Context Centrality in Distributions of Advertising Messages and Online Consumer Behavior

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Abstract

Purpose: As moment-based marketing messages (i.e., messages related to current moments or event), companies put significant investments to distribute TV advertising related to external moments in a retail environment. While the literature offers strong support for the value of distributions of context-based messaging to advertisers, less attention has been given to how to design those messages to effectively communicate across channels. This research adds a new dimension of analysis to the study of advertising context and its cross-channel effects on online consumer behavior. **Research Design, Data and Methodology:** A system-of-equations Tobit regression model was adopted using data collected from an advertising agency that consists of 1,223 TV ads aired during the Rio Olympics and NCAA, tagging from consumers, and a text analysis. **Results:** First, TV ads with high centrality of context lead to lower online search behavior and higher online social actions. Second, how brands can design messages more effectively was explored by using product information as a moderator that could improve the impact of context-based TV advertisements. **Conclusions:** Given that expenses in traditional channels are still one of the biggest channel management decisions, it is critical to understand how consumer engagement varies by design of context-based TV advertising.

Keywords: Advertising Distribution; Online Consumer Behavior; Context-Based Messaging; Cross-Media Behavior; Cross-Channel Management

JEL Classification Code: M10, M31, M37, C34, L82

1. Introduction

Keeping up with major news or events happening in the world and incorporating those into a branded message is a widespread and essence practice among today's marketers in a retail management, along with the rise of new information and communication technologies throughout the whole supply chain. This context-based messaging (i.e., messages related to current moments or events) not only offers an opportunity for the managers to use such events in hopes that consumers' engagement with such events or moments are transferred to their brands, but also it is necessary for them to relate their brands to important events or moments so that they can capture consumers' attentions. Meanwhile, information overload is one of the major issues along with the rise of online communications and digital media (Renjith, 2017). Consumers are bombarded daily with countless messages via emails, text messages, or online instant messages across diverse retail contexts while most of them are never opened or are forgotten after being read. They pay attention only when it is highly important or interesting so that it captures their attention, and therefore designing relevant messages at the right moment is critical for marketers today. Moreover, the speed that the effect of

time-relevant messages disappears is increasingly faster than before.

As one of the context-based messages, companies carry out significant investments to develop and distribute TV advertising related to contexts – i.e., major events such as Olympics or Super Bowl – as one of their channel management strategies. Therefore, a brand manager faces how much to use such contexts in ads in their major channel. For example, when designing ads for Christmas, the brand manager may put Christmas cues such as Santa, snows, red colors, mentioning holiday or Christmas, or gifts, etc. On the other hand, he or she may put a smaller number of cues so that consumers can sense that it is a Christmas ad but do not feel that such moment is dominating in the ad (see Figure 1). Otherwise, he or she may choose not to use any of such cues so that it is not related to Christmas while the ad can still be aired during the holiday seasons. Figure 1 provides an example of high, medium, and low levels of context (i.e., Christmas) embedded in advertising messages, respectively.

Figure 1: Example of Context Centrality (High[1] vs. Med[2] vs. Low[3]; source: Pinterest[1], MediaPost[2], Facebook[3])

The practice of real-time context-based messaging has been shown to be effective in generating consumer engagement among marketing scholars (e.g., Borah, Bannerjee, Lin, Jain, & Eisingerich, 2020) in a retail environment. However, relatively little is known about the effects of such contexts on subsequent online consumer responses in different channels, especially their following activities online after watching the ads. This research builds upon the context advertising and cross-channel behaviors literature and aims to explore the effects of context centrality – the degree of which an (external) context is central in an advertising message– on consumer online activities related to the ad. First, this research explores the effect of context centrality in TV advertising distributions on consumer online activities and how it affects different types of online activities across channels. Second, the paper explores content characteristics in advertising and study conditions when the effects of context centrality in TV advertising become more positive, implying that the same context information can be distributed in different ways depending

on a firm's traditional and online channel strategy and retail management. Understanding the effects of context centrality in advertising messages on online consumer behavior will provide new insights to firms regarding how to allocate their resources and distribute advertising messages, thereby improving firms' advertising channel management decisions and better utilizing traditional and new channel management in the new digital environment.

2. Literature Review

2.1. Context Effects in Advertising

According to the traditional advertising literature, advertising effectiveness varies by its context – materials within which ads are embedded (Soldow & Principe, 1981). Effects of context beyond content have been a well-researched domain since traditional media in the advertising literature. Researchers study how choice of medium such as TV program, magazine, or news influences advertising effectiveness (e.g. Dahlen 2005; Dahlen & Edenius, 2007). Other researchers look at the effect of advertising content-context congruity on consumer responses and suggest that emotional similarity or thematic congruity between advertising content and context leads to positive responses toward the ad because of increased conceptual fluency when processing the ad (e.g., Coulter 1998; Lee & Labroo, 2004; Segev, Wang & Fernandes, 2014). Evidence in the literature highlights the importance of design and placement of ads according to the right context.

This research contends that the role of context in advertising is even more critical in today's digital environment. As communications become more global, personal, immediate, and interactive at the same time, considerations of contexts such as target, timing, outside events are even more important. While consumers respond to advertising even within a minute (e.g. Lewis & Reiley, 2013; Fossen & Schweidel, 2016), the effectiveness can also disappear within a short time as the context is no longer relevant. Therefore, firms often improvise marketing messages in accordance with a relevant context at the right moment (Borah et al., 2020). The speed also enables personalized adverting with the right topic to each person based on tracking of individuals' records and updating data real-time in the digital environment. Studies by Lembrecht and Tucker (2013) and Tucker (2015) show that immediate distributions of consumer information in design of personalized advertising is possible and such contextual advertising is found to be effective in various retail environment (Zhang & Katona, 2012). While such findings suggest that more firms are considering contexts and incorporate them into their advertising, the effects of

contexts in terms of external moments or events as well as how advertisements that incorporate such contexts on consumer behavior remain unclear in the literature.

2.2. Cross-Channel Effects in Advertising

While broadcasting TV advertising related to external major events at the right time they happen is not considered an entirely new practice, the effects of such advertising spread faster and more viral today because of the Internet and social media. Consumers' reactions to TV advertising are immediate and simultaneous. In today's digital channel environment, consumers can immediately search for information using mobile phone about the brand or celebrity in the TV ad or go to a social media site to talk about the ad with others or to see what others have said while watching it. With the rise of smartphones, media multitasking is a common behavior among consumers. According to a work by Godley (2012), watching television leads consumers to social network sites more than any other medium does to primarily obtain information.

There have been research findings that explain the effects of TV advertising on following consumer responses in online spaces during the past few years. TV advertising facilitates online conversation (Onish & Manchanda, 2012; Tiruniralli & Tellis, 2016). Liaukonyte, Teixeira, and Wilbur (2015) find that TV advertising has an immediate impact on online shopping. Fossen and Schweidel (2016) explore how TV advertising and the program where the ad is embedded have a synergetic effect. A study by Zigmond and Stipp (2010) shows that TV commercials facilitate online searches. Similarly, Joo and colleague (2013) explore the effects of TV advertising on online search and find that TV advertising increases both the number of related Google searches and searchers' tendency to use branded keywords compared to generic keywords. Among them, consumers' multitasking behavior on social media platforms (i.e., viewing posts while watching TV advertising; Bharadwaj, Ballings, & Naik, 2020) is common and relevant to this research context. More recently, Du, Xu, and Wilbur (2019) demonstrate the effects of TV advertising on online search activities and indicate that consumer online responses can vary. In addition, this cross-channel effects are also shown in the context of offline to online platforms. For example, Lesscher, Lobschat, and Verhoef (2021) show a synergy between direct mailing and display advertising. Therefore, the literature indicates that the cross-channel effects can be observed across multiple platforms and lead to diverse consumer outcomes for effective channel management.

Despite the works done in the advertising and cross-media consumption literature, we have relatively little understanding of the effects of external context-based advertising content on consumer responses across platforms.

Former studies on the advertising contexts and TV programs where the ads are embedded (Fossen & Schweidel, 2016) differ from this study in the following ways. First, the context considered in their research is TV programs, while this study mainly considers external moments or events (i.e., sporting events), which is more prevalent in digital media. Second, implications on how firms should design advertising messages relevant to context is not fully discussed in the previous study.

3. Theoretical Framework and Hypotheses Development

3.1. Consumer's Online Search

Consumers engage in search behaviors when they want to know more about certain issues. Schmidt and Spreng (1996) organize the past research findings regarding a variety of factors that influence the extent of consumer pre-purchase information search and propose that the effects of these antecedents are mediated by four variables: ability, motivation, costs, and benefits. In their work, they argue that uncertainty and perceived risk of products motivate consumers to search more. Consumers also engage in external search activities if they believe that more information is available outside because it increases perceived benefit of search. These findings suggest that consumers engage in external search when they believe more information is needed. One of the major factors that lead consumers want to search more about an ad is facilitated by brand relevant information. In the study by Schmidt and Spreng (1996), knowledge about products facilitates information search because it increases consumers' ability to search for information. In addition, Punj and Staelin (1983) argue that general product-class knowledge increases external search. Such empirical studies present evidence for a positive effect of including brand relevant information in an ad on consumer search.

In this research context, consumers will have to take more effort to process context-related cues in an ad other than brand information when the context is more central in the ad. This in turn distracts consumers' attention from brand information contained in the ad and thereby decreases an opportunity to process product and brand information from the ad (MacInnis, Moorman, & Jaworski, 1991). For example, as an advertising message by a sportswear brand contains more of Olympic stories, the advertising content that is more context central will distract consumers' attention to the product and brand information while making them focus more on the Olympic stories, leading to less opportunity to process the product information of the brand. Consistently, it is shown that irrelevant information in an ad

distracts attention from brand information (Chaiken & Eagly, 1983). Since consumers process less brand information in a high context centrality ad, they will less likely search more about it as the ad does not facilitate consumers' curiosity and learning. Therefore, this study contends that there is a negative relationship between context centrality in an ad and consumers' online search, such that:

H1: As the degree of context centrality in an advertising message increases, consumers' online search decreases.

3.2. Consumer's Online Social Actions

While curiosity, uncertainty, perceived risk are the main drivers of information search (e.g., Schmidt and Spreng, 1996), there are more diverse and relational factors that explain why and how consumers are engaged in online conversations. According to the literature, consumers participate in online conversations mainly for two relational motives – 1) they wish to make good impressions to others and 2) they desire to get connected to others (e.g., Hennig-Thurau et al., 2004; Berger, 2014). Hennig-Thurau et al. (2004) provide a typology of consumer online word-of-mouth, which includes desire for social interaction, concern for other consumers, and desire for economic incentives. Similarly, Berger (2014) summarizes various factors that drive word-of-mouth and suggest five factors that explain why people engage in word-of-mouth – impression management, emotion regulation, information acquisition, social bonding, and persuasion. Those factors suggest that consumers consider what others think when they choose topics to share. Therefore, consumers share contents that are entertaining, useful, arousing, or common ground. In line with this idea, this research argues that a high context centrality advertising message is perceived to be more common ground compared to a low context centrality ad in the sense that it contains more about external moments events that more people are interested in and excited about.

On the other hand, a low context centrality advertising message will contain more brand-specific information as it contains brand-relevant contents only, and therefore is perceived to be less common ground from a consumer's perspective. For example, consumers are more likely to share an advertising message by a sportwear brand with others when it contains an interesting Olympic story or Christmas compared to a message by the same brand but only contains the product and brand information, as the former message is enjoyed and understood by a larger audience. Therefore, it is plausible to argue that consumers will perceive that more people will understand and be interested in contents of a high context centrality ad compared to a low context centrality ad, and therefore will be engaged in online social actions such as shares and conversations to a greater extent.

H2: As the degree of context centrality in an advertising message increases, consumers' online social actions increase.

3.3. Understanding a Moderator on the Effect of Context Centrality on Online Search

In the previous section, it is argued that distraction from brand information decreases consumer online search of TV ads. In this section, a moderator is proposed to enhance the effect of context centrality in an ad become more positive on searches by exploring ways that consumers process more brand information from the ad and become more willing to learn about the ad.

First, this study suggests that including more product information in an ad will increase consumers' search activities on context central ads. The argument on the negative effect of context centrality on searches was that consumers have less opportunity to process brand-relevant information from the ad and it does not facilitate more learning about the brand. If more product relevant information is present in the ad, then it will increase consumers' opportunity to process brand information in the ad (MacInnis et al., 1991) and therefore they will want to learn more about the brand. In line with this idea, Keller (1987) argues that product information in a message is an important ad retrieval cue which in turn increases ad memory after watching the ad. Since contexts such as Olympics or NCAA are the moments that other firms are also carefully checking if they can use them as a marketing opportunity, it is possible that many brands use the same stories and event-related cues in their ads and thereby the contents become similar each other. By using product information in an ad, this research argues that brands can have an opportunity to differentiate their ads from others.

H3: Product information in an advertising message weakens the negative effect of context centrality in the ad on consumers' online search.
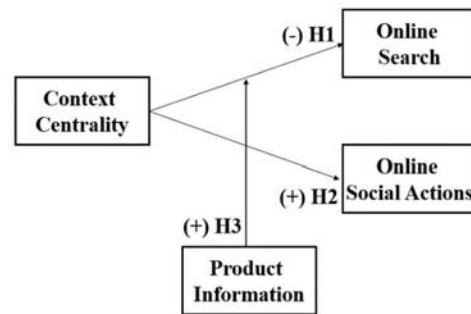

Figure 2: Conceptual Framework

4. Methodology

4.1. Data

Data was collected from three different sources: information regarding airings and engagement metrics of ads from the research agency, content characteristics in the ads from consumers, and other information in the ads using a text analysis tool. First, the TV database consists of 1,223 TV ads aired during the Olympics (August 4 – August 24, 2016) and NCAA (March 4 – April 4, 2016) and was collected with the help of a research agency (see Table 1 for descriptions of the variables in the dataset).

Table 1: Variables, Measures, and Descriptive Statistics

Variable	Tagging Method	Description	Mean	SD
Searches	Agency	Total number of searches for the ad online as tracked on Google, Bing, and Yahoo, and the agency website	30481.39	79873.14
Social Actions	Agency	Total number of social actions tracked to this ad on Twitter, Facebook, YouTube, and the agency website	8967.038	42544.0
Log (Searches + 1)	Agency	Logarithmic transformation of searches	8.62	2.13
Log (Social Actions +1)	Agency	Logarithmic transformation of social actions	6.59	2.47
Log (Estimated Spending +1)	Agency	The estimated amount spent on TV airings during the given date rage	15.43	1.61
Average View Rate	Agency	The average percentage of ad viewed by consumers	87.27	13.45
Context Centrality	Consumer	Number of context cues used in the ad	0.34	1.14
Product Fit (α = 0.96)	Consumer	There is a close fit between the ad and the product (SD=1/SA=7)	5.49	1.16
		The ad is appropriate for the product (SD=1/SA=7)	5.62	1.09
		The ad makes sense for the product (SD=1/SA=7)	5.66	1.12
Use of Humor	Consumer	The ad is not humorous et al (=1)/ very humorous (=7)	2.85	1.84
Product Information	Consumer	The ad tries to promote different occasions when or where the product can be (SD=1/SA=7)	3.14	1.70
Use of Music	Consumer	0=No music / 1=Music in the ad	0.18	0.38
Creativity (α = 0.94)	Consumer	Your general impression of the ad is: unexpected/original /different/ good to think/ingenious/ interesting/ beautifully produced (SD=1/SA=7)	4.02	1.25
Use of Celebrity	Text Analysis	0=No celebrity / 1=Celebrity in the ad	0.26	0.44

4.1.1. Dependent Variables

Dependent variables of interest in this study were collected from a research agency. Search activities were collected as the total number of searches for an ad tracked on the three major search platforms (i.e., Google, Bing, and Yahoo) and the agency's website during the time when the TV ads were aired. In a similar vein, social actions were collected as the number of related activities tracked on Twitter (shares and mentions), Facebook (posts, likes, shares, and comments), YouTube (votes and comments), and the research agency's website (votes and comments) during the time when TV ads were aired. The data is collected at an aggregate level since the ads started and until the date it is extracted which is November 30, 2016. The number of searches as a dependent variable is in line with the literature, where researchers examine search volume on search platforms such as Google (e.g., Du, Xu, & Wilbur, 2017).

The social media literature commonly considers the number of likes, comments, shares as dependent variables to explore consumer outcomes (e.g., Stephen, Sciandra, and Inman, 2015; Lee, Hosanagar, & Nair, 2018; Yang, Ren, & Adomavicius, 2019; De Vries, Gensler, & Leeflang, 2012). The number of social actions which is a collection of activities such as posts, likes, shares, and comments in social media platforms followed the relevant literature.

4.1.2. Independent Variables

A proxy of context centrality was developed and collected with information using the cues related to sporting events in ads with the following steps. First, we worked with an agency and research assistants to identify relevant items that serve as context cues in advertising messages and created a list of items, checking if they are collectively exhaustive.

Second, context centrality in ads was collected by consumer tagging. We asked college students in marketing classes to watch the ads and answer the questions provided. Each student was given 15 to 20 ads and two students were assigned per ad. Students were provided with the list of context-related cues and asked to select all items that were present in the ads. Context-related cues include items such as if the brand uses images or symbols related to the event, if athletes were present in the ad, etc. After the consumer tagging process is finished, the researcher and research assistants reviewed the works and reached an agreement after a discussion of unclear cases. This research followed this manual coding method as it is an effective approach to extract information from a dataset (Loo, 2020) and therefore regarded as a commonly used approach in the literature (Yang et al., 2019; Stephen et al., 2015; Pletikosa Cvijikj & Michahelles, 2013). Lastly, the total number of cues in each ad was calculated. Therefore, context centrality is greater as the number of cues used in the ad increases. A comprehensive list of the context-related cues used in the study is reported in Table 2.

Table 2: Measures of Context Centrality

Which of the following tactics does the message use to associate the brand with March Madness or the Rio Olympics:
1. Mentions that the brand is a sponsor of the event
2. Uses images, music, symbols, or icons related to the event (e.g., uses images of the Olympics or logo of NCAA Final Four)
3. Uses images, music, symbols, or icons related to the host city but not the event itself (e.g., uses images of Brazil or Rio de Janeiro)
4. Uses athletes or teams in the context of the event (e.g., Michael Phelps practicing or swimming during an Olympic event)
5. Uses athletes (e.g., basketball players or Olympic athletes) but outside of the event context (e.g., Michael Phelps eating a Subway sandwich)
6. Shows people playing sports related to the event. (e.g., kids playing soccer or basketball)
7. Focuses the message on the fans of the event (rather than the athletes)
8. Seems like a message created in "real-time" in response to an outcome from the event (e.g., a celebration message to the winning team)
9. Uses images or content from something that happened during the event itself (e.g., Usain Bolt winning the gold medal, etc...)

4.1.3. Moderator Variables

The moderator variable was also collected by asking the college students to answer questions given to the ads. The students were asked to answer if the ad contains product information such that it tries to promote different occasions when or where the product can be. After seeing the ads, the students were asked to answer the question using a 7-point Likert scale, where 1 indicates strongly disagree and 7 indicates strongly agree.

4.1.4. Control Variables

For control variables, three different sources were used to collect data. Average view rate per ad was provided by the research agency and other control variables such as use of humor and product fit were collected by the marketing class students. In addition, the research agency website provides information on ads such as stories about ads, celebrity names, music titles, name of musicians, or types of deals presented in the ads. Using the agency's web page, variables such as use of music and use of celebrity were collected using a text analysis tool to gather data from the website.

Since the measures of dependent variables are cumulative starting the beginning of airing times, ads that have been aired for longer times are more likely to generate more searches and social actions. In order to control such effect, this study utilized advertising spending information for each ad which is proportional to the number of days the ad has been aired. Information on advertising spending was provided by the research agency. The selection of appropriate control variables followed the procedure adopted by relevant social media and online marketing literature (e.g., Stephen et al., 2015; Lee et al., 2018; Yang et al., 2019).

4.2. Model Considerations

In order to test the proposed hypotheses, this research addressed the following considerations coming from the nature of the data. First, this research followed the approach by Stephen et al. (2015) and De Vries et al. (2012) considering the range of data and extreme values in the dataset. Because the dependent variables are left-skewed, this research applied a logarithmic transformation of the dependent variables (i.e., $\log(y+1)$) prior to using the measures in the analysis.

Second, industry fixed effects were included to account for the differences in characteristics for each industry in advertising. This study accounted for the fixed effects for the dependent variables in order to rule out effects due to economic cycle and advertising capabilities. Since such characteristics were not fully captured in our dataset but could serve as omitted variables, the exclusion of them could lead to biased estimates for the model (Wooldridge, 2010).

Finally, since the dependent variables are highly correlated (see Table 3), this research adopted a system-of-equations Tobit model and jointly estimated searches and social actions together, in addition to a Tobit model estimation for each dependent variable separately, consistent with the approach by Stephen et al. (2015). Therefore, the model estimation on each dependent variable for industry i's j^{th} ad is as follows:

Table 3: Correlation Matrix

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Log (Searches+1)	1.00										
2. Log (Social Actions +1)	0.59*	1.00									
3. Context Centrality	-0.24*	0.02	1.00								
4. Creativity	0.13*	0.33*	0.08*	1.00							
5. Use of Music	0.13*	0.25*	0.03	0.12*	1.00						
6. Product Fit	-0.05	-0.10*	-0.17*	-0.07*	-0.07*	1.00					
7. Average View Rate	0.11*	0.10*	-0.02	0.20*	-0.04	-0.02	1.00				
8. Use of Humor	0.27*	0.23*	-0.13*	0.35*	0.04	-0.12*	0.10*	1.00			
9. Use of a Celebrity	-0.07*	0.08*	0.29*	0.10*	0.04	-0.20*	0.04	0.09*	1.00		
10. Log (Estimated Spend+1)	0.65*	0.44*	-0.20*	-0.02	0.06*	-0.00	0.11*	0.08*	-0.13*	1.00	
11. Product Information	0.01	0.05	-0.02	0.05	0.09*	0.06*	-0.01	0.08*	-0.01	0.00	1.00

Note: n=1,223, *$p<0.05$

$$\log(Y^*_{ij}+1) = A_0 + \sum_{i=1}^{N\,1} A_{1,i} + A_2 X_{ij} + A_3 W_{ij} + A_4 XW_{ij} + A_5 Z_{ij} + e_{ij}$$

(1)

$$\log(Y_{ij}+1) = \log(Y^*_{ij}+1) \quad \text{if } \log(Y^*_{ij}+1) > 0$$
$$0 \quad \text{if } \log(Y^*_{ij}+1) \leq 0$$

(2)

Where Y_{ij} = [Searches$_{ij}$, Social Actions$_{ij}$]'. **1** is a vector of ones. A_0 are intercepts and $A_{1,j}$ are industry fixed effects for *N*=15 industries. A_2 and A_3 are the effects of the decision variables X_{ij} and W_{ij} (context centrality and product information) and A_4 are interaction effects between them (denoted as XW_{ij}). A_5 are the effects of control variables Z_{ij} and e_{ij} is an error term.

5. Results

Table 4 shows the main effects results of context centrality in advertising on online searches and social actions using a system of equations Tobit mode. First, the results indicate that there is a negative and significant relationship between context centrality and number of online searches. Table 4 shows that the coefficient estimate for centrality on log (searches+1) shows a negative value (β = -0.20, SE = 0.05, p<0.001), which supports our hypothesis 1 that the greater context centrality in an advertising message decreases the number of searches. In line with our expectation, other characteristics such as use of music or humor also help increase the number of searches, while using celebrities in ads does not affect searches. In addition, advertising spending captured by log (estimated spend+1) shows that greater spending leads to more searches.

Table 4: Main Effects Results for Shares and Social Actions: System-of-Equations Approach

Variable	Log (Searches +1)			Log (Social Actions +1)		
	Coeff	SE		Coeff	SE	
Context Centrality	-0.20	0.05	***	0.12	0.06	**
Creativity	0.11	0.04	***	0.52	0.05	***
Use of Music	0.54	0.11	***	1.04	0.15	***
Product Fit	-0.06	0.04		-0.08	0.05	
Average View Rate	0.00	0.00		0.00	0.00	
Use of Humor	0.21	0.03	***	0.11	0.03	***
Use of a Celebrity	0.04	0.11		0.35	0.15	**
Log (Estimated Spend +1)	0.78	0.09	***	0.70	0.10	***
Constant	-4.44	1.32	***	-4.71	1.43	***
Industry Fixed Effects						
2	-0.23	0.36		-1.73	0.47	***
3	0.20	0.37		-2.80	0.48	***
4	-1.24	0.65	*	-2.39	0.96	**
5	-0.05	0.40		-1.71	0.51	***
6	-0.30	0.40		-2.32	0.54	***
7	0.16	0.36		-1.69	0.47	***
8	0.41	0.37		-2.19	0.52	***
9	0.06	0.37		-2.20	0.51	***
10	0.40	0.42		-1.65	0.54	***
11	0.44	0.36		-2.20	0.52	***
12	0.32	0.39		-1.07	0.49	**
13	-0.43	0.40		-2.83	0.55	***
14	0.06	0.38		-2.68	0.53	***
15	0.50	0.42		-2.29	0.54	***
N	1,223					
Wald Chi-square	1019.70					
Log-likelihood	-4626.14					

Note: ****$p<0.001$; **$p<0.05$; *$p<0.10$

Next, the results also show evidence on hypothesis 2 in the main effects model. Table 4 shows that the estimated coefficient for context centrality on consumer online social actions is positive and significant (β = 0.12, SE = 0.06, p<0.05), which is consistent with the prediction that more context central ads will generate more online social actions. Also, the control variables such as creativity in an ad, use of music, humor, and celebrities show positive and significant effects on the number of social actions, which is in line with the expectation. The main effects of context centrality on searches and social actions were tested separately with a Tobit model and the results were consistent and therefore only results from a system-of-equations approach were reported in this paper.

Table 5: Moderation Analysis Results

Variable	Log (Searches+1)		
	Coeff	SE	
Context Centrality	-0.39	0.08	***
Product Information	-0.01	0.03	
Centrality x Product Information	0.05	0.02	***
Creativity	0.12	0.04	***
Use of Music	0.53	0.11	***
Product Fit	-0.07	0.05	
Average View Rate	0.00	0.00	
Use of Humor	0.20	0.03	***
Use of a Celebrity	0.05	0.11	
Log (Estimated Spend +1)	0.78	0.09	***
Industry Fixed Effects			
2	-0.24	0.36	
3	0.17	0.37	
4	-1.26	0.65	*
5	-0.09	0.39	
6	-0.37	0.40	
7	0.16	0.36	
8	0.40	0.36	
9	0.05	0.37	
10	0.38	0.42	
11	0.39	0.36	
12	0.29	0.39	
13	-0.44	0.40	
14	0.05	0.38	
15	0.48	0.42	
Constant	-4.23	1.33	***
N	1,223		
R²	0.1633		
Log-likelihood	-2226.84		

Note: ****p<0.001; **p<0.05; *p<0.10*

Lastly, results from a moderation analysis provide evidence that supports hypotheses 3 as shown in Table 5. The model with the interaction effect between context centrality and product information shows that while context

centrality in an advertising has a negative and significant effect on the number of searches (β = -0.39, SE = 0.08, p < 0.001), the effect flips when product information is introduced in the ad. The interaction coefficient between context centrality and product information (β = 0.05, SE =0.02, p<0.001) shows that presence of product information in an ad helps improving of the effect of context centrality on online searches, leading to an increase in searches for context central ads. As a following step, an interaction effect was also tested between context centrality and product information on online social actions, but the effect was not significant in the social actions model, implying that product information does not affect the relationship between context centrality and online social actions.

6. General Discussions

Consumers in the digital age often engage in multitasking behaviors using different devices, making firms' channel management strategies consider more complex than the traditional retail environment. As one of those online consumer behaviors, consumers access digital channels to search for more information about a brand or share content with others at the moment of or after watching TV advertising. More specifically, this research looks at the effectiveness of distributing advertising messages that incorporate external moments or events and diverse subsequent consumer behaviors in an online space. Findings of this research contribute to the academic literature in the following ways. First, while context-based advertising messages are becoming more prevalent along with the rise of social media platforms (e.g., Lewis & Reiley, 2013) and researchers have shown their effectiveness in driving consumer engagement (e.g., Zhang & Katona, 2012), understanding the effect of such advertising messages is limited in the sense that we simply know whether a message is context based or not. This research contributes to the literature by adding a new dimension of context centrality and explores how it affects consumers' subsequent online behavior across platforms.

Second, this research examines two different consumer behaviors in the new digital channel environment (i.e., online search and social actions) to understand different dynamics where a context-based advertising message plays a role and show that it leads these behaviors to different directions. More specifically, this research shows that more context central ads decrease consumers' subsequent search behaviors online, while such ads make consumers wish to share the content with others. Study findings and evidence from literature content that context central advertising in traditional channels such as television increases consumers' relational motives to connect with others using more

common ground topics, while decreasing opportunity to further search about the brand in the advertising message in digital channels. While the literature has paid attention to cross-channel effects of advertising such as an increase in social media multitasking (Godley, 2012), online searches (Zigmond & Stipp, 2010), and conversations (Onish & Manchanda, 2012) after watching TV ads, what this research indicates that not all consumer behaviors take place in the same way, especially in the case of context-based advertising messages.

Lastly, this research goes beyond finding differential impacts of context-based advertising on online consumer behaviors and suggest a way that firms could enhance the effectiveness of context-based advertising on online search behaviors by incorporating more product information in their message.

The findings of this research have several managerial implications. First, this research suggests that understanding their goals and expected outcomes in utilizing context-based advertising messages is a priority for managers. In this regard, firms need to understand that a variety of advertising messages can be designed and distributed for the same context, while only the importance of utilizing context into messages has been highlighted in practice. While the use of external moments or events that attract broader audience beyond a brand's core consumers is generally a commonly used and important practice, managers need to understand that consumers' subsequent behaviors after watching those ads differ by the level of context centrality. Therefore, managers first need to understand such mechanisms and set expected outcomes – e.g., whether they would like to increase shares or related social actions in social media platforms or increase searches and thereby enhance brand and product knowledge. If firms would like to make their advertising contents viral and make them actively shared and discussed among consumers across channels, the research suggests that managers could design and distribute an advertising message where external moments or events are more central.

On the other hand, firms need to consider distributing a different advertising message if their goal is to enhance consumer knowledge about their product and brand. For example, if a firm has launched a new product and wants their consumers to learn more about the product by introducing it in their new advertising, this research suggests that it would not be an ideal strategy to closely relate their ad with external events that take consumers attention. If firms would like to encourage consumers to search more about the brand, then managers could decrease the level of context centrality in an advertising message so that consumers could focus more on brand and product relevant cues. In other words, it is important that firms need to consider consumer outcomes of context-based advertising

messages in multiple directions, rather than based on a simple assumption that advertising contents with high quality and interesting topics will generate positive consumer outcomes.

However, the study findings provide a way that firms could enhance consumer searches when utilizing context-based advertising. This research suggests that firms can consider designing their advertising message contents in ways that such messages also have a great fit with their brands. The result suggests that providing more product information in a message while using external contexts could enhance the effect of context centrality in ads on online searches. While firms across different retail environments could utilize the same events or moments (e.g., Olympics, Christmas, or Mother's Day) in their advertising, they could still differentiate their messages by integrating their product information and attract a large share of consumers' attention. Designing context-relevant advertising messages in a way that they also incorporate relevant product information could serve as a practice to enhance both consumer searches and social actions.

7. Limitations and Future Research Directions

This study is among the first to explore the degree of context centrality in an advertising message on following online consumer behavior, and therefore acknowledge several limitations. First, the measure of context centrality could be further developed by addressing several concerns arising from its collection and calculation process. While the research findings show that context centrality decreases online searches while increases online social actions, each context cue used in the ads is considered equally when context centrality is calculated. However, it is possible that each context cue has different meanings and weights in ads. For example, Olympic athletes in an ad will be more impactful than kids playing sports in an ad when considering context centrality perceptions. In order to account for different dimensions in context centrality, future studies could consider direct and indirect context centrality. The context cues used in the data collection process indicate that some of the context cues are more directly related to the context (i.e., Olympics and NCAA), such as use of images or symbols related to the event or use of athletes or teams in the context of the event. However, some context cues are more indirectly related to the context, such as people playing sports or focus on the fans of the event, etc. It is possible that the effect of context centrality on searches and social actions is more prominent when it is more direct. Furthermore, it is possible that the effect of context centrality is different across channels, while this study only considers the effect of distributions of TV advertising on consumer behavior in

online channels. One of the future and important directions of this research is to explore diverse aspects of contexts across channels and incorporate them into the construct of context centrality.

Second, related to the first point, many of the ads used in the analysis contain athletes that vary by popularity. As an additional dimension of context centrality, future research could access data on each athlete's popularity and explore if more popular athletes in an ad will have different impacts on searches and social actions. Consideration of such dimensions of context centrality will offer meaningful managerial implications in that they are directly related to firms' advertising costs. Since the use of more directly related context cues or more popular athletes is closely associated with higher costs, the study findings on the impact of such cues in an ad on consumer responses will help managers design of ads considering their benefits and costs.

Third, the dependent variables are measures at an aggregate level and the effects of time were not considered in the analysis. As discussed in the theory development section, timing is a crucial element that advertisers should consider when designing ads in today's advertising environment. Since this research looks at the effects of external major moments or events during the time when consumers are mostly excited, their excitement and engagement level will decrease at a greater speed than context-irrelevant messages. Therefore, it is reasonable to expect that after certain time periods when such context is no longer relevant, it is possible that ads with high context centrality drive less engagement than those with low context centrality and therefore overall engagement for the high context central ads will be lower than low context central ads (e.g., NCAA final match is over one week ago and consumers are no longer excited about the events). In addition, it is possible that the dependent variables which are information search and social actions in this research show different patterns over time. While the literature offers little insight into how the two activities evolve over time, it will also be a meaningful direction to find high context centrality ads' differential impacts on search and social actions over time.

8. Conclusions

This research explores consumers' cross-channel behaviors in the new channel environment and finds that the degree of which context information is central in TV advertising messages has an asymmetric effect on different types of subsequent online behaviors, namely online search and online social actions. The study findings show that while consumers' subsequent online searches decrease when the degree of context centrality in distributions of TV advertising increases, online social actions such as sharing or posting related contents on social media platforms increase for more context central ads. The findings also suggest that including product information in distributing context-based advertising messages enhances consumers' online search behaviors followed by TV ads that are highly context central, providing firms new insights on advertising channel management decisions based on an understanding of consumers' cross-channel behaviors. Therefore, understanding of the changing dynamics of the retail environment will provide firms a new opportunity to enhance their channel management systems.

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