

Does complementary role matter? An empirical study on paid search and social ads on purchase



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Purpose: Online integrated marketing is arousing extensive attention from industry and academia, whereas no uniform conclusion on the effectiveness of integrated versus single marketing has been reached thus far. Accordingly, the integrated marketing effectiveness of paid search advertising and social advertising, and the moderating role of product type in it are primarily investigated in this study.

Design/methodology/approach: The interaction between paid search advertising and social advertising and purchase is elucidated. Moreover, the moderating effects of product type on the relationship are examined. The hypotheses are tested using an empirical model in accordance with the natural transaction data from Taobao.

Findings/results: An empirical analysis confirms a complementary relationship between paid search and social advertising on enhancing purchase. Furthermore, this study suggests that paid search advertising is more probably employed for the purchase of hedonic products, and social advertising more markedly affects the sales of utilitarian products. Moreover, the above-described two advertisements jointly increase the sales of hedonic products.

Practical implications: The results provide applicable guidance for sellers' advertising strategies on online shopping platforms. Sellers should stimulate sales by strategically using integrated marketing tools, and they should adopt different marketing strategies in accordance with different product types.

Originality/value: The findings reveal the complementary relationship between paid search and social advertising. Furthermore, this study expands the application of dual-process theory and analyses the information processing of utilitarian and hedonic products.

Keywords: paid search advertising; social advertising; dual-process theory; online purchase; complementary effect.

Introduction

Online shopping is gradually becoming mainstream with the constant increase of Internet users (Internet World Stats, 2021). With one of the most prevalent online marketplaces in China, Taobao has adopted a business model that provides basic platform services to sellers for free and monetises traffic through advertising tools to generate revenue. As of March 2022, Taobao accounted for 903 million active buyers and \$1.312 trillion in total merchandise value (Alibaba Group, 2022). Moreover, advertising plays an inevitable role in consumer purchase decisions on the Taobao platform. According to the IAB's Revenue Report, search advertising is the most prominent format, with a 41.4% share of the total internet advertising revenue of \$189.3 billion in 2021 (IAB, 2022). Meanwhile, 50.64% of the global population currently uses social media (Financesonline.com, 2021); in this context, social advertising revenues have been growing (IAB, 2022). Paid search and social advertising have become the mainstream of online advertising. With the increase in advertising investment, the seller is more attractive to consumers and boosts sales (Joshi & Hanssens, 2010).

Paid search advertising has become the backbone of search platforms (e.g., Google and Bing [Domachowski et al., 2016]) with its rapid growth. When the consumer searches for keywords on a search engine, the seller will recommend products on the results page based on the consumer's requirements. Once a consumer clicks on these advertisements, sellers will pay for them (Rutz & Bucklin, 2011). Extensive studies of paid search advertising have been conducted thus far. In terms of the performance of paid search advertising, various factors exist, such as keywords (Lu & Zhao, 2014; Rutz & Bucklin, 2011), location (Shrestha et al., 2009), and search engines (Baye et al., 2016). On the one hand, paid search advertising exhibits less intrusive characteristics compared

with other forms of advertising since they are directly correlated with the customers' search request (Yang & Ghose, 2010). On the other hand, paid search advertising facilitates the click-through of advertising while elevating the conversion rate of orders compared with unpaid search advertising (Batra & Keller, 2016). Social media enables users to develop and communicate user-generated content using Web 2.0 technologies and ideologies (Kaplan & Haenlein, 2010), that is, social advertising. As a matter of fact, these users serve as social endorsers who recommend products over social media, redirecting to the corresponding product page when someone clicks on the product link, thus leading to the payment for the social endorser. A considerable amount of existing research has revealed that positive attitudes (Akkaya et al., 2018), source appeal (Lim et al., 2017) and brand consciousness (Chu et al., 2013) are conducive to social advertising performance. Furthermore, social advertising is more efficient in boosting purchases as compared with the regular display or traditional advertising (Abzari et al., 2014; Tucker, 2016), since the incorporation of social messaging is capable of notably enhancing its presentation (Bakshy et al., 2012) and placing stress on consumer feelings and opinions (Berthon et al., 2012). In brief, paid search advertising and social advertising exhibit special features and have a particular effect on consumers' purchasing decisions.

As information technology has been leaping forward, consumers are not exclusively influenced by one form of marketing in the online shopping process (Lin et al., 2013). On that basis, this study aims to explore whether consumers' purchase decisions change when they are affected by two forms of advertising. Previous research has suggested that the interaction effect between online display and paid search advertising is stronger than the independent effect (Dinner et al., 2014; Kireyev et al., 2016). The interaction effect between organic and sponsored search advertising can generate more profit for companies compared with the independent effect (Yang & Ghose, 2010). However, the interaction effects are lower than all independent effects in terms of the effect of online advertising, regional advertising, and national advertising on firm value, as reported by existing research (Sridhar et al., 2016). Thus, this study focuses on the interaction effects of paid search and social advertising on consumer purchases after investigating the independent effects of the two types of advertising marketing.

The performance of advertisement marketing will vary with the specific product type (Huettl & Gierl, 2012; Peter & Ponzi, 2018). There are a wide variety of dimensions for the product categories (e.g., durable and consumables [Srivastava & Sharma, 2013], low-touch and high-touch products [Levin et al., 2003], search and experience products [Nelson, 1974], and hedonic and utilitarian products [Holbrook & Hirschman, 1982]). Furthermore, hedonic and utilitarian products have been extensively investigated in the context of e-commerce (Huettl & Gierl, 2012; Kivetz & Zheng, 2017; Okada, 2005; Peter & Ponzi, 2018). In a broad sense, hedonic products provide more experiential consumption, pleasure, delight,

and excitement (e.g., designer clothes, sports cars, and expensive watches), whereas utilitarian products are primarily instrumental and functional (e.g., microwave ovens, minivans, and personal computers) (Holbrook & Hirschman, 1982; Strahilevitz & Myers, 1998). On the one hand, hedonic and utilitarian products have an effect on advertising performance (Huettl & Gierl, 2012; Peter & Ponzi, 2018). Part of the research has highlighted that the visual effects of advertising for hedonic products are more effective compared with utilitarian products (Huettl & Gierl, 2012). Stress should be placed on warmth in advertisements for hedonic products and the competence dimension for utilitarian products (Peter & Ponzi, 2018). On the other hand, hedonic and utilitarian products are correlated with consumers' purchase intentions (Voss et al., 2003). Some research has suggested that hedonic and utilitarian products positively affect purchase decisions (Jee, 2021), whereas others have revealed that hedonic products are more effective in driving consumers' purchase decisions than utilitarian products (Kivetz & Zheng, 2017). Besides, previous research reported that utilitarian products are more likely to be selected (Okada, 2005). In brief, the current research has not obtained consistent answers to this question. Accordingly, this study investigates which type of product is better influenced by paid search and social advertising. Furthermore, which product type is more beneficial when interacting with paid search advertising and social advertising is also explored.

We use empirical analysis to investigate the topic of this study. Firstly, the impact of paid search advertising and social advertising on purchases is estimated under a variety of product types. The results of the study show that paid search advertising is more effective for hedonic products than utilitarian products, whereas social advertising is more significant for utilitarian products than hedonic products. Secondly, we explicitly evaluate the interactive effects on consumer purchases when sellers implement both paid search advertising and social advertising, as well as the moderating effect of product types. The interaction between paid search advertising and social advertising has a positive effect on purchases. Moreover, the effect is better for hedonic products compared with utilitarian products.

As a result of these findings, we make several contributions. Firstly, we discover the complementary relationship between paid search advertising and social advertising on purchases. Sellers could derive more benefits from a reasonable distribution of the two marketing methods. Secondly, product types are moderating factors in both marketing formats. Therefore, sellers should adjust their marketing strategies in time for different product types.

Literature review and hypotheses

Dual-process theory

A dual-process theory indicates that people adopt two different modes of information processing (i.e., superficial processing and deep processing). Superficial processing refers to the fact that people can rely on intuition and experience to make judgements regarding information. Deep

processing reveals that people cannot make direct judgements based on past experience and require careful consideration of the information and contextualised decision making (Epstein et al., 1996). The dual-process theory was initially evolved from Epstein et al. (1996) theory of self-cognitive experience and is a cognitive psychology concept (Smith & DeCoster, 2000). The theory has been currently applied to a wide range of fields and novel theories have been developed (e.g., the heuristic-systematic model [Trumbo, 1999], the elaboration likelihood model [Petty & Cacioppo, 1986], and the heuristic-analytic theory [Evans, 2006]). The dual-process theory takes on great significance in social psychology and it is also extensively employed in marketing (Grewal & Stephen, 2019; Park & Sela, 2018), e-commerce (Lee & Hong, 2019), and consumer behaviour (Siddiqui et al., 2018). Moreover, a dual-process theory is also available to analyse the effects of advertisement marketing (Garrido-Morgado et al., 2021; Simmonds et al., 2020). In addition, the level of involvement (Chaiken & Maheswaran, 1994) and product type (Garrido-Morgado et al., 2021) significantly affect consumers' choice of information processing mode. Accordingly, the dual-process theory is adopted to study the implications of different advertising marketing methods on online purchases.

Paid search advertising

Paid search advertising refers to a digital marketing method that serves as a vital factor for marketing success (Kim et al., 2021). Advertisements are placed on search engine result pages by advertisers based on the keywords searched by consumers, and advertisers are paid in accordance with the number of times they click on the advertisement (Rutz & Bucklin, 2011). When consumers search for keywords on a search engine, it reveals the consumer's purpose while exposing their information processing. Consumers develop their own thinking regarding the products displayed in paid search advertising (e.g., whether they are required, whether they are suitable, and whether price and value match). Thus, consumers evaluate the product and price information provided by paid search advertising comparatively through deep information processing and making a choice after careful consideration. In addition, paid search advertising is commonly closer to consumers' purchase decisions, and it is more likely to promote consumers to make the final purchase decision (Goldfarb, 2014). Thus, paid search advertising positively contributes to consumers' online purchases (Yang et al., 2020).

The classification of hedonic and utilitarian products can be more effective in measuring consumers' purchase intention (Voss et al., 2003), although there are many categories regarding product types. Moreover, the effectiveness of advertising promotion in paid search advertising may vary depending on the product type (Yang et al., 2020). Accordingly, we investigate which product type is more effectively promoted under paid search advertising from the perspective of a dual-process theory. The definition of hedonic products by consumers is heterogeneous. Moreover, hedonic purchases are uncertain (Dugan et al., 2021) and

often unplanned (Hui et al., 2013). Consumers prefer spending more time on hedonic purchases (Okada, 2005). Hence, consumers use deep processing of product information when making hedonic purchases. Utilitarian purchases are goal-oriented (Scarpi, 2012), purposeful, planned (Hui et al., 2013), and less disturbed by external information, such that consumers are more suitable to use a superficial processing method to complete the purchase of utilitarian products. As a result, the abundance of information provided by paid search advertising promotes consumers to make hedonic product purchases through deep processing, whereas it may interfere with the purchase of explicitly targeted utilitarian products. Hence, the following hypothesis is proposed:

H1: Paid search advertising facilitates the purchase of hedonic products more than the purchase of utilitarian products.

Social advertising

Social media has generated the concept of social advertising, and it has become an emerging trend in marketing (Rehman & Al-Ghazali, 2022). Enterprises actively use social advertising to create a positive brand presence and attract consumers' attention, throughout the majority of countries (Popkova et al., 2017). The information in social media incorporated into an advertisement can significantly enhance its presentation (Bakshy et al., 2012). Moreover, studies have reported that social media advertising directly affects purchase intentions (Aji et al., 2020), and it is correlated with consumer attitudes (Arora & Agarwal, 2020) and the interactivity of social advertising (Alalwan, 2018). However, another study has indicated that user-generated content on social media generally covers persuasive messages, making it difficult for consumers to identify and manipulate such covert advertising information (Mayrhofer et al., 2020). In addition, the products recommended on social media tend to be more customised recommendations (Ji et al., 2021), and consumers lack product comparisons and have less access to information, and process information at a superficial level. Therefore, consumers usually use a superficial processing method to process information regarding products recommended by social advertising.

Product types are frequently used in studies exploring the effects of social advertising (Lu et al., 2014; Winter et al., 2021), and hedonic and utilitarian products are a worthy direction to investigate (Hernández-Ortega et al., 2022). Accordingly, which product type is better promoted under social advertising is explored from the perspective of a dual-process theory. Consumers have utilitarian certainty in the purchase process (Dugan et al., 2021). Utilitarian product purchases focus on saving time resources and finding exactly the right features (Kim, 2004). At the same time, social advertising can offer consumers' credible information resources (Kim & Kim 2021; Ramanathan et al., 2022), such that consumers will follow the recommended utilitarian products of social advertising while utilising superficial processing. Moreover, the promotion of

utilitarian products in advertisements can significantly increase consumers' purchase intentions (Bart et al., 2014). Hence, it is beneficial for consumers to make purchases of utilitarian products under social advertising through superficial processing. However, the hedonic products recommended by social advertising may not correspond to consumers' hedonic concepts, such that this may not facilitate hedonic product purchases. Thus, the hypothesis is proposed as follows:

H2: Social advertising promotes the purchase of utilitarian products more than the purchase of hedonic products.

The interaction of paid search advertising and social advertising

Whether consumer purchase behaviour may change when sellers adopt both the marketing methods is also examined in accordance with the analysis of the effectiveness of the above-mentioned two marketing methods on purchase behaviour. Existing research has suggested that when sellers provide both, there is an interaction effect since consumers typically use a mix of media tools (Lin et al., 2013). Moreover, there are potential complementary or alternative effects in the interaction effect, thus enhancing or reducing the effectiveness of advertising (Lin et al., 2013; Liu & Shrum, 2009). Complementarity refers to the positive interaction effects between advertisement marketing (Lu et al., 2013), and previous research has suggested that the combined effect of multiple activities exceeds the sum of their individual effects (Belch & Belch, 2014). Alternative effects refer to negative interaction effects between advertisement marketing (Sridhar et al., 2016), and existing research has indicated that the combination of promotional instruments can eliminate the advantages (Lemon & Nowlis, 2002). Thus, a positive interaction between advertising promotions may be possible through rational arrangement (Zhang, 2006).

The online shopping process for consumers is complex, and the interaction effect between the two types of advertising may affect consumers' purchase decisions when they are exposed to paid search advertising and social advertising sequentially. Although existing studies have suggested that paid search advertising and social advertising facilitate consumer purchases separately (Abzari et al., 2014; Batra & Keller, 2016), there is also negative messaging (Carlson et al., 2022; Darke & Ritchie, 2007; De Vries et al., 2012). For instance, consumers may not make an immediate purchase decision since they are sceptical about the authenticity of social media information (De Vries et al., 2012). However, consumers receive relevant product information in subsequent paid search advertising. If the authenticity of the information in social advertising is confirmed, a greater willingness to purchase emerges. In addition, paid search advertising contains extensive information (Klapdor et al., 2014), such that consumers face difficulty in using the information effectively (Li, 2016). However, consumers receive accurate product recommendations in social advertising, and consumers are more likely to recall valid information in

paid search advertising, facilitating purchase decisions. Paid search advertising and social advertising compensate for each other's defects during their interaction, making the interaction effect more powerful than the independent effect. Since the interaction effect generates complex information, consumers usually should use a deep processing method to process the information. Given the above-described arguments, a hypothesis is proposed that:

H3: The complementary effects are present between paid search and social advertising on consumer purchase.

If both paid search advertising and social advertising are served to consumers, there may also be differences in purchases for different product types. In general, the purchase of hedonic products is perceived as indulgent, such that consumers are more cautious about it (Kivetz & Zheng, 2017). Consumers spend a lot of time on hedonic product purchases (Okada, 2005) and pay more attention to the experience of the purchase process (Adaval, 2001). The probability of being stimulated by interaction effects increases during long-term shopping processes. The interaction effect of paid search and social advertising is a repeated information stimulus that facilitates the reduction of consumer guilt for hedonic products purchase. Accordingly, the purchase of hedonic products is facilitated by the interaction effect. However, utilitarian products purchase is usually within consumers' advance planning (Hui et al., 2013) and more result oriented (Adaval, 2001). Therefore, the effect of interaction effects on utilitarian products is smaller compared with hedonic products. This leads to our last hypothesis:

H4: The interaction effect between paid search advertising and social advertising facilitates the purchase of hedonic products compared with the purchase of utilitarian products.

The theoretical model of this study is shown in Figure 1.

Method

Data collection

Data for the study are obtained from Taobao.com, one of the most active e-commerce platforms in China, to explore the effects of paid search advertising and social advertising on online purchase behaviour. To be specific, Taobao.com provides a platform for sellers to display product information while creating a channel for consumers to click through to browse product information. Moreover, it offers online

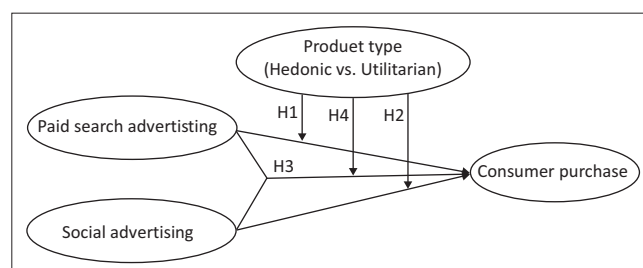


FIGURE 1: The theoretical model of paid search advertising and social advertising on consumer purchase.

sellers a P4P (pay for performance) sponsored search advertising service that works in the same way as Google's search engine advertising service. Taobao.com tracks the behaviour of consumers when they click the advertisements, and sellers pay for this tracking service. Taobao.com also tracks more consumer browsing information from social advertising as online sellers use Taobao.com's Web service. The products are classified into hedonic and utilitarian products in accordance with whether consumers can obtain quality information before purchase, indicating the effect of product categories on information acquisition. Product categories are capable of indicating product types. In this study, the product category information is based on five categories of products (i.e., fishing rods, clothes, 3C products, maternal and infant products, and shopping vouchers). The sample employed in this study comprises 21399 products and 7412 sellers. In terms of sellers, information regarding the seller's credit rating, the store's dynamic score, and the seller's platform information is collected. Furthermore, the transactions between consumers and sellers are obtained. The most representative behaviour information of consumers during the purchase process can be more effectively acquired using transaction data.

Variables and research model

Model

The empirical model is specified, as expressed in Equation 1. How paid search advertising and social advertising affect consumers' purchasing is evaluated in the above-mentioned theoretical analysis. When consumers search for a keyword on Taobao, product recommendations will be presented below or on the right hand of the search page. Consumers interested in the recommended information will click on this link and browse products. Moreover, consumers who are very satisfied with the details of the product may purchase it. Once consumers buy the products, the seller should pay for this marketing service. Social advertising, primarily spread through social media, has been extensively used on Taobao, similar to 'Amazon Post' that is adopted to browse and find a product on the Amazon platform (Lv et al., 2020). After consumers enter a store of a Taobao seller through a Taobao spreader's promotion and buy the product, the Taobao spreader gets the commission paid by the seller (Fan, 2019). In this study, P4P is adopted to represent paid search advertising, and Taoke serves as social advertising. Meanwhile, the effect of the two advertisements on consumers' purchasing intentions is examined; in this case, the response to different types of products is also tested. The empirical model is built as follows:

$$\begin{aligned} \text{purchas} = & \alpha_0 + \alpha_1 P4P + \alpha_2 \text{Taoke} \\ & + \alpha_3 \text{product type} + \beta_1 P4P \times \text{product type} \\ & + \beta_2 \text{Taoke} \times \text{product type} + \beta_3 \text{pap} \times \text{Taoke} \\ & + \beta_4 P4P \times \text{Taoke} \times \text{product type} + \gamma \sum \text{control} + \epsilon \end{aligned} \quad [\text{Eqn 1}]$$

The above model is developed to test the effects of P4P, Taoke, and the interaction on purchases, and product type is also considered a moderating factor. Moreover, the effects of

P4P, Taoke, and the interaction of two advertisements on purchases are examined under different product types.

Independent variables

There were two independent variables in this study: paid search advertising and social advertising. The description of the two independent variables has been presented in the Model. It takes a value of 1 when sellers adopt the marketing strategy and a value of 0 when they do not.

Dependent variable

The dependent variable was purchase. The purchase represents the amount of the transaction. If consumers purchase products, Taobao.com records these transactions as sales. Taobao.com keeps track of sales volume and sales revenue by measuring sales. We employ sales revenue to measure purchases according to prior research (e.g., Lu and Zhao [2014]).

Moderator variable

Product type is divided into hedonic and utilitarian products. Consumers pay attention to enjoyment when facing hedonic products, and focus on function when choosing utilitarian products (Kim & Kim 2016; Voss et al., 2003). It is influenced by consumer motivations and is a key moderator indicator of purchase behaviour. There are a variety of products in our data, such as fishing rods, cloth diapers, veils, gift cards, shopping vouchers, and notebook power supplies. According to Alsulaiman (2013), the hedonic attribute of the fishing rod is greater than the practical attribute, fishing rods are classified as hedonic products due to their pleasurable and enjoyable nature, and other function-oriented products are classified as utilitarian products. Therefore, this study classifies fishing rods as hedonic products and other products as utilitarian products. The moderator variable was product type (1 = hedonic product, 0 = utilitarian product) to explore the effect on purchase for different products.

Control variable

As depicted in Table 1, device (0 = Android, 1 = iOS), buyer credit, age, gender (1 = female, 2 = male), seller credit, Taobao's dynamic score (DSR), and seller platform (1 = Tmall, 0 = Taobao) are taken as the control variables. We control for relevant variables regarding consumer information. The buyer credit and seller credit indicate the credit rating obtained on Taobao and the credit rating of buyers and sellers based on their positive comments respectively. Taobao divides the seller credit rating into 20 different levels from 'One Heart' to 'Five Platinum Crowns' (Liang & Tao, 2013), and the buyer credit rating is assigned to 15 levels. Taobao's dynamic score, similar to that of Amazon and eBay, is adopted to measure a store's service capability. Dynamic score reveals the ability of a store to provide dynamic services, thus affecting influencing consumers' purchases. The higher the dynamic score, the easier it will be for consumers to have the desire to buy. Service, delivery, logistics, and commodity quality are all covered in the

TABLE 1: Descriptive statistics.

Variable type	Variable	Description	Mean	SD	Min	Max
Dependent variable	purchase	Log (transaction amount) After the transaction is completed, the payment amount in Alipay is the purchase quantity * price	4.761	1.476	-4.605	15.71
Independent variable	P4P	Seller use P4P marketing methods on the platform, 1 = adopted, 0 = not adopted	0.861	0.346	0	1
	Taoke	Seller use Taoke marketing methods on the platform, 1 = adopted, 0 = not adopted	0.785	0.411	0	1
Moderator variable	product type	1 = hedonic product, 0 = utilitarian product	0.663	0.473	0	1
Control variable	device	Terminal operating system adopted by consumers, 1 = iOS, 0 = Android	0.369	0.483	0	1
	buyer credit	Buyer credit rating	3.851	1.941	1	15
	age	Consumer age	48.77	24.46	16	80
	gender	1 = Female, 2 = Male	1.380	0.485	1	2
	seller credit	Seller credit rating	11.67	2.955	1	20
	DSR	Store dynamic score	4.832	0.0950	2.750	5
	seller platform	1 = Tmall, 0 = Taobao	0.470	0.499	0	1

SD, Standard Deviation; DSR, Taobao's dynamic score.

Note: The total number of transactions is $N = 351\,484$.

dynamic score. Each subdivision contributes a score to the total score, which is determined by adding up the four subdivision scores. There are two ways for sellers on the Taobao platform, one is B2C (Tmall), the seller is an enterprise, mainly brands, and distributors; the other is C2C (Taobao), which belongs to individual sellers.

Empirical results

Descriptive statistics

Table 1 shows the descriptive statistical analysis of the variables. The study takes the natural logarithm of purchase, in which the average amount of transaction is ¥4.76. The transaction data on Taobao are beneficial to determine consumers' purchases directly. The average value of P4P and Taoke is 0.861 and 0.785, suggesting that sellers adopt the marketing strategy actively in this study. The mean of seller credit is 11.67, suggesting that sellers in this sample have a 'One Blue Crown' level. Sellers with high credits are more familiar with tools and advertisements on Taobao than those with low grades. The average value of buyer credit is 3.851, which represents consumers having a 'Four Hearts' level. Higher-credit buyers spend more time on Taobao and have more experience than those with lower credit scores. A continuous variable called DSR is adopted in this study, representing the store's score in actuality. In this sample, the average value of DSR is 4.832, and the standard deviation (SD) is 0.095. Thus, the dynamic score of the store is better.

Ethical considerations

This article followed all ethical standards for research without direct contact with human or animal subjects.

Results

Table 2 shows the regression analysis for the purchase stage using the ordinary least square (OLS) method. In statistics, OLS is a method for estimating the unknown parameters in a linear regression model. According to column (1) of Table 2, P4P ($\beta = 0.473$ $p < 0.01$) markedly affects the number of

TABLE 2: Main effects of regression results and product moderated effects regression results.

Variable	Purchase			
	(1)	(2)	(3)	(4)
P4P	0.473*** (0.006)	0.401*** (0.009)	0.200*** (0.010)	0.201*** (0.010)
Taoke	0.410*** (0.005)	0.280*** (0.012)	0.554*** (0.008)	0.056*** (0.008)
product type	1.809*** (0.004)	1.808*** (0.004)	1.595*** (0.012)	1.671*** (0.013)
P4P × product type	-	-	0.439*** (0.013)	0.321*** (0.015)
Taoke × product type	-	-	-0.222*** (0.010)	-0.427*** (0.017)
P4P × Taoke	-	0.163*** (0.013)	-	-
P4P × Taoke × product type	-	-	-	0.252*** (0.016)
Device	0.055*** (0.004)	0.054*** (0.004)	0.055*** (0.004)	0.054*** (0.004)
buyer credit	0.002** (0.001)	0.002** (0.001)	0.002** (0.001)	0.002** (0.001)
Age	0.004*** (0.000)	0.004*** (0.000)	0.003*** (0.000)	0.003*** (0.000)
Gender	-0.044*** (0.003)	-0.044*** (0.003)	-0.043*** (0.003)	-0.044*** (0.003)
seller credit	-0.047*** (0.001)	-0.048*** (0.001)	-0.048*** (0.001)	-0.048*** (0.001)
DSR	4.045*** (0.019)	4.034*** (0.019)	4.002*** (0.019)	3.997*** (0.019)
seller platform	0.413*** (0.004)	0.409*** (0.004)	0.412*** (0.004)	0.408*** (0.004)
_cons	-16.418*** (0.094)	-16.305*** (0.094)	-16.073*** (0.094)	-16.044*** (0.094)
N	351 484	351 484	351 484	351 484
R ²	0.477	0.477	0.479	0.479

DSR, Taobao's dynamic score.

Standard errors are in parentheses.

** , $p < 0.05$; *** , $p < 0.01$.

purchases, suggesting that paid search advertising is critical to the transaction volume. Compared with other marketing methods, paid search advertising targets consumers with similar interests by matching searches for product keywords. Analytical processes help consumers filter information when searching for information, thus increasing the willingness to purchase. As depicted in column (3) of Table 2, there is a

significant interaction term ($\beta = 0.439$, $p < 0.01$) between P4P and product type, implying the better effect of paid search advertising on the number of transactions when facing hedonic products. Paid search advertising provides consumers who purchase hedonic products with accurate and complete information to evaluate hedonic products systematically and get emotional satisfaction. Hedonic products are more likely to be purchased through paid search advertising. Thus, hypothesis H1 is verified.

Taoke ($\beta = 0.410$, $p < 0.01$) has a notable effect on the transaction amount. Using the users' relationship network, social advertising facilitates the dissemination of information to consumers in the purchase process, increasing consumer interaction. Consumers have access to information through social media when purchasing through social advertising, such that they should do heuristic processing on the acquired information. It is easy to make purchases based on their own experience, stimulating the purchasing behaviour of consumers and increasing the transaction amount. The interaction between Taoke and product type ($\beta = -0.222$, $p < 0.01$) is indicated by the results in column (3) of Table 2, suggesting that social advertising will strengthen consumer purchases when facing utilitarian products. Consumers consider the products based on their functionality in purchasing utilitarian products. Since social advertising is embedded in social media, it provides more appropriate information and can make specific recommendations for consumers while offering information processing resources at a reduced price. Social advertising on the transaction amount notably affects utilitarian products. Accordingly, hypothesis H2 is verified.

According to column (2) of Table 2, the interaction term ($\beta = 0.163$, $p < 0.01$) between P4P and Taoke, indicates that paid search advertising and social advertising play a complementary effect in the process of consumer purchases. As revealed by the above-described results, both paid search advertising and social advertising will be critical to promoting the transaction amount if appearing separately. P4P will provide more information to match the consumer's needs. With Taoke, consumers can enhance the display effect, hide unnecessary information to a certain extent, and receive more personalised recommendations. Through social media, it is easier to recommend products to a friend, which is conducive to narrowing the distance between marketers and their customers. Stimulated by the two advertising methods, paid search advertising can provide consumers with accurate information and social advertising exhibits the characteristic of interaction. Thus, consumer perception of the product will be strengthened, and they will receive relatively enough information to stimulate their purchase intention. Thus, hypothesis H3 is verified.

The results in column 4 of Table 2 indicate the interaction among P4P, Taoke, and product type ($\beta = 0.252$, $p < 0.01$), suggesting that it is easier to promote the transaction amount of hedonic products under the interaction of the two advertising methods. Consumers pay more attention to the fun experience when purchasing hedonic products, as

detailed information processing costs are reduced. Consumers can save resources and reduce processing time when using the two advertisements to purchase hedonic products. Thus, hypothesis H4 is supported.

Robustness check

Under appropriate conditions, robustness is critical to valid causal inference since the corresponding coefficients of the central variables should not be affected by the addition or deletion of variables (Lu & White, 2014). In general, Heckman's two-step method is adopted to solve the problem of sample selection bias. The two-stage least squares method (2SLS) solves the problem of the bidirectional effect of an independent variable and dependent variable by linear regression twice.

Paid search advertising and social advertising may be associated with an endogenous problem of sample selection bias from the viewpoint of their interaction logic and purchase. As online shoppers become more active, their tendency to adopt both types of advertisements increase, making them more accessible as samples. On the other hand, those who are inclined to use the two advertising methods are more probably engaged in online behaviour. Thus, consumers who are not active in online purchases but prefer the two advertising methods may not be collected in the sample, causing a problem of sample selection bias. The above sample selection bias problem may lead to overestimation or underestimation of the role of paid search advertising and social advertising for purchase. These endogeneity issues can cause biased and unreliable estimation results. This study combines the two methods for estimation to avoid the possible effects of sample self-selectivity on the results.

In Table 3, it can be seen that the Inverse Mills Ratio has a significant effect on purchase, indicating the existence of sample selection bias and the correctness of Heckman's two-step method used in this study to correct for it (Certo et al., 2016). The regression analysis results are presented – the instrumental variables select the average value of paid search advertising and social advertising based on the industry category. The selection principle of instrumental variables is that they have a strong correlation with endogenous explanatory variables. At the same time, instrumental variables also need to be exogenous, that is, they are not related to the stochastic error. The regression results remain stable, indicating that paid search advertising and social advertising significantly impact purchases.

General discussion

This study investigated the effects of paid search advertising and social advertising and their interactions on purchase behaviour. On this basis, this study analysed the moderating effect of product type. The results indicate that paid search advertising and social advertising complement each other in the purchase process. This finding supplements the insight

TABLE 3: Heckman two-step and two-stage least squares method on P4P and Taoke.

variable	Heckman two-step		Heckman two-step and 2SLS	
	Purchase	Purchase	Purchase	Purchase
P4P	165.2770*** (2.8401)	-	2007.056*** (389.187)	-
Taoke	-	278.3162*** (3.2974)	-	2382.729*** (532.240)
mills	3585.9433*** (4.1400)	3504.4480*** (4.0467)	3348.908*** (866.488)	3415.495*** (866.241)
Select model				
seller credit	0.0032*** (5.1285)	0.0032*** (5.1285)	0.003*** (0.001)	0.003*** (0.001)
DSR	-2.4193*** (-124.9464)	-2.4193*** (-124.9464)	-2.419*** (0.019)	-2.419*** (0.019)
seller platform	0.6300*** (155.9975)	0.6300*** (155.9975)	0.630*** (0.004)	0.630*** (0.004)
Control variable	YES	YES	YES	YES
N	597 909	597 909	597 909	597 909

2SLS, two-stage least squares method; DSR, Taobao's dynamic score.

Standard errors in parentheses.

***, $p < 0.01$.

proposed by Ghose et al. (2019) who found that social advertising and paid search advertising have some complementary effects. Compared with prior literature that focuses on the effects of paid search advertising (Kim et al., 2012; Rutz & Bucklin, 2011) and social advertising (Alalwan, 2018; Bakshy et al., 2012), this study contributes to taking an integrative perspective on paid search advertising and social advertising mix to understand the consumer's path to purchase.

The effectiveness of promotional advertising varies markedly with the product type (Dugan et al., 2021; Huang et al., 2020). The moderate effects of different product types in the two marketing methods are revealed in this study. Paid search advertising is more likely to increase the purchase of hedonic products than that of utilitarian products. The effect of social advertising on the sales of utilitarian products is more positive than that on the sales of hedonic products. The role of product type in the interaction between the two marketing methods is investigated in depth, and the result indicates that paid search advertising and social advertising jointly encourage consumers to buy hedonic products more than utilitarian products. The above-described findings enrich the extant dual-process theory research into promotional marketing analysis (Jang et al., 2021; Simmonds et al., 2020). Given that consumers use different information processing methods for different marketing and products, the information processing of utilitarian and hedonic products based on the two advertising methods is investigated. Accordingly, this study applies the dual-process theory to a wider variety of scenarios.

Paid search advertising and social advertising both provide information to potential consumers. However, the correlation between these two types of information has not been examined previously, although their coexistence is becoming ever more prevalent. A question is raised about whether they

complement each other or serve as each other's substitute. We did find that paid search advertising and social advertising exhibit a complementary relationship. According to our findings, when consumers are exposed to paid search and social advertising, they are more likely to choose hedonic products over utilitarian products.

Practical implications

This study takes on a great significance for the sellers interested in pursuing marketing strategies on online shopping platforms. Firstly, this study has shown that paid search advertising and social advertising complement each other. That is, these two types of marketing tools enhance each other's effect. Accordingly, sellers should strategically apply these two marketing tools to stimulate sales. Moreover, the complement of effect is more for the hedonic product. We conjecture that the more effective of the two advertising may be due to the more information to attract customers. Thus, sellers should adopt different marketing strategies for different products.

For practitioners, the above-mentioned findings provide vital insights, that is integrated marketing takes on a critical significance to advertising and marketing. In addition, different advertising and marketing methods should be developed for different product types. Several suggestions for practitioners are presented as follows: (1) Integrated marketing methods (e.g., leveraging the complementary effects of paid search advertising and social advertising to increase the appeal to consumers) should be fully considered by marketers to enhance the effectiveness of advertising placement: (2) Sellers should develop corresponding advertising and marketing programmes based on product characteristics and customise marketing services from the perspective of consumers to clarify the moderating role of product type between advertising messages and purchase behaviour: (3) Lastly, sellers should consider product factors and develop an integrated advertising strategy that applies to the type of product when adopting an integrated marketing strategy.

Future research directions

The study can be deepened in several ways in subsequent research. Firstly, no restrictions are raised on the role revealed in this study. This study suggested that the effect on the purchase will become more significant with the increase in the funds invested in paid search advertising and social advertising. Since sellers are limited by budget limitations, they cannot use paid search advertising and social advertising without restrictions. Therefore, they should consider how to allocate their ratio when applying the results of this study to their marketing. A balance between multi-input marketing methods and budgets will be a topic worthy of further investigation.

Secondly, the field data only comprise the transactions of Taobao.com. The effects of paid search advertising and social advertising may be underestimated in this study, such that more platform data should be collected for

verification. In subsequent research, the effect of these two advertising methods should be investigated through other online platforms to enhance the universality of conclusions.

Lastly, this study places a focus on two approaches and methods. The effect of other advertising tools (e.g., banner advertising [Sherman & Deighton, 2001] or video advertising [Mei et al., 2007]) is not examined in this study. Existing research has suggested that using banner advertisements or video advertising can lead to positive outcomes (Jain, 2018; Manchanda et al., 2006). On that basis, the mutual effects of other advertisements can be explored in depth.

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Competing interests

The authors have declared that no competing interest exists.

Authors' contributions

Z.L.: conceptualisation, data curation, funding acquisition, writing-review and editing; X.T.: formal analysis, validation, methodology, supervision, writing-original draft; J.C.: visualisation, writing-original draft; L.R.: validation, writing-original draft; Y.Z.: project administration, resources, writing-review and editing.

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Data availability

The raw data required to reproduce these findings cannot be shared at this time as the data also forms part of an ongoing study.

Disclaimer

The views and opinions expressed in this article are those of the authors and do not necessarily reflect the official policy or position of any affiliated agency of the authors, and the publisher.

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