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Who Will Buy in the Next Visit?

Research in Progress

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Abstract

Increased propensity of consumers directly visiting the e-commerce website is the most prominent effect of display advertising. Therefore, understanding consumers' directed revisit behaviors is important for advertisers to arrange their advertising delivering activity. In this paper, authors used an e-commerce website's consumers browsing data and advertising clicking data to examine the relationship between consumers' previous shopping behaviors and their direct revisit. Besides, they also consider the visit channels (i.e., direct visit, generic advertising, and retargeting advertising). The results show that for consumers entering the website through different channels, their previous behaviors have different effect on the probability of revising directly in the future. The findings extend previous direct visit studies and can help website to advertise.

Keywords: direct visit, online behavior, generic advertising, retargeting advertising

Introduction

It is not an unreasonable assumption that people are not at the stages of the purchase funnel when they are attracted to an e-commerce website and therefore should be treated differently. However, in order to be able to customize the experience of a visitor based on his/her status, an e-commerce website needs to be able to distinguish people at different stages of decision funnel. More importantly, the customization effort could be even more effective and efficient if an e-commerce website could predict its visitors' next move.

In this paper, first we tried to explore what kinds of visitors could make a purchase in the next visit session. And we found that next visit methods (i.e., direct visit, retailer advertising, and retargeting advertising) had significant association with visitors' purchase: direct visitors are more likely to buy. Then, we tried to examine the association between visitors' behaviors and their selection of next visit methods. Finally, as for direct visitors, we analyzed the relationship between their shopping behaviors and the probability of purchase in the current and next session. One important contribution of this paper is that it extends the theory about purchase funnel (Butler and Peppard 1998) by identifying specific behaviors patterns that suggest the move to the purchase stages in the context of online shopping. The results of this study not only uncovered the behavior patterns associated with purchase, but also demonstrated the process in which a visitor becomes the customer of an e-commerce website after being exposed to the display advertising of that website.

The paper is organized as follows. Next session reviews related literature, followed by two studies. And in the final part of this paper, discussion and conclusion are made.

Related Work

Consumer Decision Making Process

The processes of consumers purchasing on the Internet can be divided into five stages: Problem Recognition, Information Search, Evaluation of Alternatives, Choice/Purchase, and Post-Purchase Behavior (Butler and Peppard 1998). Consumers' shopping behaviors are different when they are in different stages. Consumers who are in later stages are closer to make a purchase (Butler and Peppard 1998). They will pay more attention to the search, brand and product-related pages (Moe 2003). For example, these consumers are likely to use the search function or browse the branded stores in the website to find desired products; then they will view the details of the product to make the purchase decision. Consumers who are in earlier stages are far away from purchase (Butler and Peppard 1998). They do not have a specific buying goal and just browse the website for fun (Moe 2003). This kind of visitors spend more effort on the category level pages.

Generic Advertising, Retargeting Advertising and Direct Visit

Direct visitors, one of active search behaviors, browse the e-commerce website by typing the address or clicking the link in their bookmark (Hoffman and Novak 1996). They know something about the website and treat it as an important information source (Ghose and Todri 2015). Website and Product are two different kinds of advertising. The Website advertising is related with the website and presents the name and logo of the website. The product advertising is related with the specific products viewed by visitors before. But it does not have any discount information.

Active search behaviors are positively related with visitors' interactivity and involvement within the website (Jiang et al. 2010). In addition, consumers' motivations are varied for direct visitors (Moe 2003). They are likely to shop, search and browse in the website. Website and Product advertising clicking are passive search behaviors (Ghose and Todri 2015). The advertising clicking behaviors are related with their temporary motivations (Zhang and Mao 2016). Consumers from website advertising are interested at website and have broader preference (Lambrecht and Tucker 2013). Consumers who click product advertising are more interested at the specific products and have narrower preference (Lambrecht and Tucker 2013). They click the product advertising to search the detail of the products and other related ones.

Study 1

The first study explores that among people attracted to an e-commerce website by display advertising, what type of visitors are more likely to come back to make a purchase.

Hypothesis Development

Purchase-making is the fulfillment of consumers' previous needs (Butler and Peppard 1998). The need-fulfillment can lock-in visitors and make the website appear at the top of their consideration-sets when they have the needs in the next time (Zauerman, 2003). Therefore, when the related needs appear, visitors will come back to make a purchase. In addition, finishing a transaction on the e-commerce website can reduce visitors' uncertainty about the transaction process (Che, Peng, Lim, and Hua 2015), which has negative association with visitors' purchase and revisit in the future (Liang and Huang 1998). Therefore, previous purchase experience has positive influence on visitors' repurchase intention (Gupta and Kim 2007).

Hypothesis 1 (H1): purchasing behavior is positively associated with the purchase in the next visit.

In addition to adding products into shopping cart to make a purchase immediately, visitors also use online shopping cart as a shopping organization tool in place of a "wish list" (Close and Kukar-Kinney, 2010). They use the shopping cart to store products they are interested in temporarily and are considering a possible purchase in the future. Therefore, in the future, it is more likely for visitors to come back directly to deal with these products in shopping cart.

Hypothesis 2 (H2): non-buy who leave the products in the shopping cart are likely to buy in the next visit.

The direct visit behavior is one of the active search behaviors and the advertising click behavior is one of the passive search behaviors (Ghose and Todri 2015). Active searchers are highly involved and motivated to process information on the advertiser's website (Breuer et al. 2011). It is more likely that they meet the desired products, get affected by stimulus and finally buy them (Moe 2003). Therefore, direct visitors are more likely to convert into buyers (Li and Kannan 2014), make more orders and contribute more profile and sales to the e-commerce website (Danaher and Dagger 2013).

If a banner advertising is clicked, it is a very superficial and temporary effect that can be influenced by the design and size of the banner (Karson and Korgaonkar 2001). Compared with the active behavior, passive behaviors result in lower involvement and purchase intention (Jiang et al. 2010). Therefore, the direct impact of display advertising on conversion is found to be small (Dinner et al. 2014).

Hypothesis 3 (H3): visitors from direct revisit are more likely to purchase than those coming back from advertising.

The visitors from website display advertising are more likely to be interested at the website, and the visitors from product display advertising are more likely to be interested at the products (Jansen et al. 2008; Lambrecht and Tucker 2013). In another words, visitors from website advertising pay more attention to the website itself, while visitors from product advertising pay more attention to the products. Therefore, it is more likely that visitors from website advertising have the website at the top of their consideration-sets and more loyal to the websites (Chaudhuri and Holbrook 2001). When they have the purchase needs, the website will come out of their minds easily. Therefore,

Hypothesis 4 (H4): the buyer, non-buyer who leave some product in the shopping cart and revisitors are more likely to make a purchase in the next visit when they are from the website advertising.

Method

We used the advertising data and visitors' browsing data on an e-commerce website. The website is the online store of a famous supermarket in China. Like Walmart, consumers can buy food, electronic devices, clothes and other general merchandises. It advertised its services on external websites through a Demand-Site-Platform company. We chose the data from February 1 to March 31 in 2017. There were 393,537 visit sessions from 97,079 unique visitors. In our data set, there were 38,176 direct visit samples, 44,660 website advertising samples, and 10,381 product advertising samples. The remaining are from other ways (e.g., email).

The website server of an e-commerce store documents a visitor's behaviors using following measures, number of pages, product, category, search, visit method including direct visit, visit through website advertising and product advertising. Number of pages refers to the total number of pages that visitors have browsed on the website. An e-commerce website contains different types of web pages, pages that provide detailed information about a specific product referred as product in this paper, the pages that display information about one product category referred as category and pages that display the search result for a specific search word/term a visitor uses, referred as search. In this paper, product, category and search is the percentage of product pages, product category pages and search pages in the total number of pages a visitor has browsed during one visit, respectively. And the visit method records that

if a person comes to the website through direct visit, website display advertising and product display advertising.

Because the dependent variable – next purchase – is a binary variable (i.e., buyer and non-buyer) and has high sample bias (the number of non-buyer is greatly larger than the number of buyers), we selected the Firthlogit Regress Model to verify the hypothesis. The Firthlogit Regression Model used the penalized likelihood method to reduce the rare events bias in maximum likelihood estimation (Firth 1993).

Results

The Firthlogit regress results show that purchase have positive association with the purchase in the next visit. For visitors from website advertising, the coefficient value is 1.315 ($p = 0.001$); for visitors from product advertising, the coefficient value is 1.254 ($p = 0.000$). Therefore, the hypothesis 1 (H1) is supported. Shopping cart without purchase is positively associated with the purchase in the next visit. For visitors from website advertising, the coefficient value is 1.905 ($p = 0.000$); for visitors from product advertising, the coefficient value is 0.800 ($p = 0.000$). Therefore, the hypothesis 2 (H2) is supported. Next visit is negatively associated with the purchase in the next visit. For the visitors from website advertising, the coefficient value is -4.019 ($p = 0.000$); for the visitors from product advertising, the coefficient value is -1.532 ($p = 0.000$). Therefore, the hypothesis 3 (H3) is supported. For visitors from website advertising, the coefficient of purchase, shopping cart without purchase and next visit are higher than those for visitors from product advertising. Therefore, the hypothesis 4 (H4) is supported.

Study 2

In the Study 1, we find that direct visitors in the next visit are more likely to make a purchase. So, in this study, we are trying to explore that among people attracted to an e-commerce website by display advertising, what type of visitors are more likely to come back directly.

Hypothesis Development

Retention of site content is crucial to promote users to visit again, because it can add the site into consumers' consideration-sets when they have needs to browse the e-commerce websites (McCoy et al. 2007). The deeper interaction with the e-commerce website means that visitors will have deeper impression and memories about the website (Baker 2003). These will increase the ranking of the website in consumers' consideration-sets when they want to buy something (Baker 2003). Therefore, if they view more pages, it is more likely that they will revisit the website directly in the next time.

Besides, according to Moe's (2003) study, the more page viewed by visitors, the more likely they are searching information and knowledge about the products. It means that they have reached the Information Search or Alternative Evaluation stage (Butler and Peppard 1998). Therefore, they are more likely to come back directly to finish their purchase decision process in the next visit session. Therefore,

Hypothesis 5 (H5): The number of pages is positively associated with the direct revisit.

Search in e-commerce website can happen in the search function use and category list browsing (Lu and Zhao 2014). Search function in the e-commerce website refers to that visitors use search function to find desired products or brands. According to Moe (2003)'s study, more search in the website means that visitors are goal-directed and searching information for their future purchase-decision-making. Therefore, they are more likely to come back to the website to finish their purchase decision process.

Category list present the related products under the same category or brand (Moe, 2003). Visitors can use the category list to browse and search the desired potential products, when they know what kinds or brands of products they want. Therefore, when visitors pay more attention on the category list pages, they are likely to be at the information searching stages to find out desired potential products (Butler and Peppard 1998).

Therefore,

Hypothesis 6 (H6): The percentage of search are positively associated with the direct revisit.

Hypothesis 7 (H7): The percentage of category is positively associated with the direct revisit.

Many customers treat the online shopping as a "job" (Wolfenbarger and Gilly, 2011). Being able to make a purchase at a website suggests the fulfillment of their goals. Therefore, they are more likely to associate

with the website where they make the purchase with a sense of accomplishment and consequently they are more likely to remember the website and come back directly (Wolfenbarger and Gilly, 2011).

Many customers use the shopping cart as a research or organizational tool (Close and Kukar-Kinney 2010). Before leaving the e-commerce website, they put desired products into the shopping cart to wait for sale or lower price (Close and Kukar-Kinney 2010). Therefore, it is likely that they will come back directly in the future to check the products and make a purchase, when they leave some products in the shopping cart before leaving the website (Close and Kukar-Kinney 2010).

Hypothesis 8 (H8): Purchase is positively associated with the direct revisit.

Hypothesis 9 (H9): Shopping Cart without Purchase is positively associated with the direct revisit.

Results

We used the same data in Study 1 to build the Firthlogit Regression model. This time, we used direct revisit (a binary variable, 0: not directly revisit, 1: directly revisit) as the dependent variable. The Firthlogit Regression results show that the coefficient values of number of pages are 0.021 ($p = 0.000$) and 0.008 ($p = 0.000$) respectively for visitors from website advertising and product advertising. Therefore, the hypothesis H5 is supported. The coefficient values of percentage of search pages are 1.328 ($p = 0.000$) and 0.058 ($p = 0.000$). The hypothesis H6 is supported. The coefficient values of percentage of category pages are 1.519 ($p = 0.000$) and 1.050 ($p = 0.000$). The hypothesis H7 is supported. The coefficient values of purchase are 2.168 ($p = 0.000$) and 1.530 ($p = 0.000$). Therefore, the hypothesis H8 is supported. The coefficient values of shopping cart without purchase are 1.484 ($p = 0.000$) for visitors from website advertising and 1.193 ($p = 0.000$) for visitors from product advertising. Therefore, the hypothesis H9 is supported.

Discussion

In this study, we try to answer the question “who is more likely to make a purchase in the next visit” after they are attracted by the display advertising. Previous related studies pay more attention to the relationship between advertising and current purchase (e.g., (Goldfarb and Tucker 2011)). We do not find the study that explore the relationship among advertising, shopping behaviors and purchase in the next visit. In Study 1, we find that the current buyer is likely to make another purchase in the next visit. And the non-buyers who leave some products in the shopping cart before leaving also are likely to make a purchase in the next visit. In addition, the direct revisitors are likely to make a purchase. This finding is consistent with Li and Kannan’ study (2014). Li and Kannan find that visitors through direct visit channels are more likely to convert into buyers (Li and Kannan 2014). The buyer, non-buyers who leave some product in the shopping cart and direct revisitors are more likely to make a purchase if they are from the website advertising.

Because the direct revisitors are likely to make a purchase, we move on to explore what kinds of visitors are more likely to directly revisit the website. Previous related studies try to answer this question through visitors’ revisit intention. Website design (Rosen and Purinton 2004), brand loyalty (Supphellen and Nysveen, 2001), users perception (Che, Peng, Lim, and Hua 2015) etc. are important antecedent factors impacting visitors’ revisit intention. However, most of the factors are based on visitors’ perception. Therefore, it is hard for website to use the finding to treat their visitors. Then, in this paper, based on an e-commerce website’s advertising and user visiting log data, we find the relationship between visitors’ shopping behaviors and revisit behavior. In Study 2, based on consumers’ purchase-decision process model (Butler and Peppard 1998) and shopping motivation theory (Moe, 2003), we explore what kinds of visitors will come back directly in the next visit session. We combine visitors’ previous shopping behaviors and advertising-clicking behavior together and explore their association with revisit methods in the next visit session. We find that visitors who browse more pages, pay more attention on search, category, make a current purchase or leave with some products in shopping cart are more likely to revisit the website directly.

Conclusion

The preliminary results suggest that current purchase, leaving product in shopping cart without buy and coming back in the format of direct visit are the factors that significantly associated with the purchase in next visit after the exposure to the digital advertising. We also identify the visitors’ browsing behaviors associated with direct revisit in the next visit. We find that for website advertising clickers and product advertising clicker, some behaviors have different associations.

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