How manufacturer brand erosion shapes consumer assortment perceptions

Received 7 April 2019
Revised 25 September 2019
15 November 2019
Accepted 19 November 2019

Chunyu Li
Department of Marketing, School of Business, Guangdong University of Foreign Studies, Guangzhou, China
Yongfu He
Department of Marketing, Monash Business School, Monash University, Melbourne, Australia
Ling Peng
Department of Marketing and International Business, Lingnan University, Tuen Mun, Hong Kong, and
Denghua Yuan
Research Center for International Brand Management, School of Business, Guangdong University of Foreign Studies, Guangzhou, China

Abstract

Purpose – Recently, the popularity of store brands has resulted in some manufacturer brands being removed from shelves. The current literature lacks empirical work on the effect of manufacturer brand erosion on consumer assortment perception and repatronage intention. Based on signalling theory, the purpose of this paper is to manufacturer brands play a signalling role and contend that manufacturer brand erosion has detrimental effects on the assortment perception due to reduced signalling efficacy.
Design/methodology/approach – A 3 (low manufacturer brand erosion vs high manufacturer brand erosion vs manufacturer brand dominance) ×2 (assortment size: small vs large) between-subject experiment was conducted.
Findings – Manufacturer brand erosion exerts a negative effect on assortment attractiveness and consumers' repatronage intention; the greater the erosion, the larger the negative effect. These negative effects are mediated by reduced consumer perceptions of assortment quality and variety. A large (vs small) assortment size attenuates the negative effect of manufacturer brand erosion by improving perceived assortment quality.
Practical implications – To engage in strategic positioning through efficient assortment management, retailers should cooperate with brand manufacturers, instead of promoting their own private labels. Nevertheless, a large assortment dominated by store brands signals that the retailer has built a strong private brand, which in turn gains a differentiation advantage.
Originality/value – This paper is among the first to take the signalling perspective and explicitly investigate whether and how manufacturer brand erosion exerts a significant impact on assortment perception.

Keywords Store brand, Repatronage intention, Assortment quality, Assortment variety, Manufacturer band erosion

Paper type Research paper

1. Introduction

Consumer decision making has been described as a hierarchical process in which consumers select an assortment and then select an option from the chosen assortment (Boyd and Bahn, 2009; Hong *et al.*, 2016). Although understanding both aspects of this process is important, failure to effectively manage the first step – consumer preference for a given assortment – can

This research received funding from National Natural Science Foundation of China (No. 71902044); Natural Science Foundation of Guangdong Province (No. 2019A1515011232); and Featured Innovation Grant of Guangdong Education Department (No. 2018WTSCX031).

Asia Pacific Journal of Marketing and Logistics
Vol. 32 No. 4, 2020
pp. 922-939
© Emerald Publishing Limited
1355-5855
DOI 10.1108/APJML-04-2019-0235

be disastrous for retailers (Briesch *et al.*, 2009; Boyd and Bahn, 2009). Perceptions of an assortment are largely shaped by its quality, price and brands; they determine a retailer's market position and image (Mantrala *et al.*, 2009; Gao and Simonson, 2016) and are associated with consumers' purchases and satisfaction with a store (e.g. Spassova and Isen, 2013; Hong *et al.*, 2016).

The proliferation of retailer-owned store brands (or private labels) that compete directly with manufacturer brands (national brands) has radically changed the face of supermarket assortments (Szymanowski and Gijsbrechts, 2012; Peng Tan and Cadeaux, 2012). In 2017, the market share of store brands in supermarkets increased in 12 out of 19 countries surveyed, and it now stands at 30 per cent or above in 17 countries (in particular, more than 40 per cent in the UK, Germany, Belgium and Portugal) (PLMA, 2018). Retailers now offer up to four tiers under their private labels in a single product category, and provide a range of price and quality alternatives to consumers (Olbrich *et al.*, 2017; Geyskens and Steenkamp, 2014). This development in retailer strategy has considerably escalated the penetration of store brands in product-category assortments (Steenkamp *et al.*, 2010; Geyskens and Steenkamp, 2014). Store brands now have the potential to match manufacturer brands on every attribute level, and several studies have demonstrated that multi-tier strategies have improved retailer performance and profitability (Diehl *et al.*, 2015; Palmeira and Thomas, 2011; Geyskens and Steenkamp, 2014). For instance, Coelho do Vale *et al.* (2016) demonstrate that the brand image, consumer trust, quality and price competitiveness of store-brand products drives the store-brand loyalty, which in turn foster store loyalty. Also, Fornari *et al.* (2016) consolidate the change in consumers' increasing preference for store brands, and demonstrate that a large price gap between manufacturer brands and store brands leads to the switching of market share from the former towards the latter.

Nonetheless, consumers have reported anger and fear about the erosion of manufacturer brand choice in supermarkets (Dalley and Sheftalovich, 2012; Greenblat, 2011). For instance, Walmart experimented with a reduced assortment structure, with only one top manufacturer brand and their own store brand in a specific category, and faced a backlash from customers (Dass and Kumar, 2012). Moreover, the indirect effects of store-brand growth, particularly the negative impact on primary producers and employment, have gained media attention (e.g. Fyfe and Millar, 2012). In addition, while in the grocery retail environments, retailers overall wield more power over manufacturers (Chimhundu *et al.*, 2015), manufacturer brands remain important for store traffic (Ngobo, 2011). These seemingly conflicting consequences of manufacturer brand erosion demand formal investigation.

We propose that manufacturer brands have a salient signalling effect. Consequently, manufacturer brand erosion reduces consumer assortment perception and repatronage intention, due to a reduced signalling effect. All else being equal, manufacturer brands have greater credibility, as they have a greater marketing-mix consistency over time and greater brand investment (Erdem *et al.*, 2006). Moreover, because effective signals must be differentially costly and observable (Connelly *et al.*, 2011), manufacturer brand erosion hampers consumers' perception of differential cost and observability, and thus harms perceived assortment quality and perceived assortment variety, respectively. Although a number of studies have focused on how assortment brand composition shapes consumer assortment perception, little research has explicitly investigated the sophisticated trade-off between manufacturer brands and store brands in retail assortment management. For instance, Lourenço and Gijsbrechts (2013) show that the introduction of manufacturer brands contributes to a more favourable perception of hard-discounters. Consumers show a preference for manufacturer brands over store brands when they are aware (Rossi *et al.*, 2015) or when their self-concept involves high brand engagement (Liu *et al.*, 2018). However, Ngobo (2011) reveals that increasing the share of the store-brand encourages consumers to switch from manufacturer brands to the store brand. To reconcile these mixed findings, we adopt a signalling perspective to investigate whether and how manufacturer brand erosion exerts a significant impact on assortment perception. Furthermore, we demonstrate a significant moderation effect of assortment size, suggesting that a strong retailer may make use of large assortments dominated by store brands after removing manufacturer brands from the shelf. Generally, the effects of manufacturer brand erosion disclosed by this paper suggest that retailers have an incentive to cooperate with manufacturer brands, instead of promoting their own private labels. From a retailer perspective, our managerial implications provide practical guidelines for assortment management and store-brand strategies, revealing their dependence on manufacturer brands. In addition, retailers need to carefully consider the trade-off between reducing the size of assortments for cost-efficiency reasons and enlarging them to signal high assortment quality. For manufacturers, this study can guide future supply chain integration and marketing strategies.

In the following sections, we first provide a brief review of the literature on retailing assortment management and the competition between manufacturer brands and store brands. We then present our research framework and hypotheses based on signalling theory, and empirically examine them through a scenario-based experiment using a sample of 521 shoppers. Lastly, we discuss the findings, their theoretical and managerial implications and directions for future research.

2. Literature review and hypothesis development

2.1 Retailing assortment management

Retailing assortment affects consumers' store choice decisions, and has been shown to be the third most important criterion after location convenience and low prices (Briesch *et al.*, 2009). Assortment planning is a key component of the marketing mix and represents a strategic positioning tool for customer acquisition and retention (Bauer *et al.*, 2012). Assortment strategies play a significant role in attracting consumers (Tan and Cadeaux, 2011; Beneke *et al.*, 2013) and cultivating customer loyalty (Bahng and Kincade, 2014). Consumers choose one assortment over another because they perceive it to have more benefits (Beneke *et al.*, 2013). Thus, assortment decisions determine a retailer's market position and image (e.g. Chimhundu *et al.*, 2015; Mantrala *et al.*, 2009), heavily influence a retailer's sales and profits and are crucial for long-term success (Bahng and Kincade, 2014; Bauer *et al.*, 2012).

Regardless of strategic or operational challenges, consumers expect retailers to offer the right mix of products at the right price, right time and right place with the right promotions. However, what constitutes "the right mix of products" or a "good assortment" from the consumer perspective is often unclear to retailers, and little is known about how consumers form perceptions of an assortment in the grocery category (Bauer *et al.*, 2012). The most important assortment decisions that determine a retailer's marketing position and image include assortment compositions, size and depth, pricing and presentation (Mantrala *et al.*, 2009). In terms of size and depth, the current literature shows that larger assortments have the capacity to make consumers value products more (Mathmann *et al.*, 2017) and aid them in achieving decision-making certainty (Boyd and Bahn, 2009). Retailers should be cautious to increase assortment depth by line extension for more store brand or manufacturer brand products, because ill-developed extension may backfire (Lourenço and Gijsbrechts, 2013; Hökelekli *et al.*, 2017). Moreover, engaging in item reduction by dropping low-selling items does not necessarily affect customers' assortment perceptions, and may even increase consumers' satisfaction when they are unfamiliar with the product category (Beneke *et al.*, 2013; Bauer *et al.*, 2012). Nevertheless, large assortments carry both benefits and costs for consumers, which do not change commensurately as assortments grow larger (Beneke *et al.*, 2013). Consumer satisfaction and consumption increases when the assortment size increases up to a point, but decreases after that point (i.e. an inverted U-shape) (e.g. Reutskaja and Hogarth, 2009).

Pricing policies play an important role. Listing NBs that are not category leaders at prices too far above its private labels deteriorates the hard discount's favourable value positioning (Lourenço and Gijsbrechts, 2013). A large price gap leads to the switching of market share from store brands towards manufacturer brands (Fornari *et al.*, 2016). Assortment presentation also matters. For instance, horizontal (vs vertical) display increases perceived assortment variety and ultimately leads to more variety being chosen and easier choice task (Deng *et al.*, 2016). Also, the display proximity to other assortments with greater variety can retrain the purchase of the focal assortment (Hong *et al.*, 2016).

Assortment composition, which is the most pertinent to our study, has been most researched. For instance, compared with the substitute-based assortment organisation, the complement-based assortment organisation enhances consumers' perceived effort but meanwhile increases the assortment attractiveness (Diehl *et al.*, 2015). Meanwhile, in recent decades, the growing penetration of store brands and their role in the manufacturer–distributor and distributor–consumer relationship has markedly affected retailer distribution strategies (Rubio *et al.*, 2017). The increasing popularity of store brands has resulted in the removal of some manufacturer brands from shelves, which is known as manufacturer brand erosion. However, the current literature has not achieved consensus about the effect of manufacturer brand erosion. For example, Ngobo (2011) demonstrates that increasing a store's private-label share relative to the market average switches consumers from the national brand to the store brands. However, Olbrich *et al.* (2017) show that extending the range of private labels and reducing that of national brands does not lead to greater category performance. Also, Rossi *et al.* (2015) evidence that the effect may not be straightforward; when confronting store brands vs manufacturer brands, consumers prefer the former when unaware of manufacturer brands but the latter when well informed. To reconcile the inconsistent discussions in the current literature, we explicitly articulate the negative effects of manufacturer brand erosion on assortment attractiveness and repatronage intention and disclose the mediating effect of perceived assortment variety and perceived assortment quality.

2.2 Trade-off between manufacturer brands and store brands

Product assortment planning entails a series of trade-offs, in which retailers must consider consumer perceptions and preferences, their own supply-side constraints and external environmental factors, such as economic conditions and competitors' strategies (Mantrala *et al.*, 2009). Notably, store brands in the consumer packaged goods industry have experienced a major global surge in availability and market share in recent years (Mantrala *et al.*, 2009), emerging as fierce competitors of manufacturer brands (Lamey *et al.*, 2012). Crucial decisions as to "what is sold and how" are made by large retailers, and the proliferation of store brands facilitates this shift (Hökelekli *et al.*, 2017). Indeed, exclusive store brands help differentiate stores from other retailers. By contributing to retailer differentiation and increasing the store's image, store brands foster customers' store loyalty (Coelho do Vale *et al.*, 2016). This claim has received extensive empirical support (Lamey *et al.*, 2012; Yan *et al.*, 2019), and is associated with increased manufacturer brand erosion.

However, although store brands play several strategic roles such as enhancing overall store performance, building store traffic and retailing customer loyalty (Peng Tan and Cadeaux, 2012), it is important for retailers to examine whether there is an optimal mix of store brands and manufacturer brands in each category to best meet the needs of shoppers (Ngobo, 2011). As Bandyopadhyay *et al.* (2009) contend, retailers do not possess all the tools to develop an optimal retail strategy, and manufacturers of name brands have information and expertise that retailers lack. Manufacturer brands are financially strong enough to create substantial brand equity by means of long-term advertising campaigns and strong product performance. Manufacturer brands, which are associated with high quality, also benefit retailers by establishing and augmenting the store's image. Indeed, while the lower prices of store-brand items are likely to attract customers, many consumers have more confidence in the quality of manufacturer brands and are reluctant to switch to store brands. Thus, although store brands play important strategic roles (Peng Tan and Cadeaux, 2012), manufacturer brands remain important for store traffic (Ngobo, 2011). Retailers may, therefore, allow considerable freedom to a dominant manufacturer brand to set its own pricing and promotion policies (Bandyopadhyay *et al.*, 2009). An interdependence between manufacturer brands and store brands persists in many retail environments, notwithstanding their fight for market share and associated revenues.

2.3 Effect of manufacturer brand erosion

We propose that manufacturer brands have a salient signalling effect. Consequently, manufacturer brand erosion weakens consumer assortment perception due to a reduced signalling effect. Signalling theory is fundamentally concerned with reducing information asymmetry when two parties (individuals or organisations) have access to different information (Spence, 2002). It has been used extensively in marketing as a framework for understanding how two parties (e.g. a buyer and seller) address limited or hidden information in precontractual (prepurchase) contexts to diminish adverse selection (Ahlers *et al.*, 2015; Steigenberger and Wilhelm, 2018; Li *et al.*, 2017; Connelly *et al.*, 2011). A signal is a cue that a seller can use "to convey information credibly about unobservable product quality to the buyer" (Rao *et al.*, 1999). In particular, the sender must choose whether and how to communicate (or signal) information and the receiver must choose how to interpret the signal (Connelly *et al.*, 2011). Commonly used signals include brands (Fischer *et al.*, 2010; Eckert *et al.*, 2012), advertising (Modig *et al.*, 2014), price (Dutta, 2012) and warranties (Li *et al.*, 2019). A firm can use various marketing-mix elements to signal product quality (e.g. charging a high price, offering a warranty, or distributing products through certain channels). However, what sets brands apart from individual marketing-mix elements as credible signals is that they embody the cumulative effect of prior marketing-mix strategies and activities (Erdem *et al.*, 2006).

As a signal, a manufacturer brand can reduce perceived risk by offering a credible and consistent symbol of product quality (Erdem *et al.*, 2006). Compared with store brands, manufacturer brands facilitate consumers' category-level assortment perceptions due to stronger brand familiarity (Fischer *et al.*, 2010). Because of the differences in manufacturing costs and marketing efforts (e.g. product innovation, advertising, promotion or packaging), consumers perceive a quality gap between manufacturer brands and store brands (Steenkamp *et al.*, 2010). Manufacturer brands are typically positioned as premium products (Steenkamp *et al.*, 2010) via national promotional campaigns that tout the quality of the components or construction (Liu *et al.*, 2018). Over time, consumers form attitudinal links to previous experiences with the aid of brand names. This brand attachment is responsible for the strength of the relationships that develop between consumers and manufacturer brands (Whan Park *et al.*, 2010). It is also responsible for consumer willingness to pay a premium for manufacturer brand products. Over time, brand attachment is solidified and diffused throughout families, and ultimately shapes assortment expectations (Diehl and Poynor, 2010; Perez *et al.*, 2010). Additionally, the marketing effort initiated by manufacturer brands, such as featured promotion in the exclusive retailing stores, can benefit the retailers in terms of consumer switching from the rival stores and category expansion (Guyt and Gijsbrechts, 2014).

Therefore, although store brands have recently gained greater leverage over manufacturer brands, we propose that the presence of manufacturer brands within an assortment exerts a signalling effect on consumers' category assortment perception. We, therefore, hypothesise that manufacturer brand erosion reduces this signalling effect, and thus harms consumers' perception of assortment attractiveness and repatronage intention:

H1. Manufacturer brand erosion negatively influences consumers' perception of assortment attractiveness (a) and repatronage intention (b).

2.4 Mediating effects of perceived assortment quality

Consumer quality perceptions of manufacturer brands and store brands have been shown to influence consumer choice (Liu *et al.*, 2018). According to signalling theory, effective signals must be differentially costly and observable (Connelly *et al.*, 2011). This differential cost is the most important property of signals, because some signallers are in a better position than others to absorb the associated costs. As Dimoka *et al.* (2012) argue, it should be more costly for a bad seller to transmit a signal (a phenomenon known as "separating equilibrium"), and it must be more costly for bad products than good products to transmit a signal (known as "single-crossing property"). All else being equal, the credibility of a brand has been shown to be greater for brands with greater marketing-mix consistency over time and greater brand investment (Erdem *et al.*, 2006). Brand investment means the resources that firms spend on brands to assure consumers that brand promises will be kept and demonstrate long-term commitment to the brand (Erdem *et al.*, 2006). If a firm has not invested in brand-building activities, its ability to use the brand name signal will be adversely affected.

Thus, we postulate that, due to the differential cost in signalling quality between manufacturer brands and store brands, manufacturer brand erosion weakens the signalling efficacy of manufacturer brands and decreases consumers' perception of assortment quality. Removing manufacturer brands from the category assortment and leaving store-brand items to dominate the shelf harms consumers' perception of assortment quality. By contrast, by stocking manufacturer brands, the retailer sends a signal of high quality to the market, which facilitates consumers' heuristic processing in forming their perception of category assortment. Although the perceived quality gap between manufacturer brands and store brands has recently narrowed, it is still a hurdle for retailers when trying to strengthen assortment perception and achieve optimal retailing strategies (Gázquez-Abad *et al.*, 2017; Bandyopadhyay *et al.*, 2009). Consumers perceive store brands to be lower-quality options than competing manufacturer brands (Olbrich *et al.*, 2017), and are reluctant to choose store brands because of social acceptance considerations (Gázquez-Abad *et al.*, 2017). These considerations lead consumers to show greater willingness to pay more for manufacturer brands (Steenkamp *et al.*, 2010).

Therefore, we propose that the detrimental effect of manufacturer brand erosion on assortment perception is mediated by consumers' perceived assortment quality:

H2. Perceived assortment quality mediates the negative effect of manufacturer brand erosion on perceived assortment attractiveness (a) and repatronage intention (b).

2.5 Mediating effect of perceived assortment variety

In the signalling theory framework, observability is another important characteristic of efficacious signalling. According to Connelly *et al.* (2011), observability is the extent to which buyers are able to notice a particular signal and reduce their information search and processing costs. If the signal cannot readily be observed, it is difficult to use it to communicate effectively with receivers. For instance, Ramaswami *et al.* (2010) argue that signal observability or visibility, which describes the noteworthiness or salience of a signal in a given context, determines where/when a signal will in fact be strong and influential. By the same token, the low observability of manufacturer brands hampers their signalling efficacy if store brands dominate the whole category. In spite of their divergent profit objectives, both manufacturers and retailers are increasingly realising that their profit margins can be increased through cooperation rather than confrontation (Bandyopadhyay *et al.*, 2009). The best positioning strategy for a store brand may depend on how it competes with manufacturer brands and on the quality of its products. Most retailers still need manufacturer brands to differentiate themselves from competitors (Coelho do Vale *et al.*, 2016). Otherwise, customers move to competing stores when it appears that the retailer favours its own brands over manufacturer brands (Ngobo, 2011). Thus, compared with manufacturer brand erosion, the dominance of manufacturer brands enhances assortment variety perception.

At the same time, variety perceptions play a critical role in how assortments are evaluated. Consumers are attracted to varied assortments and research has found that the enhanced perceived variety results in larger consideration sets that eventually lead to larger choice sets (when quantity purchased is not limited) or to more unique items chosen (when choice set sizes are limited) (Deng *et al.*, 2016). Consumers form assortment variety perceptions based on a number of factors specifically related to the category, such as the number of items within the category and their (dis-)similarity, the distribution of attribute levels across the category assortment and the category's external layout (Bauer *et al.*, 2012). The assortment reduction literature provides evidence that consumers form category-specific assortment variety perceptions. Consumers' variety perceptions are not solely determined by the number of SKUs offered in a specific category (Deng *et al.*, 2016). Rather, consumers form assortment variety perceptions based on how distinct product variants are on key attributes. Offering products that represent various combinations of brands, flavours, package sizes and quality not only enhances consumers' chance of finding the right product but also provides them with desirable flexibility (Bauer *et al.*, 2012). Thus, we believe that reducing or totally removing manufacturer brands from the assortment can harm consumers' perception of assortment variety:

H3. Perceived assortment variety mediates the negative effect of manufacturer brand erosion on perceived assortment attractiveness (a) and repatronage intention (b).

2.6 The moderating role of assortment size

We further propose a moderating role of assortment size on the effect of manufacturer brand erosion. As we have contended, manufacturer brand erosion harms consumers' assortment perception by decreasing perceived assortment quality. Due to the differential cost of signalling, manufacturer brands (vs store brands) provide more credible signals to reduce information uncertainty concerning quality. Manufacturers invest more heavily in manufacturing and marketing efforts (e.g. product innovation, advertising, promotion and packaging), so that consumers perceive a greater quality gap between brands (Steenkamp *et al.*, 2010). Large assortments have been found to increase the ease of choice task, satisfaction and confidence (Deng *et al.*, 2016), product valuation (Mathmann *et al.*, 2017) and the ease of making comparisons among options (Gao and Simonson, 2016; Spassova and Isen, 2013). In the context of manufacturer brand erosion, a large assortment indicates that the retailer devotes substantial effort to developing its product portfolio. Retailers of strong private-label brands can earn a differentiation advantage and thus build store loyalty (Coelho do Vale *et al.*, 2016). According to the differential cost and observability of signalling, a large (vs small) assortment signals a higher level of assortment quality and variety. Therefore, we propose that a large assortment attenuates the negative effect of manufacturer brand erosion by improving perceived assortment quality and perceived assortment variety among consumers:

H4. Assortment size positively moderates the mediation effect of perceived assortment quality and perceived assortment variety; that is, it attenuates the negative effect of manufacturer brand erosion on perceived assortment quality (a) and perceived assortment variety (b).

3. Methodology

A scenario-based experiment was conducted to test the proposed conceptual model in Figure 1.

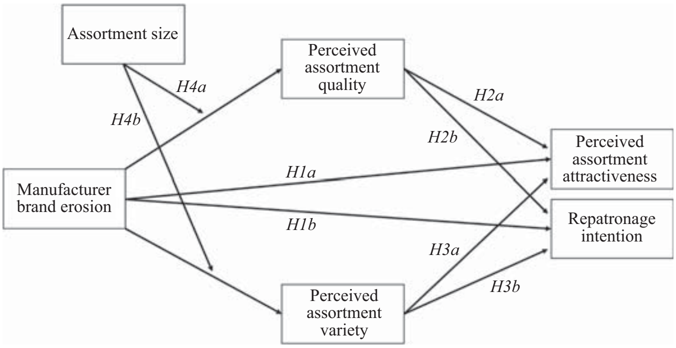

Figure 1.
The proposed conceptual model

3.1 Stimulus and measurement

In the experiment, participants were instructed to imagine themselves on a routine grocery shopping trip to a major supermarket chain store called Rowlands during which they intended to purchase a number of everyday household products. Participants were told that Rowlands was one of a few nearby supermarkets offering a wide variety of everyday goods. They were also told that Rowlands stocks both name brands (also sold by other supermarkets in the area), and their own store brand (exclusively sold in their supermarkets). Package sizes were set to the same size, 450 ml.

We manipulated the levels of manufacturer brand erosion and assortment size via verbal descriptions and visual images. Consistent with other similar studies (Bezawada and Pauwels, 2013; Nenycz-Thiel and Romaniuk, 2012), we chose salad dressing as the experimental stimulus, which is a very popular grocery category with many different brands (including manufacturer brands and store brands). We manipulated different levels of manufacturer brand erosion by setting different proportions of manufacturer brands (1/3, 2/3 or 100 per cent) within the assortment. We manipulated the assortment size, with three products for the small assortment and six products for the large assortment. The manipulation levels of the factors and justification for their manipulation in the experimental design are presented in Table I.

After reading the scenario and being exposed to the stimulus, the participants' perceptions of assortment attractiveness, repatronage intention, assortment variety and assortment quality were measured with single-item or multiple-item scales. Participant demographic characteristics were elicited at the end for sample profiling purposes. We measured the

Manipulated variables	Manipulation levels	Justification
Manufacture brand erosion	High manufacturer brand erosion – 1/3 are manufacturer brands Low manufacturer brand erosion – 2/3 are manufacturer brands Manufacturer brand dominance – 100% are manufacturer brands	The levels of manufacturer brand erosion are executed by setting different ratios of manufacturer brand items to store brand items according to current levels (see high level ratio) and distinct expert forecasting of furture assortment composition (Steiner, 2004)
Assortment size	Low – 3 products and 2 flavour varieties in assortment High – 6 products and 6 flavour varieties in assortment	Product reduction in a grocery category of 50% or more has been verified to impact the variety perceptions of consumers (Oppewal and Koelemeijer, 2005). Research has also shown that the number of flavours available can serve as a signal of variety to consumers (Kahn and Wansink, 2004)

Table I.
Justification of experimental stimuli

participants' perception of assortment attractiveness by means of a frequently used single-item Likert scale that ranged from 1 (very unattractive) to 7 (very attractive) (Boyd and Bahn, 2009). We captured the participants' repatronage intention using a three-item scale developed by Hui *et al.* (2004) (the Cronbach's α is 0.90). We gauged the participants' perception of assortment quality with a single item ranging from 1 (very low quality) to 7 (very high quality). We also adopted a three-item scale to measure perceived assortment variety (the Cronbach's α is 0.91). Two items require participants to assess the assortment variety of salad dressing, which ranged from 1 (very little variety) to 7 (a great deal of variety) and 1 (very little diversity) to 7 (a great deal of diversity). The third item, "The assortment of salad dressing is not varied at all" to "is extremely varied", was developed especially for the purpose of this study.

3.2 Pretest

We conducted a pretest using an online survey to determine appropriate variable manipulation levels and to assess the response rates, timing and comprehension of the experiment stimuli. in total, 100 participants were randomly recruited from Research Now SSI, an online research agency registered in Australia and recognised as a leader in market research. A short questionnaire elicited the subjects' perception of the category's features and their behavioural intentions. Based on the pretest, we refined the instrument to ensure that the measures were accurate, recordable and user-friendly. Data analysis of the pretest results uncovered some participant confusion due to the level of scenario complexity and information overload. Participant inattention to particular measures was also revealed in some instances. As a result, several changes were made to generate the final survey instrument. Visual product information was softened to better harmonise with the online distribution format and enhance efficacy. Question numbering and flow were also tailored to improve respondent attention. These alterations were implemented before the final instrument was distributed online.

3.3 Main experiment and analysis results

We conducted a 3 (low manufacturer brand erosion vs high manufacturer brand erosion vs manufacturer brand dominance) $\times 2$ (assortment size: small vs large) full factorial between-subject experiment. Participants were recruited again from Research Now SSI (the pretest participants were excluded) and randomly assigned to one of the six conditions. The sample comprised shoppers across major metropolitan areas in Australia who had shopped for salad dressing within the preceding six months. A total of 521 participants completed the experimental tasks. The sample included slightly more males than females (52.8 per cent). Over a third (37 per cent) of the participants had attained a college education or above; 37.5 per cent reported a household income exceeding $55,000. Over half (56.4 per cent) of the participants were between 34 and 65 years of age. The sample composition is representative of the national (Australian) population.

We hypothesised that manufacturer brand erosion hurts consumer perceptions of assortment attractiveness and repatronage intention, which is mediated by their negative effect on customers' perception of assortment variety and assortment quality. Table II

Table II.
The statistical summary of the focal variables

	Manufacturer brand dominance	Low manufacturer brand erosion	High manufacturer brand erosion
Assortment attractiveness	5.707 (0.801)	5.424 (0.841)	5.082 (0.832)
Repatronage intention	5.267 (0.801)	4.86 (0.841)	4.64 (0.832)
Perceived assortment quality	5.464 (0.771)	4.953 (0.978)	4.506 (0.899)
Perceived assortment variety	5.464 (0.771)	4.953 (0.972)	4.494 (0.885)

provides a statistical summary (mean and standard deviation in parentheses) of the focal variables. It reveals that consumers' perception of assortment attractiveness, repatronage intention, assortment quality and assortment variety are highest in the manufacturer brand dominance condition, and lowest in the high manufacturer brand erosion condition.

The ANOVA results show the significant effects of manufacturer brand erosion on the assortment attractiveness ($F(2, 518) = 25.22$, $p = 0.00$), repatronage intention ($F(2, 518) = 25.22$, $p = 0.00$), perceived variety ($F(2, 518) = 53.63$, $p = 0.00$), and perceived quality ($F(2, 518) = 51.62$, $p = 0.00$). The planned contrast analyses in Figure 2 further reveal that manufacturer brand erosion hurts consumers' perceived variety and quality for the assortment and reduces assortment attractiveness and repatronage intention; the larger extent the erosion, the more negative the effects are.

To test our hypotheses, we used multiple regressions. Because we had three levels of manufacturer brand erosion, we used two dummies, with "manufacturer brand dominance" as the control group (i.e. when the two dummies both equal 0). Thus, the resulting estimation coefficients indicate, compared with the manufacturer brand dominance situation, whether and how low (or high) manufacturer brand erosion influences consumers' perception of the assortments and their repatronage intention. The results of the model estimations are presented in Table III. Manufacturer brand erosion hurts assortment attractiveness and consumers' repatronage intention; the higher the erosion, the more it does so. Both low and high manufacturer brand erosion have a significant negative effect on assortment attractiveness (-0.284, $p < 0.01$; -0.625, $p < 0.01$) and repatronage intention (-0.404, $p < 0.01$; -0.625, $p < 0.01$). The reduced salience of manufacturer brands in the assortment limits their signalling effect. When only 1/3 of the brands are manufacturer brands and the store brand dominates the assortment, consumers exhibit significantly lower assortment perception and repatronage intention. This is consistent with the findings of previous research that manufacturer brands are important for forming category-level assortment perception due to stronger brand familiarity (e.g. Ngobo, 2011; Steenkamp *et al.*, 2010; Fischer *et al.*, 2010).

To test *H2* and *H3*, we conducted the mediation analyses proposed by Zhao *et al.* (2010) using a bootstrapping procedure (Hayes and Preacher, 2014). As we demonstrate in the third and fourth columns in Table III, both low and high manufacturer brand erosion significantly harms consumer perception of assortment quality (-0.511, $p < 0.01$; -0.958, $p < 0.01$) and assortment variety (-0.512, $p < 0.01$; -0.971, $p < 0.01$). In the next step, we include the two mediators in the regressions to test the mediating effect; the results are presented in the fifth and sixth columns. Perceived assortment quality and perceived assortment variety have a

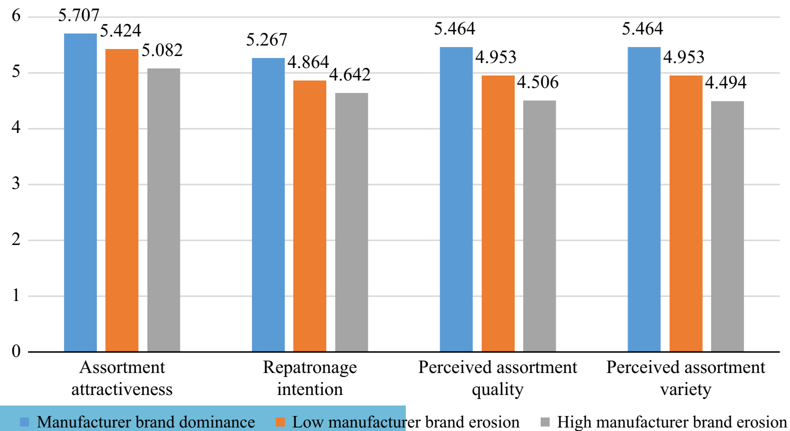

Figure 2.
The effects of the extent of manufacturer brand erosion

Table III. The effect of manufacturer brand erosion

	Mediation effect (Step 1)		Mediation effect (Step 2)		Mediation effect (Step 3)		Moderation effect	
	Assortment attractiveness	Repatronage intention	Perceived assortment quality	Perceived assortment variety	Assortment attractiveness	Repatronage intention	Perceived assortment quality	Perceived assortment variety
Low erosion of manufacturer brand	−0.284** (0.088)	−0.404** (0.088)	−0.511** (0.094)	−0.512** (0.092)	0.018 (0.076)	−0.163* (0.081)	−0.604** (0.132)	−0.487** (0.129)
High erosion of manufacturer brand	−0.625** (0.088)	−0.625** (0.088)	−0.958** (0.094)	−0.971** (0.092)	−0.056 (0.082)	−0.171*** (0.089)	−1.064** (0.132)	−0.924** (0.129)
Perceived assortment quality	–	–	–	–	0.393** (0.039)	0.309** (0.042)	–	–
Perceived assortment variety	–	–	–	–	0.198** (0.040)	0.163** (0.043)	–	–
Assortment size × low manufacturer brand erosion	–	–	–	–	–	–	0.292** (0.109)	−0.051 (0.184)
Assortment size × high manufacturer brand erosion	–	–	–	–	–	–	0.317** (0.109)	−0.096 (0.184)
Assortment size	0.175** (0.072)	0.175* (0.072)	−0.084 (0.078)	0.354** (0.075)	0.138* (0.062)	0.143* (0.067)	−2.18*** (0.132)	0.402** (0.128)
Constant	5.622** (0.070)	5.182** (0.070)	5.505** (0.076)	5.292** (0.074)	2.408** (0.222)	2.618** (0.240)	5.570** (0.092)	5.269** (0.089)
Ajust R^2	0.094	0.097	0.163	0.201	0.373	0.272	0.183	0.198
Mediation effect								
95% Confidence Interval (CI)					(0.253–1.120) (0.101–0.922)	(0.201–0.800) (0.099–1.001)		

Notes: Standard errors are in the parenthesis. $*p < 0.05$; $**p < 0.01$; $***p < 0.10$

significant positive effect on assortment attractiveness (0.393, $p < 0.01$; 0.198, $p < 0.01$) and repatronage intention (0.309, $p < 0.01$; 0.163, $p < 0.01$). Furthermore, the direct effects of low or high manufacturer brand erosion on assortment attractiveness become insignificant (0.018, $p > 0.10$; −0.056, $p > 0.10$) and their effects on repatronage intention become smaller (−0.163, $p < 0.05$; −0.171, $p < 0.10$).

We implemented Hayes's PROCESS macro to test the significance of the mediation effects, which are deemed statistically different from zero if the 95% confidence interval (CI) does not straddle zero (Hayes and Preacher, 2014). The analyses were conducted for assortment attractiveness and repatronage intention, respectively. The results indicate that both perceived quality and perceived variety mediate the effect of manufacturer brand erosion on assortment attractiveness (95% CIs: 0.253–1.120; 0.101–0.922) and repatronage intention (95% CIs: 0.201–0.800; 0.099–1.001). These results support *H2* and *H3*. Although many studies have shown the roles of assortment quality and variety in the retail context (Bauer *et al.*, 2012; Boyd and Bahn, 2009), we make a novel contribution by showing that manufacturer brand erosion hinders the signalling efficacy by reducing differential cost and observability.

To test the moderating effect of assortment size, as hypothesised in *H4a* and *H4b*, we include the interactions of low/high manufacturer brand erosion and assortment size. The results presented in the last two columns of Table III reveal that assortment size attenuates the negative effect of manufacturer brand erosion (0.292, $p < 0.01$; 0.317, $p < 0.01$) on perceived assortment quality and that the attenuation effect is larger for the high (vs low) erosion condition (0.317 > 0.292). Nevertheless, assortment size does not moderate the effect of manufacturer brand erosion on perceived assortment variety. Therefore, *H4* is partially supported. As predicted by differential cost in signalling theory, a large assortment that is dominated by the store-brand signals that the retailer has developed a strong private brand to gain a differentiation advantage (Coelho do Vale *et al.*, 2016). Generally, a larger assortment enables consumers to fulfil their variety-seeking needs more effectively and offers more flexibility in light of uncertainty about future taste (Chernev and Hamilton, 2009; Gao and Simonson, 2016). The moderation effect of assortment size on the effect of manufacturer brand erosion sheds light on retailers' trade-off between reducing assortment for cost efficiency and enlarging it to signal a high assortment quality.

To summarise, the experimental results pinpoint our main propositions that by stocking manufacturer brands, retailers send a signal of high quality to the market, which facilitates consumers' heuristic processing in forming their category assortment perception. Thus, removing manufacturer brands from the category assortment dampens consumers' assortment perception and decreases assortment attractiveness and repatronage intention. Such detrimental effects of manufacturer brand erosion can be attributed to reduced perceived assortment quality and perceived assortment variety. These findings are in line with previous work showing that store brands lead to lower perceptions of quality (Steenkamp *et al.*, 2010) and degrade the general perception of the quality and symbolic benefits of a retailer's offerings (Geyskens and Steenkamp, 2014). Manufacturer brand erosion also limits consumers' desired choice flexibility and reduces assortment variety perception (Bauer *et al.*, 2012). In addition, we find that larger assortments are a boundary condition for retailers to counteract the negative effect of manufacturer brand erosion.

4. Discussion, implications and future research

4.1 Discussion

Detrimental effect of manufacturer brand erosion. This study demonstrates the sheer impact of manufacturer brand erosion on the grocery assortment perception of consumers, their repatronage behaviour and the process by which this evaluative judgement takes place. We show that manufacturer brand erosion in a grocery product category significantly decreases consumers' perceived assortment attractiveness and repatronage intention. These findings are in accord with many studies that find that manufacturer brands remain important for forming category-level assortment perception due to stronger brand familiarity (e.g. Ngobo, 2011; Steenkamp *et al.*, 2010; Fischer *et al.*, 2010). Nevertheless, we contribute to the literature by showing that, due to the signalling of manufacturer brands, assortment perception suffers because of manufacturer brand erosion.

Mediation effect of perceived assortment quality and variety. We further reveal that when manufacturer brands are reduced or totally removed from the assortment, consumers perceive a grocery product category to have considerably lower quality, less variety and to be less attractive and consequently they are less willing to revisit the store. Although many studies have shown the roles of assortment quality and variety in a retail context (Bauer *et al.*, 2012; Boyd and Bahn, 2009), the signalling perspective is innovative because it posits that manufacturer brand erosion reduces the signalling efficacy of the differential cost and observability of manufacturer brands as signals.

Moderating effect of assortment size. The notable interaction effect of the two important assortment attributes (size and composition) identified in this study speaks to the dilemma of store-brand popularity and manufacturer brand dominance in assortment management. Our results suggest that a strong store brand with a sufficiently large assortment can signal assortment quality and thus achieve a differentiation advantage. This also clarifies retailers' trade-off between reducing assortment for cost efficiency and enlarging it to signal high assortment quality. The effect of different interactions of assortment attributes on consumer decisions has been investigated in the previous literature, such as composition and price (Lourenço and Gijsbrechts, 2013), variety and structure (Kahn and Wansink, 2004), and size and situation factors (Mathmann *et al.*, 2017; Gao and Simonson, 2016). Our research enriches the current understanding of assortment management.

4.2 Managerial implications

Our findings underscore the threat of manufacturer brand erosion to the customer retention and long-term profitability strategies of supermarket retailers, and have wide-reaching implications for practitioners and researchers. Based on the proposed signalling framework, this paper provides valuable insights for grocery industry stakeholders and marketing researchers. The increasing introduction of store brands to product-category assortments, at the expense of manufacturer-supplied brands, has been the product of a shift in strategy towards multi-tiering (Geyskens *et al.*, 2010). Our findings indicate that there is a ceiling to the benefits of the proliferation of store brands, implying that the dominance of manufacturer brands is salient in informing consumers of assortment quality and variety. Our research speaks to the ongoing debating in retailing assortment management literature (Ngobo, 2011; Olbrich *et al.*, 2017; Rossi *et al.*, 2015), and particularly sheds lights on the effects of leveraging store brands and delisting manufacturer brands. The detrimental impact of manufacturer brand erosion has been attributed to the reduced signalling efficacy of manufacturer brands. Due to continuous investment in manufacturing and marketing efforts, manufacturer brands are positioned as premium products (Liu *et al.*, 2018; Geyskens and Steenkamp, 2014).

Moreover, the positive moderating effect of assortment size has important practical consequences for retailers' marketing strategies and assortment management. Retailers can embrace the popularity of the store brand to increase their market power by widening the product portfolio, as long as they keep reputable manufacturer brands dominant in assortments. The significant moderation effect of assortment size also clarifies retailers' trade-off between reducing assortment for cost efficiency and enlarging it to signal high assortment quality. When retailers decide to build strong store brands by operating a large product portfolio, removing manufacturer brands from shelf space may not necessarily have a negative effect on consumers' assortment perceptions.

4.3 Theoretical implications

Consumer perceptions of retailing assortment management, and particularly the most important assortment decisions in terms of assortment compositions, size and depth, pricing and presentation, has been extensively researched. However, few studies have explicitly investigated the effect of manufacturer brand erosion on consumers' assortment perceptions. This omission contrasts with media reports indicating that manufacturer brand erosion in supermarkets is causing discontent among supermarket shoppers (Dalley and Sheftalovich, 2012; Greenblat, 2011). To remedy this academic oversight, this study proposes a signalling framework to enrich our understanding of the effects of manufacturer brand erosion. Many signals have been examined in the marketing context, such as brands (Fischer *et al.*, 2010; Eckert *et al.*, 2012), price (Dutta, 2012), advertising (Modig *et al.*, 2014) and warranties (Li *et al.*, 2019), but the signalling effect of manufacturer brands has seldom been examined in the assortment context. We postulate the salient signalling effect of manufacturer brands; as a consequence, manufacturer brand erosion deteriorates consumer assortment perception due to reduced signalling efficacy. To understand the mechanism, we further highlight that manufacturer brand erosion decreases perceived assortment quality and variety due to the reduced differential cost and observability of signalling, respectively.

Furthermore, the interaction between two signals (i.e. manufacturer brand erosion and assortment size) is helpful for understanding marketing signals. By combining two types of signals that involve incurring additional upfront costs and risking future revenues, a firm increases the credibility of its signalling to consumers (Basuroy *et al.*, 2006). Currently, there is little research that explicitly examines signal interaction. For instance, Basuroy *et al.* (2006) reveal a positive interaction between movie sequels and advertising spending. In our context, large assortments that are dominated by store brands signal that the retailer has invested a substantial sunk cost in product line extensions, and that serious quality defects would risk the retailer's future revenues. Thus, our findings deepen the theoretical understanding of how different signals interact in assortment management.

4.4 Limitations and future research

There are several limitations of this study that present opportunities for future research. First, we focus on perceived assortment attractiveness and repatronage intention as final dependent variables. While these are important variables with links to actual shopping behaviour, further research should be conducted to test for a direct relationship between manufacturer brand erosion and consumers' actual store patronage and repatronage. Second, we used a hypothetical shopping scenario to implement the study, which differs from real shopping situations. Future research should conduct field studies to gauge consumers' responses to manufacturer brand presence in a real world context. Third, we only used salad dressing in our study. Future research could enrich the findings of this study by broadening its scope. Grocery shoppers typically shop within more than one product category. As such, by exploring the influence of manufacturer brand erosion across multiple product categories, the generalisability of the present study's findings can be enhanced. Given that supermarkets are now stocking an increasing number of non-food product categories, exploring the transferability of these grocery assortment findings across alternative supermarket product categories would be a logical and critical extension to this study. Moreover, extending the research questions to multiple countries and cultures, at different stages of store-brand penetration, may help to increase the overall validity of the findings. Additionally, closer inspection of the specific antecedents behind consumer preferences for manufacturer brand presence in supermarket assortment, which are touched upon in this research, would provide a more holistic understanding of this study's findings.

To conclude, this study uncovers the detrimental impacts of manufacturer brand erosion on supermarket customers' assortment perception and repatronage intention. By exposing this consumer behaviour phenomenon, this study advances practitioner and academic knowledge. The long-term strategies of grocery retailers and manufacturers will benefit from more accurate insight into their consumers. This study also advances academic knowledge of grocery assortment perception and supermarket store branding, providing opportunities for further research efforts. As the supermarket industry becomes increasingly complex and competitive, such research will provide essential guidance for the multitude of stakeholders involved in "everyday" grocery shopping.

References

Ahlers, G.K., Cumming, D., Günther, C. and Schweizer, D. (2015), "Signaling in equity crowdfunding", *Entrepreneurship Theory and Practice*, Vol. 39 No. 4, pp. 955-980.

Bahng, Y. and Kincade, D.H. (2014), "Retail buyer segmentation based on the use of assortment decision factors", *Journal of Retailing and Consumer Services*, Vol. 21 No. 4, pp. 643-652.

Bandyopadhyay, S., Rominger, A. and Basaviah, S. (2009), "Developing a framework to improve retail category management through category captain arrangements", *Journal of Retailing and Consumer Services*, Vol. 16 No. 4, pp. 315-319.

Basuroy, S., Desai, K.K. and Talukdar, D. (2006), "An empirical investigation of signaling in the motion picture industry", *Journal of Marketing Research*, Vol. 43 No. 2, pp. 287-295.

Bauer, J.C., Kotouc, A.J. and Rudolph, T. (2012), "What constitutes a 'good assortment'? A scale for measuring consumers' perceptions of an assortment offered in a grocery category", *Journal of Retailing and Consumer Services*, Vol. 19 No. 1, pp. 11-26.

Beneke, J., Cumming, A. and Jolly, L. (2013), "The effect of item reduction on assortment satisfaction – a consideration of the category of red wine in a controlled retail setting", *Journal of Retailing and Consumer Services*, Vol. 20 No. 3, pp. 282-291.

Bezawada, R. and Pauwels, K. (2013), "What is special about marketing organic products? How organic assortment, price, and promotions drive retailer performance", *Journal of Marketing*, Vol. 77 No. 1, pp. 31-51.

Boyd, D.E. and Bahn, K.D. (2009), "When do large product assortments benefit consumers? An information-processing perspective", *Journal of Retailing*, Vol. 85 No. 3, pp. 288-297.

Briesch, R.A., Chintagunta, P.K. and Fox, E.J. (2009), "How does assortment affect grocery store choice?", *Journal of Marketing Research*, Vol. 46, pp. 176-189.

Chernev, A. and Hamilton, R. (2009), "Assortment size and option attractiveness in consumer choice among retailers", *Journal of Marketing Research*, Vol. 46 No. 2, pp. 410-420.

Chimhundu, R., Kong, E. and Gururajan, R. (2015), "Category captain arrangements in grocery retail marketing", *Asia Pacific Journal of Marketing and Logistics*, Vol. 27 No. 3, pp. 368-384.

Coelho do Vale, R., Verga Matos, P. and Caiado, J. (2016), "The impact of private labels on consumer store loyalty: an integrative perspective", *Journal of Retailing and Consumer Services*, Vol. 28 No. 1, pp. 179-188.

Connelly, B.L., Certo, S.T., Ireland, R.D. and Reutzel, C. (2011), "Signaling theory: a review and assessment", *Journal of Management*, Vol. 37 No. 1, pp. 39-67.

Dalley, E. and Sheftalovich, Z. (2012), "Supermarket special", *Choice Magazine*, available at: www.choice.com.au/reviews-and-tests/food-and-health/food-anddrink/supermarkets/copyshop.aspx (accessed 6 December 2019).

Dass, M. and Kumar, P. (2012), "Assessing category vulnerability across retail product assortments", *International Journal of Retail & Distribution Management*, Vol. 40, pp. 64-81.

Deng, X., Kahn, B.E., Unnava, H.R. and Lee, H. (2016), "A 'wide' variety: effects of horizontal versus vertical display on assortment processing, perceived variety, and choice", *Journal of Marketing Research*, Vol. 53 No. 5, pp. 682-698.

Diehl, K. and Poynor, C. (2010), "Great expectations?! Assortment size, expectations, and satisfaction", *Journal of Marketing Research*, Vol. 47 No. 2, pp. 312-322.

Diehl, K., Van Herpen, E. and Lamberton, C. (2015), "Organizing products with complements versus substitutes: effects on store preferences as a function of effort and assortment perceptions", *Journal of Retailing*, Vol. 91 No. 1, pp. 1-18.

Dimoka, A., Yili, H. and Paul, A.P. (2012), "On product uncertainty in online markets: theory and evidence", *Mis Quarterly*, Vol. 36 No. 2, pp. 395-426.

Dutta, S. (2012), "Vulnerability to low-price signals: an experimental study of the effectiveness of genuine and deceptive signals", *Journal of Retailing*, Vol. 88 No. 1, pp. 156-167.

Eckert, C., Louviere, J.J. and Islam, T. (2012), "Seeing the forest despite the trees: brand effects on choice uncertainty", *International Journal of Research in Marketing*, Vol. 29 No. 3, pp. 256-264.

Erdem, T., Swait, J. and Valenzuela, A. (2006), "Brands as signals: a cross-country validation study", *Journal of Marketing*, Vol. 70 No. 1, pp. 34-49.

Fischer, M., Völckner, F. and Sattler, H. (2010), "How important are brands? A cross-category, cross-country study", *Journal of Marketing Research*, Vol. 47 No. 5, pp. 823-839.

Fornari, E., Fornari, D., Grandi, S. and Menegatti, M. (2016), "Leading national brands facing store brands competition: is price competitiveness the only thing that matters?", *Journal of Retailing and Consumer Services*, Vol. 30 No. 5, pp. 234-241.

Fyfe, M. and Millar, R. (2012), "Cheap food comes at a price", *Sydney Morning Herald*, The Age, p. 10, available at: www.theage.com.au/world/cheap-food-comes-at-a-price-20120527–1zd6a.html#ixzz2MWlIUbLG (accessed 8 December 2019).

Gao, L. and Simonson, I. (2016), "The positive effect of assortment size on purchase likelihood: the moderating influence of decision order", *Journal of Consumer Psychology*, Vol. 26 No. 4, pp. 542-549.

Gázquez-Abad, J.C., Martínez-López, F.J. and Esteban-Millat, I. (2017), "The role of consumers' attitude towards economic climate in their reaction to 'PL-only' assortments: evidence from the United States and Spain", *Journal of Retailing and Consumer Services*, Vol. 34 No. 1, pp. 340-348.

Geyskens, I. and Steenkamp, J.E.B.M. (2014), "Manufacturer and retailer strategies to impact store brand share: global integration, local adaptation, and worldwide learning", *Marketing Science*, Vol. 33 No. 1, pp. 6-26.

Geyskens, I., Gielens, K. and Gijsbrechts, E. (2010), "Proliferating private-label portfolios: how introducing economy and premium private labels influences brand choice", *Journal of Marketing Research*, Vol. 47 No. 5, pp. 791-807.

Greenblat, E. (2011), "No simple (home) branding exercise", available at: www.businessday.com.au/business/no-simple-home-branding-exercise-20111123-1nu36.html (accessed 8 December 2019).

Guyt, J.Y. and Gijsbrechts, E.L.S. (2014), "Take turns or march in sync? The impact of the national brand promotion calendar on manufacturer and retailer performance", *Journal of Marketing Research*, Vol. 51 No. 6, pp. 753-772.

Hayes, A.F. and Preacher, K.J. (2014), "Statistical mediation analysis with a multicategorical independent variable", *British Journal of Mathematical and Statistical Psychology*, Vol. 67 No. 3, pp. 451-470.

Hökelekli, G., Lamey, L. and Verboven, F. (2017), "Private label line proliferation and private label tier pricing: a new dimension of competition between private labels and national brands", *Journal of Retailing and Consumer Services*, Vol. 36 No. 5, pp. 39-52.

Hong, S., Misra, K. and Vilcassim, N.J. (2016), "The perils of category management: the effect of product assortment on multicategory purchase incidence", *Journal of Marketing*, Vol. 80 No. 5, pp. 34-52.

Hui, M.K., Zhao, X., Fan, X. and Au, K. (2004), "When does the service process matter? A test of two competing theories", *Journal of Consumer Research*, Vol. 31 No. 2, pp. 465-475.

Kahn, B.E. and Wansink, B. (2004), "The influence of assortment structure on perceived variety and consumption quantities", *Journal of Consumer Research*, Vol. 30 No. 4, pp. 519-533.

Lamey, L., Deleersnyder, B., Steenkamp, J.-B.E. and Dekimpe, M. (2012), "The effect of business-cycle fluctuations on private-label share: what has marketing conduct got to do with it?", *Journal of Marketing*, Vol. 76 No. 1, pp. 1-19.

Li, C., Cui, G. and Peng, L. (2017), "The signaling effect of management response in engaging customers: a study of the hotel industry", *Tourism Management*, Vol. 62, October, pp. 42-53.

Li, K., Wang, L., Chhajed, D. and Mallik, S. (2019), "The impact of quality perception and consumer valuation change on manufacturer's optimal warranty, pricing, and market coverage strategies", *Decision Sciences*, Vol. 50 No. 2, pp. 311-339.

Liu, R.L., Sprott, D.E., Spangenberg, E.R., Czellar, S. and Voss, K. (2018), "Consumer preference for national vs. private brands: the influence of brand engagement and self-concept threat", *Journal of Retailing and Consumer Services*, Vol. 41 No. 3, pp. 90-100.

Lourenço, C.J. and Gijsbrechts, E. (2013), "The impact of national brand introductions on hard-discounter image and share-of-wallet", *International Journal of Research in Marketing*, Vol. 30 No. 4, pp. 368-382.

Mantrala, M.K., Levy, M., Kahn, B.E., Fox, E., Gaidare, P., Dankworth, B. and Shah, D. (2009), "Why is assortment planning so difficult for retailers? A framework and research agenda", *Journal of Retailing*, Vol. 85 No. 1, pp. 71-83.

Mathmann, F., Chylinski, M., de Ruyter, K. and Higgins, T. (2017), "When plentiful platforms pay off: assessment orientation moderates the effect of assortment size on choice engagement and product valuation", *Journal of Retailing*, Vol. 93 No. 2, pp. 212-227.

Modig, E., Dahlén, M. and Colliander, J. (2014), "Consumer-perceived signals of 'creative' versus 'efficient' advertising", *International Journal of Advertising*, Vol. 33 No. 1, pp. 137-154.

Nenycz-Thiel, M. and Romaniuk, J. (2012), "Value-for-money perceptions of supermarket and private labels", *Australasian Marketing Journal*, Vol. 20 No. 2, pp. 171-177.

Ngobo, P.V. (2011), "What drives household choice of organic products in grocery stores?", *Journal of Retailing*, Vol. 87 No. 1, pp. 90-100.

Olbrich, R., Jansen, H.C. and Hundt, M. (2017), "Effects of pricing strategies and product quality on private label and national brand performance", *Journal of Retailing and Consumer Services*, Vol. 34 No. 1, pp. 294-301.

Oppewal, H. and Koelemeijer, K. (2005), "More choice is better: effects of assortment size and composition on assortment evaluation", *International Journal of Research in Marketing*, Vol. 22 No. 1, pp. 45-60.

Palmeira, M.M. and Thomas, D. (2011), "Two-tier store brands: the benefic impact of a value brand on perceptions of a premium brand", *Journal of Retailing*, Vol. 87 No. 4, pp. 540-548.

Peng Tan, L. and Cadeaux, J. (2012), "Intra-category competition, entry probability, and private label share", *Asia Pacific Journal of Marketing and Logistics*, Vol. 24 No. 3, pp. 414-432.

Perez, M.E., Castaño, R. and Quintanilla, C. (2010), "Constructing identity through the consumption of counterfeit luxury goods", *Qualitative Market Research: An International Journal*, Vol. 13 No. 3, pp. 219-235.

PLMA (2018), "Private label gains across Europe, climbing to all-time highs in seven countries", PLMA's 2018 International Private Label Yearbook, available at: www.plmainternational.com/news-update (accessed 8 December 2019).

Ramaswami, A., Dreher, G.F., Bretz, R. and Wiethoff, C. (2010), "Gender, mentoring, and career success: the importance of organizational context", *Personnel Psychology*, Vol. 63 No. 2, pp. 385-405.

Rao, A.R., Qu, L. and Ruekert, R.W. (1999), "Signaling unobservable product quality through a brand ally", *Journal of Marketing Research*, Vol. 36 No. 2, pp. 258-268.

Reutskaja, E. and Hogarth, R.M. (2009), "Satisfaction in choice as a function of the number of alternatives: when 'goods satiate'", *Psychology & Marketing*, Vol. 26 No. 3, pp. 197-203.

Rossi, P., Borges, A. and Bakpayev, M. (2015), "Private labels versus national brands: the effects of branding on sensory perceptions and purchase intentions", *Journal of Retailing and Consumer Services*, Vol. 27 No. 11, pp. 74-79.

Rubio, N., Villaseñor, N. and Yagüe, M.J. (2017), "Creation of consumer loyalty and trust in the retailer through store brands: the moderating effect of choice of store brand name", *Journal of Retailing and Consumer Services*, Vol. 34 No. 1, pp. 358-368.

Spassova, G. and Isen, A.M. (2013), "Positive affect moderates the impact of assortment size on choice satisfaction", *Journal of Retailing*, Vol. 89 No. 4, pp. 397-408.

Spence, M. (2002), "Signaling in retrospect and the informational structure of markets", *The American Economic Review*, Vol. 92 No. 3, pp. 434-459.

Steenkamp, J.-B.E., Van Heerde, H.J. and Geyskens, I. (2010), "What makes consumers willing to pay a price premium for national brands over private labels?", *Journal of Marketing Research*, Vol. 47 No. 6, pp. 1011-1024.

Steigenberger, N. and Wilhelm, H. (2018), "Extending signaling theory to rhetorical signals: evidence from crowdfunding", *Organization Science*, Vol. 29 No. 3, pp. 529-546.

Steiner, R.L. (2004), "The nature and benefits of national brand/private label competition", *Review of Industrial Organization*, Vol. 24 No. 2, pp. 105-127.

Szymanowski, M. and Gijsbrechts, E. (2012), "Consumption-based cross-brand learning: are private labels really private?", *Journal of Marketing Research*, Vol. 49 No. 2, pp. 231-246.

Tan, L.P. and Cadeaux, J. (2011), "Brand and stock-keeping-unit (SKU) assortments, assortment changes and category sales", *The International Review of Retail, Distribution and Consumer Research*, Vol. 21 No. 2, pp. 161-185.

Whan Park, C., MacInnis, D.J., Priester, J., Eisingerich, A. and Iacobucci, D. (2010), "Brand attachment and brand attitude strength: conceptual and empirical differentiation of two critical brand equity drivers", *Journal of Marketing*, Vol. 74 No. 6, pp. 1-17.

Yan, L., Xiaojun, F., Li, J. and Dong, X. (2019), "Extrinsic cues, perceived quality, and purchase intention for private labels", *Asia Pacific Journal of Marketing and Logistics*, Vol. 31 No. 3, pp. 714-727.

Zhao, X., Lynch, J.G. and Chen, Q. (2010), "Reconsidering Baron and Kenny: myths and truths about mediation analysis", *Journal of Consumer Research*, Vol. 37 No. 2, pp. 197-206.

About the authors

Chunyu Li, PhD, is Lecturer in the Department of Marketing of Guangdong University of Foreign Studies. She received her PhD from Lingnan University (Hong Kong) in 2015. Her publications have appeared in *Tourism Management*, *Computers in Human Behaviour*, *Journal of Product and Brand Management*, *Journal of Marketing Management*, *International Journal of Market Research*, *Asia Pacific Journal of Marketing and Logistics*. Her current research interest covers brand management, online marketing, social network media and customer value co-creation.

Yongfu He, PhD, is Senior Lecturer of the Department of Marketing, Monash University, Australia. She received her PhD from the University of Alberta in 2008. Her research addressing consumer behaviour online has appeared in several important marketing journals, such as *Journal of Retailing and Marketing Letters*. Her current research focuses on the influence of various quality cues on consumer behaviour online.

Ling Peng, PhD, is Associate Professor of the Department of Marketing and International Business, Lingnan University, Hong Kong. She received her PhD from the University of Alberta in 2007. Her research, addressing the psychometric theories to measurement issues in marketing, has appeared in *Journal of Product Innovation Management*, *International Journal of Market Research*, *Journal of Marketing Management* and *Journal of Global Marketing* among others. Her current research focuses on new product and innovation management, e-commerce and social media.

Denghua Yuan, PhD, is Professor of School of Business, Guangdong University of Foreign Studies, China. He received his PhD from Zhejiang University in 2004. His research has appeared in *Journal of Consumer Marketing*, *Computers in Human Behavior* and *Journal of Financial Risk Management*. His current research focuses on consumer brand engagement, brand psychology and consumer behavior. Denghua Yuan is the corresponding author and can be contacted at: ydenghua@126.com