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How does advertising salience impact conversion rates? The mediating role of consumer engagement

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HOW DOES ADVERTISING SALIENCE IMPACT CONVERSION RATES? THE MEDIATING ROLE OF CONSUMER ENGAGEMENT

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SINGAPORE MANAGEMENT UNIVERSITY

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2023

I hereby declare that this dissertation is my original work
and it has been written by me in its entirety.
I have duly acknowledged all the sources of information
which have been used in this dissertation.

This dissertation has also not been submitted for any degree
in any university previously.

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CHENG, Yu

5th Oct. 2023

How Does Advertising Salience Impact Conversion Rates? The Mediating

Role of Consumer Engagement

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Abstract

Previous studies have mainly analyzed the relationship between advertising salience and conversion rates using subjective data from questionnaires or experiments. However, existing researches have not provided a clear explanation of how advertising salience affects conversion rates. In contrast to the existing literature, this study utilizes objective data from advertising agencies and establishes a mediation model to investigate how advertising salience influences conversion rates in news feed advertising. Empirical research shows that consumer engagement serves as a mediating variable between advertising salience and conversion rates, while market share, regional marketization level, and regional income level play moderating roles in the relationship between advertising salience and conversion rates. The mediation model presented in this study provides a better understanding of the underlying mechanism through which advertising salience affects conversion rates. This research not only contributes to the existing literature on the relationship between advertising salience and conversion rates but also offers practical recommendations for advertisement placements on website platforms.

The strength of this research in terms of data is mainly reflected in the fact that this paper uses objective data from head clients in the e-commerce, financial and social sectors who are in the middle of their projects, and the data spans up to one year, so the richness and objectivity of the data ensures that the conclusions are more reliable. Moreover, experimental methods are employed to further test the research hypotheses, resulting in consistent results.

Contents

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I have received a lot of support and help in the process of writing this thesis. First of all, I would like to thank my alma mater for fostering me so that I can continue to learn and improve. At the same time, I am sincerely grateful to my team of supervisors who gave me valuable guidance throughout the writing process. In addition, I would like to thank my family, who have been supportive of my studies so that I could concentrate on successfully completing the thesis.

1 Introduction

1.1 Research background

With the rapid development of internet marketing, a new type of advertising known as "news feed advertising" (hereinafter referred to as "advertising") has gained increasing attention from scholars and professionals, often regarded as one of the most significant innovations on internet social platforms. News feed advertising, in their appearance, includes a series of items that provide users with useful information in a format similar to the surrounding content, including images, text, and videos (Leone & Mahdian, 2014). Furthermore, with advancements in algorithms, the accuracy and personalization of advertising have been improved. Importantly, news feed advertising displays different content to different users and changes as users refresh the page, aiming to minimize the fatigue of users towards advertisements. News feed advertising also overcomes the negative impressions associated with traditional advertising, such as rigidly occupying the screen. Consequently, news feed advertising enhances user experience.

News feed advertising first appeared on social networking websites such as Facebook and then expanded to news websites and online search engines. It made its debut in the Chinese online market through platforms like "Weibo". Nowadays, even in the era of mobile internet, news feed advertising remains widely popular due to its comfortable and natural approach, and it can be found in almost all mobile applications. By analyzing social demographics, user

preferences, and characteristics, news feed advertising effectively facilitates intelligent marketing, promoting a connection and resonance between products and users. Additionally, brand content can be seamlessly integrated into the information flow, providing targeted information to the audience and optimizing user experience.

In recent years, the news feed advertising market has experienced rapid growth. Numerous internet companies such as WeChat, Facebook, Twitter, and others have established their own news feed advertising departments. Furthermore, according to a report released by iResearch in 2021, the market size of news feed advertising in China has exceeded 300 billion yuan. The significant growth of news feed advertising provides important practical value for this research. The development of news feed advertising in China has its own characteristics. Firstly, there is a clear stratification in the industry, with Alibaba, Tencent, and ByteDance products occupying the top tier. Head platforms leverage their resource advantages to create an ecosystem of product matrices, elevating competition in the news feed advertising industry to an ecosystem level. Tencent possesses super social traffic products, while Alibaba covers various scenarios including news and search, showcasing its competitive advantage. Secondly, benefiting from the development of the domestic big data industry, news feed advertising demonstrates significant advantages over other forms of mobile advertising in terms of being native, highly efficient in matching, and causing minimal user interference.

In the ecosystem of news feed advertising in China, there are three main roles involved: media, advertisers, and service providers. Media platforms provide the infrastructure and traffic support for news feed advertising placements. Advertisers allocate advertising budgets and provide materials to promote their products through news feed advertising, generating exposure and sales opportunities. Service providers act as intermediaries, offering specialized news feed advertising placement services to ensure efficient campaign delivery.

In the optimization of news feed advertising placements, the advertisement creatives, including the corresponding text, images, and videos, serve as the medium for delivering the advertising content and are key factors influencing the effectiveness of the placements. One notable characteristic of news feed advertising creatives is their relatively short lifespan, necessitating a constant search for new and more effective advertisement creatives. In traditional advertising practices, this is achieved through continuous experimentation with new creative elements and iterating on the quality of the creatives through AB testing. This paper is based on the current state of advertising optimization and focuses on the research of advertising salience, aiming to develop a methodological framework that can assess the quality of advertisement creatives and predict their effectiveness, which holds significant importance for optimizing news feed advertising placements.

1.2 Research issues

Unlike previous studies that primarily conducted research in laboratory settings, this study utilizes real data from news feed advertising across multiple brands and industries, as well as actual sales conversion data, to explore the impact of advertising salience on conversion rates. Therefore, the variables used in this study represent important characteristics of news feed advertising.

Compared to traditional advertising, a significant advantage of news feed advertising is its ability to provide a higher quality user experience. Unlike traditional ads that disrupt users' browsing experiences when they search for information or browse through real-time content shared by friends on social media, news feed advertising aims to blend seamlessly into the users' browsing environment. Advertising salience, therefore, is selected as an effective and reasonable indicator representing how much the users' browsing experience is interrupted. In this study, we investigate how advertising salience influences sales conversion rates in the context of news feed advertising. We employ multiple variables that represent important characteristics of news feed advertising, namely advertising salience, conversion rates, consumer engagement, and market share. Additionally, we consider the influence of regional marketization level and income level in the consumers' regions. The specific variable definitions are as follows:

Advertising salience: This reflects the prominence of slogans or brand/product representation in the copy. It is also referred to as text salience in the subsequent sections.

Conversion rate: This reflects the effectiveness of the advertisement in generating market profits.

Consumer engagement: This reflects the willingness and interest of users to interact with the advertisement, including the click through rate and completion rate of ad playback.

Market share: This reflects the level of consumer awareness and understanding of products. It is an essential variable that cannot be ignored when determining advertising dissemination strategies.

Regional marketization level and regional income level: These factors influence consumer purchasing willingness and purchasing power, and are important factors that affect conversion rates.

Based on the aforementioned six variables, this paper attempts to answer the following three research questions:

(1) Does the advertising salience truly affect the conversion rates?

(2) If the advertising salience does have a significant impact, how does it influence the conversion rates? How is this influence transmitted through consumer engagement?

(3) How do market share and regional development influence the relationship between advertising salience and conversion rates?

1.3 Research significance

1.3.1 Theoretical significance

The theoretical significance of this study is mainly manifested in the following three aspects:

Firstly, existing literature on the relationship between advertising salience and conversion rates has not discussed specific influencing mechanisms and contextual factors. However, this study constructs a theoretical model with consumer engagement as the mediating variable and market share with other variables as the moderating variable to explore the relationship and mechanisms through which advertising salience affects conversion rates.

Secondly, this study tests the model in a high-dimensional environment. The environment of news feed advertising provides rich dimensions to validate the hypotheses and confirms the analysis, thereby enhancing the practical relevance of this research.

Thirdly, this study utilizes objective and real-world data. Previous studies relied on subjective data primarily collected through surveys, interviews, or experiments. However, this study collects objective data with the help of online technologies and advertising agencies. With abundant objective data, this study avoids biases associated with subjective data, making the conclusions more reliable and persuasive. Additionally, experimental research was conducted, yielding consistent findings.

1.3.2 Practical significance

Given the significant market advantage of news feed advertising and its widespread usage on various online platforms (news apps, social media

platforms and so on), this research provides valuable insights for different types of businesses to improve their marketing strategies, thus holding important practical significance:

Firstly, the research findings reveal the specific mechanism through which advertising salience influences conversion rates, offering guidance for advertisers and clients in designing advertising content. Specifically, advertising salience can enhance conversion rates by increasing consumer engagement. Therefore, when designing advertising content, efforts should be made to enhance advertising salience. Additionally, during the advertising campaign, attention should be paid to fostering widespread consumer engagement and emphasizing effective interaction between the company and consumers.

Secondly, this research demonstrates that the impact of advertising salience on conversion rates varies depending on the market share of the product and the level of economic development in different regions. This provides insights for designing advertising content for different types of products. Specifically, for products with low market shares and in regions with higher income levels and market development, it is more advisable to enhance advertising salience to stimulate conversion rates.

1.4 Research content and research methods

1.4.1 Research content

Firstly, research questions are proposed based on the practical background of the role of news feed advertising in marketing. Secondly, a review and synthesis of the literature on advertising salience, conversion rates, consumer engagement, and brand reputation are conducted. Building on existing research and theoretical deductions, corresponding research hypotheses are formulated. Subsequently, a research design is developed based on the research framework, including sample selection and data collection. The collected data is then subjected to statistical analysis. Hypotheses are tested and research conclusions are drawn based on the results of data processing.

1.4.2 Research methods

The theoretical research section of this paper is primarily based on literature research. It employs theoretical deductions to derive the relationships between variables and subsequently applies methods such as descriptive statistics, correlation analysis, and regression analysis to empirically test these relationships. Additionally, experimental research methods are employed to test the hypotheses.

1. Literature research method

The literature research method mainly involves systematically reviewing relevant literature in the field related to the research topic of the paper. It aims to determine the current state of research in the field, identify areas for improvement, and establish a clear position for one's own research, emphasizing its contribution. In this study, the authors employed this method

to review, organize, and summarize relevant research on advertising salience, conversion rates, consumer engagement, brand reputation, and other topics from top international marketing journals. This approach not only provides a solid theoretical foundation for the research in this paper but also highlights its differences with existing studies.

2. Normative analysis method

The normative analysis method consists of two aspects: induction and deduction. Induction refers to summarizing general rules from emerging phenomena in practice, while deduction involves reasoning about more specific variable relationships based on mature theories and the logical reasoning behind them. In this paper, based on the induction of the news feed advertising market, the deductive approach is predominantly used. The existing research is employed to derive the relationships between advertising salience, conversion rates, and various situational factors at different levels, forming the theoretical model of this paper.

3. Empirical analysis method

Based on the theoretical model derived from existing literature and theoretical deduction, this paper analyzes the relationships between variables such as advertising salience, conversion rates, market share, regional economic development level, and consumer engagement. Several research hypotheses are formulated as a result. Subsequently, using objective data from news feed advertising, descriptive statistics, correlation analysis, and multiple regression

analysis methods are employed to empirically examine the relationships between variables in the theoretical model, thereby validating the rationality of the theoretical model.

4. Experimental research method

In addition to conducting large-sample empirical research, this paper also utilizes news feed advertising to design experiments and analyze participants' reactions to two different advertisements with varying levels of advertising salience in order to test the research hypotheses.

2 Literature review

2.1 Advertising salience

2.1.1 Connotation of advertising salience

As a bridge for communication between businesses and consumers, advertising is primarily used to showcase the value of products, persuade consumers, and increase their willingness to make purchases (Lee et al., 2010). Therefore, in the process of product promotion and marketing, advertising is widely used, and the concept, definition, and impact of advertising salience have attracted increasing attention from scholars. Ad salience refers to the degree to which a specific stimulus factor in an advertisement contrasts with other stimulus factors in the user environment (Fiske and Taylor, 1991), and this attribute directly reflects the actual effectiveness of advertising placement.

Compared to traditional advertising, news feed advertising or product placement are presented in a more natural, subtle, non-coercive, and targeted manner to promote company's products (D'Astous and Chartier, 2000). Consumers unknowingly accept the brands in these types of advertisements. However, it is precisely because of this characteristic that consumers are prone to overlook the brand, failing to achieve the desired promotional effect for the company (Zhou and Wang, 2014). Therefore, in order to achieve a more prominent advertising effect, companies strive to increase the prominence of their brand in advertisements (prominence), hoping that consumers can better recall (Law and Braun, 2000; Gupta and Lord, 1998; Russell, 2002; Roehm et

al., 2004; Gould et al., 2000; Gupta and Gould, 1997) and choose (Law and Braun, 2000) their brand. It can be seen that the value of advertising salience is prominent and deserving of attention from both the industry and scholars.

2.1.2 The significance of advertising salience

Advertising salience holds multifaceted value, significance, and impact, with wide applications in the field of marketing. Firstly, advertisements consist of three key attributes: brand, visuals, and copy. Some advertising copies specifically emphasize the brand being promoted, leaving a lasting impression on users, such as "Dove, indulge in silky smoothness". Secondly, the salience of the advertising text serves a symbolic function and reflects the relevance of the advertisement to the users, highlighting how crucial the advertisement is in achieving marketing objectives and aligning with user values (Celsi and Olson, 1988). Liberman and Chaiken (1996) studied the direct and indirect effects of personal relevance on user attitudes and its moderating effects. They found that personal relevance has a positive impact on user attitudes. Campbell and Wright (2008) employed Structural Equation Modeling (SEM) to analyze the relationship between personal relevance and user attitudes. Personal relevance significantly influences how individuals perceive or interpret stimulus factors in advertisements. Advertisements perceived as highly personally relevant allow advertising recipients to expose their intentions. The results indicate that personal relevance has a positive impact on advertising recipients' attitudes towards the advertisement. D'Astous and Chartier (2000) found that highly

relevant billboards are perceived as more accepted marketing tools and are more likely to generate positive outcomes. Huang and Yang (2012) stated that for players in a high-involvement gaming context, advertising relevance demonstrates a favorable viewpoint towards billboard advertising, which suggests that if the advertiser's primary concern is user attitudes rather than just brand reputation, designing media with high relevance is considered a better media strategy. Thirdly, for users, news feed advertisings typically bring less disruption compared to traditional advertising (Sahni and Nair, 2016), thus making the salience of advertising copy potentially more important than other entities in news feed advertising.

2.1.3 The impact of advertising salience

Existing literature has explored the impact of advertising salience on advertising effectiveness from various perspectives, such as motion, color, size, and placement (Cho, 1999; Guido, 2001; Yoo and Kim, 2005), but there is no consensus among scholars. For example, regarding whether prominent product placements can evoke positive consumer attitudes, scholars have different opinions. Some scholars have found that prominent product placements can evoke brand-related or neutral (at least not negative) attitudes in consumers (Russell, 2002; Cowley and Barron, 2008). However, some researchers have found that although there may be differences in brand recall between prominent and non-prominent product placements, there is no significant difference in attitudes (Cauberghe et al., 2010). Furthermore, some scholars have found that

consumers have negative evaluations of repeated and prominent product placements in entertainment media (Homer, 2009). If users have a motive for entertainment-seeking, advertising salience will lead to more advertising avoidance issues (Hyejin Bang et al., 2018). Ning (2017) found that users can identify and avoid advertisings based on the semantic level of the advertising, which weakens the differences induced by advertising salience. Specifically, the impact of advertising salience can be analyzed from the following two aspects:

Firstly, visual salience. In recent years, as the internet has replaced traditional media as the main platform for advertising, the forms of online advertising have been constantly evolving. Many online advertisers do not require immediate clicks from users. Their main purpose is to repeatedly expose the product to consumers through online advertisings. Therefore, how to enhance users' visual attention to online advertisings has been an important issue in the field of visual marketing (Yang et al., 2019). Consequently, visual salience becomes the primary key indicator of advertising salience. In human visual information processing, the ability to quickly filter out a small number of salient objects for priority processing while ignoring or discarding other non-salient objects greatly enhances work efficiency (Frintrop et al., 2010). However, conflicting views of the "uniqueness hypothesis" and "blindness hypothesis" have emerged in research on visual attention to online advertisings. The "uniqueness hypothesis" argues that users' attention to online advertisings

can be enhanced by altering the physical attributes of the advertising, such as its size (Jiang, 2014) or color (Moore and Coulter, 2005). The stronger the visual perception of the advertising on a webpage, the more likely it is to attract consumers' attention (Cicek et al., 2017). However, the "blindness hypothesis" suggests that internet users intentionally or unintentionally ignore online advertisements while browsing web pages, regardless of the type of advertisement, and do not pay much attention to them (Ding, 2016). This view posits that users do not expect to gain valuable information from advertisings and tend to intentionally suppress their attention to online advertisings in terms of cognition and response (Resnick and Albert, 2014).

Overall, advertisings with stronger visual salience can lead to better attention effects. For example, Yang et al. (2019) found that visual salience has a significant impact on the attention effects of online advertisings, with higher visual salience advertisings having better attention effects. Li et al. (2021) found that high-visual salience pop-up advertisings outperformed low-visual salience pop-up advertisings in terms of attention effects, and this effect was not influenced by the type of pop-up advertisings (floating or jumping). However, even advertisings with strong visual salience cannot completely avoid the occurrence of visual blindness. To increase the relevance between the visual salience of advertisings and user attention, it is also necessary to pay attention to the consistency between advertising content and the content of the user's browsing task. Researchers have found that the type of task users engage

in while browsing web pages is the main factor contributing to the occurrence of advertising blindness (Resnick and Albert, 2014). Users are more likely to experience advertising blindness when they are engaged in tasks with a higher cognitive load compared to tasks with a lower cognitive load. Additionally, content consistency also affects the strength of advertising blindness. Consistency in content makes users develop a sense of relevance towards advertisings, reducing advertising aversion and increasing attention towards advertisings (Porta et al., 2013; Hershberger and Costea, 2009).

Secondly, brand placement salience. Brand placement, also known as product placement, refers to the practice where companies collaborate with film or game producers to incorporate their brands or products in a discreet manner within the content, aiming to promote brand reputation, enhance consumer recognition, and generate favorable impressions towards the placed products or brands (Zhou and Wang, 2014). Its characteristics are relatively apparent: first, brand placement must be discreetly integrated into other media to achieve the promotional objectives of the company; second, brand placement is intentional and intentionally highlighted within the film or game.

With marketing-oriented microfilms or short videos gradually becoming one of the most effective forms of content marketing, the prominence of brand placement in such advertising strategies has become a focal point for scholars. Consequently, the prominence of placement has been frequently mentioned as a research factor in brand placement advertising. Regarding the definition of

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brand prominence in brand placement advertising, most scholars adopt the definition proposed by Gupta et al. (1998), which considers prominence as the size of the brand's information, its central position on the screen, and the duration of its appearance in films or games. Subsequently, researchers have categorized the prominence of brand placement. For instance, Lehu et al. (2009) divided the prominence of brand placement into four levels: the space occupied by the brand or product, the presence of other brands or products simultaneously, the duration of display, and the location of the brand. Bressoud et al. (2010) stated that brand prominence in brand placement advertising should include the duration of display, the position of display, and the size of display.

From existing research, there is no consensus among scholars on the relationship between brand prominence in brand placement advertising and consumers' brand evaluation. Some scholars believe that increasing the level of brand prominence in brand placement advertising enhances consumers' awareness of the implanted brand. The impact of brand placement prominence on brand attitude is mainly reflected in two aspects: firstly, it can increase brand recognition, and secondly, it can influence brand purchase intention or brand evaluation (Zhou and Jian, 2015). However, some studies also suggest that overly prominent brand placements can lower consumers' brand evaluation. Therefore, the impact of brand placement prominence on consumers' brand evaluation is not a single linear relationship and is influenced by multiple

factors. For example, researchers have found that the association between the brand and the narrative of the medium is an important factor influencing consumers' attitudes towards brand placement advertising (Russell, 2002; Lehu and Bressoud, 2009). The form of placement also affects the brand attitude. When the placement method is consistent with narrative cognition, consumers have a positive attitude towards the brand in the advertisement, whereas inconsistency leads to negative attitudes (Russell, 2002). Integrated placements involving both audio and visual elements are more memorable and effective than placements that only appear visually (Gupta et al., 1998). In addition, individual differences among consumers play an important role in the relationship between brand placement prominence and consumers' attitudes towards advertisements (Lee and Faber, 2007; Brennan et al., 2004; Sung et al., 2009). These differences vary significantly based on factors such as age, gender, education level, income, and frequency of movie watching.

2.2 Analysis of factors influencing conversion rates

2.2.1 Connotation and measurement of advertising conversion rates

The marketing objective of advertising is to capture the attention of consumers, gather user information, and further guide the purchase of advertised products. The action of "conversion" refers to the desired goal or outcome that the advertiser expects to achieve when consumers or potential consumers come into contact with the advertiser's advertisement. Depending on the level of audience engagement and the stage of brand or product

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development, different conversion goals may be set by advertisers. Generally, target conversion behaviors include clicking on the brand or product webpage and spending a significant amount of time browsing, completing personal information registration on the webpage, adding the promoted brand or product to favorites or shopping carts, engaging in communication and inquiries with website customer service, and ultimately making actual purchases. The ultimate goal of advertising is to drive actual purchase behavior, leading to repeat purchases and brand loyalty (Liu, 2017). Conversion rate, as a measure of advertising effectiveness, is used to evaluate the efficiency of online advertising placements. It is the most important and closely tracked metric during the advertising process and serves as an indicator for evaluating the effectiveness of marketing activities for advertisers. The proportion of successfully promoted users who have achieved the advertising objectives to the total number of users represents the conversion rates of the advertising (Cheng and Wan, 2022). On a more granular level of measurement, exposure, clicks, and conversions are commonly used to evaluate the effectiveness of advertising placements. Due to limitations in advertising effectiveness data feedback, many advertising systems often use exposure or Click Through Rate (CTR) as the measurement standard for advertising placements (Yao et al., 2017; Chapelle et al., 2015). Metrics such as Cost Per Click (CPC) and Cost Per Mile (CPM) are also used to reflect advertising performance.

2.2.2 Analysis of factors influencing conversion rates

There are various factors that influence the conversion rates of advertising, and existing literature has conducted detailed explorations on this issue. These factors mainly include user characteristics, product reputation and brand influence, advertising features and types, advertising design factors, user experience, product characteristics, situational features, relevance between product and advertising, authenticity of the advertisement, and the suitability between the strength of social advertising relationships and products. The details are as follows:

First, user characteristics. Cheng et al. (2010) found through statistical analysis that user characteristics are the main factors influencing advertising click through rates. Users are the direct audience of app advertisings and the specific implementers of conversion behavior. Users' experiences and attitudes towards app advertisings greatly influence conversion behavior (Wang and Liu, 2017). In addition to being influenced by advertising features, users' experience and attitude are also affected by their own factors, such as age, gender, preferences for app advertisings, and demand for advertised products or services (Zhao et al., 2018). Specifically, this includes the following three areas: (1) Attribute features: including users' age, gender, education, occupation, marital status, place of residence, and other background information. (2) Preference features: reflecting users' preference for certain types of app advertisings, generally manifested through their clicking behavior on advertisings. (3) Demand features: reflecting users' specific demand for the

products or services advertised, usually manifested through their purchase or usage behavior after clicking on the advertisings. There are already cases in practice where user characteristics are leveraged to improve advertising conversion rates. For example, Facebook provides various precision targeting methods for advertisers, allowing them to select target users based on demographic features such as age, gender, fan engagement and interest tags. Facebook's "dynamic messages" feature aggregates all users' activities, such as posting articles, commenting, following accounts, and liking, and displays them on friends' homepages. For instance, a female user who has publicly announced her pregnancy status will see maternity clothing advertisings from Facebook, while a user who has announced their engagement will see wedding videography advertisings (Zhao, 2015).

Second, product reputation and brand influence. The reputation of a product and the influence of its brand are crucial for advertising conversion rates as they directly impact consumers' perception of the product and their acceptance of the advertisement, thereby influencing the conversion rates. For example, Dix et al. (2017) examined the driving factors behind consumer acceptance and response to SMS advertising and found that brand influence is an important factor affecting consumer conversion rates.

Third, advertising features and types. Advertising features reflect various aspects of advertisings, such as their presentation format, content, and the advertiser's characteristics. They can stimulate users' sensory and

emotional experiences, thereby influencing their conversion behavior (Zhao et al., 2018). Specifically, advertising features include the following aspects: (1) Presentation format features: These refer to the fundamental characteristics of the advertising presentation format that can impact advertising conversion rates, such as dynamic or static features, visual characteristics, and so on. (2) Content features: These refer to the fundamental characteristics of the advertising's main content that can influence advertising conversion rates, such as content format, materials used, characters involved, and so on. (3) Advertiser features: These refer to the fundamental characteristics of the businesses placing the advertisings that can impact advertising conversion rates, such as industry sector, company size, business performance, brand recognition, and so on. In addition, Xu et al. (2014) found that different types of advertisings have varying effects on conversion rates. Their study revealed that display advertisements have a relatively lower direct impact on purchase conversion but are more likely to stimulate subsequent visits through other advertising formats.

Fourth, advertising design factors. In a study conducted by Sun et al. (2023), the impact of advertising design factors on conversion rates was explored, revealing that objective content narratives can increase conversion rates. Additionally, enhancing the integration of advertising design with the media environment and contextual environment has a positive effect on improving advertising conversion rates. Zhao (2015) found that native advertising, by integrating into the media environment and contextual content

where the audience is present, provides valuable information to users. It avoids disrupting the user experience and addresses the drawbacks of traditional, intrusive advertisements. This approach blurs the boundary between content and advertising, making users more willing to read, share, engage, and trust the advertised information. Theoretically, this approach enables unlimited resources and capacity in online advertising, which is especially significant for the development of mobile network advertising. This case has already been implemented and applied by many companies. For example, domestic platforms like Sina Weibo have launched native advertising products similar to Twitter, while portals like Sina.com and Ifeng.com have introduced "native news feed ads". Additionally, search engines like Baidu and NetEase Youdao have also introduced native advertising services. This demonstrates the significant value of advertising design factors in influencing conversion rates.

Fifthly, user experience. user experience plays a crucial role in determining the effectiveness of advertising conversion rates. Among them, the impact of user experience in terms of interaction, emotion, and visual aspects on advertising conversion rates varies: the interaction interface affects user behavior such as clicking, browsing, visiting, and purchasing, the visual hierarchy of advertisements influences users' behavior of effectively perceiving information, and the creative content of advertisements affects users' memory and preference towards the brand, thereby influencing their future purchasing and engagement behavior. Therefore, a low user experience can result in low

advertising conversion rates, while improving the user experience can enhance advertising conversion rates (Cheng and Wan, 2022).

Sixthly, product characteristics. The product (or service) is the target of app advertising marketing, and attributes such as appearance, type, functionality, and price of the product are the main factors influencing user demand and consumption behavior. Users often click on app advertisements and are redirected to the product details page, where they carefully examine various features of the product in order to make a purchase decision. Therefore, product features have a more direct impact on consumer conversion behavior after a user clicks on an app advertisement (Zhao et al., 2018).

Seventhly, situational features. The contextual features of advertising publishing and design influence conversion rates. In the mobile network environment, app advertisements have stronger contextual dependency, enabling dynamic changes in presentation format, playback mode, and content based on the context. This helps advertisers carry out personalized and precision marketing, stimulating users to engage in more conversion behaviors. Specifically, situational features primarily include two aspects: (1) Advertising placement features, which indicate the specific locations where advertisings are displayed within the app, such as splash screen advertisings, pop-up advertisings, banner advertisings, and so on. (2) User contextual features, which represent the geographic location, time, network environment, and mobile device used by users when browsing and clicking on advertisings. Zhao (2015)

elucidated the significant relationship between the dynamic situational demands of users and advertising conversion rates. It is believed that mobile internet advertising will be closely integrated with mobile commerce, mobile payment, mobile search, mobile social media, and other elements. It enables users to instantly see advertisements for desired products anytime and anywhere. Advertisements are immediately linked to user-generated word-of-mouth, which in turn leads to instant access to e-commerce platforms and immediate payments. This integration allows internet advertising to better match the dynamic situational demands of users, thereby promoting an actual increase in the conversion rates of online advertising messages.

Eighthly, the relevance between products and advertisements. Zhang and Ma (2015) found through their research that the relevance between products and advertisements directly affects the conversion rates of advertisements. Relevance refers to the association between the content promoted in online advertising and the actual products. It involves complex theories, including dimensions of information sources and information needs, and constructs corresponding patterns through a timeline. There is no absolute standard for relevance, as different audiences have different perceptions of online advertising and judgments of relevance. When designing online advertising, the issue of relevance must be taken into consideration, and within a reasonable range, advertising design should adopt patterns that are acceptable to the majority of the audience. Relevance primarily manifests itself in whether the

products displayed in online advertising align with the relevant information consumers obtain when conducting internet searches. If the information is consistent, it is highly likely to generate second or third visits, and consumers are more likely to make purchases of related products, thereby increasing conversion rates.

Ninthly, the authenticity of advertisements. The authenticity of advertisements has an impact on the conversion rate (Zhang and Ma, 2015). Advertisers and producers are responsible for the authenticity of advertisements when it comes to their publication and production, which directly affects their credibility. Advertisements with strong credibility are more likely to achieve conversions by turning advertising viewers into product purchasers. For advertisers, it is a common marketing technique to employ some degree of exaggeration and embellishment to promote product sales. However, this approach also comes with corresponding risks. If such marketing tactics are deemed to mislead consumers, there will be consequences to bear. For consumers, advertisements from renowned brands and those with industry-recognized certifications have a higher level of authenticity. When browsing advertisements, they are more inclined to purchase related products.

Tenthly, the suitability between the strength of social advertising relationships and products. Strong relationship social advertising platforms such as WeChat and Renren have a high degree of social network homogeneity among users. The people within these networks have similar occupations and

possess similar information. The relationships between users are close, with strong emotional factors maintaining interpersonal connections. These platforms are more suitable for industries that require high levels of trust, such as healthcare and home decoration. However, weak relationship social advertising platforms like Sina Weibo and Tencent Weibo have a high degree of social network heterogeneity among users. Interactions are wide-ranging, and users may come from various industries. Information obtained from these platforms is diverse. User relationships are not as close, and there is less emotional connection. As a result, these platforms are more suitable for industries related to outdoor sports, travel, automotive, IT, and other hobby-based industries. From an advertising perspective, both weak and strong relationships play important roles in the dissemination of social advertising messages. The strength of the relationship is not significantly correlated with the effectiveness of the advertisements but rather with the suitability of the product (Zhao, 2015). This alignment directly impacts the conversion rates of the advertisement.

2.3 Consumer engagement

Based on the review of existing literature, scholars generally believe that consumer engagement is inherent in almost any form of advertising service. This is because the communicative environment determines the convenience of advertising message delivery. This reciprocal, responsive, and suggestive information can be conveyed through means beyond verbal language and can

be measured for effectiveness using scientific metrics. This characteristic is also referred to as "interactivity" (Johnson et al., 2006; Ko et al., 2005). From the perspective of consumers, advertising interactivity reflects a business's ability to handle, collect, and record consumer responses to their products/services (Steuer, 1992). In the long run, there is an objective positive correlation between consumers' advertising interactivity intention and purchase intention (Wu, 1999; Cho and Leckenby, 1999; Yoo and Stout, 2001), and sustained purchase intention is the most direct manifestation of advertising effectiveness. To investigate the role of consumer engagement in the advertising salience and conversion rates of news feed advertising, this section first provides a brief summary of the definition of "consumer engagement" and then reviews the factors that may affect consumer engagement.

2.3.1 Connotation of consumer engagement

There are various definitions of consumer engagement in the academic field, with some scholars focusing on the subjective proactivity of consumers, which can be broadly categorized into **psychological and behavioral research and definitions**. At the psychological level, consumer engagement is a psychological state that arises from consumers' pursuit of higher psychological needs during the transaction process, including the desire for recognition, respect, self-actualization, and other emotions. For example, Zhang (2017) defined consumer engagement as a psychological process based on cognition and emotion that establishes a brand relationship. At the behavioral level,

consumer engagement is an action whereby consumers determine their roles in the service process through their engagement and behavior, as well as the behaviors they expect to obtain from the service (Busalim et al., 2021; Carlson et al., 2019). Specifically, it refers to the consumer's involvement in the design of service content and methods. For instance, Brodie et al. (2011) defined consumer engagement as a dynamic and interactive process in which consumers and businesses jointly create experiences in specific situations. Similarly, Hsieh and Yen (2005) regarded consumer engagement as the degree to which consumers contribute resources in the process of service production and delivery.

Some scholars approach consumer engagement by examining **the attributes of the advertising target**, dividing it into "interaction between individuals and information" and "interaction between individuals". The former refers to the interaction between the recipient and the information, such as the content of the advertisements. From this perspective, consumer engagement measures the extent to which users control or even modify the scope of the message. This allows users to customize the content of the information flow according to their goals and purposes (Liu and Shrum, 2002). The latter refers to the interaction between the recipients of the advertisements, and the advertising process itself is like an intermediary environment created for individual user communication. In this study, considering the availability of data on interpersonal interaction, subsequent research focuses on the interaction

between individuals and information. Furthermore, measuring the interaction between consumers and information also has practical significance. Firstly, as mentioned earlier, news feed advertising has a high level of proactive control, which is a major advantage in enhancing information interaction. Additionally, some added features of advertisements by businesses have not been successfully perceived by users, and the goal-directedness of the information needs to be strengthened.

2.3.2 Types of consumer engagement

Furthermore, the specific conceptions of consumer engagement behavior vary in different research fields. For example, in studies related to consumer behavior, consumer purchases are considered as their substantial participation, while in studies related to communication, individual information dissemination is considered as their direct involvement. In the context of advertising and marketing discussed in this study, the multiplicity of consumer roles determines the multidimensional complexity of their engagement behavior, with varying emphasis among different scholars.

Consumer purchasing behavior is a crucial form of advertising engagement (Mittal and Sawhney, 2001). In simple terms, it refers to the intention or act of purchasing that arises in consumers after reading or browsing through advertisements placed by businesses. Different scholars have provided more detailed descriptions of this behavior. Mullet and Karson (1985) regarded consumer purchase intention as an attitude determined by whether the product

30

information matches their own needs. Dodds et al. (1991) suggested that consumer purchase intention is related to probability, indicating to what extent consumers are likely to purchase a particular product or service. Eagly and Chaiken (1993) defined it as a motivation, representing the effort consumers put into achieving the act of shopping. Similarly, Wu et al. (2011) proposed that consumer purchase intention reflects their planned or future willingness to buy a particular product. Ajzen and Driver (1992) posited that purchase intention plays a decisive role in consumer purchasing behavior; once consumers develop the intention to purchase, they will engage in the act of buying.

Consumer communication is also a form of engagement, and previous studies have identified three levels of communication behavior, including Consumption, Contribution, and Creation, where Consumption refers to passive viewing or browsing of a merchant's advertising content; when consumers engage in various forms such as liking, sharing, and commenting to participate in the dissemination of advertising content, it can be defined as Contribution behavior; and when consumers actively generate content related to influencer marketing, it belongs to the highest level of Creative participation (Dissanayake et al., 2019; Kanyawee et al., 2021).

Furthermore, consumer engagement also includes co-creation. Algesheimer et al. (2010) propose that consumer engagement is an interactive collaborative activity among community consumers, driven by functional, emotional, or relational motivations. According to Lusch and Vargo (2006),

"consumer co-creation" refers to the creative involvement of consumers in the invention, design, or production of the core products of a company. Therefore, co-creation occurs when consumers engage in spontaneous and voluntary actions, uniquely shaping their experiences with the brand. It is evident that providing suggestions to improve the consumer experience, assisting and guiding service providers, as well as helping other customers to consume better, are all aspects of co-creation and, hence, aspects of customer participation behavior (Vargo, 2009).

Additionally, some researchers perceive consumer engagement behavior as a form of brand commitment that encompasses both cognitive and affective elements. Others incorporate emotional factors and view consumer participation behavior as an indicator of the level of consumer involvement with a brand. Overall, these definitions generally fall within the domains of psychology and behavior.

Essentially, different types of engagement reflect the degree of commitment of consumer engagement, which is one of the core variables of interest in this paper - consumer engagement. Previous scholars have mainly categorized consumer engagement into two types: the first is high engagement and low engagement; the second is browsing information, consuming information, and creating information. High engagement represents creating information, and low engagement represents browsing information. Hollebeek et al. (2014) considered consumer engagement in the marketing

environment as consumers' affective state, rational evaluation, and positive feedback behavior when facing the marketing process. Affective state and rational behavior represent medium level of engagement, while positive feedback behavior represents high level of engagement. Storbacka et al. (2016) argued that consumer engagement reflects consumers' willingness to interact with advertised brands as well as their levels of engagement when interacting with them, and argued that consumers' co-creation of content with merchants reflects a higher level of engagement. It can be seen that this paper adopts consumer engagement as a mediating variable and uses objective data to reflect the subjective satisfaction of visitors (consumers) with infomercials, which can build a bridge between advertising salience and conversion rates.

2.3.3 Factors influencing consumer engagement

As an important research topic in the field of marketing, many scholars have conducted in-depth studies on the antecedents of consumer engagement behavior. In the context of Maslow's hierarchy of needs theory, relevant research results show that the motives related to consumer engagement behavior include realistic value, mutual benefit, social interaction, personal interest, acquiring knowledge, and undertaking tasks. In addition, a large number of empirical studies have shown that consumer engagement is a combination of internal and external factors. **Internal drivers** mainly refer to consumers' internal characteristics, including cognition (Brodie et al., 2011; Zhang et al., 2017), motivation (Jiang et al., 2021; Guo et al., 2021), trust, value

(Lloyd et al., 2003), emotion, self-efficacy (Dash and Saji, 2008), and mindstream experience (Kang et al., 2020); **external drivers** are mainly composed of technological features and environmental factors, including perceived control, perceived value (Wongkitrungrueng and Assarut, 2020), relationship building (Carlson et al., 2019), technological features (Chen and Lin, 2018), social support and community identification (Molinilo et al., 2020), relational bonding (Hu et al., 2020), and social interaction (Kang et al., 2020).

In addition to discussing the internal and external driving factors separately, it is also possible to analyze the antecedent variables of consumer engagement from different theoretical perspectives. For example, based on the Uses and Gratifications Theory, multiple motivations contribute to enhancing consumers' social community engagement behaviors, including utility, enjoyment, prestige, achievement, and affiliation. From the perspective of the Elaboration Likelihood Model, factors such as win-win situations, community rewards, trust between community and consumers, helping others, and seeking recognition play a significant role in the spontaneous creation behavior of new open community consumers. It is worth noting that the influence of relevant institutional environments on consumer engagement should not be underestimated. Factors such as group norms, community values, freedom of speech, subjective rules, and incentivized content have a positive effect on consumer co-creation (Casalo et al., 2010). From the perspective of the motivational opportunity ability theory, establishing trust mechanisms and

virtual incentives is crucial for promoting sustainable consumer engagement and knowledge sharing among consumers.

2.3.4 Outcome studies of consumer engagement

In terms of outcomes, existing research has examined the impact of consumer engagement on brand satisfaction, trust, and loyalty. Habibi et al. (2014) found through a survey of brand community members that consumer engagement interactions significantly influence consumers' trust in the brand. Survey results from online community participants also indicate that consumer engagement has a positive impact on brand reputation and emotional identification. Many studies emphasize that consumer engagement can reduce perceived risk, thus significantly affecting consumer satisfaction. Consumer interaction within brand communities enhances consumers' knowledge and affirmation of the product, thereby promoting consumer purchase behavior (Adjei et al., 2010). The practices of several well-known companies have also demonstrated that consumer co-creation contributes to building competitive advantages. For consumers with different levels of engagement, their engagement behaviors have a significant impact on relationship quality and loyalty behaviors, with the high-engagement consumer group having higher behavioral predictability than the low-engagement consumer group.

Co-created value generated by consumer engagement has a positive impact on consumers' experiences of feeling, thinking and acting. Although it does not directly contribute to consumer satisfaction, in the co-creation of value

model, consumer engagement can both increase perceived consumer value, thereby maximizing consumer value, and enhance consumer loyalty. Consumer engagement in various dimensions makes different contributions to co-created consumer value, which plays a significant mediating role between consumer participation and consumer satisfaction, as well as consumer behavioral intentions (Wu & Chen, 2017). Consumer psychological empowerment refers to the comprehensive inner experience that influences consumer prosocial behavior through consumer engagement. Consumer engagement behavior also has a significant positive impact on consumer commitment. Interaction between consumers in brand communities can lead to resource integration and promote product innovation (Füller et al., 2010).

2.4 Brand reputation

2.4.1 Connotations of brand reputation

As the name suggests, brand reputation refers to the extent to which a brand is known by consumers. In the Modern Chinese Dictionary, "zhīmíng" is an adjective meaning "famous" or "well-known". In English, synonymous adjectives include "Famous" and "Well-known". In international research, brand reputation is often defined as "Brand reputation" or "Brand Impression".

(1) Brand reputation. Brand reputation refers to the basic level of (consumer) brand knowledge, which involves at least knowledge about brand name recognition (Hoyer and Brown, 1990). Hoeffler and Keller (2002) suggested that there are two dimensions of brand reputation: firstly, depth,

which means that consumers are able to recall or recognize a brand easily; and secondly, breadth, which means that a brand name immediately comes to the mind of consumers when they buy a product. Laurent et al. (1995), in order to better measure consumers' brand reputation, classified brand reputation into three categories: Spontaneous Awareness, Top-of-mind Awareness, and Aided Awareness. Spontaneous awareness refers to when consumers can spontaneously mention a brand without any prompting when asked about a certain product category. Top-of-mind awareness refers to when consumers can spontaneously mention a specific brand first when asked about a certain product category without any prompting. Aided awareness refers to when consumers can identify a brand among several brand names when shown them.

(2) Brand impression. The consensus among scholars regarding brand impression is that it represents consumers' perceptions of a brand. These perceptions are influenced by brand-related factors and are also related to individual consumers. Different consumers have different interpretations of brand information, resulting in diverse brand impressions. Gardner and Levy (1955) proposed that the first perception consumers receive about a brand in the marketplace is the brand impression, which can predict consumer attitudes and even purchase decisions when managing a brand. Dobni and Zinkhan (1990) defined brand impression as consumers' rational or emotional perceptions of a brand. de Chernatony (2001) viewed brand impression as individuals' interpretation of a brand based on direct or indirect brand experiences and a

series of associations. Kahle and Kim (2006) suggested that brand impressions are formed by the brand name, product, information resources, and consumers' feelings toward the brand. Their definition further elaborated on the specific content of brand perception, including both rational and emotional aspects, and encompassed a series of individual perceptions of the brand, such as brand relevance. Regarding the formation of brand impressions, Corti (2003) summarized some theories on the formation of brand impressions from the perspective of cognitive psychology. They proposed that the first stage is the sensation stage, which includes visual, gustatory, tactile, and auditory senses. These sensations are then integrated into perception in the second stage. Thus, consumers can recognize objects through sensory stimuli. To remember the information they acquire, consumers must construct mental representations, while this cognition must be built on the belief that the information is true. Furthermore, Kirmani and Zeithaml (1993) developed a model explaining the causal relationship between perceived quality and brand impressions. They argued that forming brand impressions requires multiple inputs, including perceived quality, brand attitudes, perceived value, sensations, brand associations, and advertising attitudes.

2.4.2 Factors influencing brand reputation

The primary task of enhancing brand reputation is to create a favorable brand impression among consumers. Therefore, the efforts made by the brand itself are crucial, including all aspects of brand interaction with consumers. This

section summarizes the main factors that influence brand reputation.

(1) Employees. Many scholars argue that brand employees' interactions with consumers have a significant impact on consumers' perceptions of the brand and even represent the brand in the eyes of consumers (Wentzel, 2009).

(2) Brand name. The brand name will influence consumers' evaluation of product quality (Rigaux-Bricmont, 1982). Relevant empirical studies have also found that the brand name assists in consumer attitude evaluation (Robert et al., 1972).

(3) Packaging design. A substantial body of literature emphasizes the importance of brand packaging design as a tool for conveying and expressing brand impressions. For instance, unique designs can evoke a shared emotional resonance among numerous consumers. This perspective aligns with the prevailing market viewpoint that brand communication must encompass information that is difficult to misinterpret, independent, and clear (Orth and Malkewitz, 2008).

(4) Brand Personality. Brand personality is considered an effective tool for systematically categorizing various aspects of a brand. Aaker (1997) discussed the fundamental meanings of brand personality from five perspectives: sincerity, excitement, competence, sophistication, and ruggedness. Scholars have devoted considerable effort to understanding how brand personality can motivate consumers to express their authentic selves, ideal selves, or specific meanings through brand information acquisition and usage.

(5) Advertising. When a brand has the opportunity to enhance its brand value by showcasing its image in front of the public, it will rely more on self-promotion, with advertising being one of the primary means of self-promotion. Advertising theorist T. Schwartz introduced the "resonance model" in the 1970s, suggesting that successful brand advertisements resonate with the target audience (consumers). Advertisements evoke and stimulate deep-seated memories within consumers, creating unforgettable experiences and emotions, thus achieving the goal of self-promotion. Based on this theory, brands can enhance product awareness and effectively establish brand image through advertising. In comparison to traditional advertising models, news feed advertising in modern society transcends limitations such as product price and advertising methods, making it easier for consumers to develop dependence on a product brand. Therefore, brands can utilize diverse advertising methods to increase brand reputation and deepen consumer understanding of their products. Additionally, brands can guide consumers to gradually form consumption habits and endow products with cultural value through enriching advertising content, thereby enhancing brand reputation (Ding, 2011).

2.4.3 The impact of brand reputation on consumer attitudes

Brand reputation plays a crucial and foundational role in the process of consumer brand selection. The source of brand equity lies in consumer brand reputation, and brand reputation is a key driver of brand equity and an important measure of consumer perception and understanding of the brand's essence and

value. Numerous studies in the field of marketing have demonstrated that brand reputation influences consumer attitudes towards the brand (Bird et al., 1970) and purchase decisions (Keller, 1993). From the first exposure to a brand, brand impressions start to form and develop, representing accumulated knowledge about the brand's functional and symbolic features, obtained through actual product experiences or marketing communication efforts (Kevin, 1993).

Firstly, brand reputation is a crucial consideration factor in consumer decision-making processes, as a well-known brand is more likely to be considered for purchase by consumers (Silk and Urban, 1978). This is because brands with higher awareness levels have generally established brand impressions through users' past experiences. Customers who have some association with a brand are more likely to pay attention to its advertisements (Romaniuk et al., 2012), which represents an important advantage of well-known brands. According to the associative network theory of advertising memory (Anderson, 1973), if a brand has already established a brand image in the minds of consumers, recipients of advertisements are more likely to anchor new information to existing memories (Ambler et al., 2004). Similarly, Hoyer and Brown (1990) defined "brand reputation" and highlighted its significant impact on consumer choice behavior, stating that brand reputation forms the foundation for consumers' initial considerations when selecting products within a category. Brand names help consumers identify the provider (the business) of a product or service and predict the outcome of the service based on the brand

name (Janiszewski and Van Osselaer, 2000). Therefore, when a brand possesses high awareness, it often enjoys a larger market share. Consumers perceive its products to be of higher quality and value, and consequently, they exhibit a higher willingness to purchase (Dodds et al., 1991; Grewal et al., 1998). In other words, a high level of brand reputation often indicates better product quality, greater consumer recognition, and stronger brand influence.

Secondly, brand reputation also influences the effectiveness of brand advertising and marketing strategies. Campbell and Keller (2003) pointed out that consumers respond differently to repeated advertisements sponsored by well-known brands compared to unknown brands. When faced with repetitive advertisements from an unfamiliar and unknown brand, consumers who are already aware of and familiar with a brand are more likely to have established or reinforced brand impressions. In contrast, consumers may develop negative perceptions towards the repetitive advertisements from an unknown brand, as they have not yet formed any impression of the brand, which results in a faster deterioration of their attitude towards the brand. Thus, due to the lack of tangible product experience among different consumers, the content of advertising plays a crucial role in shaping brand attitudes and purchase intentions. The fundamental strategy for brands with lower awareness levels is to create and improve relationships with consumers through advertising, encouraging them to engage more and browse through the advertisements. When consumers have limited knowledge about ordinary brands, they rely

more on the information conveyed in advertisements to make purchase decisions (Ford and Smith, 1987). As more exposure to advertisements occurs, the effects of effective interaction between individuals and advertisements are established. However, as brand impressions strengthen, this influence gradually weakens (Smith and Park, 1992). Due to the lack of sufficient tangible experience with products or services from ordinary brands, the perceived risk associated with purchase behavior is high. Therefore, there is an increased reliance on the quality of advertisements during this time.

In addition, brand reputation is also related to brand reputation. Highly recognized brands are able to achieve more positive consumer brand attitudes, a larger number of consumers making purchases, greater market share, and stronger brand influence. It is important to note that brand reputation is not classified as positive or negative, but rather as high or low. However, Brand reputation can be positive or negative. It is possible for a highly recognized brand to have a very negative brand reputation, and a brand with a poor consumer evaluation may also be widely known, often referred to as "infamous".

2.5 Research summary and evaluation

Based on the literature review above, it can be observed that scholars have conducted a series of studies on the impact of advertising salience. However, the underlying mechanism by which advertising salience affects conversion rates remains unexplored in existing research. In light of this, this study aims to

analyze and examine the influence of advertising salience on conversion rates using objective news feed advertising data. Additionally, drawing upon the relevant research on consumer engagement discussed in this section, it seeks to understand the mediating role of consumer engagement between advertising salience and conversion rates. Furthermore, integrating the literature on brand reputation outlined in this section, it will analyze and examine how market share moderates the relationship between advertising salience and conversion rates. These contributions will further enrich and expand the field of research in related areas.

3 Research hypothesis and theoretical model

3.1 Analysis of the impact of advertising salience on conversion rates

Signal theory suggests that the content features of advertisements are important factors that influence consumers' responses to advertisements. As the salience of brand names in news feed advertising increases, consumers' perception of the advertisement gradually strengthens, which further enhances the fluency of their information processing. Studies have shown that when consumers are able to process information about a product smoothly, it stimulates positive attitudes towards the brand, which may subsequently lead to positive responses towards the product or advertisement (Lee and Labroo, 2004; Novemsky et al., 2007; Shen et al., 2010). This positivity enhances consumer engagement, such as by increasing advertising click through rates or improving advertising completion rates. Based on this, the following hypothesis is proposed:

H1: Advertising salience increases consumer engagement.

Furthermore, as consumer engagement increases, consumers gain a deeper understanding of the specific content of the advertisement, which enhances their memory and comprehension of the information, thus leading to higher conversion rates. The SICAS model in advertising marketing describes an interactive communication process, suggesting that the communication interaction between users and businesses can induce consumer purchasing behavior. Bai (2012) found that active consumer engagement prompts users to

proactively seek out product and brand information, deepen their understanding of the advertisement, form positive attitudes towards the advertisement, generate purchase intentions towards the brand's products or services, and ultimately have a positive impact on advertising effectiveness. Bian (2022) also found that consumer engagement can enhance their advertising cognition, attitude, and purchase intention. This effect may be more likely to lead to conversion rates, especially when consumers find the advertising content relevant to their actual needs. Based on this, the following hypothesis is proposed:

H2: Advertising salience increases advertising conversion rates.

Based on the analysis above, this study suggests that advertising salience enhances advertising conversion rates through increased consumer engagement. Therefore, consumer engagement plays a mediating role between advertising salience and advertising conversion rates. Hence, the following hypothesis is proposed:

H3: Consumer engagement mediates the relationship between advertising salience and advertising conversion rates, indicating that advertising salience increases advertising conversion rates by enhancing consumer engagement.

3.2 Analysis of the impact of advertising salience on conversion rates in different contexts

Market share to some extent represents the importance of a brand in the minds of consumers, and products with high market share often indicate high

brand recognition. Chaudhuri and Holbrook (2001) argued that market share is an important dimension of brand equity, representing consumer perceptions and acceptance of brand identifiers, product personalities, and other associations related to the brand. Doorn and Lemon (2010) suggested that brands exist in the minds of consumers as brand associations, and brand reputation is formed by brand recall and brand recognition. Brand reputation (and brand image) is at the core of brand knowledge, which in turn influences consumer responses to brand marketing and brand equity.

Therefore, product market share can determine the initial level of consumer information processing. For consumers, the higher the perceived prior value of a brand, the easier it is to process information, and the higher the sensitivity to information (Janiszewski, 2001). This also makes it easier to stimulate higher-level attitude preferences among consumers and thus increase advertising conversion rates. Based on this, the following hypothesis is proposed:

H4: The market share of the product moderates the positive relationship between advertising salience and advertising conversion rates, with higher market share strengthening the relationship between advertising salience and conversion rates.

The higher the level of regional marketization, the more robust the related infrastructure, and the stronger the advertising effect of enterprises. Consumers are also relatively more influenced by advertising. Therefore, when advertising

salience is high, there is a higher likelihood of advertising conversion rates. Conversely, if the level of regional marketization is low, consumers have limited attention to advertising, and therefore the impact of advertising salience on advertising conversion rates is limited. In addition, a higher level of regional marketization implies a higher level of legal system (Wang et al., 2022), which means higher advertising authenticity and credibility. Research has shown that advertisers and producers are responsible for the authenticity of advertising during advertising release and production, which directly affects the credibility of advertising. Credible advertising is more likely to achieve conversion by turning viewers' attention to the product into purchases (Zhang and Ma, 2015). Therefore, both in terms of consumer attention to advertising and the credibility of advertising itself, the level of regional marketization increases the relationship between advertising salience and conversion rates. Based on this, the following hypothesis is proposed:

H5: Regional marketization level moderates the positive relationship between advertising salience and advertising conversion rates, with higher levels of regional marketization strengthening the relationship between advertising salience and conversion rates.

Consumer income level is the most direct factor affecting advertising conversion rates. Increasing advertising conversion rates depends on consumer willingness to purchase, and businesses can improve advertising design, enhance user experience, and increase product quality from multiple

dimensions. Furthermore, consumer willingness to purchase is a prerequisite, and the ultimate decision to make a purchase also depends on their purchasing power. The higher the regional income level, the easier it is for consumers to convert into purchases when they receive advertising with high salience. Conversely, when the regional income level is lower, even if consumers receive advertising with high salience, their conversion rates are relatively lower. Therefore, the following hypothesis is proposed:

H6: Regional income level moderates the positive relationship between advertising salience and advertising conversion rates, with higher levels of regional income strengthening the relationship between advertising salience and conversion rates.

3.3 Theoretical model of the study

The study constructs a theoretical model to investigate how the salience of product advertising affects its conversion rates in the context of news feed advertising, as depicted in Figure 1.
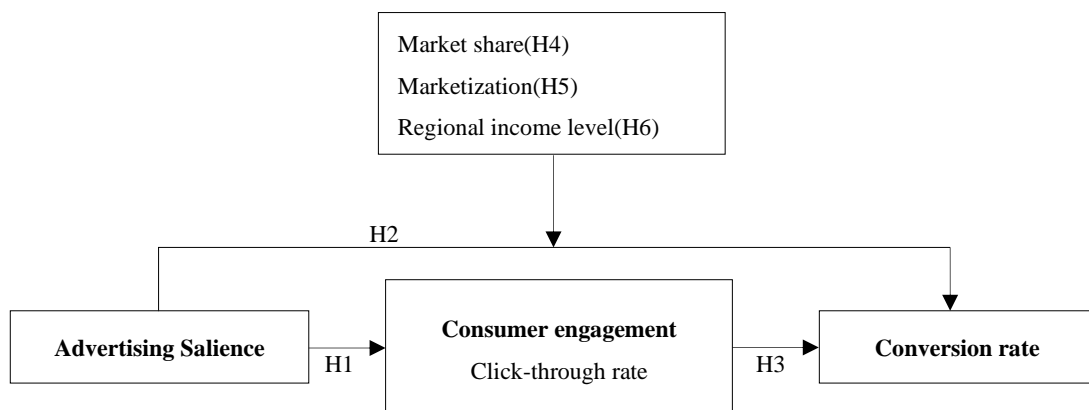
Figure 1: Theoretical Model of the Study

In this model, the salience of advertising significantly affects conversion rates through the mediating effect of consumer engagement. In other words, in

this mechanism, if the advertising salience is strong, consumer engagement will be higher, leading to higher conversion rates. Market share, regional marketization level, and regional income level play a moderating role. If a product has high brand reputation, a higher level of regional marketization, and a higher regional income level, the effect of advertising salience on improving conversion rates will be stronger.

4 Large-sample empirical studies

4.1 Research design

4.1.1 Sample and data

This study collected advertising expenditure data from thousands of companies. Most of the data had issues with incomplete data chains, either missing conversion rates data or market share data. After screening, a dataset containing 33,287 samples was obtained, ensuring data integrity.

The dataset for this study collected advertising expenditure data from 8 companies across three industries: finance, e-commerce, and social networking. In the finance industry, the selected companies were Yiren Wealth, Renren Dai, and Jiufu Wanka. In the e-commerce industry, the chosen companies were Koubei, Seku, and Haitunjia. And for the social networking industry, Momo and Tantan were selected. These brands were chosen mainly based on their substantial advertising volume. The data was collected from a genuine advertising database. Each data entry represents an advertisement with its own advertising salience, perceived interactivity, market share, and advertising conversion rates. This ensures that subsequent regression analyses can reflect real mechanisms.

4.1.2 Variable measurement

The explanatory variable is Advertising Salience (AS). Advertising salience refers to the prominence of the slogan and represents the brand/product exposure in the advertising text. The calculation method involves establishing

a brand corpus, which consists of the actual search behaviors of users on search engines in textual form. The proportion of keywords from the brand/product corpus in the corresponding slogan is then calculated. For example, for a slogan containing 20 characters, if the corpus contains 6 characters, the advertising salience would be 30%.

The mediating variable is Consumer engagement (PI), which is manifested through Click through rate (CTR) and Completion rate (CR). CTR reflects the level of consumer involvement and is calculated as the number of clicks on the advertisement divided by the number of views. Similarly, CR also reflects consumer engagement and is calculated as the proportion of completed views to the total number of views.

The dependent variable is Conversion rate (AC). Conversion rates refer to the ratio of conversions that occur after users click on the advertisement. In this context, a conversion is defined as the filling of a sales lead, specifically through filling out an online form. The calculation method involves dividing the number of form submissions by the number of clicks on the advertising.

The moderating variables in this study include Market share (MS), Regional marketization level (MI), and Regional income level (GDP). (1) Market share (MS): It is calculated as a ratio. Taking internet APP products as an example, the numerator represents the number of smartphone users covered by the target APP product, while the denominator represents the total number of smartphone users using similar APP products. For example, if the total

number of smartphone users covered by Chinese short video applications is 1 billion, and the number of smartphone users covered by Tik Tok is 600 million, then Tik Tok's market share in the short video industry would be 60%. (2) Regional marketization level (MI): It is measured using the marketization index of the province where the advertising is placed. The marketization index is derived from the work of Wang Xiaolu, Fan Gang, and others (2016). This index characterizes the marketization process of different provinces in China in different years based on five aspects: "the relationship between government and market", "development of non-state economy", "development of product markets", "development of factor markets", and "development of market intermediaries and legal institutions". For example, in 2014, Zhejiang province had the highest marketization level with a marketization index score of 9.78, while Qinghai province had the lowest marketization level with a marketization index score of 2.53. Sichuan province, ranking in the middle, had a marketization index score of 6.62. (3) Regional income level (GDP): It is measured using the per capita GDP of the province where the advertising is placed.

In addition, this study also controls for the advertising length (SIZE) as well as industry and province dummy variables in the model.

4.1.3 Model design

According to the mediation effect model established by Wen Zhonglin (2012), this study constructs Model 1, Model 2, and Model 3 to test the

mediation effect.

Additionally, this study also constructed Model 4, Model 5, and Model 6 to examine the moderating effects of product awareness, regional marketization level, and regional income level.

Model 1: $AC_i = \beta_1 + \beta_2 AS_i + \beta_3 MS_i + Control_i + \varepsilon_i$

Model 2: $PI_i = \beta_1 + \beta_2 AS_i + \beta_3 MS_i + Control_i + \varepsilon_i$

Model 3: $AC_i = \beta_1 + \beta_2 AS_i + \beta_3 MS_i + \beta_4 PI_i + Control_i + \varepsilon_i$

Model 4: $AC_i = \beta_1 + \beta_2 AS_i + \beta_3 MS_i + \beta_4 MS_i \times AS_i + Control_i + \varepsilon_i$

Model 5: $AC_i = \beta_1 + \beta_2 AS_i + \beta_3 MI_i + \beta_4 MI_i \times AS_i + Control_i + \varepsilon_i$

Model 6: $AC_i = \beta_1 + \beta_2 AS_i + \beta_3 GDP_i + \beta_4 GDP_i \times AS_i + Control_i + \varepsilon_i$

The definitions of the variables in the model are provided in the previous text. In Model 1, the positive coefficient of β_2 indicates that advertising salience has a significant positive impact on conversion rates, thus validating Hypothesis 2. In Model 2, the positive coefficient of β_2 suggests that advertising salience has a positive influence on consumer engagement, thus verifying Hypothesis 1. In Model 1, the simultaneous positive coefficients of β_2 and β_3 indicate that consumer engagement mediates the relationship between advertising visibility and conversion rates, thus supporting Hypothesis 3. The coefficient of β_4 is positive in Models 4, 5, and 6, which confirms Hypotheses 4, 5, and 6.

4.2 Analysis of empirical results

4.2.1 Descriptive statistics and Correlation Analysis

Table 1 presents the descriptive statistics for the variables. It can be observed that the mean of the dependent variable AC is 0.005, with a variance of 0.044, a minimum value of 0, and a maximum value of 2. The mean of the explanatory variable AS is 0.019, with a variance of 0.032, a minimum value of 0, and a maximum value of 0.125. The mean of the mediating variable PI is 0.017, with a variance of 0.060, a minimum value of 0, and a maximum value of 1. The mean of the moderating variable MS is 0.076, with a variance of 0.060, a minimum value of 0.010, and a maximum value of 0.430. The mean of the moderating variable MI is 7.193, with a variance of 1.764, a minimum value of 1.020, and a maximum value of 9.970. The mean of the moderating variable GDP is 11.332, with a variance of 0.390, a minimum value of 10.712, and a maximum value of 12.154. The mean of the control variable SIZE is 3.830, with a variance of 0.194, a minimum value of 0, and a maximum value of 4.127.

Table 1 Descriptive statistics of variables

Variables	N	Mean	SD	Min	Max
AC	33287	0.005	0.044	0	2
AS	33287	0.019	0.032	0	0.125
PI	33287	0.017	0.060	0	1
MS	33287	0.076	0.060	0.010	0.430
MI	33287	7.193	1.764	1.020	9.970
GDP	33287	11.332	0.390	10.712	12.154
SIZE	33287	3.830	0.194	0	4.127

Table 2 presents the correlation coefficients among variables. It is

observed that the correlation coefficient between advertising salience and advertising conversion rate is 0.014, significant at the 1% level, indicating a positive correlation between the two. The correlation coefficient between consumer engagement and advertising conversion rate is 0.015, significant at the 1% level, showing a positive correlation between the two.

Table 2 Correlation coefficients of variables

	AC	AS	PI	MS	MI	GDP	SIZE
AC	1						
AS	0.014***	1					
PI	0.015***	0.003	1				
MS	0.039***	-0.175***	0.203***	1			
MI	0.046***	-0.542***	0.037***	0.095***	1		
GDP	0.020***	-0.389***	0.025***	0.071***	0.799***	1	
SIZE	-0.011**	0.069***	-0.125***	-0.541***	-0.075***	-0.055***	1

Note: * $p<0.1$, ** $p<0.05$, *** $p<0.01$

4.2.2 Empirical results

Table 3 presents the regression results on the impact of advertising salience on conversion rates. In Model 1, the coefficient of AS is 0.106, significant at the 1% level, indicating a positive effect of advertising salience on the conversion rates, thus validating Hypothesis 2. In Model 2, the coefficient of AS is 0.167, significant at the 1% level, demonstrating a positive effect of advertising salience on consumer engagement and supporting Hypothesis 1. In Model 3, the coefficient of AS is 0.103, significant at the 1% level, and the

coefficient of PI is 0.015, also significant at the 1% level. This suggests that consumer engagement partially mediates the relationship between advertising salience and conversion rates. In other words, advertising salience enhances conversion rates by promoting consumer engagement, thus confirming Hypothesis 3.

Table 3 Regression results for the effect of advertising salience on conversion rate

	Model 1	Model 2	Model 3
AS	0.106***	0.167***	0.103***
	(10.28)	(12.20)	(10.02)
PI			0.015***
			(3.58)
MS	0.102***	0.040***	0.102***
	(12.95)	(3.80)	(12.88)
SIZE	0.006***	0.006***	0.006***
	(3.56)	(2.84)	(3.50)
_cons	-0.013**	-0.023***	-0.012*
	(-2.00)	(-2.73)	(-1.94)
Industry	YES	YES	YES
Provinces	YES	YES	YES
Observations	33287	33287	33287
R^2	0.0332	0.0631	0.0336
F	34.60***	67.83***	33.97***

Note: t-values in parentheses, * $p<0.1$, ** $p<0.05$, *** $p<0.01$

Table 4 presents the results of the impact of advertising salience on conversion rate in different scenarios. In Model 4, the coefficient of MS*AS is -1.819, significant at the 1% level, indicating that market share negatively

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moderates the positive effect of advertising salience on advertising conversion rates. Hypothesis 4 is not supported. One possible explanation is that when the product market share is high, product familiarity also increases, and consumers' recognition of the product increases, which in itself enhances the advertising conversion rates. As a result, the impact of advertising salience on conversion rate diminishes. Therefore, for products with low market share, it is more crucial to rely on advertising salience to enhance conversion rates. In Model 5, the coefficient of MI*AS is 0.119, significant at the 1% level, implying that regional marketization positively moderates the positive effect of advertising salience on advertising conversion rates. Hypothesis 5 is supported. In Model 6, the coefficient of GDP*AS is 0.438, significant at the 1% level, showing that regional income level positively moderates the positive effect of advertising salience on advertising conversion rates. Hypothesis 6 is confirmed.

Table 4: Impact of advertising salience on conversion rates in different scenarios

	Model 4	Model 5	Model 6
AS	0.100***	0.243***	0.191***
	(9.71)	(18.77)	(15.70)
MS*AS	-1.819***		
	(-6.38)		
MS	0.128***	0.098***	0.099***
	(14.44)	(12.45)	(12.49)
MI*AS		0.119***	
		(17.29)	
MI		0.001***	
		(4.16)	
GDP*AS			0.438***
			(12.99)
GDP			0.007***
			(4.73)
SIZE	0.007***	0.003**	0.005***
	(4.07)	(2.12)	(2.77)
_cons	-0.017***	-0.012*	-0.089***
	(-2.70)	(-1.76)	(-4.76)
Industry	YES	YES	YES
Provinces	YES	YES	YES
Observations	33287	33287	33287
R^2	0.0344	0.0418	0.0381
F	34.82***	42.67***	38.71***

Note: t-values in parentheses, * $p<0.1$, ** $p<0.05$, *** $p<0.01$

To gain a clearer understanding of the impact of moderating variables on the relationship between advertising significance and conversion rates, this

article presents moderation effect graphs. Figure 2 illustrates the moderating

effect of market share, revealing that advertising significance has a positive

impact on conversion rates at low market shares, while at high market shares,

the impact of advertising significance on conversion rates is negative. Figure 3

presents the moderating effect of regional marketization level, indicating that

when the regional marketization level is high, the positive impact of advertising

significance on conversion rates is stronger. Figure 4 displays the moderating

effect of regional income, showing that when regional income levels are high,

the positive impact of advertising significance on conversion rates is stronger.
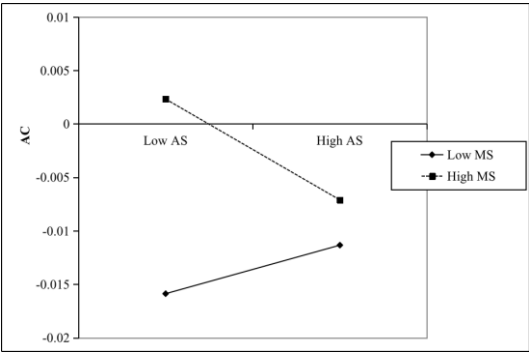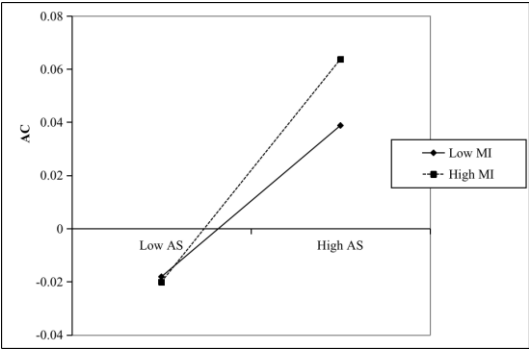

Figure 2 The moderating effect of MS

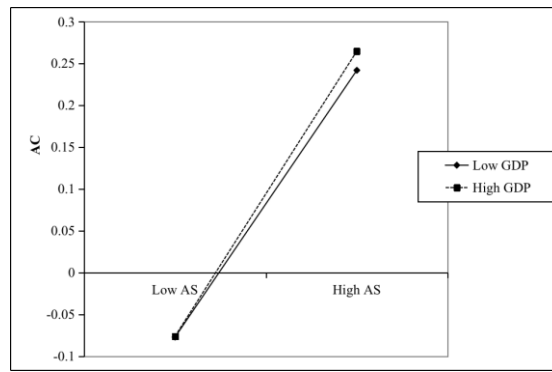Figure 3 The moderating effect of MI

Figure 4 The moderating effect of GDP

Table 5 presents the validation results of the main hypotheses, except for hypothesis 4, all other hypotheses are supported.

Table 5 Main assumptions validated

Hypothetical number	Hypothetical content	Whether to verify
Hypothesis1	Advertising salience increases consumer engagement.	Yes
Hypothesis 2	Advertising salience increases advertising conversion rates.	Yes
Hypothesis 3	Consumer engagement mediates the relationship between advertising salience and advertising conversion rates, indicating that advertising salience increases advertising conversion rates by enhancing consumer engagement.	Yes
Hypothesis 4	The market share of the product moderates the positive relationship between advertising salience and advertising conversion rates, with higher market share strengthening the relationship between advertising salience and conversion rates.	No
Hypothesis 5	Regional marketization level moderates the positive relationship between advertising salience and advertising conversion rates, with higher levels of regional marketization strengthening the relationship between advertising salience and conversion rates.	Yes
Hypothesis 6	Regional income level moderates the positive relationship between advertising salience and advertising conversion rates, with higher levels of regional income strengthening the relationship between advertising salience and conversion rates.	Yes

4.2.3 Further analysis

The article further investigates the impact of advertising salience on conversion rates in different industries, as shown in Table 6. It can be observed that in the e-commerce industry, the coefficient of AS is 0.295 and significant

at the 1% level, indicating that for every unit increase in advertising salience, the conversion rate increases by 0.295 units. In the financial industry, the coefficient of AS is 0.056 and significant at the 1% level, implying that for every unit increase in advertising salience, the conversion rate increases by 0.056 units. In the social networking industry, the coefficient of AS is 0.086 and significant at the 1% level, showing that for every unit increase in advertising salience, the conversion rate increases by 0.086 units. Comparatively, the impact of advertising salience on conversion rates is stronger in the e-commerce industry.

Table 6 Regression results of advertising salience on conversion rates in different industries

	E-commerce	Financial	Social network
AS	0.295***	0.056***	0.086***
	(4.74)	(8.64)	(6.93)
MS	0.176***	-0.254***	-0.090***
	(8.90)	(-4.56)	(-10.07)
SIZE	0.024***	0.00100	0.006***
	(3.75)	(0.49)	(3.45)
_cons	-0.092***	0.00700	-0.00500
	(-3.59)	(1.40)	(-0.90)
Provinces	YES	YES	YES
Observations	5575	16244	11468
R^2	0.0445	0.0107	0.0244
F	8.33***	5.65***	9.23***

Note: t-values in parentheses, * $p<0.1$, ** $p<0.05$, *** $p<0.01$

5 Experimental methods

This chapter will use psychological experimental methods for research. In the previous chapter, regression models were used to validate hypotheses based on secondary data. In these data, there may exist confounding variables. To control the influence of confounding variables, this study supplements the theoretical model with experimental methods for further validation. Experimental methods allow for direct control of other relevant variables in a laboratory setting, thereby revealing the causal relationship between the dependent variable and a certain type of independent variable. Therefore, we apply psychological experimental methods to analyze the impact of different levels of advertising salience on conversion rates and their underlying mechanisms.

5.1 Pre-experiment

To ensure the purity of the data by avoiding the influence of other factors, a pilot study is conducted first to select the experimental brand. The purpose of this pilot study is to test whether the manipulation of significance in the experiment meets the expected target. The formal experiment, based on these two pilot studies, controls for other factors and tests the effect of advertising salience on advertisement click willingness.

5.1.1 Pre-experiment 1: Selection of brands of subject experimental material

5.1.1.1 Experimental purpose

To determine the stimuli for this study, we need to identify brands that are familiar to participants, have a relatively neutral attitude evaluation, and have scores close to the median.

5.1.1.2 Experimental samples

The sample collection method for the two pilot studies, Pre-experiment 1 and Pre-experiment 2, was the same. The participants were employees of Company A in China. We contacted the leaders of Company A via phone to seek permission for conducting our research in their office. Subsequently, the leaders would distribute an internal announcement during the break time at a designated location in their company's premises, inviting their employees to participate in our study.

In Pre-experiment 1, we requested the top 15 participants from Company A to recall several brand names that came to their mind and rate their attitudes towards these brands. Participants were asked to complete a 10-minute survey after providing their consent. There were 9 male participants and 6 female participants, with an average age of 31.4 years.

5.1.1.3 Experimental procedures

We asked the participants to write down 5 financial and social brand names that they could associate with and were familiar with. Then, based on the frequency of mentions, we conducted a simple selection to identify the top 3 brands mentioned most frequently. We then assessed the participants' attitudes towards these 3 brands. The measurement items for brand attitude were adapted

from Maheswaran and Chaiken (1991) and consisted of two questions as follows:1. "What is your overall attitude towards this financial/social brand?" (1 = very unfavorable, 7 = very favorable). 2. "How much do you approve of this financial/social brand?" (1 = strongly disapprove, 7 = strongly approve).

5.1.1.4 Experimental results

This questionnaire was administered in written form, and all scales were measured using a 7-point Likert scale. Table 7 presents the top 3 brands mentioned most frequently and their brand attitude scores (mean and standard deviation). Through the experiment, it was found that the financial brands mentioned most frequently by the participants were, in descending order, "Duxiaoman" (18 mentions), "Renren Dai" (12 mentions), and "Yiren Wealth" (8 mentions). The mean attitude scores for these brands were 4.53, 5.73, and 2.65, respectively. The participants' evaluation of "Duxiaoman" was closer to the median, indicating that they did not have a strong brand preference for "Duxiaoman". Similarly, applying the same method to social brands, the social brands mentioned most frequently by the participants were, in descending order, "Momo" (13 mentions), "Tantan" (12 mentions), and "Baihe.com" (7 mentions). The mean attitude scores for these brands were 4.5, 2.35, and 2.38, respectively. The participants' evaluation of "Momo" was closer to the median, indicating that they did not have a strong brand preference for "Momo". Therefore, considering the factors mentioned above, we selected "Duxiaoman" as our financial test brand and "Momo" as our social test brand.

Table 7 Pre-experiment 1 results

Subject	Financial Brands			Social Brands		
	Duxiaoman	Renren Dai	Yiren Wealth	Momo	Tantan	Baihe.com
Q1	4.77 (1.62)	5.85 (1.23)	2.46 (1.08)	4.69 (1.14)	2.31 (0.99)	2.23 (1.05)
Q2	4.31 (1.14)	5.62 (1.15)	2.85 (1.03)	4.31 (1.54)	2.38 (1.00)	2.54 (0.93)
Sum	4.53 (1.42)	5.73 (1.19)	2.65 (1.07)	4.5 (1.37)	2.35 (1.00)	2.38 (1.00)

5.1.2 Pre-experiment 2: Experimental manipulation test

5.1.2.1 Experimental purpose

In order to test participants' perceptions of the salience of the advertisements, that is, whether the experimental manipulation was valid, whether participants significantly differed between high and low salience.

5.1.2.2 Experimental samples

We will ask participants from Company A to watch 4 videos (approximately 30 seconds) selected for Study 1 on their cell phones. Participants will be asked to complete a 15-minute survey after providing consent. The participants are 7 males and 8 females with an average age of 32.5 years.

5.1.2.3 Experimental procedures

The participants were first shown a random video advertisement to put them into context. Then, based on this context, they were asked to rate the salience of the advertisement in the video ("To what extent did you notice the brand of the advertisement in the video just now? 1=very unobvious, 7=very

obvious"). After the participants answered the question then the next video was played. Each participant had 4 scores.

5.1.2.4 Experimental results

This test was conducted using a 7-level scale, and the results of the paired samples t-test showed that for financial brands, there was a significant difference between the two videos of high salience (M_{high}=5.47, M_{low}=2.27) and low salience (t (14) =12.220, p<0.000), which suggests that the two videos showed a clear significance distinction and the stimulus achieved the desired effect. The same manipulation tested social branding and there was also a significant difference between the two videos with high salience (M_{high}=5.27, M_{low}=2.53) and low salience (t (14) =8.271,p<0.000).

5.2 Experiment 1

5.2.1 Experimental purpose

The purpose of this subsection of the study is to investigate the effects and potential mechanisms of advertising salience on advertisement click willingness, specifically, to verify whether advertisements with different salience make a difference to advertisement click willingness and whether consumer engagement plays a mediating effect in this. It should be explained that in the previous study, the dependent variable chosen was the advertising conversion rate, using the number of times the form was filled out in the secondary data/the number of clicks on the advertising. Considering that there is no relevant formula in the experimental method, we used the variable

advertisement click willingness to indicate the advertising conversion rate. It should be noted that the advertising conversion rate refers to the proportion of advertisements that actually accomplish the desired goal (e.g., purchasing a product, registering as a member, etc.) after reaching the target audience. It reflects the effectiveness and attractiveness of the advertisement. Click willingness refers to the tendency of the target audience to be interested in the content of the advertisement and be willing to click further to get more information or take relevant actions when they are exposed to the advertisement. A high willingness to click helps to increase the conversion rate: if the target audience is interested in the advertisement and willing to click on it, they are more likely to learn more about the product or service, thus increasing the chance of actual conversion. Therefore, groups with higher advertisement click willingness usually have higher conversion rates.

5.2.2 Experimental samples

We designed a between-group experiment to validate the main effect. The specific process is as follows: The first step is to inform each subject before the start of the experiment that the purpose of this experiment is to understand the consumer's perception of advertising, and that the results of the experiment are for academic research only, all the experimental measurement items are not right or wrong, and only need to be selected according to individual circumstances, please read and fill in the form carefully, complete it independently, and don't communicate with each other. We will randomly ask

participants from Company A to watch one of the 4 videos (Study 1 video) on their cell phones (approximately 30 seconds in length) and then answer some questions based on how they feel after watching it; all questions will be single-choice. Participants will be asked to complete a 5-minute survey after providing consent. In order to avoid subjects' confusion about their willingness to click on advertisements, we chose specific items as experimental materials. Based on the pre-experiment, the social networking platform Momo was selected as the specific experimental stimulus. Please refer to the Appendix for more details on the specific experimental materials. In the second step, after ensuring that each subject understood the purpose and requirements of the experiment, a link to the experimental material was randomly sent to each subject based on the double-blind principle, and the subjects were not aware of the content of the others. Subjects were randomly assigned to either of the two experimental groups (advertising salience: high vs. low), and we asked subjects to observe the Momo advertisement video with two different salience levels. The video link begins with a description of the experimental scenario as well as a video of the advertisements with different salience. The scenarios were described in the following two categories of text, "Please imagine a scenario in which you have just opened the video software on your cell phone and are greeted with a video like this." After viewing the corresponding experimental materials, the subjects answered the manipulation test questions, then the questions on advertisement click willingness and the questions on consumer engagement, which were

measured on a 7-point Likert scale, with 1 being "strongly disagree" and 7 being "strongly agree", and finally completed the demographic information. The specific measurement items are shown in Table 8.

The effective subjects in Experiment 1 were 209, of whom 88 (42.1%) were male and 121 (57.9%) were female, with a mean age of 32.15 years. A two-way ANOVA with G*Power 3.1.9.7 was chosen, and when the number of groups was 2, the degree of freedom was 1, the effect size (f) was 0.25, and the level of significance was 0.05, the Power value for a sample size of 209 was 0.949, which was above the basic level of 0.80, indicating an appropriate sample size. The gender and age of the subjects were not included in the statistical analyses that followed because they did not have any significant effect.

Table 8 Scale questions

variables	Subjects
Maneuverability test questions (Boerman, Reijmersdal, & Neijens, 2012)	To what extent did you notice the brand in the video advertisement?1=very insignificant, 7=very significant
Advertisement click willingness questions (Shen, Zhang, & Krishna, 2016)	I would like to click on this advertisement link for more detailed information. 1 = Very unwilling 7 = Very willing
Consumer engagement questions (Hollebeek, Glynn, & Brodie, 2014)	1 While watching a video, I always pay attention to the brands advertised in that video 2 I would like to like or retweet the video 3 I would like to see the video advertisement repeated 4 I would like to watch more video advertisements for that brand

5.2.3 Results analysis

5.2.3.1 Manipulative tests

The activation manipulation of advertising salience was first tested. An independent samples t-test was conducted to test the manipulation test question, and the results showed that in the high salience experimental group ($M_{high\ salience}$ =5.39, $SD_{high\ salience}$ =1.273), subjects perceived the salience of the advertisement higher than in the low salience experimental group ($M_{low\ salience}$ =2.85, $SD_{low\ salience}$=1.040), which indicated that the activation manipulation of social crowding was successful (t (207) =15.811, p<0.000).
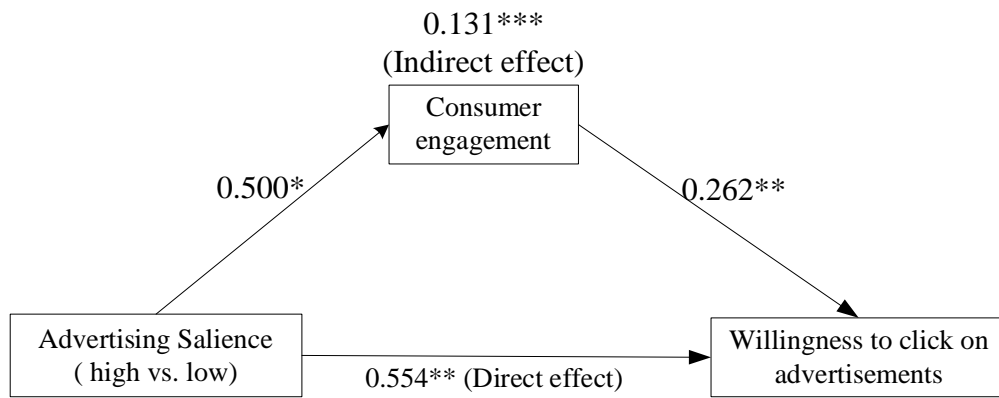
5.2.3.2 Main effects tests

In order to test H1, that is, that advertising salience positively affects consumer engagement, the results of the experiment were analyzed using a one-way ANOVA. Considering that consumer engagement perception was measured using four question items in this study, the three items were homogenized to obtain data on the variable of consumer engagement before the results were analyzed. The results showed that after watching the advertisement video with high salience, the participants' engagement perception ($M_{high\ salience}$ =5.71, $SD_{high\ salience}$ =1.09) was higher than that of the experimental group with the advertisement video with low salience ($M_{low\ salience}$ =2.33, $SD_{low\ salience}$ =0.765). In other words, advertising salience positively affects consumer engagement (F (1,207) =675.905, p<0.000), and H1 is verified.

To validate our main effect, which is H2, advertising salience increases advertising conversion rates. We performed a one-way ANOVA on the

experimental results. The results show that advertising salience has a significant positive effect on advertisement click willingness ($F_{(1,207)}$ =1072.586, $p<0.000$). Specifically, participants who watched videos with relatively high advertising salience ($M_{high\ salience}$ = 6.14, $SD_{highly\ salience}$ = 0.980) had stronger advertisement click willingness, that is, stronger advertising conversion rates, than those with low advertising salience ($M_{low\ salience}$ = 2.25, $SD_{low\ salience}$ = 0.725), as verified by H2.

5.2.3.3 Mediating effects test

Next, we examined the mediating role of consumer engagement. Based on the Bootstrap method proposed by Hayes (2013), the mediating role of consumer engagement was examined using the PROCESS program in SPSS. With advertisement click willingness as the dependent variable, Model 4 was chosen to have a significant mediating effect of consumer engagement at the 95% confidence interval (β= 0.131, 95% CI= [0.347, 0.009]), with an effect coefficient of 0.131, as shown in Figure 5, which suggests that consumer engagement mediates the relationship between advertising salience and advertisement click willingness, and that after controlling for consumer engagement, the mediating effect of consumer engagement is significant. After controlling for consumer engagement, advertising salience still positively affects advertisement click willingness (β= 0.554, 95% CI= [9.213, 9.540]), so there is a partial mediating role for consumer engagement, validating H3.

0.131*** (Indirect effect)

Consumer engagement

0.500*

0.262**

Advertising Salience (high vs. low)

0.554** (Direct effect)

Willingness to click on advertisements

Notes: 1 = Low salience experimental group; 2 = High salience experimental group; *p < 0.05; **p < 0.01; ***p < 0.001

Figure 5 The mediation effect results graph

5.2.3.4 Discussion

Study 1 fully supports all of our hypotheses (H1, H2 and H3) by noting the positive results of advertising salience. That is, when more brand information is included in the advertisement video, as it will positively affect consumer engagement, which in turn will positively affect consumers' advertisement click willingness. In other words, it will positively increase the conversion rate of the advertisement. In subsequent experiments, in addition to repeating the test of the above experimental results to ensure the robustness of the results, we intend to verify the moderating role of brand reputation in the relationship between advertising salience and advertising click through rate.

5.3 Experiment 2

5.3.1 Experimental purpose

The purpose of Experiment 2 was to verify H4 (brand reputation moderates the effect of advertising salience on advertisement click willingness).

5.3.2 Experimental procedure

Experiment 2 uses a two-factor 2 (advertising salience: high vs. low) × 2

(brand reputation: high vs. low) between-groups factorial experimental design to test the hypotheses. The dependent variable was advertisement click willingness, and the participants were divided into four experimental groups: high advertising salience-high brand reputation, low advertising salience-high brand reputation, high advertising salience-low brand reputation, and low advertising salience-low brand reputation. To ensure diversity in the experimental sample, this experiment will randomly ask participants in Company B to watch one of the four videos selected in Study 2 (approximately 30 seconds) and then answer some questions based on how they feel after watching the video; all questions will be single-choice. Participants will be asked to complete a 5-minute survey after providing consent. Finally, A total of 420 participants were recruited for the study, and they were randomly assigned to the four groups. After removing 4 invalid questionnaires, 416 valid questionnaires remained, accounting for 99% of the total. Among these 416 questionnaires, there were 218 male participants, accounting for 52.4%, and 198 female participants, accounting for 47.6%.

Different levels of advertising salience were initiated still using video. Based on Experiment 1, we use the same video advertisements to ensure that other irrelevant information interferes. The only difference is the addition of the brand logo in the high saliency video advertisements, while in the low saliency video advertisements, there is no brand logo. The selection of brands with different levels of brand reputation was based on the market share as mentioned

in the previous section, through which we found that for social brands, Momo (high salience) and Tantan (low salience) represent brands with different levels of salience in Mainland China, respectively. According to the "China Mobile Social Market Development and User Behavior Survey" published by iiMedia Research, in the first half of 2021, the user base of Momo accounted for the highest share at 46.9%, while the user base of Tantan accounted for 35.5%, which is 11.4% lower than Momo. Therefore, from the perspective of market share, Momo has higher salience than Tantan, which is consistent with the market share data I previously obtained.

Specifically, participants were randomly assigned to any of the four experimental groups, and the participants did not communicate with each other. Participants were randomly assigned a piece of experimental material, which consisted of a textual contextual introduction and an advertising video. The textual contextual introduction was "Please imagine a scenario in which you have just opened the video program on your cell phone and are greeted by this video." After viewing the corresponding experimental materials, participants answered the manipulation test questions, which consisted of two questions on advertising salience (to what extent did you notice the brand advertised in the video just now? 1 = "Very unobvious", 7 = "Very obvious") and brand reputation (to what extent do you think the advertised brand featured in the video just now is well known? 1= "Very not well known", 7= "Very well known"), and then answering the question on advertisement click willingness

(consistent with Experiment 1), the measurement items were all used to measure advertisers' advertisement click willingness. The questions were measured on a 7-point Likert scale, with 1 representing "strongly disagree" and 7 representing "strongly agree". Finally, several control variables were measured, such as brand familiarity (how familiar are you with the brand advertised in the video? 1= "very unfamiliar", 7= "very familiar"), and frequency of use (How often do you use the brand featured in the video advertisement? 1= "Never", 2= "1-3 times", and 3= "7-8 times"). Finally, participants were asked to provide demographic information.

5.3.3 Results analysis

5.3.3.1 Manipulative tests

The activation manipulation of advertising salience was first tested. The results showed that in the high advertising salience-high brand reputation group, participants' perception of the video advertising salience was higher than that in the low advertising salience-high brand reputation group ($M_{high\ salience} = 5.63$, $M_{low\ salience} = 2.06$, p<0.001); in the high advertising salience-low brand reputation group, participants' perception of the video advertising salience was similarly higher than that in the low advertising salience-low brand reputation experimental group ($M_{high\ salience} = 6.02$, $M_{low\ salience} = 2.14$, p<0.001), suggesting that the initiation manipulation of advertising salience was successful. Next, the effect of the brand reputation manipulation was tested. The results showed that in the high advertising salience-high brand reputation

group, participants' perceptions of brand reputation for the video advertisements were higher than those in the high advertising salience-low brand reputation group ($M_{\text{high brand reputation}}$ =6.24, $M_{\text{low brand reputation}}$ =1.91, p<0.001); and that in the low advertising salience-high brand reputation group, participants' perceptions of brand reputation for the video advertisements were similarly higher than those in the low advertising salience-low brand reputation low group ($M_{\text{high brand reputation}}$ = 6.38, $M_{\text{low brand reputation}}$ = 1.79, p<0.001), suggesting a successful brand reputation initiation manipulation.

5.3.3.2 Moderating effects test

A 2x2 factorial analysis of variance (ANOVA) was conducted with advertising salience and brand reputation as independent variables, advertisement click willingness as a dependent variable, and brand familiarity and use frequency as control variables. The results showed that the interaction term of advertising salience and brand familiarity was significant (F (1, 415) =713.545, p<0.001). Since the interaction effect was significant, we conducted a simple effects analysis. The results are as follows: specifically, when brand reputation is relatively high, the higher the salience of the advertisement, the stronger the consumers' advertisement click willingness ($M_{\text{high salience}}$ = 5.738, $M_{\text{low salience}}$ = 2.703, F(1, 202) = 199.151, p<0.001); when brand reputation is relatively low, the difference in the effect of video advertising salience on the consumers' willingness to click on the video advertisement is smaller ($M_{\text{high salience}}$ = 3.314, $M_{\text{low salience}}$ = 3.212, F (1, 210) = 3.145, p=0.077>0.05), that is to

say, for video advertisements with low brand reputation, the brand's salience high or low has a weak effect on consumers' clicking willingness (Figure 6). Accordingly, the H4 of this paper has been validated.
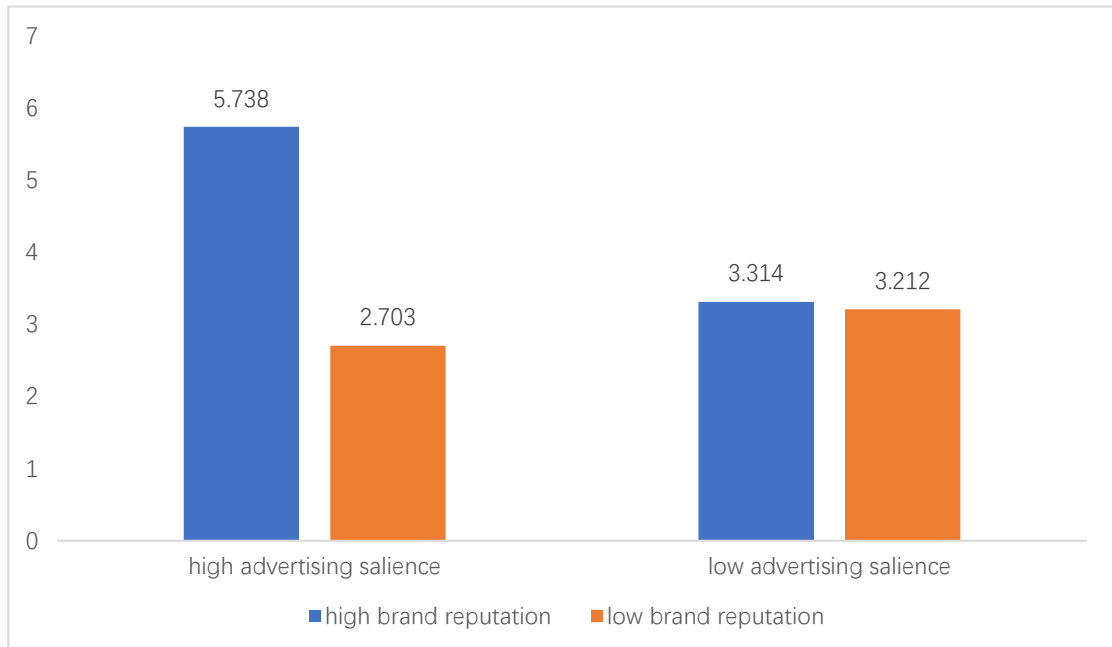

Figure 6 Moderating effect of brand reputation in advertising salience on advertisement click willingness

5.3.3.3 Discussion

The results of Experiment 2 fully validate H4, that is, brand reputation plays a moderating effect in advertising salience affecting consumers' click willingness. Specifically, when brand reputation is low, advertising salience does not affect consumers' willingness to click. When brand reputation is high, the higher the advertising salience is, the stronger the consumers' willingness to click on the advertisement.

6 Conclusions and outlook of the research

6.1 Research findings

This paper develops a mediated effects model based on existing research to investigate how the news feed advertising affects the conversion rate, as well as the moderating effects of contextual variables. Through the use of both large-sample empirical research and experimental research methods to test the research hypotheses, the following research findings are obtained:

(1) The news feed advertising has a significant positive effect on the conversion rates.

(2) Consumer engagement mediates the relationship between advertising salience and conversion rates.

(3) Market share, regional marketization level, and regional income level moderate the relationship between advertising salience and conversion rates.

6.2 Research value

This paper contributes to the existing literature by studying news feed advertising in China, which has important practical value for emerging news feed advertising.

By examining how the salience of content design influences conversion rates and the specific mechanisms underlying this effect in news feed advertising in China, this study not only contributes to the existing body of literature but also holds significant practical value for emerging news feed advertising practices.

In terms of theoretical significance, the research in this paper makes three contributions: First, the research conclusions of this study represent an important extension of the literature on the consequences of advertising salience. Building upon existing research, this study analyzes and tests the influence of advertising salience on conversion rates and further investigates the mediating mechanisms and boundary conditions through which advertising salience impacts conversion rates. It reveals the specific mechanisms by which advertising salience operates. Second, the research conclusions of this study also enrich the literature on factors influencing advertising conversion rates. Existing research has identified numerous factors influencing advertising conversion rates, and this study identifies salience as a novel factor and systematically analyzes how this factor influences conversion rates. Third, after constructing a theoretical model incorporating variables such as advertising salience, conversion rates, consumer engagement, market share, and regional factors, this study comprehensively tests the relationships between these variables through the use of both large-sample empirical research and experimental research methods. The integrated use of these two methods combines the advantages of objective data authenticity and experimental design flexibility, ensuring the rigor of the research design.

For the booming news feed advertising, the research in this paper also has high practical value for the market strategy.

First, the news feed advertising has a significant positive impact on the

conversion rates. In the practice of online advertising, it is necessary to appropriately enhance the commercial display of the brand in the advertising copy, such as emphasizing the brand name and logo. This strategy of enhancing advertising salience can guide consumers to pay greater attention to the information conveyed in the advertisement, thereby increasing the conversion rates. The same applies to video advertising, as evidenced by the findings in the experimental research section of this study. Designers of video adverting should also emphasize the brand content within the video to ensure a higher conversion rate.

Secondly, consumer engagement plays an intermediary role in the middle. This conclusion suggests that businesses can subsequently enhance advertising conversion performance by optimizing consumer engagement. In the previous practice of advertisement optimization, conversion rate optimization has always been the difficulty and pain point of advertisement optimization, mainly because there are a lot of influencing factors. It is challenging to find suitable angles for data analysis, especially for long-running advertising accounts that have encountered bottlenecks in improving conversion rates. In the future, in the process of advertising design and placement, in addition to enhancing advertising salience to attract consumer engagement, it is also necessary to consider how to improve the means of advertising placement to enhance consumer involvement. When consumers actively participate in the advertising dissemination process due to the optimization of advertising content and

placing methods, their conversion rates will increase.

Finally, the moderating effect of different contextual factors discovered in this study also has certain practical insights for enterprises to place advertisements. Enterprises can adjust the significance of advertisements according to the market share of their products and the different marketization and income levels of the regions where consumers are located, so as to achieve the purpose of improving the conversion rates of advertisements. Specifically, if a company has a low market share for a particular product and operates in a region with high marketization and income levels, it should place greater emphasis on enhancing the salience of advertisements during the design stage. This is because in these situations, the impact of advertising salience on the final conversion rates is stronger.

6.3 Limitations and outlook of the research

Firstly, this study primarily focuses on text-based advertising, while the trend of news feed advertising now is to use more and more audio and video advertisements. Therefore, investigating the salience of audio and video advertising can be considered as a future research direction. Particularly, with the widespread consumer recognition of audio platforms like Himalaya, audio advertising is poised for significant market growth, making the study of its salience issues crucial in both theoretical and practical contexts. In particular, it would be worthwhile to explore whether there are differences in the impact of advertising salience on conversion rates across different types of

advertisements. These are all important questions worth exploring in future research.

Secondly, in the empirical study, the measurement of the core variable of advertising salience in this paper is based on the frequency of brand name appearances as a proxy variable, due to data availability. Although this measurement can reflect the degree to which a specific stimulus factor in an advertisement contrasts with other stimulus factors in the user's environment, as defined by Fiske and Taylor (1991), it is not a direct measure of the concept of advertising salience. In future research, more direct measurement methods could be attempted. With the increasing prevalence of video advertising, there will be a greater variety of stimulus factors to choose from in advertisements, making direct measurement of advertising salience more feasible. Additionally, the empirical study found that consumer engagement plays a partial mediating role in the relationship between advertising salience and conversion rates. This result suggests the existence of other mediating variables between advertising salience and conversion rates, such as the potential impact of advertising salience on product reputation, which in turn affects conversion rates. In future research, considering both data availability and theoretical considerations, similar mediating variables can be explored and empirically tested for their effects.

Finally, in terms of experimental design, from one perspective, the main object of the sample is the employees of a Chinese enterprise, and the

experiment can be well into the situation. However, in reality, the consumers of TV or movies cover people from all walks of life in the society, and the perception of the salience of the advertisements may also be somewhat different. Therefore, I would like to experiment the same method in future studies using different subjects, such as people with work experience, managers and so on to verify whether the same results and underlying mechanisms are produced. From the other perspective, the strategy of using implanted advertisements in movies, TV or games has been adopted by many companies around the world, but due to the differences in culture and economic development of each country, there are some differences in consumers' perception and attitude evaluation. The experimental research subject of this paper mainly focuses on Chinese subjects, and fails to take into account the influence of culture and other factors. Therefore, in future research, I will take a cross-cultural perspective to examine whether consumers in other countries or regions share similar trajectories of brand attitude evaluation.

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