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Effects of paid search advertising on product sales: a Chinese semantic perspective

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ABSTRACT

Prior research on the impact of brand keywords on product sales has produced contradictory findings. Thus, one purpose of this study was to examine how brand keywords affect product sales when brand equity is considered. The other purpose was to explore how hedonic and utilitarian keywords interact with product type to impact product sales. The results of analyses of two secondary datasets and one lab experiment showed that brand keywords yielded more product sales than non-brand keywords. However, this effect disappeared when brand market share was small or consumer brand knowledge was high. A coding system was developed for Chinese keywords based on Chinese semantic features. Results showed a matching effect in which hedonic keywords generated higher product sales than utilitarian keywords for hedonic products, and utilitarian keywords generated higher product sales than hedonic keywords for utilitarian products.

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KEYWORDS

Paid search advertising; brand keyword; hedonic keyword; utilitarian keyword; Chinese semantics

Introduction

Paid search advertising now accounts for more than 50% of e-retailers' ad spending (Dai & Luca, 2017). In paid search advertising, keywords serve as an essential bridge linking e-retailers and search users (Yang et al., 2016). Thus, many studies have explored the effects of keyword features on impressions, click-through rates, conversions and product sales. A large number of these studies have focused on the external features of keywords. These extrinsic features include keyword frequency, length, cost, rank, popularity and specificity (e.g. Agarwal et al., 2011; Jerath et al., 2011; Wang et al., 2019; Yang et al., 2016). Other studies have examined the specific information communicated by keywords, such as brand name, retailer name and location, which are referred to as the intrinsic features of keywords (e.g. Ghose & Yang, 2009; Jansen et al., 2011; Kim et al., 2012).

Despite the extensive literature on paid search advertising (see Table 1), there are two matters that should be further addressed. The first is the influence of intrinsic brand information (i.e. brand keywords) on keyword performance. Brand information is so important to keyword advertising that almost all prior research on the intrinsic features of keywords has discussed its impact. Nonetheless, the findings from these studies have

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been contradictory. For example, several studies have shown that brand keywords are positively associated with impressions (Kim et al., 2012), click-through rates (e.g. Du et al., 2017; Rutz et al., 2012), conversion rates (e.g. Klapdor et al., 2014; Simonov et al., 2018), return visitations (Rutz et al., 2011) and orders (Spilker-Attig & Brettel, 2010). Wolk and Theysohn (2007) also found a positive link between brand information in paid content and the number of visitors to a website. Other studies have shown that brand keywords have a negative impact on search volume (Yang & Ghose, 2010), click-through rates (Ghose & Yang, 2009; Im et al., 2016) and conversion rates (Ghose & Yang, 2009). Further, only a few studies have linked brand keywords with product sales, the critical indicator of e-retailers' survival (Jansen et al., 2011; Lu & Zhao, 2014). Therefore, a more comprehensive study is needed to explore the impacts of brand keywords on e-retailers' product sales.

The second matter to be addressed is how to extract and mine keywords' other effective intrinsic features and their impacts on product sales. Intrinsic features communicate a product's key benefits and value to consumers. They are the essential bridge that links consumers' needs and products (Gopal et al., 2011). Therefore, choosing keywords that accurately represent a product's benefits and value should be an effective way to gain sales. Nonetheless, beyond brand and retailer names and location information (Klapdor et al., 2014; Yang & Ghose, 2010), prior work has rarely addressed how the intrinsic features that communicate a product's benefits and value influence product sales. Such benefits and value vary greatly from product to product. For example, hedonic products tend to provide experience value, whereas utilitarian products are more likely to provide functional value. Therefore, there is a need to address how such intrinsic features of keywords interact with product types to affect product sales.

Based on the foregoing discussion, the first aim of this study is to comprehensively examine how brand keywords affect product sales. Brand market share (i.e. large and small) and consumer brand knowledge (i.e. high and low) are considered. The former is an objective measurement and the latter is a subjective self-reported measurement based on consumer-based brand equity. We propose that brand keywords generate higher product sales than non-brand keywords. However, this effect is eliminated when the brand market share is small (versus large) or consumer brand knowledge is high (versus low). The second aim is to explore how keywords that communicate a product's hedonic or utilitarian benefits and value affect sales. We call these keywords attribute keywords and classify them as hedonic keywords and utilitarian keywords. We suggest that there is a matching effect between attribute keywords and product types. In detail, we propose that hedonic keywords generate higher product sales than utilitarian keywords for hedonic products, whereas utilitarian keywords generate higher product sales than hedonic keywords for utilitarian products. Figure 1 outlines the research framework.

Analyses of two secondary datasets and one lab experiment support our proposals. Our findings make several contributions. *First*, by examining brand market share and consumer brand knowledge, we show how brand keywords impact sales in a comprehensive way and explain why previous findings on the impact of brand keywords on sales have been contradictory. *Second*, previous studies have investigated the intrinsic features of keywords, including brand name, retailer name and location information. We advance this research domain by exploring product attribute information (i.e. hedonic and utilitarian attributes), which has rarely been considered before. Our results

		Main findings	Brand information in paid content <i>positive</i> affects traffic of a website. Bidding strategies	Retailer keyword increases the click and conversion rates, while brand keyword decreases the click and conversion rates.	When users are activated to believe that the order in which search results are displayed has a meaning, they will have better recall of an unknown brand that is displayed before the well-known brands. <i>Those with low Internet search skills tend to evaluate the unknown brand how for the unknown brand how</i>	Search engine marketing has a positive effect on orders.	Retailer keywords are associated with a higher search volume, whereas brand keywords are associated with a lower search volume.	For specific keywords, the topmost position has a higher click-through rate but a lower conversion rate.	A match between brand keyword and brand advertisement generates more sales revenue.	Searches with less popular keywords (search volume) are associated with more clicks.	Generic search generates a spillover effect on brand search, but the reverse does not hold.	Brand and broader keywords are associated with higher levels of return visitation. Keywords that better match user needs also attract visitors with a higher propensity to return to the site.
		Method	Secondary analysis	Secondary analysis	Behavioural experiment	Secondary analysis	Secondary analysis, field experiment	Secondary analysis	Secondary analysis	Secondary analysis	Secondary analysis	Secondary analysis
		Market place	No clear report	SU		No clear report	US	No clear report	US	Korea	No clear report	No clear report
	Performance	metrics	Number of visitors, views	Click, Conversion rates,	Brand memory	Impression, click, orders	Search volume	Click, Conversion rates	Click, sales, orders	Click	Click	Return visitation propensity
features		Extrinsic		Length, cost, rank	Rank		Length	Keyword specificity, rank		Keyword popularity		
Keyword		Intrinsic	Brand	Brand, retailer keyword	Unknown brand		Brand, retailer keyword		Brand keyword		Brand, generic keyword	Brand, broader keyword
		Studies	Wolk and Theysohn (2007) Edelman et al. (2007)	Ghose and Yang (2009)	Dou et al. (2010)	Spilker-Attig and Brettel (2010)	Yang and Ghose (2010)	Agarwal et al. (2011)	Jansen et al. (2011)	Jerath et al. (2011)	Rutz and Bucklin (2011)	Rutz et al. (2011)

Table 1. Literature review on paid search advertising.

(Continued)

	Main findings	Brand keywords yield higher click-through and conversion rates than non-hrand keywords	Positive relationships among impressions for	brand keywords are stronger than those for non-brand keywords.	Search advertising is more effective than traditional advertising.	Less popular keywords are associated with more clicks per search.	Brand keywords have a strong positive impact on both click and conversion rates	Specific keywords improve direct sales while general keywords improve the indirect sales of other modures	The number of ads on the paid-search listings	postructory and the current of the search advertisements than existing buyers, especially in mature stage (i.e. users have adapted to the search advertising service) compare to in launch stage (i.e. the search advertising service is newly introduced to the users).	Introduce a novel approach of generating relevant keywords	Introduce an approach for optimal biding. The influence of rank is weaker for specific brand keywords, <i>but stronger when consumers</i> have low prior experience with brand.	Brand keywords decrease click rates for experience goods.	The adoption of the mobile channel slightly cannibalised the purchases on the web channel, but the overall purchase increased.	(Continued)
	Method	Secondary analysis	Secondary analysis			Secondary analysis	Secondary analysis	Secondary analysis	Secondary analysis	Secondary analysis		Secondary analysis	Secondary analysis	Secondary analysis	
	Market place	US	Korea		NS	Korea	Germany	China	SU	No clear report			No clear report	China	
	Performance metrics	Click, conversion	Impression, click,	conversion rates	Click	Click	Click, conversion rates	Direct and indirect sales	Click, cost per click	Revenue	Click	Click rates Click, sales, orders	Click, conversion rates	Purchase frequency, amount	
d features	Extrinsic	Length, position				Keyword popularity	Frequency, lexical ambicuity	Keyword specificity				Keyword specificity, rank			
Keywor	Intrinsic	Company brand name, location	Brand keyword				Brand, Location,	Specific product name				Brand keyword	Brand, deal keyword		
	Studies	Rutz et al. (2012)	Kim et al. (2012)		Dinner et al. (2014)	Jerath et al. (2014)	Klapdor et al. (2014)	Lu and Zhao (2014)	Yang et al. (2013)	Fang et al. (2015)	Hur et al. (2015)	Nabout (2015) Narayanan and Kalyanam (2015)	lm et al. (2016)	Huang et al. (2016)	

Table 1. (Continued).

Table 1. (Continued).

	Keyword	features				
Studies	Intrinsic	Extrinsic	Performance metrics	Market place	Method	Main findings
(210C) 15 45 2002V		, ac, by	Click converse	No close concet	Corondoni analisis	Brand an accompate on social media. (1)
rang et al. (2010)		AUTANK	unck, conversion rates	NO CIERT REPORT	secondary analysis	brand engagement on social means: (1) increases click and conversion rate of the
						focal brand on search engines, (2) strengthens the relationships between
						advertisement rank and search engine
Du et al. (2017)	Brand, generic keyword		Sales, profit, ROI	No clear report	Secondary analysis	Brand keywords generate higher click and
						conversion rates than generic keywords.
Jeziorski and Moorthy		Brand ad position	Click rates	No clear report	Secondary analysis	Ad position and advertiser prominence are
(71.1)						substitutes.
Simonov et al. (2018)	Brand keyword	Ad position	Click rates		Secondary analysis	When no competitors are present, brand ads
						have a positive impact on clicks, with larger
						brands having a smaller causal effect.
Wang et al. (2019)		Keyword specificity,	Direct and indirect	China	Secondary analysis,	Compared with online keywords, mobile
		cost	sales		behavioural	keywords increase direct sales but decrease
					experiment	indirect sales. Keyword costs and specificity
						attenuate these positive and negative
						relationships.
This study	Brand, hedonic,		Product sales,	China	Secondary	Brand keywords yield more product sales
	utilitarian keyword		purchase		analysis,	than non-brand keywords. However, this
			intention		behavioural	effect is eliminated when either the
					experiment	brand market share is small or consumer
						brand knowledge is high. A match
						between hedonic (utilitarian) keyword
						and hedonic (utilitarian) product
						generates higher product sales.



Figure 1. Research framework.

suggest that hedonic keywords generate higher product sales than utilitarian keywords for hedonic products, whereas utilitarian keywords generate higher product sales than hedonic keywords for utilitarian products. Third, we test the matching effect of attribute keywords and product type and examine its effects on product sales. We demonstrate that hedonic (utilitarian) keywords matched with hedonic (utilitarian) products increase e-retailers' product sales. We also offer some insights into and guidelines for this effort. Finally, by obtaining two secondary datasets from two Chinese e-sellers, we extend theory by developing a coding system for Chinese keywords based on Chinese semantics. Through this system, the product attribute information contained in keywords can be identified. Although some prior work (Klapdor et al., 2014; Rutz et al., 2011) has explored keyword information content from a semantic perspective, the information under study has been limited to brand name, retailer name and location, and the paradigm has only applied to English keywords. We code and analyse products' hedonic and utilitarian information from the perspective of Chinese semantics. We hope that our work provides an example of semantic analysis of Chinese keywords because China's e-commerce market is the largest in the world. Its volume is currently 1 USD.5 trillion and will exceed 1 USD.8 trillion by 2022 (Forrester, 2018). To the best of our knowledge, research on paid search keywords in the Chinese market has been limited (Huang et al., 2016; Lu & Zhao, 2014; Wang et al., 2019). We believe that in the future, more comprehensive and detailed research on keywords in the Chinese e-commerce market will be needed. In addition, our work provides practical insights into optimising e-retailers' bidding strategy for paid search keywords at auctions in terms of their brand market share, consumer brand knowledge and product type.

In the following sections, we first review previous work on paid search advertising and develop our hypotheses. We then report on our two secondary data analyses and one lab experiment, which test our hypotheses. Finally, we discuss the theoretical contribution, managerial implications, limitations and future directions of our work.

Literature review and hypotheses development

Paid search advertising

Keywords serve as an essential bridge between e-retailers and search users in paid search advertising (Yang et al., 2016). There are two perspectives of paid search advertising on e-commerce platforms: the e-retailer bidding perspective and the consumer journey perspective (see Figure 2). For consumers, their goal is to buy products that meet their needs. Thus, they first search keywords that meet their purchasing intent (i.e. search), then click on a product ad that directs them to the landing page of the focal product (i.e. click). They make a purchasing decision after browsing the details of the product (i.e. purchase), and finally they may engage in some post-purchase activities (e.g. rating). For e-retailers, their goal is to present and sell their products to consumers. Thus, their first task is to select and bid on the keywords (i.e. select & bid) that best describe their products' characteristics (e.g. product name, function, brand). Thereafter, the e-commerce platform exposes the sponsored ads to consumers based on the outcome of the e-retailers' auction (i.e. impress). If the advertised product is sold, e-retailers gain sales (i.e. sales). The final stage for e-retailers is to provide after-sales service. This study explores how keyword selection impacts product sales from the e-retailer bidding perspective.

Brand/non-brand keywords and product sales

Brand keyword and non-brand keyword defined

Each keyword may consist of one or more words that reflect a product's characteristics (Ghose & Yang, 2009). The characteristics can be brand, shape, colour and so on. It is widely accepted that brand represents a product's fundamental information (Rahman et al., 2008; Wootten, 2003). Brand information is also a crucial attribute contained in keywords (Kim et al., 2012). As shown in Table 2, previous studies have defined brand keywords in a variety of ways. Based on prior work (Jerath et al., 2014; Kim et al., 2012; Rutz et al., 2012; Yang & Ghose, 2010), this study defines *brand keyword* as a keyword that contains a brand name, whereas a *non-brand keyword* is a keyword that does not contain a brand name. For example, in the case of shoes, 'Yijiabao comfortable shoes' is a brand keyword in which 'Yijiabao' is a Chinese brand of shoes. 'Fashion design shoes' is a non-brand keyword because there is no brand information. Likewise, in the case of water purifiers, 'Qinyuan water purifier' is a brand keyword in which 'Qinyuan' is a Chinese brand of water purifier, whereas



Figure 2. E-retailer bidding perspective and consumer journey perspective in paid search advertising.

Author(s)	Term	Definition
Ghose and Yang (2009)	Product-brand or company-specific keywords (vs. retailer keywords)	The presence of either a product or company brand name in the keyword
Jansen et al. (2011)	Retailer name	Brand-focused key phrases mean key phrases that contain a mention of a brand name
Jerath et al. (2014)	Brand-specific information	A brand name appears in the query
Kim et al. (2012)	Product brands	Keyword contains brand names
Klapdor et al. (2014)	Advertiser name	The presence of an advertiser's name in a keyword
Rutz and Bucklin (2007)	Company brand name	A keyword includes the company brand name
Rutz et al. (2011)	Firm's brand name (vs. general terms)	A keyword with brand attribute
Rutz & Bucklin (2011)	Brand terms (vs. generic terms)	A keyword contains brand names
Yang and Ghose (2010)	Manufacturer or brand names	A keyword with brand-specific information

Table 2. Brand term and definitions in the literature.

'small white water purifier' is a non-brand keyword because there is no brand information.

Brand/non-brand keywords and product sales

Brand information plays an important role in the performance of paid search advertising. First, compared to non-brand keywords, brand keywords contain brand names. These provide clues into a product's quality. With the signal of quality, consumers are more likely to trust the search results of brand keywords when they make purchasing decisions (Rahman et al., 2008; Wootten, 2003). According to Klapdor et al. (2014), brand keywords increase the keyword click-through rate and conversation rate, both of which can positively affect sales (Kim et al., 2012; Rutz & Bucklin, 2007). Second, brand keywords facilitate sales by arousing brand awareness and attitudes. In paid search advertising, consumers are aware of the searched-for brands and intend to purchase products from specific brands when they use brand keywords (versus non-brand keywords; Drèze & Hussherr, 2003; Fang et al., 2015; Gallagher et al., 2001; Ghose & Yang, 2009; Rutz & Bucklin, 2011). Brand awareness increases the level of subsequent visitations, which may positively affect sales (Rutz et al., 2011). Searching brand keywords also indicates that consumers are in a later stage of the purchasing process (Jansen & Schuster, 2011), when they are more likely to make purchasing decisions. Brand keywords can affect sales as much as 15 times more than non-brand keywords (Jansen et al., 2011). Empirical findings have suggested that brand keywords significantly outperform non-brand keywords, Therefore, this study makes the following hypothesis:

H1: Brand keywords generate higher product sales than non-brand keywords.

The moderating role of brand market share

Brand market share adds values to a product and affects consumers' responses to the product (Goodhardt et al., 1984; Romaniuk et al., 2007; Sharp et al., 2012). For brand awareness and association, a large share brand is always easier to access and gain more responses from than a small share brand (Romaniuk, 2006). Research has shown that a product's brand equity positively affects both consumers' willingness to pay premium prices (Keller, 1993) and the product's profits (Srivastava & Shocker, 1991). In paid search

advertising, because brand keywords signal product quality, they stimulate brand awareness and association. Thus, a keyword with a brand name is more likely than a non-brand keyword to induce a consumer response. However, Romaniuk (2006) found that for smaller share brands, an unprompted approach is less likely to elicit associations. Shopping online is a situation in which consumers spontaneously search keywords for their intended products. Consumers are less likely to associate products with small share brands, which in turn decreases their likelihood of searching for or buying them through brand keywords in e-commerce. Thus, we propose:

H2: (a) Brand keywords generate higher product sales than non-brand keywords when the brand market share is large. However, (b) this effect is eliminated when the brand market share is small.

The moderating role of consumer brand knowledge

All brand-image associations are related to consumers' prior experience and knowledge. Consumer brand knowledge increases through buying, consuming, viewing the brand's advertising or through word of mouth (Romaniuk, 2006). Romaniuk et al. (2012) explained that brand knowledge is a key driver of brand-image associations (see also Bird et al., 1970; Romaniuk, 2006; Romaniuk & Nenycz-Thiel, 2013). For example, a former user of a brand is more likely to make a brand association than someone who has never tried the brand (Romaniuk et al., 2012). Ku et al. (2019) also observed that brand familiarity increases recall and the association with that brand. A branded product often provides unique benefits and value to consumers. Thus, consumers with high brand knowledge are more likely to associate a brand with its products' unique attributes. Similarly, by assigning unique attributes to products, consumers associate with specific brands.

When shopping on an e-commerce platform, consumers with high brand knowledge can search either by a specific brand name or a unique attribute of a brand. When the unique attribute matches the product, they are more likely to purchase it because the brand offers consumers a compelling reason to do so (Aaker & Shansby, 1982; Keller, 1993; Ku et al., 2019). That is, for consumers with high brand knowledge, their intention to purchase a particular product will increase, compared to non-brand keywords.

However, consumers with low brand knowledge tend to evaluate a product based on external clues, such as the brand (Dou et al., 2010; Narayanan & Kalyanam, 2015). Therefore, they tend to search by brand name instead of by the unique attributes of a brand. In addition, compared with brand keywords, products associated with non-brand keywords may increase consumers' confidence in their decisions if they have low brand knowledge. Hence, we propose:

H3: (a) Brand keywords generate higher product sales than non-brand keywords when consumer brand knowledge is low. However, (b) this effect is eliminated when the consumer brand knowledge is high.

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Hedonic/utilitarian keywords and product sales

Hedonic keyword and utilitarian keyword defined

Similar to 'brand keyword', we first define 'attribute keyword' as a keyword that contains a product's attribute information. Such attributes can be classified as hedonic or utilitarian based on the benefits and value the product provides (Batra & Ahtola, 1991; Chitturi et al., 2007; 2008; Strahilevitz & Myers, 1998). Utilitarian attributes have utilitarian benefits and value, whereas hedonic attributes have hedonic benefits and value (see Dhar & Wertenbroch, 2013; Jones et al., 2006). For example, for products like shoes, 'round toe' (shape), 'retro design' (fashion trend) and 'net surface' (style) are hedonic attributes, whereas 'ventilated', 'keep warm' and 'antiskid' (related to function) are utilitarian attributes. For products like water purifiers, 'white' (colour), 'mini' (size) and 'wall hanging' (style) are hedonic attributes, whereas 'straight drink', 'reverse osmosis' and 'ultrafiltration' (related to function) are utilitarian attributes.

Based on these two well-documented types of product attributes (hedonic and utilitarian), we classified attribute keywords as hedonic keywords and utilitarian keywords. A *hedonic keyword* mainly describes the aesthetic, experiential and enjoyment-related attributes of a product, whereas a *utilitarian keyword* mainly describes the functional, instrumental and practical attributes of a product. Keywords such as 'fashion round toe shoes' and 'retro design shoes' are hedonic keywords, whereas 'comfortable toe protection shoes' and 'antiskid shoes' are utilitarian keywords.

Hedonic/utilitarian keywords and product sales

Products are designed and produced to satisfy various consumer demands (Chitturi et al., 2007; 2008). Products can be classified as hedonic or utilitarian (Bridges & Florsheim, 2008; Jones et al., 2006; Kempf, 1999; Woods, 1960). Previous studies have indicated that consumers expect different benefits from different types of products. They tend to seek function-related benefits from utilitarian products and experience-related benefits from hedonic products (Dhar & Wertenbroch, 2013; Jones et al., 2006). When searching online, consumers often type in relevant keywords to describe what they want from a product (Chernev, 2006; Klein & Melnyk, 2016; van Osselaer & Janiszewski, 2012). That is, they instinctively input hedonic (utilitarian) keywords when seeking experience (function) related benefits from hedonic (utilitarian) products.

Based on regulatory theory, Higgins (2000) pointed out that 'people experience a regulatory fit when they use goal pursuit means that fit their regulatory orientation, and this regulatory fit increases the value of what they are doing' (p. 1217). Regulatory fit makes individuals feel 'right' (Hamstra et al., 2013; Higgins, 2004), thereby enhancing their certainty about their initial goals and increasing their decision-making confidence (Hamstra et al., 2013; Higgins, 2000; Zheng et al., 2015). If the search results for hedonic keywords match the experience benefits that consumers seek, they can be confident in making decisions about hedonic products. Similarly, when consumers have expectations of the functional benefits of a utilitarian product, they focus on utilitarian attributes and input utilitarian keywords. Based on the regulatory fit (Hamstra et al., 2013; Higgins, 2000; 2004; Zheng et al., 2015), once the search results from utilitarian keywords fulfil consumers' function-related needs, the consumers can make their purchasing decisions with confidence. In paid search advertising, it can be assumed that searching keywords that

match a product type induces purchasing because it makes consumers feel 'right' about their goals. Hence, we propose:

H4: (a) For hedonic products, hedonic keywords generate higher product sales than utilitarian keywords, whereas (b) for utilitarian products, utilitarian keywords generate higher product sales than hedonic keywords.

Overview of the studies

Two secondary datasets were analysed and one lab experiment was conducted to test our hypotheses. First, we obtained two datasets from two online sellers on Taobao.com, China's largest consumer-to-consumer (C2 C) e-commerce platform. This platform offers sellers a chance to sell their products (including shoes, clothes and electronics) to individual consumers. It also offers keyword auction services to sellers. Sellers in this platform can create and bid for keywords related to their products. Based on a pre-test (see the Results section of Studies 1 and 2 below), we finally chose men's leisure shoes as the hedonic product and water purifiers as the utilitarian product for this study. Both sellers marketed products from multiple brands. The results of the analyses of the two secondary datasets supported H1, H2a, H2b, H4a and H4b. Second, because consumer brand knowledge is hard to measure using secondary data, we conducted a lab experiment using a real mobile phone brand in China to test H3a and H3b.

Studies 1 and 2: secondary data analysis

Within a three-month window, we downloaded two secondary datasets from two sellers on China Taobao.com. The first dataset was downloaded with the cooperation of a men's shoe seller¹ and, the second dataset was downloaded from a water purifier seller. The men's shoe seller sold several bands of men's leisure shoes, and the water purifier seller sold multiple brands of water purifiers. Overall, 10,966 records of shoe data and 53,701 records of water purifier data were obtained.

Data coding

Based on the definitions of 'hedonic keyword' and 'utilitarian keyword', four researchers coded the keywords according to the semantic features of Chinese. First, each Chinese semantic group consists of two or more single Chinese characters composed of two or more radicals with a particular semantic feature (Taft et al., 1999). For instance, ' \hbar 'm' (at leisure, free and having spare time) consists of the two characters ' \hbar ' and ' π ', each of which comprises two semantic radicals. The character ' \hbar ' contains two radicals; the first, '1', means a man and the second, ' π ', means wood. Therefore, ' \hbar ' refers to a man leaning against wood, feeling pleasant and comfortable. The other character, ' π ', contains two radicals; the first, '1', meaning a door and the second, ' π ', meaning wood. Therefore, ' π ' refers to a wooden door and to closing the door to sleep. Thus, the semantic unit and clues are the key factors in recognising Chinese words regardless of their radicals and characters. During the coding procedure, the coders needed to bear in

mind that each result had to be a complete semantic unit; for example, ' $\overline{\pm}$ ' (shoes) and ' $\overline{\pm}$ $\overline{+}$ ' (shoes + a nonsense syllable) had to be coded as the same unit because each one was a complete semantic unit.

Second, hedonic products are different from utilitarian products in their sensory and functional characteristics (Woods, 1960). For instance, hedonic products are dependent on their sensory characteristics (and the visual features of any product, such as colour and design). To a large extent, shoes are appealing to consumers because of their sensory features, such as design, colour and type, whereas their appeal depends to a lesser extent on functional features such as their ability to protect the feet from injury. Conversely, water purifiers mainly attract consumers through their special or powerful functions, not through their design, colour or type. During the coding procedure, the coders referred to the category of hedonic/functional character as a basic coding framework.

Third, the meaning of a lexical term can be distinguished according to the attributes of its semantic features, which may be defining or characteristic (Smith et al., 1974). In the keywords '休闲鞋' (a kind of leisure shoe), for example, the defining character '鞋' (shoes) is an essential or defining aspect of the Chinese semantic group, and '休闲' (leisure) indicates a non-essential or characteristic feature of the group. In the coding procedure, the coders considered the difference between defining and characteristic features.

Fourth, after each Chinese semantic group was coded (see Table 3), the coders calculated and compared the number of hedonic and utilitarian groups for each keyword, then classified them as hedonic or utilitarian keywords. If the hedonic value outnumbered the utilitarian value, the keyword was classified as hedonic. Likewise, if the utilitarian value outnumbered the hedonic value, the keyword was classified as utilitarian. The keywords were classified as neutral if the numbers for each value were equal. This classification method was adopted from previous studies by Goh et al. (2013), Healey and Kassarjian (1983), and You et al. (2017) in other disciplines.

Data name	Coding category	Definition	Examples
Men's shoes	Product type	Definition features	xiezi/xie (namely, shoes)
data	Brand	Product brand name	YIJIABAO/PLAYBOY
	Brand market share	Largest market share brand or not	N/A
	Hedonic	Hedonic features, including shape/colour/ appearance/design	round toe/retro/net surface
	Utilitarian	Functional features	ventilated/keep warm/antiskid
Water purifier data	Product type	Definition features	jingshuiqi (namely, water purifier)
	Brand	Product brand name	QINYUAN/ANGEL
	Brand market share	Largest market share brand or not	N/A
	Hedonic	Hedonic features, including shape/colour/ appearance/design	wall hanging/front/portable
	Utilitarian	Functional features	straight drink/reverse osmosis/ ultrafiltration

Table 3. Coding results of Chinese semantic group in keywords for the men's shoes and water purifier data.

N/A not applicable. Due to the confidentiality agreement, both sellers do not wish to disclose this information. We told the coders the name of the brand with the largest market share. The brand with the largest market share should be coded as 1 and the others as 0.

Finally, the brand name was coded as an independent classification. The coders first coded the keywords into 'brand' and 'non-brand' categories, with 1 for brand keywords and 0 for non-brand keywords. Keywords coded as 1 were further coded as brand market share variables, where the brand with the largest market share² was 1 and the others were 0.

Four students participated in the coding procedure. One group (one graduate student and one PhD student, both of whom were studying business) coded the shoes data independently. The other group (two graduate students specialising in business) coded the water purifier data independently. Before coding, the four coders were made aware of the following four rules: first, the coding results should be a complete and independent semantic unit; second, the coding results should reflect the difference between the defining and characteristic features; third, the coding results should be based on the hedonic/functional reference frame; and fourth, the brand name and brand market share should be coded as independent categories.

At first, the inter-coder agreement percentage was 84% for the shoes data and 79% for the water purifier data. The disagreements were largely caused by misunderstandings over the brand name, the misplacement of hedonic keywords and uncertainty over the classification of certain utilitarian attributes, such as '诤水' (water purification) and '诤水 器' (water filter). A fifth coder (a PhD student in psychology who was also an associate professor) reconciled and then discussed the disagreements with the coders. Thereafter, the coder agreement rates increased to 91% for the shoes data and 87% for the water purifier data. The remaining disagreements resulted from confusion over formal categories with lower frequencies, and the unclassified informal category in which many keywords could not be coded. Through discussion, the coders placed unclassified keywords into the formal categories.

Variables

Independent variables

There were four independent variables in this study: brand keyword (versus non-brand keyword), attribute keyword (0 = hedonic, 1 = utilitarian), product type (0 = hedonic, 1 = utilitarian) and brand market share (0 = small, 1 = large).

Dependent variable

The dependent variable was product sales. Product sales are a direct indicator of keyword performance and the main factor contributing to sellers' revenue.

Control variable

The conversion rate is the ratio of the total number of transactions to the number of clicks. It is influenced by keyword features and is a key indicator of product sales (Rutz et al., 2012). Thus, conversion rate was the control variable.

Results and findings

Pre-test

Before the two datasets were downloaded, we conducted a pre-test to determine whether the products sold by the two sellers could be regarded as hedonic and utilitarian products. Forty-seven participants (72.3% female, $M_{age} = 24.17$, SD = 1.81) were recruited through an online survey pool. We told them that the purpose of the survey was to understand their evaluations of the two products from the two sellers. We then followed a specific procedure. First, the definitions of hedonic and utilitarian products were explained to the participants. Second, the participants were asked to write down at least three products that belonged to the categories of hedonic and utilitarian products. This procedure was designed to help them understand both definitions. Third, we provided the participants with all of the main products sold by the men's shoes seller and water purifier seller and asked them to evaluate whether each type of product was hedonic or utilitarian based on a 1-item, 7-point scale (1 = 'hedonic product', 4 = 'neither hedonic product nor utilitarian product', 7 = 'utilitarian product'). Then we calculated the average score for the men's leisure shoes and the water purifier for each participant. A paired sample t-test showed that the score for men's shoes (M = 3.85) was significantly lower than the water purifier score (M = 4.81, t = -3.65, p < .01). Thus, we were confident in these two products and downloaded the datasets for this study.

The effects of brand keywords (versus non-brand keywords) on product sales

For the shoes data, analysis of covariance (ANCOVA) was conducted on product sales that used brand keyword (versus non-brand keyword) as an independent variable and conversion rate as a covariate. The results indicated that brand keywords (M = 104.2) generated significantly higher product sales than non-brand keywords (M = 30.49, F (1, 10,963) = 8.66, p < .01). Another ANCOVA was conducted for the water purifier data. The results showed that brand keywords (M = 13.77) generated significantly higher product sales than non-brand significantly higher product sales than non-brand keywords (M = 133.65, F (1, 53,698) = 166.92, p < .001). Thus, H1 was supported by both datasets. That is, brand keywords generated higher product sales than non-brand keywords.

The moderating role of brand market share

In the coding procedure, brand keywords were coded into two categories according to brand market share: large and small. We compared the product sales from large and small brand keywords with those from non-brand keywords. For the shoes data, an ANCOVA was conducted on product sales that used brand market share as an independent variable (three levels: large brand keyword, small brand keyword and non-brand keyword), with conversion rate as a covariate. The results indicated a significant difference for brand market share (F (2, 10,962) = 31.98, p < .001). Post hoc tests showed that large brand keywords (M = 281.20) generated higher product sales than non-brand keywords (M = 30.49, p < .001). However, small brand keywords (M = 5.82) generated lower product sales than non-brand keywords (M = 30.49, p < .05). The same ANCOVA was conducted for the water purifier data. The results showed a significant difference for brand market share (F (2, 53,697) = 142.92, p < .001). Post hoc tests showed that large brand keywords (M = 179.13) generated higher product sales than non-brand keywords (M = 13.77, p

< .001). However, there was no significant difference between small brand keywords (M = 6.37) and non-brand keywords (M = 13.77, p = .59). Taking both datasets together, the product sales from large brand keywords were higher than non-brand keywords, which supported H2a. However, product sales from small brand keywords had no significant difference from and were not lower than sales from non-brand keywords, which partially supported H2b. The lower effect was not expected in this study. We examine this further in the general discussion and the section on future directions.

Hedonic/utilitarian keywords and product sales

The coding of hedonic and utilitarian keywords depended on whether the keywords mainly described the hedonic or utilitarian value of the product. However, there was a small neutral group of keywords that presented equal numbers of hedonic and utilitarian values. We did not consider this group in the study. Thus, 10,573 records were included for analysis in the shoes dataset and 38,865 in the water purifier dataset. For the shoes data (the hedonic product condition), an ANCOVA was conducted on product sales that used attribute keywords (hedonic versus utilitarian keywords) as the independent variable, and conversion rate as a covariate. The results indicated that hedonic keywords (M = 39.72) generated significantly higher product sales than utilitarian keywords (M = 5.29, F (1, 10,570) = 9.98, p < .01). Another ANCOVA was conducted for the water purifier data (the utilitarian product condition). The results showed that utilitarian keywords (M = 17.42, F (1, 38,862) = 13.75, p < .001), indicating that H4a and H4b were both supported.

Study 3

Methods

Aim and design

Study 3 was a lab experiment. It aimed to examine H3 because consumer brand knowledge is hard to obtain from secondary data. A 2 × 2 design was created in which we manipulated keywords (brand keywords versus non-brand keywords) and consumers' brand knowledge (high versus low) as between and within-subject experimental factors, respectively. One hundred and forty-one participants (53.2% female, $M_{age} = 24.56$, SD = 3.72) were recruited from a large university in central China. The participants were randomly assigned to either the brand keyword or the non-brand keyword condition.

Stimuli

We chose Oppo, a real mobile phone brand, as the stimulus. 'Oppo mobile phone' and 'camera mobile phone' were chosen as the brand and non-brand keywords. There were three reasons for these choices. First, using a real brand in Study 3 was more appropriate than using a virtual brand because we needed to measure consumer brand knowledge. Second, we wanted to know how keywords influence product sales when consumer brand knowledge is considered. Oppo's unique positioning is that it has a powerful camera feature. All of its advertising refers to this camera function and describes the product as a camera phone. When the brand is mentioned, consumers with high brand

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knowledge of Oppo are likely to remember this unique attribute. In turn, if the attributes of the camera function are mentioned, consumers with high brand knowledge may also associate them with Oppo. However, for consumers with low brand knowledge, these effects do not exist. Thus, if a keyword contains a unique attribute of a product, but not its brand name, it may have the same impact that brand keywords have on sales. Thus, the selection of the two keywords was appropriate and helpful to furthering our propose. Third, although Oppo is a popular mobile phone brand in China, not all consumers are familiar with it. Accordingly, we could find consumers with either high or low levels of knowledge of the Oppo brand.

Procedures and measures

The participants were told that the purpose of the study was to understand consumers' online shopping behaviour. They were first asked to imagine that they were purchasing a new mobile phone. Second, the participants in the brand keyword setting were told to 'enter the search term "Oppo mobile phone" in the search bar in Taobao.com'. The participants in the non-brand keyword setting were told to 'enter the search term "camera mobile phone" in the search bar in Taobao.com' and click on one ad. Third, all of the participants were directed to the same screen displaying product information related to the Oppo mobile phone. After viewing the detailed product information, the participants reported their purchasing intention. Purchasing intention was measured by a 3-item, 5-point scale. Using a guestion adapted from Yi (1990), the participants were asked, 'How ____ are you to purchase the product?' [1 = 'impossible/unlikely/improbable' and 5 = 'possible/likely/probable'; α = .9]. The participants were also asked to report their brand knowledge on a 10-item, 5-point scale [1 = 'strongly disagree' and 5 = 'strongly agree'; $\alpha = .7$] adopted from Yoo and Donthu (2001). This scale is a consumer-based brand equity scale. It is appropriate to keyword searches because it measures consumers' brand loyalty, perceived quality and brand awareness/association. One example is 'Some characteristics of X come to my mind quickly' (where X indicates a brand name). We calculated the mean of brand knowledge for all of the participants. The participants who scored above the mean were considered to have high brand knowledge, and those scoring below the mean were considered to have low brand knowledge.

Results and findings

Analysis of variance revealed a significant interaction between keywords (brand versus non-brand keywords) and consumer brand knowledge (high versus low) (F(1,137) = 6.09, p < .05). Simple effect analysis showed that for consumers with low brand knowledge, brand keywords (M = 2.43) generated higher product sales than non-brand keywords (M = 1.83, p < .01), whereas for consumers with high brand knowledge, there was no significant difference between brand keywords (M = 2.53) and non-brand keywords (M = 2.57, p = .997; see Figure 3). Thus, H3a and H3b were both supported. Brand market share is an objective measurement while consumer brand knowledge is a subjective self-reported measurement. Both results have consistently indicated the moderating role of brand equity in the relationship between brand (versus non-brand) keywords and product sales.



Figure 3. Interaction effects between keyword and consumer brand knowledge in Study 3.

General discussion

The results of the hypotheses testing are shown in Table 4. The first aim of this study was to examine the effect of brand keywords (versus non-brand keywords) on product sales because prior findings on the link between brand keywords and keyword performance have conflicted. We involved the moderating role of brand equity by considering brand market share as an objective measurement and consumer brand knowledge as a subjective self-reported measurement based on consumer-based brand equity. Analyses of two secondary datasets and one lab experiment showed that brand keywords generated higher product sales than non-brand keywords, which is consistent with previous research (Kim et al., 2012; Rutz & Bucklin, 2007). This effect held when the brand market share was large or when consumer knowledge of a brand was low. However, this effect disappeared when either the brand market share was small or consumer brand knowledge was high. Because the consumers were less likely to associate products with a small share brand, they were less likely to search small brand keywords when shopping online. They were also less likely to purchase a product even if it was linked to a small brand keyword. When consumers lack knowledge of a brand, they interpret brand keywords as a signal of guality (Narayanan & Kalyanam, 2015). For them, brand keywords increase purchasing intention more than non-brand keywords.

Tab	le	4.	Summary	of	findings.
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	Hypothesis	Results
H1	Brand keywords generate higher product sales than non-brand keywords.	Supported
H2a	Brand keywords generate higher product sales than non-brand keywords when the brand market share is large.	Supported
H2b	This effect is eliminated when the brand market share is small.	Supported
H3a	Brand keywords generate higher product sales than non-brand keywords when consumer brand knowledge is low.	Supported
H3b	This effect is eliminated when the consumer brand knowledge is high.	Supported
H4a	For hedonic products, hedonic keywords generate higher product sales than utilitarian keywords.	Supported
H4b	For utilitarian products, utilitarian keywords generate higher product sales than hedonic keywords.	Supported

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Further, when consumers' brand knowledge is high, it is easy to associate a product's attributes with a unique brand name, thereby increasing the intention to purchase a product when it is linked to a non-brand keyword.

Second, in this study, small brand keywords generated lower product sales than nonbrand keywords, which was unexpected. That is, if a retailer sold small brand products, unlike non-brand keywords, small brand keywords could negatively affect product sales. This might be in line with reality. If consumers do not search small brands, or small brands are viewed as a signal of low quality, it could lead to negative associations, which decrease purchasing intention. Instead of relying on small brand names, non-brand keywords avoid the negative associations, and present the products' value to consumers, generating more sales.

Finally, we explored how hedonic and utilitarian keywords interacted with product type to impact product sales. From our analyses of two secondary datasets, we found that for hedonic products, hedonic keywords generated higher product sales than utilitarian keywords, whereas for utilitarian products, utilitarian keywords generated higher product sales than hedonic keywords. Hedonic benefits evoke emotions of cheerfulness and excitement (Chernev, 2006; Chitturi et al., 2007; 2008). Consumers often expect to derive fun and pleasure from hedonic products (Chitturi et al., 2008). Based on regulatory fit theory, searchers feel 'right' when the search results meet their goals and reveal hedonic benefits from hedonic products, which in turn facilitates their purchasing decisions. The pattern for utilitarian products is the same as it is for hedonic products. Consumers encounter regulatory fit when the search results match their shopping goals, and thus influence their purchasing decisions.

Theoretical contributions

This study makes several theoretical contributions to paid search advertising. First, it comprehensively addresses the conflict between brand keywords and keyword performance. Prior studies of brand keywords have had different impacts on keyword performance (e.g. Du et al., 2017; Ghose & Yang, 2009). This study also offers insight into the moderating role of brand equity by using brand market share as an objective measurement and consumer brand knowledge as a subjective self-reported measurement based on consumer-based brand equity.

Second, our work contributes to prior research on the intrinsic features of paid search keywords. Intrinsic information apprises consumers of a product's benefits and value. Academic researchers have paid much attention to intrinsic information but limit to brand name (Jansen et al., 2011), retailer name (Ghose & Yang, 2009), and location (Klapdor et al., 2014). This study focused on hedonic and utilitarian attribute information. Compared with brand and retailer information, the other intrinsic features of keywords are more difficult to identify. Clearly, there is a need for a deeper understanding of the intrinsic features of keywords in paid search advertising.

Third, product types vary greatly depending on the seller. This study extends the literature on paid search advertising by suggesting that there is a matching effect between keywords and products. Notably, instead of considering prior indicators, such as impressions, clicks, and conversions, this study examined product sales, the critical

performance aspect for e-retailers. This enriches prior work on paid search advertising for e-retailers on e-commerce platforms (Wang et al., 2019).

In addition, we extend theory by developing a coding system to identify keyword content for Chinese keywords based on Chinese semantic features. Although other studies have examined keyword content from a semantic perspective, it has only applied to English keywords. Language and context are closely intertwined (Ogden et al., 2001), and they vary between cultures (Fenko et al., 2010). It has been reported that there are three million active sellers on Amazon.com (Marketplace Pulse, 2019). However, there are ten million on Taobao.com, the largest e-commerce platform in China (Aidianmao, 2019). In such a competitive keyword auction market, how do Chinese e-retailers accurately present their products to consumers? We believe there will be extensive studies on paid search advertising in China's e-market in the future. We hope this study provides an example of semantic analysis of Chinese keywords.

Managerial implications

This paper offers two major implications for marketing managers. First, brand keywords help to increase product sales when there are large brands and the target consumers know the brand well. However, for small sellers, or sellers of small brand products, brand keywords may reduce sales. For those sellers, a good bidding strategy is to avoid small brand keywords and bid on keywords that reflect the benefits and value of the products.

Second, we offer guidelines on which keywords are best suited to achieving product sales for sellers of hedonic and utilitarian products. We also provide inspiration for sellers of the same product who want to highlight different attributes of the product. For example, if sellers sell snacks or want to highlight their products' experiential value, they should bid on hedonic keywords.

The e-commerce platform provides three matching options: exact, phrase and broad (Klapdor et al., 2014). Prior research has shown that when consumers search by brand keywords they are in a later stage of the purchasing process (Jansen & Schuster, 2011). Thus, a good strategy for brands with small market share wanting to improve their keyword efficiency is for sellers to bid for brand keywords but choose the exact matching option, which could avoid costs at the early stages of the consumer journey.

Limitations and further directions

We acknowledge several limitations to our approach and method, which may offer opportunities for future research. First, our sample includes two secondary datasets and one lab experiment. Although this is comparable to other secondary data analyses of product sales in paid search advertising, the limited dataset of sellers and brands limited our ability to test the generalisability of our findings. It would be valuable to obtain more secondary data from multiple sellers and from brands with large and small market shares, and then survey real users through questionnaires. Although it is difficult to implement, a controlled field experiment with real sellers would also be valuable. We obtained our

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secondary data within a three-month window. Data covering a longer period would also help to test the robustness of our findings.

Second, our research context is the e-commerce platform, which differs from search engine sites (e.g. Baidu in China, which is similar to Google). In search engines, bidders might be more concerned with click-through rates and page visits. Future research could confirm the generalisability of our findings to such contexts.

Finally, this study accounts for the differences between hedonic and utilitarian attributes in keywords. Subcategories of keywords referring to design, colour and shape within the hedonic category and specific functional features within the utilitarian category may affect sales in different ways. A promising extension of our research could therefore test how sub-level keywords affect product sales.

In addition, this study is limited to Chinese keyword semantic analysis of Chinese paid search keywords. Because the semantic analysis is positioned as a cultural question, it would be valuable to generalise our findings to other languages and explore comparisons between cultures.

Notes

- 1. Both sellers wished to remain anonymous. We thank these two sellers for providing the data used in this study.
- 2. Due to their confidentiality agreements, neither sellers wanted to disclose their brand information. We obtained the sales rank of each brand through Shengyicanmou, a big data information platform provided by Alibaba. Sellers who purchase the service can inquire about market competition, popular products and the performance of their products in the market.

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