different depending on the price and brand of a specific product. For example, in the case of purchasing a wedding dress, a consumer's level of involvement and thought would be different from in buying an ordinary dress. Furthermore, the purchase decision-making processes of B2B and B2C products are also known to be different. Therefore, we should be very careful in generalizing findings from research on a particular product to other products in different FCB quadrants or even products within the same quadrant with different prices/brands. This also means that we need much more researches on various products following this line of research framework fully understand the effects of email advertising.

Finally, in this dissertation, a linear relationship between each independent variable and the dependent variable is investigated. This kind of study needs to be complemented by the inclusion of the interaction effect of independent variables in the future. For example, both the subject line with price discount promotion and the subject line with loss frame statement increase the odd of opening of the email recipient, respectively. The usage of two elements together on the subject line of email advertising may or may not enhance

the recipients' opening behavior of email advertising. Thus, interaction effects among email advertising elements on opening, clicking, and purchasing would better be examined in the future study.

This dissertation investigates the effects of email advertising on consumer behavior via the hierarchy of advertising effects model. The email advertising recipients' three behaviors - opening, clicking, and purchasing - correspond to the stages in the hierarchy model and the panel data set on them is used to test how the model works in the specific case of a clothing marketing company's email advertising. This dissertation contributes to filling the gap in the existing literature on email advertising research. Despite some limitations mentioned above, this dissertation can be used as a guide for future email advertising research for academicians and for the development of effective email advertising strategies for advertising practitioners.

Appendix: Coding Book for Email Subject Line and Content

1. Is there (a) price discount promotion element(s)?
 - a. Yes
 - b. No

Promotion element means monetary/financial benefits that an email recipient may receive with purchase such as 20% off or \$5 off. (Price(discount) promotion)

2. Utilitarian and Hedonic attributes:
 - a. Utilitarian
 - b. Hedonic
 - c. None of them all
 - d. All of them

Utilitarian goods: those which provide rational and cognitive-oriented benefits

Hedonic Goods: those which are highly dependent on their sensory characters

A focus on the sensory pleasures or hedonic benefits provided by interaction with products or services.

3. Seasonal Appeals:
 - a. Spring
 - b. Summer
 - c. Fall
 - d. Winter
 - e. None of them all

If there are season related-words, please mark yes.

4. Holiday(s):
 - a. Yes
 - b. No

If there is a holiday-related words, please mark yes.

5. Gain-framed:
 - a. Yes
 - b. No

Gain-frame: Recommendation for message recipient to follow the instruction to have benefits such as “Free shipping”.

Examples from literatures:

- Use sunscreen to help your skin stay health
- Use sunscreen to decrease your risk of getting skin cancer

Examples from Coding Sample:

Use This Code for 20% Off Today Only.↯†

- 6. Loss-framed:
 - a. Yes
 - b. No

Loss frame: Recommendation for message recipient to follow the instruction to avoid the potential loss such as “last day of discount”

Examples from Literatures:

- Without sunscreen you increase your risk of developing skin cancer
- Without sunscreen you cannot guarantee the health of your skin

Example from Coding sample:

☐üüó↯†Last Day! - Up to 35% Off.↯†
Last Day: Don't forget to use your Discount Code!↯†☐üéÅ

- 7. Is there (a) specific product type(s)?
 - a. Yes
 - b. No

If there is a product type such as socks or backpacks, please mark yes.

- 8. Is there a corporate-social-responsibility element?
 - a. Yes
 - b. No

If there is a corporate social responsibility element such as “Ways to help w/ Hurricane Harvey Relief” on the subject, please mark yes.

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