Analyzing the Effectiveness of Interaction Between Brand Awareness and Social Network Advertising: The Moderating Role of Social Facilitation

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ABSTRACT

Although social network advertising has become part of the online marketing strategy, there is still a lack of research related to the interaction between brand awareness and advertising content in social network advertising. Using the semiotic theory to explain the interaction in social network advertising, this study introduced sign-interpretation-object triangle to analyze the interactions of advertising content and brand awareness as signs, users’ experience as interpretation, and social networks advertising effectiveness as objects moderated by social facilitation. This study was made in an experiment followed by an online survey, which contains 303 participants in Mainland China. This study shows some major findings. There is an interaction effect on advertising content and low brand awareness in a social network. The moderating role of social facilitation is significant in advertising content with high brand awareness.

KEYWORDS

Brand Awareness, Sign-Interpretation-Object Triangle, Social Facilitation, Social Network Advertising

1. INTRODUCTION

Advertising has become one of the most important channels for social network marketing strategy. At the same time, brand awareness is an important factor that influences users’ review and forwarding and then affects the advertising effect (Zs, Yz, Fo, & Ab, 2019; Miguel, 2020). From the perspective of marketing activities, companies need to place a large number of advertising on social networks to increase sales. Meanwhile, companies also need to consider what kind of advertising contents can enhance brand awareness (Pantea, 2019; Dabbous & Barakat, 2020). However, few companies think about whether different brand awareness should adopt different advertising content. Whether there is a interactive relationship between brand awareness and advertising content characteristics, it is a problem that marketers often face. So, analyzing the effectiveness of interaction between brand awareness and social network advertising contents can provide novel insights into a social network advertising strategy.

Nonetheless, mainstream research on the social advertising effectiveness has still lagged in two critical aspects that motivate this study. First, prior studies have focused on advertising contents and brand awareness separately, which paid little attention to the interaction between advertising contents and brand awareness on the effectiveness of social network advertising. On the one hand, some studies...
used advertising content, such as page design and advertising slogans as independent variables and web clicks as dependent variables, to analyze the social network advertising effectiveness (Weng, Huang, & Bao, 2021). But the conclusions of these studies conclusions are not entirely adopted by marketing practices. On the other hand, some studies analyzed that brand awareness is one of the core factors of users’ behavior, different brand awareness has different effects on advertising (Phua, Jin, & Kim, 2017; Hayes, Brinson, Bott, & Moeller, 2021). In social network advertising, all advertisers’ contents (such as brand awareness, page design, and marketing to mix) are unified and integrated into the social network post (Sreejesh, Pa, Strong, & Pius, 2020). It is not clear which element can understand social network advertising. Thus, the literature lacks an interactive perspective of analyzing the effectiveness of interaction between brand awareness and social network advertising.

Second, prior studies have shed little light on the moderating role between social network advertising and the effectiveness. On the one hand, some studies focused on brand awareness’s influence on advertising effectiveness (Kim & Sundar, 2014; Niu, Wang, & Liu, 2021). But there is expected to be very little research specifically on social networks. On the other hand, some studies focused on social network advertising contents to analyze the effectiveness (Weng et al., 2021). The most difference between the social networking scene and the web scene is user-generated content. Users can interact with each other through the user-generated content, thereby influencing the behavior of individual users (Miguel, 2020; Sreejesh et al., 2020; Kemp, Cowart, & Bui, 2020). However, there is very little research paid attention to the moderating role of social network scenarios on the social network advertising effectiveness. Thus, literature also lacks the moderating role of analyzing the effectiveness of interaction between brand awareness and social network advertising.

To fill the gaps, this study introduces the semiotic theory and social facilitation to construct a theoretical model to examine the effectiveness of interaction between brand awareness and social network advertising. Umberto Eco (1976) first defined semiotics as “being concerned with everything that can be taken as a sign.” Many later studies follow this definition. Peirce, Hartshorne, Weiss, & Burks (1931) formulated the sign- interpretation-object triangle, which introduces the interaction of three abstract subjects: the sign (some literature uses “representamen” as a word for “sign”), its object, and its interpretation as a core of human cognitive activities (Peirce et al., 1931; Corina, 2019; Kumar, Srinivasan, Cheng, & Zomaya, 2020). The sign- interpretation-object triangle cannot be only express meaning, but also explain our perception and all the phenomena we perceive.

Considering that the sign-interpretation-object triangle has some theoretical advantages, this study uses it to examine the social network advertising effectiveness. The reasons are as following. First, the sign-interpretation-object triangle can create a framework to measure brand awareness and advertising content with the social network. Due to a lack of meaning-making in brand awareness and advertising content, previous studies cannot express meaning in social network advertising (Peirce et al., 1931; Wiese, Martínez & Botella, 2020). Second, the sign-interpretation-object triangle can provide insights into users’ interaction with a social network to measure social network advertising effectiveness (Petofi, 1972; Mingers & Willcocks, 2014; Mikhail & Baskerville, 2019). Previous studies represent one-way processes that ignore the interaction between advertisers and user groups in social networks (Mikhail & Baskerville, 2019; Kemp et al., 2020). To promote interaction in the study of social network advertising, the sign-interpretation-object triangle has the advantage of analyzing how meaning is shared between sign and users (Dong, Yoon, & Lee, 2014; Mingers & Willcocks, 2014; Accurso, 2020). This study wants to confirm the interaction mechanism between advertising content and brand awareness in social network advertising.

Compared with online advertising, social network advertising users are more engaged and more dynamic. To study the effectiveness of social network advertising, we must consider the impact of user-generated content on advertising effectiveness. So, this study develops a quantitative model to integrate social network advertising effectiveness, which introduces social facilitation into the sign- interpretation-object triangle. According to Zajonc (1965), social facilitation is that users show different work efficiency when others are present than when they are alone (Zajonc, 1965; Uziel, 2007;
Steger, Gebrehiwot, Chengere, Marinkovich, & Klein, 2021). The interpretation can be divided into three stages: the general meaning of the message, bring in the users’ emotions (Peirce et al., 1931). However, there is a lack of variables to measure the interpretation in the social network environment. Social facilitation as measurable variables can describe a user’s interpretation that expresses users’ cognition, emotion, and intention to receive to communicate advertising on a social network (Hillman, Lundin, Rensfeldt, Lantz, & Peterson, 2021). The sign-interpretation-object triangle with social facilitation can better explain social network advertising effectiveness.

The rest of the article is expanded as following. First of all, this article establishes a social network advertising effect model based on sign-interpretation-object triangle. The model uses social facilitation as a moderating variable. Second, this article discusses the experiment design, data collection, and analysis. And then, this paper discusses the conclusion, findings, and further research.

2. LITERATURE REVIEW

2.1 The Sign-Interpretation-Object Triangle

The sign-interpretation-object triangle is Peirce’s main contribution in the semiotic research field (Peirce et al., 1931). In the sign-interpretation-object triangle, the sign refers to a thing other than itself and the object. Because it can generate a certain meaning, some people can understand this sign. To explain a sign, people must realize it through mental activity that can be regarded as the interpretation (Peirce et al., 1931). Through the interpretation, a sign can be interpreted as a certain phenomenon by people through a certain characteristic, which can be regarded as its object (Porcar, 2011; Fjrtoft & Lai, 2020). To explain the different ways that a sign generates its object through the interpretation, it can fall into three types: icon, index, and symbol (Peirce et al., 1931). Icons are signs that imitate or resemble other things in some way. For example, the cartoon image represents an animated character. Cartoon images are icons that expressing real characters. Indexes are the type of pronoun or instruction of things. There is a logical relationship between indexes and things, but there is no similar relationship (Petofi, 1972; Corina, 2019). For example, in traffic signs, the red light means stop, and the green light means driving, which are the indexes. The symbol is a special kind of sign. It is built on the habit of the social background to realize the association between symbol and meaning (Petofi, 1972; Kumar et al., 2020). So, a symbol be matched with the icons or indexes to express meaning. For instance, in the minds of many consumers, the red represents passion and blue represents a sense of technology. So, to express enthusiasm or the meaning of technology must be used through symbols such as red graphics or blue logos, etc. In summary, the sign-interpretation-object triangle is a model of things, people’s interpretations and meanings of things (Kumar et al., 2020; Paraskevaidis & Weidenfeld, 2021).

2.2 The Sign-Interpretation-Object Triangle In Social Network

In recent years, the sign-interpretation-object triangle is used to explain social network marketing communication in social network research (Mingers & Willcocks, 2014; Leone M, 2020). Using the sign-interpretation-object triangle, some studies use communication effectiveness to measure social network marketing effectiveness (Dong et al., 2014; Fjrtoft & Lai, 2020). So, the meaning of social network marketing information can be communicated through the sign-interpretation-object triangle (Porcar, 2011; Corina, 2019). In the sign-interpretation-object triangle in a social network, both advertising content and brand awareness can be regarded as signs. In the sign-interpretation-object triangle, both icon and index can express meaning independence (Mikhaeil & Baskerville, 2019; Paraskevaidis & Weidenfeld, 2021). Thus, it is important to analyze the influence of icons and indexes on the means of communication. Considering that symbols must be combined with icons or indexes to express meaning, this study focuses on the impact of icons and indexes on the social network advertising effectiveness.
At the same time, brand awareness is an important sign in advertising, which combined with advertising content to express meaning. Brand awareness can be seen as the strength of a brand node in consumers’ memory. Brand awareness also can be reflected by consumers’ ability to recognize the brand within various contexts or situations (Keller, 1993; Dabbous & Barakat, 2020; Sang, 2021). Brand awareness consists of two parts: brand recognition and brand recall performance. Brand identity is a clue that marketers hope to create and maintain, which can arouse people’s good impression. Brand recall refers to a situation: given a product category, consumers are asked to point out or recall a brand without further prompting (Zs et al., 2019; Miguel, 2020). Brand recall can be regarded as consumers’ familiarity with the brand, which can be used to analyze users’ attitudes towards the brand (Abou & Soliman, 2021; Berlo, Reijmersdal, Smit, & Laan, 2021).

In a social network, consider the characteristics of user-generated content, brand awareness can be defined as the extent to which users are familiar with the distinctive qualities or the image of a particular brand of goods or services in a social network (Phua et al., 2017; Sung & Woodside, 2021). In social network advertising, brand awareness plays a key role in a marketing communication to recognize and recall a brand, and then to make a decision of the advertising communication (Apg, Ddt, Gsm, & Le, 2020). So, brand awareness is a necessary factor for the social network advertising communication effectiveness (Phua et al., 2017; Pantea, 2019). The role of brand awareness in the effectiveness of social network advertising is reflected in arousing user interest. While the existing literature has well established the role of brand awareness on communication in a social network, the interaction mechanism between brand awareness and advertising content in a social network is still only limited research (Godey et al., 2016; Souleles, 2020; Jiang et al., 2020).

In the sign-interpretation-object triangle in a social network, the advertising content and brand awareness can be represented by signs. Users’ perceptions and emotions can be represented by interpretations. And then, social network advertising effectiveness can be represented by its objects in the triangle. Figure 1 depicts the social network advertising effectiveness in the sign-interpretation-object triangle. The advertising posts can be seen as signs (Mikhaeil & Baskerville, 2019; Paraskevaidis & Weidenfeld, 2021). These signs can change users’ perceptions and emotions. Users can forward the posts, and then create a social network advertising effectiveness, which can be represented by objects (Porcar, 2011; Paraskevaidis & Weidenfeld, 2021).

Figure 1. The social network advertising effectiveness in the sign-interpretation-object triangle
2.3 Social Facilitation In Social Network

The sign-interpretation-object triangle connects sign, interpretation and object (Peirce et al., 1931; Mikhaeil & Baskerville, 2019). In social network advertising, the sign-interpretation-object triangle can be considered in creating advertising meaning, bringing in users’ perceptions and emotions, and comment or forwarding the advertising. Unfortunately, there are few relevant studies in social network advertising. Thus, our research introduces social facilitation into the sign-interpretation-object triangle.

Social facilitation shows that the presence of other people raises the individual’s general level of driving force. It can also enhance the individual’s dominant response tendency more than competitive (Zajonc, 1965; Neider, Fuse, & Suri, 2019; Heinrich, Müller, & Caal, 2021). According to social facilitation, when a person does some simple work, the presence of others can improve the person’s work efficiency. It also found that when it is necessary to solve problems or engage in new jobs, it may also inhibit an individual’s work efficiency (Zajonc, 1965; Uziel, 2007; Bailey, Bonifield & Elhai, 2021). The distraction-conflict hypothesis can explain the mechanism of social facilitation. When a person is involved in a job, the appearance of others or novel stimuli will distract him. This distraction creates a conflict between the individual’s attentions to the task of the novel stimulus. This conflict makes the arousal increase, which leads to social facilitation. There are two main trends: one is the individual’s positive reaction to the social environment, which can be called social promotion, and the other is the individual’s negative reaction to the social environment, which can be called social inhibition (Uziel, 2007; Arulogun, Oluwatobi, Akindele, & Badmus, 2020; Barkley & Lepp, 2020). In social network advertising, user-generated content is an expression of the presence of others. The user-generated content, as a distracting stimulus, may have an effect on the users’ decision-making efficiency of advertising. Unfortunately, there are few relevant studies on the relationship between social network groups and individuals (Hansen, 2016; Kardos et al., 2017; Kirkpatrick, Cho, & Stone, 2021). Especially the research on the effect of social network groups on individuals in social network advertising is almost blank. So, this study introduces social facilitation as a moderating factor into the sign-interpretation-object triangle.
3. THE CONCEPTUAL MODEL AND HYPOTHESES

This paper has developed the framework for this research in Figure 2.

3.1 The Signs’ Influence On Object In Social Network

In social networks, advertising content generation advertising effectiveness can be attributed to the relationship between sign and object (Mikhaeil & Baskerville, 2019; Paraskevaidis & Weidenfeld, 2021). Meanwhile, brand awareness in social network advertising can promote users’ behavior intention. It also can be explained as a sign and object, which can promote social network advertising effectiveness (Phua et al., 2017; Corina, 2019). But the mutual influence study of advertising contents and brand awareness on social network advertising effectiveness is rare. The relationship between sign and object can explain them. In social network advertising, there is a causal or similar relationship between icons and objects (Porcar, 2011; Corina, 2019). At the same time, compared with the low brand awareness, the high brand awareness would build brand recall and brand recognition, and then also enhance the behavior intention (Phua et al., 2017; Dabbous & Barakat, 2020). Icons can be utilized to deepen a brand impression. Thus, for high brand awareness, icons will result in more increased levels of communication effect than the index.

Compared with high brand awareness, low brand awareness is difficult to identify and recall the brand (Keller, 1993; Pantea, 2019). In the social network, the process of signs to objects is complex. Meanwhile, there is a direct relationship between indexes and objects, which can be seen as direct behavior intention (Porcar, 2011; Sang, 2021).

Compared with the icon, the index is more able to generate brand recognition (Sang, 2021). The index is related to the object, thereby achieving more direct behavior results (Sang, 2021). Based on the contractions, a brand to recall can be more created. Thus, for low brand awareness, indexes will result in more increased levels of social network advertising effectiveness than icons (Mingers & Willcocks, 2014; Kemp et al., 2020). Hence, it can be inferred that different interactions between the contents and brand awareness can influence the object in different ways. This study hypothesizes:

H1a. For high brand awareness, the icon will result in more increased levels of social network advertising effectiveness than the index.

H1b. For low brand awareness, the index will result in more increased levels of social network advertising effectiveness than the icon.

In the social network, there is a similar connection between icons and users’ interpretation (Mingers & Willcocks, 2014; Sang, 2021). The emotional energy between icons and users’ interpretation can be stimulated (Collins, 2011; Dabbous & Barakat, 2020). Compared with the indexes, the icons can help users to produce a higher emotional energy and then can be interpreted by users (Collins, 2011; Dabbous & Barakat, 2020). At the same time, compared with the low brand awareness, the high brand awareness would bring in the users’ knowledge and motivations, and then enhance the level of users’ interpretation (Barreda, Bilgihan, Nusair, & Okumus, 2016; Gomes, Lu et al., 2016). It is easy to create brand recognition and brand recall performing with the icons. So, for the high brand awareness, the icons will result in more increased levels of users’ interpretation than the indexes.

At the same time, users would build weak capability to confirm their prior exposure to the brand of the product of low awareness (Phua et al., 2017). So users’ interpretation is a complex process to create emotional energy for the product of low awareness (Barreda et al., 2016; Kim, Choe, & Petrick, 2018). The indexes are linked to the users’ interpretation (Paraskevaidis & Weidenfeld, 2021; Septianto, Ye, & Northey, 2021). The indexes can help users to bring in the brand recognition of contractions. Based on the directive contractions, brand recall can be more created with the indexes than the icons for the production of low brand awareness. Combination the process of brand recognition and brand
to recall, it is easy to create an individual’s knowledge and motivation (Ke, Chen, & Su, 2016). This study hypothesizes:

H2a For high brand awareness, the icon will result in more increased levels of users’ interpretation than the index.
H2b For low brand awareness, the index will result in more increased levels of users’ interpretation than the icon.

3.2 The Moderating Roles Of Social Facilitation

Based on the distraction-conflict hypothesis, the executive level of the task can be predicted by the number of distractions in the environment around the task (Uziel, 2007; Hillman et al., 2021). At the same time, based on the previous derivation, the icons are similar to the interpretation in some way (Paraskevaidis & Weidenfeld, 2021). Compared with the indexes, it is easier for users to generate similar meanings through icons, and then easier bring to users’ interpretation (Porcar, 2011; Sang, 2021).

Meanwhile, high brand awareness can speed up the process from sign to interpretation (Sang, 2021). In social network advertising, the icons are related to users’ interpretation (Mingers & Willcocks, 2014; Mikhaeil & Baskerville, 2019). Compared with the indexes, users can generate a similar meaning with the icons, and then bring it to the individual’s knowledge and motivation (Collins, 2011; Mikhaeil & Baskerville, 2019). Meanwhile, brand awareness is high, which can speed up the process from sign to interpretation. So the process from sign to interpretation can be seen as a simple work. Based on the social facilitation, the user-generated content, such as reviews and likes, can improve the users’ interpretation (Steger et al., 2021; Hillman et al., 2021). So, social facilitation will positively moderate the relationship between the icons and users’ interpretation with high brand awareness.

Meanwhile, the product of low brand awareness cannot bring in the individual’s knowledge and motivation (Phua et al., 2017; Yang, & Lau, 2019). Generating knowledge and motivation are a complex process. So completing the process from sign to users’ interpretation can be regarded as a complex work. At the same time, there is a certain direct contact between the index and users’ interpretation in social network advertising. The directness of indexes can simplify the users’ cognitive process of brand awareness and shorten the time. Meanwhile, although recognizing the product of low brand awareness is a complex task for users, users may view the user-generated content, such as reviews and likes, as direct contractions with index, and also consider them as direct contractions with the brand (Barreda et al., 2016; Apg et al., 2020; Berlo, 2021). Based on social facilitation, user-generated content can always improve the users’ interpretation (Neider, 2019; Barkley & Lepp, 2020). So the level of social facilitation in a social network will positively moderate the relationship between the indexes and levels of users’ interpretation of low brand awareness. This study hypothesizes:

H3a For high brand awareness, social facilitation in the social network will positively moderate the relationship between the icon and users’ interpretation.
H3b For low brand awareness, social facilitation in the social network will positively moderate the relationship between the index and users’ interpretation.

3.3 The Interpretation Influence on Object

Although there is no face-to-face interaction, the users’ interpretation also can be seen as being there (Collins, 2011; Paraskevaidis & Weidenfeld, 2021). The users’ interpretation can increase users’ organizational identification of social networks. It can also influence the users’ organizational identification in the social network (Gooch & Watts, 2014; Neider, 2019). In social network advertising, using social networks as a new medium, user behavior in the social network is decentralized (Wiese
et al., 2020; Niu et al., 2021). Through social networks, users’ behavior towards advertising is also decentralized. To improve the dissemination efficiency of social network advertising information, the decentralized user’ perception and emotion are very important. In other words, the degree of decentralized users’ understanding of advertising is an important factor in social network advertising effectiveness. The intensity of the users’ perception and emotion is related to the degree of useful links to social networks and then related to social network advertising effectiveness (Wiese et al., 2020; Niu et al., 2021). This study hypothesizes:

H4: A more positive users’ interpretation of social network advertising will improve social network advertising effectiveness.

4. METHODOLOGY

4.1 Page Design And Manipulation

To test the above hypothesis, this study applied a 2 (advertising content: icon vs. index) * 2 (brand awareness: high vs. low) between-subjects experimental design. The study manipulated various advertising contents and brand awareness, and then measured the social network advertising effectiveness as dependent variables with my experiment. Figure 3 shows the steps of methodology in the study.

First, this study classified the products that entered the experiment. Using Philip Nelson’s categories standard, the study selected clothing (search goods), cosmetics (experience goods), and drink (credence goods) as the three categories of standardized products that are popular on Sina microblog (weibo.com) (Nelson, 1970; Kim et al., 2018). To test the rationality of product selection, the study had conducted a 7-point Likert scale survey on the three products using user interests, perceived price, and social network communication intentions. Using analysis of ANOVA, the result noted that
there are significant differences in user interests, perceived price, and social network communication intentions for the three products. The three products represent search goods, experience goods and credence goods. The result shows that the three categories of standardized products had a significant difference. Use this product classification can cover all kinds of products. So, the three types of products are suitable for this experiment.

Second, this study designed experiment pages. The study had designed a 2*2 (advertising contents* brand awareness) factorial pages. For each page, this study had two advertising contents (icon and index) and two brand awareness (high and low) for each product. To be consistent with the page design of Sina (weibo.com), each page was divided into two parts: advertiser posts and communication effects. Advertiser posts contain pictures and words on the heading line. For example, the icon picture featured variant word text, cartoon, and scale-model, which can imitate objects. The index picture featured pure text, pure words, and pointers, which can relate to objects. The communication contains reviews, likes, and sharing. The beginning of the questionnaire presented the definition of brand awareness. For instance, Figure 4 provides an example of the page design. Based on Figure 3, this is the product advertising with low brand awareness on Sina Weibo. Since it is not within the list of the top ten brands on Sina Weibo, I define it as a product with low brand awareness. At the same time, it is a cosmetic product, which is a typical experience product. Based on page contents and brand awareness, this page has been developed.

To test whether my design is reasonable, some participants had been making a small test. Some participants were informed the definition of advertising content in this experiment and then asked to judge the attribution of the advertising content. To avoid the carry-over effect, no participant had been evaluated on more than one-page content. The pre-test results indicated that the page design of my study is reasonable.

4.2 Measure

The pre-test showed that the interviewees could understand the questions arose in the study. The study used the pages for the full study. The participants were asked to review each of the pages from a social network user viewpoint. After seeing the page, participants completed an online survey.
In order to ensure the effectiveness of the experiment, each participant was assigned and only viewed one type of brand awareness and advertising content of each product. Where possible, the core structure of the measurement in this study was developed based on previous literature and existing scales (see Table 1).

### Table 1. Construct measure

<table>
<thead>
<tr>
<th>Construct</th>
<th>Items</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advertising</td>
<td>The page was imitates other objects in some way</td>
<td>(Porcar, 2011; Septianto et al., 2021; Sung &amp; Woodside, 2021)</td>
</tr>
<tr>
<td>content</td>
<td>The page was indicates other objects in some way</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The page was resembles other objects in some way</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The page was visually other objects in some way</td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>The reviews of in the post was very informative</td>
<td>(Uziel, 2007; Barkley &amp; Lepp, 2020; Hillman et al., 2021)</td>
</tr>
<tr>
<td>facilitation</td>
<td>The numbers of likes in the post was very informative</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The numbers of sharing in the post was very informative</td>
<td></td>
</tr>
<tr>
<td>Brand awareness</td>
<td>I can recall the brand</td>
<td>(Phua et al., 2017; Pantea, 2019; Dabbous &amp; Barakat, 2020)</td>
</tr>
<tr>
<td></td>
<td>I can recognition the brand</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I like the brand</td>
<td></td>
</tr>
<tr>
<td>Interpretant</td>
<td>I will pay attention to the post</td>
<td>(Porcar, 2011; Mingers &amp; Willcocks, 2014; Wiese et al., 2020)</td>
</tr>
<tr>
<td></td>
<td>I think the post can affect my mood</td>
<td></td>
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<tr>
<td></td>
<td>I know the content of social network advertising</td>
<td></td>
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<tr>
<td></td>
<td>I know inherent meaning of social network advertising</td>
<td></td>
</tr>
<tr>
<td>Object</td>
<td>I will share the post in my social network</td>
<td>(Porcar, 2011; Mingers &amp; Willcocks, 2014; Wiese et al., 2020)</td>
</tr>
<tr>
<td></td>
<td>I like the product in the post</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I will to buy the product</td>
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</tbody>
</table>

### 4.3 Participants and Procedure

As part of this study, this study made an open invitation to all the college students from mainland China as participants. A link to my survey was posted on a popular survey website in China (sojump.com), and then forwarded it through social networks to attract those who were interested in this study. This study used convenience sampling and snowball sampling methods to recruit participants. All participants need to meet the condition that they used social network often. In total, the participants in this study are 303 in mainland China. The participants are mainly college students. The participants all had social network experience. The participants consist of 35.6% males and 64.4% females. The age for most participants (62.7%) can range from 18 to 25 years. Most participants had social networking experience at least twice a day (99.3%). Considering gender and age, this result shows that my sample is similar to mainstream social media user research (Kemp et al., 2020; Jiang et al., 2020; Septianto et al., 2021). This result supports the representativeness of my sample.

The participants were initially told that this is a survey about social network usage. Study participants are then assigned and only viewed one type of advertising. After that, participants responded to items.

### 5. RESULTS

#### 5.1 The ANOVA Results

To test H1a-b and H2a-b, one-way ANOVA had been used to compare the means of two or more samples (using the F distribution) (Hair et al., 2010). Table 2 indicates the ANOVA results.
Specifically, for the product with high brand awareness, the levels of communication were evaluated more increased when advertising used to index (M=4.41, SD=1.617) than when advertising used icon (M=3.83, SD=1.644, F=5.760, P=.017). But, H1a assumes that the icon is more likely to result in communication than the index. For the product with low brand awareness, the levels of communication effect were evaluated more increased when advertising used to index (M=3.654, SD=1.88, F=22.366, P=.000). So, Thus, H1a was not supported, and H1b was supported.

At the same time, in the case of high brand awareness, when using advertising for the index (M=4.58, SD=1.265), the evaluation of users' interpretation is higher than when using an icon (M=4.34, SD=1.354). But the differences were not significant (F=1.625, P=.204). In the case of low brand awareness, when using advertising for the index (M=5.03, SD=1.132), the evaluation of users' interpretation is higher than when using an icon (M=5.106, SD=1.288) than when advertising used icon (M=3.654, SD=1.88, F=22.366, P=.000). So, Thus, H1a was not supported, and H1b was supported.

The ANOVA results show that, regardless of brand awareness, the role of the index significantly exceeds the role of the icon. The interaction between brand awareness and advertising content is mainly reflected in the use of lower brand awareness indexes in the social network (Uziel, 2007; Bailey et al., 2021).

5.2 The Moderating Effects Of Social Facilitation And The Mediating Effect Of Users’ Interpretation

This study had hypothesized that social facilitation would positively moderate the relationship between the icons and advertising effectiveness with high brand awareness (H3a) and the relationship between the index and advertising effectiveness with low brand awareness (H3b). To examine H3a and H3b, it first regressed the advertising effectiveness onto advertising contents, brand awareness, and advertising contents and brand awareness interaction. Table 3 shows the results.

<table>
<thead>
<tr>
<th>Table 2. Effects of the brand awareness and advertising contents</th>
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<tbody>
<tr>
<td><strong>Hypothesis</strong></td>
</tr>
<tr>
<td>H1a</td>
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<tr>
<td>H1b</td>
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<tr>
<td>H2a</td>
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<tr>
<td>H2b</td>
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<table>
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<tr>
<th>Table 3. The moderating effects of social facilitation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Regression 1 Users’ interpretation</strong></td>
</tr>
<tr>
<td><strong>Contents</strong></td>
</tr>
<tr>
<td>Social facilitation</td>
</tr>
<tr>
<td>Contents * Social facilitation</td>
</tr>
<tr>
<td><strong>R2</strong></td>
</tr>
<tr>
<td><strong>F</strong></td>
</tr>
</tbody>
</table>

Note: High = High brand awareness; Low = Low brand awareness; ** p < .001
The results support H3a. But the results cannot support H3b. There are not similar moderating effects of social facilitation in the interaction between brand awareness and advertising contents. Especially for the product with low brand awareness, the moderating effects of social facilitation are not significant. The results can confirm that brand awareness has the Matthew Effect on social networks.

To further explore the interaction between brand awareness and advertising content that will affect social network advertising effectiveness, and also to test H4, the mediation effect of users’ interpretation was tested. A mediation model is one that seeks to identify the mechanism or process that underlies an observed relationship between an independent variable and a dependent variable via the inclusion of a third hypothetical variable, known as a mediator variable (Preacher et al., 2007). Using SPSS 22.0, Table 4 calculated the direct effect, mediating effect, and total effect. Table 5 presents the test results.

Table 4. Mediation analysis of users’ interpretation

<table>
<thead>
<tr>
<th>IV: Contents</th>
<th>IV®DV</th>
<th>IV®M</th>
<th>IV+M®DV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low brand awareness</td>
<td>0.616**</td>
<td>0.693**</td>
<td>0.004</td>
</tr>
<tr>
<td>High brand awareness</td>
<td>0.562**</td>
<td>0.662**</td>
<td>0.013</td>
</tr>
</tbody>
</table>

Note: IV is independent variable; M is mediating variable; DV is dependent variable; ** p<0.001

The results show that no matter how brand awareness is, users’ interpretation plays a fully intermediary role. Further, the results show that the interaction mechanism between content and brand on the effect of social network advertising is generated through user interpretation as an intermediary factor. To examine H4, we also do a cross-sectional regression analysis. The users’ interpretation has a significant influence on social network advertising effectiveness (β=0.858, p=0.000). The result supports H4.

From H1 to H4, the results can find conclusions from three aspects. First, the results partially confirm the interaction mechanism between brand awareness and advertising content types in social network advertising. The results support H1b and H2b, but not support H1a and H2a. These results can improve existing literature about the interaction mechanism between brand awareness and advertising content. In particular, the results point out the impact of the index of the social network advertising effectiveness for the product with low brand awareness. Second, using social facilitation theory, the results explain the interaction mechanism between brand awareness and the type of content in social network advertising. The results support H3a, but not support H3b. These results can fill the gap in the existing literature about the matching degree between different brand awareness and advertising content on users’ emotions with social facilitation. In particular, the results point out the level of social facilitation can positively moderate the relationship between the icon and the level of users’ interpretation of the product with high brand awareness. Combined with H1, the results can help us to recognize the different roles of an icon and index in social network advertising. Third, the results clearly show the mechanism of the sign in the social network to produce the advertising effectiveness. The results support H4. These results can expand the full mediation effect of users’ interpretation.

6. DISCUSSION

This study that investigates the impact of interaction between brand awareness and advertising contents on the social network advertising effectiveness has some notable findings.

First, this study shows that under the different brand awareness backgrounds, the mechanism of advertising contents on the social network advertising effectiveness is different. Specifically, the
index under the background of low brand awareness has a significant impact on the social network advertising effectiveness. Supporting H1b and H2b confirm this conclusion. However, for the rejected hypotheses H1a and H2a, the icon does not have a significant impact on the social network advertising effectiveness in the context of high brand awareness. These empirical results show the rich potential results of the interaction between brand awareness and advertising contents on the social network advertising effectiveness. In the past literature and marketing practice, the analysis of social network advertising content often focused on design, marketing content and other perspectives (Weng et al., 2021). The literature on brand awareness often only connects brand awareness and advertising effects (Phua et al., 2017; Hayes et al., 2021). The conclusions of this study can provide a more detailed research perspective, that is, through the semiotic analysis method, the product feature of brand awareness and the advertising contents can combine to analyze the impact of its interaction on the social network advertising effectiveness.

Second, this study shows that under the different brand awareness backgrounds, the moderating role of social facilitation on the relationship between the advertising contents and users’ interpretation is different. Specifically, under the background of high brand awareness, social facilitation can positively moderate the relationship between the icon and users’ interpretation. Supporting H3a confirms this conclusion. However, for the rejected hypothesis H3b, under the background of low brand awareness, social facilitation cannot positively moderate the relationship between the index and users’ interpretation. These empirical results also show the diversity of the moderating role of social facilitation on the social network advertising effectiveness. In the older literature, social facilitation may present two situations: social promotion and social inhibition (Zajonc, 1965; Bailey et al., 2021). In an application scenario, social facilitation often only presents one of social promotion or social inhibition (Neider et al., 2019; Heinrich et al., 2021). The conclusions of this study can provide a new perspective of social facilitating, that is, under different brand awareness background, social facilitation can present diverse directions of the moderating role in social networking. Based on the distraction-conflict hypothesis, the reason may be that brand awareness may be considered as a source of distraction (Zajonc, 1965). Stimulus intensity of distraction sources on social network users may affect their understanding of advertising content, which affects social network advertising effectiveness. At the same time, based on the sign-interpretation-object triangle, the conclusion also confirms that social facilitating in different directions may have impact on different advertising contents, which affect social network advertising effectiveness. These conclusions also provide interesting perspectives for enriching the research on the integration of social facilitating and advertising content in a social network.

Third, this study shows that positive users’ interpretation can improve social network advertising effectiveness. Supporting H4 confirms this conclusion. In the sign-interpretation-object triangle, interpretation is an intermediary connecting sign and object (Fjrtoft & Lai, 2020). The conclusion confirms the applicability of the sign-interpretation-object triangle in the research of social network advertising. On the one hand, no matter what kind of brand awareness, social network advertising effectiveness can be obtained by promoting users’ interpretation. On the other hand, no matter what kind of advertising contents, users’ interpretation must be increased to achieve social network advertising effectiveness. Furthermore, in marketing practice, in the interactive test of brand awareness and advertising contents, users’ interpretation must be measured as a vital variable in order to improve social network advertising effectiveness.

7. CONCLUSIONS AND IMPLICATIONS

7.1 Theoretical Implications
First, this study provides interesting implications for research. Most prior work related to social network advertising effectiveness has focused on brand awareness and advertising content independently (Kim & Sundar, 2014; Niu, Wang, & Liu, 2021). To address this gap, this study has confirmed a logical
relationship between brand awareness, advertising contents, and advertising effectiveness within the semiotics triangle. According to the results, the semiotics triangle is suitable for the explanation of social network advertising effectiveness. This study provides a unique perspective on social network advertising. This study develops a quantitative model to integrate social network advertising effectiveness, which provides a model and an idea for future research.

Second, this study has confirmed the interaction mechanism between advertising content types and brand awareness in social network advertising. Prior studies have paid little attention to the interaction mechanism between advertising contents and brand awareness in a social network (Mikhaei & Baskerville, 2019; Kemp et al., 2020). To address this gap, the results provide us with an interesting perspective on social network marketing. Especially for how to introduce brand theory (such as brand image and brand leadership) into the social network advertising, the conclusions of this study provide ideas for future research.

Third, this study has extended social facilitation into the field of social network advertising. To our knowledge, no existing literature has established a moderating role of social facilitation of social network advertising. This study indicates that social facilitation is a moderating factor in social network advertising. This study also indicates that the moderating effect of social facilitation may be affected by advertising content and brand awareness in the social network. By providing a better understanding of social convenience in social network advertising, this study enriches the existing literature. At the same time, it also provides a new perspective on studying social network advertising effectiveness.

7.2 Practical Implications
First, from a practical point of view, the results can help advertisers to use different types of advertising content on a limited social network page. For low brand awareness, advertisers should use indexes to create a stable phase in the brand communication theme. For high brand awareness, advertisers should consider highlighting the contents of color and artistic conceptions to convey brand image benefits.

Second, the results provide differentiated social network marketing strategies for distinctive brand awareness. The advertiser can use simple graphics to show that the low brand awareness can improve social network advertising effectiveness. The advertiser can use logos, colors, and a series of visual display tools of high brand awareness and then cooperate with a high social network group atmosphere to improve user emotions. The matching method can guide designers to design social network advertising.

Third, the results can focus on designing social network advertising strategies for low brand awareness. Many marketers may be good at social network marketing strategies for high brand awareness. It feels hard for advertising strategies for low brand awareness. This study provides that marketers can consider using simple or direct elements to enhance users’ emotions in a social network without paying attention to social facilitation. Especially in simple promotional activities, it may be necessary to separate the advertising content types from a mature brand.

Forth, the results may also help advertisers to combine word-of-mouth and advertising. Paying attention to word-of-mouth has been the main task of social network marketing. Some marketers even hire an online water army and other ways to improve advertising effectiveness. Whether these controversial practices, there has been no precise research. The results show that the social facilitation of user-generated content can adjust advertising and interpretation with high brand awareness. Therefore, combined with a clear expression of product information, marketers can enhance brand awareness, and promote social network advertising effectiveness.

7.3 Limitations and Further Research
This study has some limitations and can be expanded from several aspects in the future. First, this study used a single research method, which is quasi-experimental research. This method can control some of the internal factors, but whether the conclusions can be generalized to the real environment is unknown. Future research should attempt to introduce actual business data to reach universal conclusions. Second, this study has simplified print advertising as a sample of the quasi-experimental.
REFERENCES


