Subsequent Reaction to Online Advertisement Disturbance

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***Abstract*—The objective of this study is to examine subsequent reaction to online advertisements in information searching prior to product purchase. Total valid samples were 283, out of 300 surveyed respondents. The mobile phone is used in this study as objects. The informativeness of online advertisements including dimensions of price/promotion, service, design, and function are what respondents intend to view. For respondents in the ad-neutral cluster, price/promotion and service are factors valued more importantly. On the contrary, for respondents in the ad-annoyed cluster, design and function are more important factors than price/promotion and service in terms of information upon seeing online advertisements. The results indicate internet users are aware of online advertisements and understand the disturbance caused by online advertisements is unavoidable. When internet users are disturbed and the annoyance can be tolerated, the information searching behavior goes on. When internet users are disturbed and the annoyance cannot be tolerated, the information searching behavior is terminated. The effort of designing online advertisements ended up with users' ignorance or termination can be wasted and useless. Marketers and advertisers not only try to attract attentions of online users with advertisements, but also need to restrict the annoyance or disturbance of online advertisements to an acceptable level to reduce the opportunities of being ignored or terminated.**

***Index Terms*—Information searching, Online advertising, Disturbance of advertising, Attitudes toward advertising, Mobile phones.**

I. INTRODUCTION

In the contemporary business environment, consumers are exposed to a huge amount of information on a daily basis, more than typical consumers can handle. This situation results in information overloading [1]. Consumers have tendencies to skip or ignore certain irrelevant information due to limited capabilities in information processing. Information is supplied by companies and demanded by consumers [2]. Consumers devote more effort in information searching in cases the products or services are with relatively high value and the purchases are of great importance. As for online advertising, consumers have certain control over what to browse in information searching. Online advertising can be designed interactively. Internet users are able to choose whether to interact with the advertisements, by clicking, browsing, or ignoring. Contents and the forms of internet advertising influence whether consumers pay attention to the information in advertisements.

Online advertisements have various formats. Banner advertisements are placed at the top or bottom of web pages. Some online advertisements have the appearances floating up or down along the sides of web pages. Different forms of advertisements may have distinct impacts on the way consumers perceive the information. Hence, this study intends to investigate whether certain forms of online advertisements would cause disturbance in information searching prior to product purchases.

II. LITERATURE REVIEW

A. Attitudes Toward Advertising

Internet is essential for advertising and has affected how the advertising industry functions [3]. The effectiveness of internet advertising has been a debatable issue due to a lack of a thorough method in evaluation. The number of clicks has been used as one of the calculations in estimating online advertising effectiveness. However, clicking on the online advertisements does not indicate that users have received the information contained in advertising, not even further infer that users are influenced by online advertising in purchasing decisions.

Attitudes toward online advertising have certain impacts on consumer behavior [4]. Consumers' usage of online advertising would be influenced by their attitudes [5]. In addition, positive attitudes toward online advertisements are more likely to generate subsequent purchasing behavior. Consumers' attitudes toward advertisements of personally favored products or brands are linked to the attitudes toward advertisements in general [6]. Consumers with favorable attitudes toward general advertisements may find particular advertisements of interests relatively acceptable, informative, or enjoyable. Informative or humorous advertisements were recognized as less intrusive [7]. Certain characteristics, informativeness or annoyance, of advertisements influence consumer attitudes toward the advertisements during searching processes.

Rotfeld [8] pointed out most of the bad advertising shared the same problem-"fail to focus on potential end customers and what they need to see and hear." Preferences of customers and the way they perceive advertisements need to be taken into considerations in marketing strategies, especially in designing advertisements targeted at certain segments of customers. Mittal [9] mentioned that public attitudes toward advertising worsened over time. Advertisements often include factual data about the products or services that are advantageous to companies in a persuasive appeal to influence consumers'

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purchasing decisions [10]. Although advertising is commonly considered as an external information source for consumers, consumers distrusted the information in advertisements and further generated negative attitudes toward the advertised brands once consumers believed advertising was exaggeration. Low credibility will lead to avoidance of advertisement [11].

B. Information Searching Behavior

The majority of internet users are active information seekers [12]. Since internet has been an important source for consumers in gathering relevant information during the decision-making process [13], providing valuable information with the contents that is easy to search can be imperative for companies with intentions to disseminate certain information.

The involvement of a product is determined by the relative importance of the product to consumers. Higher levels of involvement cause more intensive types of search, and highly involved consumers make more extensive use of information [14]. When consumers search information on the internet, "querying" and "link-clicking" are commonly applied [15], and are referred to "direct searching" and "browsing", respectively [16]. Consumers query online information with intentions to obtain certain knowledge. Other than querying, online users surf and look around for information that may or may not be relevant to the purpose-oriented searching. Active searching behavior leads positive influences in the decision processing advancing from the information searching stage to the decision making stage.

In order for advertisements to be effective, the repetitions are exercised to create strong memories or as a way to remind consumers certain characteristics of products or services, and further decrease the willingness to seek for alternatives. Moreover, if the repetitions are activated using different advertising contents for the same products, the decreasing effect is much stronger [17]. However, frequent repetitions make consumers feel annoyed, leading negative attitudes toward the advertisements. Consumers may skip or ignore commercials on their favorite social media sites [18]. Web users are more likely to avoid advertisements when they expect a negative experience or the content is doubtful or not relevant to them [19]. How annoyance consumers feel in terms of various types of online advertising is not exclusively studied in the literature. This study intends to examine disturbance of various types of online advertisements and subsequent behavior to fill in the gap in the literature and to provide a baseline for further research.

III. RESEARCH METHODOLOGY

A. Research Design

A questionnaire was designed and a survey was administered in Taiwan. Information searching behavior, attitude toward advertising, general purchasing behavior of mobile phones, perceived annoyance of various types of internet advertisements are included in the questionnaire.

The questionnaire of this study was designed based on findings in the literature, and was revised following suggestions from professionals and opinions from those participated in the trial surveys. Since college students are frequent users of internet and are knowledgeable to search online information, college students are considered appropriate to be potential respondents of the survey. Mobile phones are used as the object in the study due to the familiarities of the products to college students and abundance of product-related information provided online.

1) Constructs Used to Measure Informativeness of Online Advertising

The seven-point Likert scales are used to measure the informativeness of online advertisements. Higher score indicates the specific types of information are more preferred by respondents while viewing advertisements. Four dimensions are included in the constructs to measure informativeness, including price, function, design, and service.

2) Constructs Used to Measure Annoyance of Online Advertising

A set of nested questions is designed to measure annoyance of online advertisements. Five questions are included to describe various forms of online advertisements. Upon answering to whether certain forms of online advertisements can be annoying or not, respondents are further questioned about the subsequent behavior in response to the annoyance. If respondents are affirmative to annoyance of a certain type of online advertisements, following questions are to ask respondents whether they terminate the searching behavior or they continue searching for what they intend to. If respondents do not feel annoyed upon seeing certain types of online advertisements during searching processes, following questions are to ask whether respondents ignore the advertisements or click on the advertisements.

3) Information Searching Behavior

How respondents spend time surfing on internet, searching shopping-related information in general, and searching information of mobile phones prior to purchases are questioned in the questionnaire. Various types of sources are included in the questionnaire to measure the proportion of time spent on each source ahead of the last purchase of mobile phones.

4) Demographics

The demographical variables of respondents are inquired at the end of the questionnaire, including gender, age, and monthly expenses.

B. Data And Analytical Methods

The formal survey was conducted in three universities, National Chengchi University, National Chung Hsing University, and National Kaohsiung First University of Science and Technology, located in the northern, central, and southern part of Taiwan. Convenient sampling was applied in conducting the survey. The respondents of the survey were college students (including graduate students and undergraduate students) who had mobile phone in use. A total of 300 respondents were surveyed, and valid samples were 283. The reason to classify samples as invalid is mainly due to incompleteness of answers in the questionnaire.

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IV. EMPIRICAL RESULTS

A. Demographics Of Respondents

The survey generating data for this study was conducted in three universities in Taiwan to increase the diversity of respondents in the sample. A total of 300 respondents were surveyed, and valid samples were 283 (94.33% of total samples). The respondents of the survey were college students (including graduate students and undergraduate students) and had personal mobile phones in use. Respondents are not further separated by different universities in the analysis in order to reveal perceptions of college students in general in Taiwan.

In the data set, the percentage of male respondents (55.12%) is more than female respondents (44.88%). The monthly expenses are NTD 6,793.29 on average, and the average age is 22.68 years old. Since graduate students are included in the sample as well as undergraduate students, the average age of respondents is shifted upward slightly.

B. Information Searching Behavior

The results of the survey reveal that respondents spend 202.2 minutes on average searching relative information on internet prior to next mobile phone purchases. Time spent on internet searching for mobile phone information accounts for 28.33% of total information searching time from various sources before purchasing mobile phones. In converting this percentage into total time spent searching information before next mobile phone purchases, the estimation shows young adults spend relatively lengthy time in searching information in a total of 713.19 minutes (11.89 hours) from various channels.

Friends and families are a source for word-of-mouth and account for 22.53% in time spent for information searching prior to mobile phone purchases, followed by salespersons (15.71%), television commercials (15.08%), and newspapers and magazines (12.61%). On average, respondents spend 291.09 minutes per day (weekends and weekdays) on internet, and 57.21 minutes out of the daily total time spent on internet are used for searching shopping-related information. Compared the time spent for searching shopping-related information (57.21min.) to the time spent searching information before next mobile phone purchases (202.2 min.), the results reveal that respondents spend abundant time (more than 3 times the regular daily searching time spent on shopping-related information) to search mobile phone information during the decision making processes.

C. Results Of The Factor Analysis And Segmentation

Ten questions are included in the questionnaire to evaluate the informativeness of online advertising using the seven-point Likert scales. These ten questions related to four main dimensions of advertising contents are based on the findings of [12]. From marketers' points of view, recognizing the types of information included in online advertisements that users have willingness to view can be valuable. The factor analysis is applied in this study to extract underlying factors of the informativeness of online advertising. The results of the factor analysis in this study correspond to the findings in the literature in four dimensions of informative contents, including price/promotion, service, design, and function.

The price/promotion dimension indicates that respondents have intentions of viewing the information of product prices, promotions, and discounts in online advertisements. The service dimension describes when respondents view online advertisements, the information of service and warranties is considered concurrently. The design dimension reveals the respondents intend to see the information of product design as well as the styles and product accessories in online advertisements. The function dimension includes product functions and innovation that online users intend to find out while observing online advertisements. These four factors explain 86% of total variations in the data. The results of the factor analysis reveal young adults observe various dimensions of information in online advertisements.

Cluster analysis is used in this study to segment observations. Respondents are categorized into two clusters, ad-neutral and ad-annoyed, using five variables measuring annoyance of online advertisements while searching information of mobile phones. The ad-annoyed cluster includes respondents who have stronger feelings of disturbance toward online advertisements during information searching than respondents in the other cluster have. Respondents classified in the ad-neutral cluster do not sense online advertisements as irritating as those in the ad-annoyed cluster do.

For respondents in the ad-neutral cluster, price/promotion and service are factors valued more importantly while viewing information in online advertisements. On the contrary, for respondents in the ad-annoyed cluster, design and function are more important factors than price/promotion and service in terms of information upon seeing online advertisements.

D. Constructs Used To Measure Annoyance Of Online Advertising

Due to the nature of online advertisements to be interactive, internet users have certain control over whether they intend to ignore, browse, or click on the online advertisements. Internet users may feel annoyed somehow if the online advertisements are interruptive, especially when users are in the middle of acquiring certain needed information.

This study intends to clarify the forms of online advertisements causing disturbance to young adults in the stage of information searching prior to mobile phone purchases. Various types of online advertisements are described in the questionnaire in an attempt to verify whether respondents would feel that certain types of online advertisements would have caused annoyance in information searching. Furthermore, if respondents reply affirmatively in the reactions of annoyance, subsequent behavior of terminating information searching or continuing information searching needs to be verified in the questionnaire for each type of online advertisements. If respondents reply affirmatively in the reactions of not feeling annoyed upon seeing a certain type of online advertisement, subsequent behavior of ignoring or clicking on the advertisements are choices for respondents to

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specify. This set of nested questions is designed to measure annoyance of online advertisements at a relatively broad sense.

Table I lists the differences in reactions to various types of online advertisements and subsequent behavior of respondents in the clusters of ad-neutral and ad-annoyed. The proportion of respondents in the ad-annoyed cluster is 54.06% (153/283), and in the ad-neutral cluster is 45.94% (130/283). The proportional differences in two clusters reveal that when young adults surf online for information of mobile phones prior to purchases, online advertisements are more likely to be perceived as annoyance.

Table I: Reactions To Online Advertisements Of Ad-Neutral And Ad-Annoyed Clusters

	Ad-neutral (45.94 %)				***Ad-annoyed (54.06 %)***			
Reactions to ***banner ads***	Annoyed 18.46%		Not annoyed 81.54%		Annoyed 100%		Not annoyed 0.00%	
Subsequent behavior	Term. 17.39%	Cont. 72.61%	Ignore 95.28%	Click 4.72%	Term. 32.24%	Cont. 67.76%	Ignore 0.00%	Click 0.00%
Reactions to ***ads floating at sides of Web pages***	Annoyed 35.38%		Not annoyed 64.62%		Annoyed 95.42%		Not annoyed 4.58%	
Subsequent behavior	Term. 26.09%	Cont. 73.91%	Ignore 96.34%	Click 3.66%	Term. 29.45%	Cont. 70.55%	Ignore 100%	Click 0.00%
Reactions to ***interstitial ads***	Annoyed 41.54%		Not annoyed 58.46%		Annoyed 89.54%		Not annoyed 10.46%	
Subsequent behavior	Term. 24.07%	Cont. 75.93%	Ignore 97.33%	Click 2.67%	Term. 29.20%	Cont. 70.80%	Ignore 93.75%	Click 6.25%
Reactions to ***pop-up ads***	Annoyed 88.46%		Not annoyed 11.54%		Annoyed 97.39%		Not annoyed 2.61%	
Subsequent behavior	Term. 45.61%	Cont. 54.39%	Ignore 93.33%	Click 6.67%	Term. 49.66%	Cont. 50.34%	Ignore 50.00%	Click 50.00%
Reactions to ***mouse-tailing ads***	Annoyed 79.23%		Not annoyed 20.77%		Annoyed 98.69%		Not annoyed 1.31%	
Subsequent behavior	Term. 49.02%	Cont. 50.98%	Ignore 100%	Click 0.00%	Term. 49.01%	Cont. 50.99%	Ignore 100%	Click 0.00%

Note: Term. indicates termination, and Cont. indicates continuous in searching.

Certain types of online advertisements are considered more annoying than other types are. In commonly applied online advertisements, the types of pop-ups and the mouse-tailing are considered more irritating. Even respondents in the ad-neutral cluster express feelings of annoyance toward pop-ups (88.46%) and mouse-tailing (79.23%) online advertisements. For respondents in the ad-annoyed cluster, almost all of them felt annoyed upon seeing the types of pop-ups (97.39%) and mouse-tailing (98.69%) online advertisements while searching information prior to mobile phone purchases. This result reveals the forms of online advertisements that have the effects of blocking windows in action or tailing the cursors may cause negative sensations toward online advertisements.

For respondents in the ad-neutral cluster, banner advertisements and ads floating at sides of Web pages seem to cause less disburtance. Only 18.46% and 35.38% of respondents indicated that banner ads and floating type ads, respectively, would have caused annoyance while searching information of mobile phones. This result confirms that online advertisements not interrupting users at their current tasks are considered less annoying.

In considering the subsequent behavior of respondents, over 95% of the respondents who do not feel annoyed upon seeing banner advertisements in the ad-neutral cluster have intentions of ignoring the banner advertisements. Although banner advertisements cause less negative attitudes toward online advertising in the ad-neutral cluster, respondents in this cluster lack for motivations to click on the banner advertisements. Respondents who do not feel annoyed upon seeing advertisements floating at sides of Web pages in the ad-neutral cluster also have intentions of ignoring (96.34%) the advertisements. The same situation applies to the ignorance of respondents in the ad-neutral cluster for the interstitial ads (97.33%), pop-up ads (93.33%) and mouse-tailing ads (100%).

For respondents who feel annoyed upon viewing various types of online advertisements in the ad-neutral cluster, they tend to continue their current searching activities after being disturbed by the online advertisements. Respondents in the ad-neutral cluster who are annoyed by the pop-ups and mouse-tailing ads have relatively higher percentages in terminating the search due to disturbances caused by pop-ups (45.61%) and mouse-tailing ads (49.02%). The interesting result is that respondents who are classified into the ad-annoyed cluster also have similar subsequent behavior as those who are classified into the ad-neutral cluster when feel annoyed by pop-ups and mouse-tailing ads.

In sum, base on the results of this study, almost all kinds of online advertisements cause annoyance to a certain level. For those young adults who do not have reactions of being disturbed by online advertisements, they tend to have subsequent behavior of ignoring the online advertisements. The majority of respondents who feel annoyed upon seeing online advertisements have the subsequent behavior of continuing search activities except for the pop-ups and mouse-tailing types of online advertisements.

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V. CONCLUSION

The objective of this study is to examine whether different forms of online advertisements cause disturbance in information searching prior to product purchases. These data was gathered by conducting consumer surveys to college students (including graduate students and undergraduate students) in three universities in Taipei, Taichung, and Kaohsiung in Taiwan. The total valid samples were 283, out of 300 respondents surveyed.

Young adults have tendencies to search information online. The informativeness of online advertisements including dimensions of price/promotion, service, design, and function are what respondents intend to view. Due to the characteristics of the internet, advertisers are able to utilize animated, colored, and interactive advertisements on the Websites to draw attentions of internet users. The concern is that certain advertisements disturb what users are currently doing online. In this study, a set of nested questions was designed to reveal the reactions to different forms of online advertisements and to examine whether respondents have feelings of annoyance during information searching. Subsequent behavior after verifying that whether they are annoyed or not upon viewing certain types of online advertisements is questioned. Respondents indicate whether they terminate information searching or continue searching if they are annoyed by certain online advertisements, and whether they ignore or click on online advertisements if they are not annoyed by online advertisements.

Respondents are segmented into two clusters in this study to reveal the behavioral differences upon viewing online advertisements. For respondents in the ad-annoyed cluster, information of product design and function in online advertisements is influential. The factors of product price/promotion and product service seem to be of less important for respondent whose attitudes of online advertisements toward annoyance. In turn, the price/promotion and service information is considered more relevant than information of design or function for the respondents in the ad-neutral cluster.

Nearly all kinds of online advertisements make respondents feel annoyed somehow. However, respondents do not terminate their information searching while being disturbed by online advertisements. The results of this study indicate internet users are aware of online advertisements and understand that the disturbance caused by online advertisements is unavoidable. Internet users do not stop doing what they intend to work on the internet due to annoyance of online advertisement. Hence, chances are for marketers and advertisers to utilize online advertisements in disseminating information as long as the disturbance does not stop users from using the internet.

VI. MARKETING IMPLICATIONS

The findings in this study reveal that internet users stay online for a lengthy period of time and have tendencies to seek for information prior to product purchases. The online advertisements provide useful information for internet users. However, online advertisements cause disturbance to users, especially the pop-ups and mouse-tailing types. In understanding how internet users react to online advertisements and what types of online advertisements cause less disturbance, marketers and advertisers can design marketing strategies more effectively to communicate with consumers in disseminating information online. Marketing strategies for different segments of respondents in this study are suggested as the following.

The proportion of respondents in the two clusters is 45.94% in the ad-neutral cluster and 54.06% in the ad-annoyed cluster. The attitudes toward online advertisement of respondents in the ad-neutral cluster are not as negative as those of the ad-annoyed cluster. The forms of online advertisements that can be used for ad-neutral young adults could be banners or interstitials to lessen the annoyance. The information contents within online advertisements may need to focus on product price/promotion or product service to meet their needs in disseminating effectively.

For respondents in the ad-annoyed clusters that any kind of online advertisements would have caused annoyance, the pop-up ads and mouse-tailing ads need to be avoided due to lower willingness to continue the information searching activities. Although other types of online advertisements cause disturbance to ad-annoyed young adults as well, the subsequent behavior of termination is not definite. Since design- and function-related information is preferred by respondents in this cluster, marketers and advertisers may want to provide more information related to design and function of mobile phones in online advertisement to improve the effectiveness of online advertising.

In sum, if marketers or advertisers intend to design online advertisements that do not cause too much disturbance to the majority of internet users, the banners or interstitials should work. Certain types of online advertisements that need to be used with caution are the types of pop-ups and mouse-tailing. When internet users are disturbed and the annoyance can be tolerated, the information searching behavior goes on. However, when internet users are disturbed and the annoyance cannot be tolerated, the information searching behavior is terminated. The effort of designing online advertisements ended up with users' ignorance or termination can be wasted and useless. Marketers and advertisers not only try to attract attentions of internet users using online advertisements, but also need to restrict the annoyance or disturbance of online advertisements to an acceptable level to reduce the opportunities of being ignored or terminated.

VII. *LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH*

The limitation of this research is that the samples are from college students who are generally more acquainted with the internet. Further research may need to expand sampling to the general public to increase the applicability of the findings. Moreover, more detailed descriptions of various forms of online advertisements and the subsequent behavior can be conducted to get more knowledge of psychological insights of consumers.

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