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# Connecting the dots between brand equity and brand loyalty for retailers: The mediating roles of brand attitudes and word-of-mouth communication

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## ABSTRACT

Managing and developing brand equity is of crucial interest to retailers. To provide a better understanding of retailer brand equity, we introduce a specific nomological network that brings together operational retailer brand equity dimensions and marketing performance outcomes. More specifically, we hypothesize that consumer attitudes toward the retailer and word-of-mouth communication individually and sequentially mediate the relationship between retailer brand equity and consumer loyalty toward the retailer. Partial least squares path modeling (PLS) was used to test the proposed model with 335 US consumers from the home improvement retail sector. A systematic validation procedure with explanatory (i.e., in-sample) and predictive (i.e., out-of-sample) power assessments and robustness tests such as the confirmatory tetrad analysis and model comparison confirms these specific relationships. The results show that the refined model allows retail managers to link brand equity dimensions to marketing performance more accurately and to predict customer loyalty more reliably.

## 1. Introduction

Brand equity, from its early stages (Aaker, 1991; Farquhar, 1989, Keller, 1993) to more recent developments (Datta et al., 2017; Keller, 2016; Rajavi et al., 2022), is one of the most prominently studied concepts in marketing. It has been investigated and measured in various contexts from electronics and fashion brands to branding of hospitals and tourism destinations. Yet, despite specific calls to apply this key marketing asset to retailers (Ailawadi & Keller, 2004; Grewal & Levy, 2009; Keller & Lehman, 2006; Verhoef et al., 2009), there have been very few investigations toward developing an appropriate conceptualization and empirical measures of retailer brand equity (RBE). This is even more surprising insofar as retailers are major actors in our economy with strong channel power and close relationships with consumers. In fact, few brands can claim such long-term consumer relationships with such regular and frequent interactions. Retailers work continuously to improve their business models and provide their customers with a superior shopping experience, better assortment and good value for cost. According to the Retailer Preference Index (Dunnhumby, 2020), H-E-B has now dethroned Trader Joe's, Amazon and Costco as the top U.S. grocery retailer. But how did a regional retailer not only compete against

such big players but actually beat them, in respect to both consumer preference and financial performance? According to the report, the answer lies in their sustained focus and excellence on assortment relevance, private brand and convenience, in addition to more conventional dimensions such as price and quality. As the example of H-E-B illustrates, it is imperative for retailers to better understand the drivers of the value they can build for consumers and how this value relates to more conventional marketing outcomes.

As a construct that describes the power of the retailer as a brand in the minds of consumers (Leone et al., 2006) or, more precisely, as the "added value with which the retailer endows its stores, and the combination of products, services and experiences that are delivered through these outlets" (Troiville et al., 2019, p.74), RBE is critical because it affects chain consumer behavior (e.g., acquisition), customer-level performance (e.g., share of wallet), product-market performance (e.g., market share) and ultimately, accounting performance (e.g., profit) (Katsikeas et al., 2016). The literature has investigated RBE both theoretically and empirically. For example, prior theoretical research has underlined the conceptual and operational benefits of developing and validating an RBE measure (Ailawadi & Keller, 2004; Hartmann & Spiro, 2005) to better capture the added value by the retailer and to provide

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effective tools for retail managers. Empirical research has also explored the relationship between RBE and various marketing variables. For example, Arnett et al. (2003) were among the first to propose an RBE index and to test it with a holistic construct they referred to as shopping intentions. In a similar perspective applied to malls, El Hedhli and Chebat (2009) developed a brand equity measure following Keller's (1993) conceptualization of brand knowledge, and Chebat et al. (2010) tested a measure based on the dimensions of retailer image theoretically identified by Ailawadi and Keller (2004). Swoboda et al. (2013) investigated the relationship between RBE and corporate reputation, whereas Pappu and Quester (2006) suggested an RBE measure based on Aaker's (1991) brand equity model with four dimensions. More recently, Swoboda et al. (2016) tested five predictors of RBE and its impact on loyalty, Anselmsson et al. (2017) used a second-order RBE model tested with loyalty, and Troiville et al. (2019) developed a second-order RBE model with eight subdimensions and validated RBE effects on attitudes, word-of-mouth (WOM) communication, and loyalty.

As for the conventional construct of brand equity (Rojas-Lamorena et al., 2022), the steadily growing literature on RBE contains several different viewpoints on the conceptualization of the construct, its dimension and the embedded network within which it should be inserted (i.e., antecedents and consequences). However, there is a broader consensus on the perspective from which it should be studied. RBE is a consumer-based construct, since the added value of a retailer is always uniquely and phenomenologically determined by consumers who are its beneficiaries (Vargo & Lusch, 2008) or more simply because retailers need to satisfy consumers with their marketing mix to build their brand equity and enhance loyalty.<sup>1</sup>

We aim to bridge some of the gaps in the literature that we have identified as follows. Prior research has developed measures of RBE without studying its effects on marketing outcomes (e.g., Arnett et al., 2003; Pappu & Quester, 2006), has only tested them in single independent relationships (e.g., Chebat et al., 2010; Swoboda et al., 2016; Troiville et al., 2019), or has not focused on the sources of brand equity (Swoboda et al., 2013). Thus, in this paper we set out to investigate i) the dimensions that contribute to RBE, ii) RBE's impact on several marketing variables, iii) how these variables interact, and iv) these relationships in one single model with assessment of both explanatory and predictive powers. This study mobilizes specific methods to establish new relationships or validate existing ones, using a more demanding methodological protocol that produces reliable results. The study contributes to refining the existing literature on the nature and nomological network of retailer brand equity by demonstrating that consumer attitudes toward the retailer and WOM communication are two individual mediators and are sequential mediators of the relationship between RBE and loyalty. Indeed, we demonstrate a strong relationship between RBE and loyalty with both direct effects and several indirect effects, identifying the complex nature of the RBE construct and the various relevant interactions that link the retailer as a brand to consumer loyalty. The indirect path shows that a high level of brand equity may engage consumers in a stronger relationship with the brand (that is, with more favorable attitudes and a higher propensity to develop positive WOM communication), which in turn leads to greater intention to buy from the retailer in the future. Therefore, we extend existing research by suggesting that retailers can develop marketing activities to build brand equity across the specified subdimensions, which in turn engages the consumers in a virtuous cycle by increasing positive attitudes toward the retailer, positive WOM communication and ultimately, consumer loyalty. This study takes advantage of a hierarchical component model (HCM) to specify retailer brand equity within a precise network of

relationships, and executes a systematic validation procedure with in-sample and out-of-sample evaluations, which is a substantial contribution to theory building and theory testing (Shmueli & Koppius, 2011), and a required condition to develop managerial recommendations (Sarstedt & Danks, 2022). In the following sections, we will discuss the conceptual framework of this study and then introduce a set of formal hypotheses. This will be followed by our research method and results relative to the hypotheses. Lastly, we will conclude with a discussion of the theoretical contributions, marketing implications, and suggestions for future research.

## 2. Conceptual framework and hypotheses development

The model draws together diverse streams of research and addresses measurements ranging from RBE dimensions to marketing outcomes. The model formalizes *consumer attitudes toward the retailer* and *word of mouth communication* as critical mediators of the impact of RBE on *consumer loyalty to the retailer*. Therefore, consumer loyalty is the key target construct of interest that will serve for prediction purposes with RBE as a direct antecedent, while consumer attitudes and WOM communication serve as two mediators. The following two sections, respectively, discuss the conceptual definitions of RBE and its consumer-centric marketing outcomes.

### 2.1. Retailer brand equity

RBE is a consumer mindset construct, holistic in nature, that involves customer knowledge about the retailer and its value proposition (Katsikeas et al., 2016; Swoboda et al., 2016). This equity is subjectively assessed by consumers and based on their ongoing experiences and the value proposition of the retailer (Ailawadi & Keller, 2004; Ou et al., 2017). Therefore, it is continuously developed through consumer interactions with the retailer (Arnould & Thompson, 2005; Homburg et al., 2005). In this process, consumers do not directly identify RBE, as it is a theoretical construct, complex and latent by nature (Nunnally & Bernstein, 1994). Consumers do, however, collect information and form evaluations about more concrete retailer marketing mix attributes (e.g., product quality, store atmosphere). Building on the process of categorization with categories and subcategories (Barsalou, 1983; Campbell & Keller, 2003), these associations in the consumer's memory relative to salient dimensions constitute, at a more abstract level, holistic knowledge related to the retailer (Keaveney & Hunt, 1992; Keller, 1993). On this ground, evaluations of these dimensions may serve to quantify, at a more abstract level, the value proposed by the retailer as perceived by consumers and in turn, distinguish a retailer from its competitors or affect consumer loyalty, referring to the aforementioned properties of RBE (Puligadda et al., 2012; Swoboda et al., 2013). Hence, RBE is conceptualized as a hierarchical component model with two layers of abstraction (Edwards, 2001; Law et al., 1998). First-order dimensions are more concrete variables, while second-order variables evolve at a higher level of abstraction, as is the case for the RBE construct. First-order dimensions are also more easily understood by consumers, who are both the beneficiaries of the retail offers (Drucker, 1985) and the respondents of the survey, and this is important for reliability purposes (Ailawadi et al., 2003; Anderson & Gerbing, 1991). We retained the eight RBE dimensions identified by Troiville et al. (2019), namely: access, assortment, atmosphere, convenience, employees, product quality, product value and private brands. These dimensions are defined in the supporting literature and measurement scales provided in Appendix A.

<sup>1</sup> A complementary perspective also exists (the firm perspective) with financial and market-based brand equity measures, but these measures are direct consequences of consumer-based brand equity. For details see Ailawadi et al. (2003).

## 2.2. The relationship between retailer brand equity and consumer loyalty

Consumer attitudes, WOM communication and consumer loyalty toward the retailer<sup>2</sup> are consumer mindsets frequently used to assess marketing performance (Katsikeas et al., 2016). In this regard, a deeper analysis of the interplay between RBE and these marketing outcome variables is highly relevant to provide a better understanding of the business role played by the retailer as a brand (Ailawadi & Keller, 2004). Loyalty is a key variable in marketing that continues to be investigated within a consumer perspective (Ou et al., 2017). This relevance is even more important in a retail context where shops must attract and retain consumers (Gil-Saura et al., 2017; Grewal et al., 2016). Consumer loyalty and the effectiveness of loyalty strategies and retailer tactics to enhance shoppers' purchases remain complex phenomena in marketing research, justifying this article's focus on prediction of this central variable.

### 2.2.1. Consumer loyalty

Consumer loyalty is defined as the strength of the relationship between an individual's relative attitude and repeat patronage (Dick & Basu, 1994), or in terms of the focus of this research, as a deeply held commitment to repurchase a preferred product or service (Oliver, 1999) or to repatronize a preferred store. Of the two frequently described perspectives of brand loyalty, namely behavioral or attitudinal, we adopted the latter, insofar as it is a metric matching a consumer-centered perspective relevant to evaluating brand equity (Ailawadi et al., 2003; Stahl et al., 2012) and the "customer's intentions to engage again" (Herhausen et al., 2019, p.11). Brand loyalty is often used in consumer research as the ultimate objective due to its strategic and marketing importance (Kotler, 1984) and its propensity to offer a significant basis for developing a sustainable competitive advantage (Homburg et al., 2017). The objective to study consumer loyalty as the outcome construct of interest is driven by the positive effect of brand equity on loyalty that should be demonstrated in the retailer brand equity framework (Gilboa et al., 2020; Ou et al., 2017). We therefore hypothesize as follows (see Fig. 1):

**Hypothesis 1.** Retailer brand equity positively impacts consumer loyalty.

### 2.2.2. Consumer attitudes

Brand attitudes refer to consumers' overall judgment about a brand. They have implications for marketing-relevant consumption behaviors such as brand purchase, repeat purchase, and willingness to recommend a brand (Park et al., 2010). Brand attitudes therefore form the basis for consumer behavior (Keller, 1993). These attitudes are related to both product attributes and experiential benefits (Puccinelli et al., 2009; Zeithaml, 1988), which are identified within the retail literature as a source of value creation as soon as they are favorable or positive (Hartman & Spiro, 2005; Pappu & Quester, 2006; Puccinelli et al., 2009; Verhoef et al., 2009). Insofar as RBE "is the added value with which the retailer endows its stores, and the combination of products, services and experiences that are delivered through these outlets" (Troiville et al., 2019, p.74), we expect RBE to positively influence consumer attitudes. Consumer research has frequently investigated the relationship between consumer attitudes and loyalty, demonstrating that consumer attitudes influence consumer behavior (e.g., Anderson, 1998; Hogan et al., 2003; Medina-Molina et al., 2021) or, in other words, that loyalty is manifested in consumer attitudes toward the retailer (Dick & Basu, 1994; Park et al., 2010). Therefore, and inferring from these arguments, we expect RBE to enhance attitudes, and for this increase to exert a significant effect on

<sup>2</sup> For readability, we use shortened forms of these variables. Therefore, attitudes stand for "consumer attitudes toward the retailer," WOM for "word-of-mouth communication" and loyalty for "consumer loyalty toward the retailer."

consumer loyalty. Thus, the following hypothesis can be posited (see Fig. 1):

**Hypothesis 2.** Consumer attitudes toward the retailer mediate the relationship between retailer brand equity and consumer loyalty.

### 2.2.3. Word-of-mouth communication

Word-of-mouth communication refers to informal communication between private parties concerning information or/and evaluations of a target object, such as a good, a service or a retailer as a brand (Anderson, 1998; Brown et al., 2005). WOM is an outcome of past experiences and sales, and at the same time, a driver of future behaviors and sales, resulting in a close relationship with consumer loyalty (Banerjee, 1993; Duhan et al., 1997; Godes & Mayzlin, 2004). Several definitions may be mobilized when studying WOM, depending on the focus investigated (e.g., WOM frequency, WOM detail or WOM praise; Harrison-Walker, 2001). This study retained WOM praise—that is, willingness to recommend the retailer in communication—to assess consumers' evaluations of the retailer's offer. WOM communications are a customer behavior construct identified in the marketing-performance outcome chain (Katsikeas et al., 2016), and hence a consequence of various customer mindsets such as brand equity. RBE involves customer knowledge about the retailer and its value proposition that may serve as the basis for WOM communication (van Doorn et al., 2010). According to self-perception theory (Bem, 1967; 1972) and the consistency principle (Cialdini, 2009; Cialdini & Goldstein, 2004), this willingness identifies an engagement or commitment toward the retailer, leading to an increase in consumer loyalty (e.g., Garnefeld et al., 2011; Hollebeek, 2011; van Doorn et al., 2010; Yoo et al., 2013). Thus, we expect WOM communication to have a positive influence on consumer loyalty. Following this theoretical development, we posit that the RBE will increase WOM communication, and therefore consumer loyalty. We thus hypothesize the following (see Fig. 1):

**Hypothesis 3.** Word-of-mouth communication mediates the relationship between retailer brand equity and consumer loyalty.

### 2.2.4. The sequential effect of attitudes and WOM communication

Regarding H2 and H3, we posit that both attitudes and WOM positively influence consumer loyalty. However, the relationship between these two variables must be specified. Following Park et al. (2010), attitudes, as a more abstract concept, are formed toward the retailer and have downstream marketing-relevant consequences in terms of consumption behaviors, such as willingness to recommend. WOM implies that the consumer has built specific *a priori* knowledge or associations toward the retailer, such as attitudes (Keller, 1993) or evaluations (Konuk, 2019), that will serve as a basis when generating WOM communication (Godes & Mayzlin, 2004). Hence, we posit that attitudes constitute a direct antecedent of WOM. In accordance with this support, RBE relates to consumer loyalty first through attitudes and then via WOM. Therefore, we hypothesize the following (see Fig. 1):

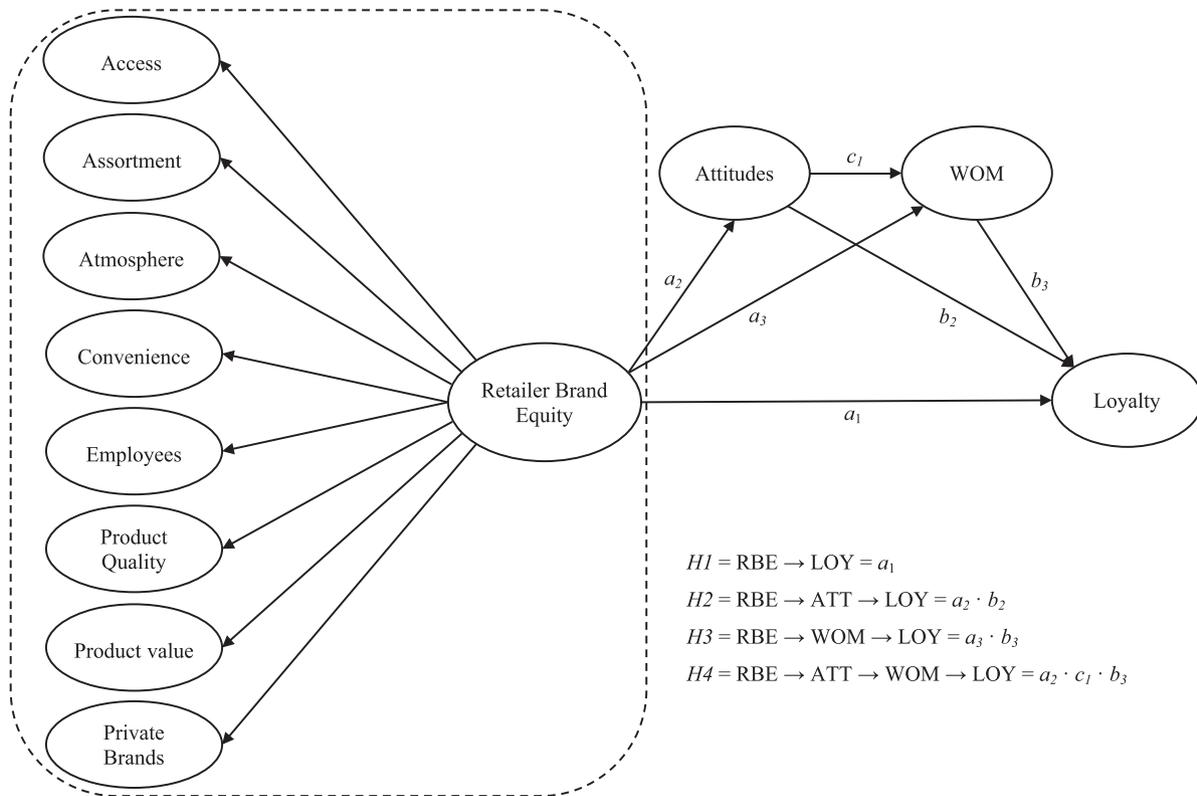
**Hypothesis 4.** Consumer attitudes toward the retailer and word-of-mouth communication sequentially mediate the relationship between retailer brand equity and consumer loyalty.

Thus, we propose to test a more precise nomological network of RBE with specific relationships (see Fig. 1).

## 3. Research design and methodology

### 3.1. Participants and procedure

The US domestic market is one of the biggest in the world and a fertile ground for business innovation (Deloitte, 2019). We conducted this survey within the US home improvement sector where there is intense competition among strong brands like Home Depot, Lowe's or Menards. We administered an online questionnaire to US consumers



**Fig. 1.** Conceptual model of retailer brand equity with two sequential mediators. Note: Indicators are omitted for clarity purposes. The dashed line box represents the lower-order components (LOCs) and identifies the measurement model of the higher-order component (HOC).

who agreed to respond in exchange for monetary compensation and were recruited through Amazon’s Mechanical Turk, whose quality and diversity could increase the external validity of this research (Buhrmester et al., 2011; Goodman & Paolacci, 2017). To ensure high quality results, we conducted two pretests, a pilot survey, and a filter question at the beginning of the questionnaire to ask respondents to confirm that they have patronized a home improvement retailer within the last 6 months. The two pretests were conducted to guarantee a good level of understanding. First, we performed a substantive validity (item validity) assessment using a procedure established by Anderson and Gerbing (1991) to confirm that the concepts were clearly distinct from one another. Second, two different groups of respondents (scholars and consumers) filled out the questionnaire to judge the face validity and evaluate each item for relevance; which led to minor modifications. We then conducted a pilot study (N = 100) to confirm that the instructions were clear and to check for potential problems regarding data collection. Requirements to achieve a statistical power of 80 % assuming a 5 % significance level with an effect size of 0.05 resulted in a sample size of 160 (G\*Power, Faul et al., 2009). After removing outliers with incorrect responses from the two attention check questions and reverse-coded items, 335 usable responses were obtained, thus meeting the threshold. A *post hoc* analysis with effect sizes from the tested model resulted in a power above 90 %, thus confirming the *a priori* procedure. The sample consisted of 156 males and 179 females, and the average age was 39.1 ([min: 18; max: 74]; SD = 11.47). Detailed demographic information about the respondents is provided in Appendix B.

**3.2. Measures and method**

RBE was operationalized as a second-order construct. This HCM uses reflective measurement models to operationalize each first-order dimension as well as for the measurement model used to operationalize the construct RBE on the lower-order level, therefore identifying a

Type I model (Jarvis et al., 2003). As noted by Anselmsson et al. (2017), this specification is frequently adopted in the literature relative to retailer equity. Regarding the primary objective of this study, an HCM is statistically valuable for parsimonious purposes as it gathers specific dimensions into a general, more abstract concept (Edwards, 2001; Law et al., 1998) that facilitates testing complex relationships in the model such as mediations. In order to replicate the conceptualization of Troiville et al. (2019), we kept the same items to measure the eight RBE dimensions (see Table 1) (Ringle et al., 2023). Regarding the consequences of RBE, consumer attitudes toward the retailer and WOM communication were measured using scales introduced by Chebat et al. (2010), and consumer loyalty using items proposed by Yoo et al. (2000). All constructs were measured by means of multiple items using seven-point Likert scales ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), except for attitudes and WOM communication, for which we used Osgood scales (see Table 1). Common method bias (CMB) can threaten the validity of conclusions drawn about the relationships among latent variables (Podsakoff et al., 2003). We designed our questionnaire based on guidelines by Podsakoff et al. (2003) to minimize the likelihood of CMB, and applied a full collinearity test (Kock, 2017; Kock & Lynn, 2012) because of its relevance in a variance-based SEM context. This conservative test confirmed that the model can be considered free of CMB, with variance inflation factor (VIF) values falling below the recommended threshold of 3.3 (Kock, 2017; Kock & Lynn, 2012).

The hypotheses were tested using structural equation modeling (SEM). The latter is a common method in social sciences (e.g., Hulland, 1999; Ringle et al., 2012), as it enables researchers to simultaneously model and estimate complex relationships among multiple dependent and independent variables (Hair et al., 2022). To estimate SEM by means of empirical data, researchers may choose between the covariance-based approach (CB-SEM) (Jöreskog, 1978) and the composite-based partial least squares approach (PLS-SEM) (Lohmöller, 1989; Wold, 1974). Arguments regarding the appropriate estimation method (Hair et al., 2019;

**Table 1**  
Measurement items.

Latent variable	Item	Loading	Measure
<i>RBE dimensions</i>			
Access	ACC1	0.790 <sup>***</sup>	It is easy to get into this store.
	ACC2	0.764 <sup>***</sup>	This store is not easily accessible. (r-c)
	ACC3	0.857 <sup>***</sup>	This store offers convenient locations.
Assortment	AST1	0.643 <sup>***</sup>	This store never seems to lack the type of product I buy.
	AST2	0.683 <sup>***</sup>	This store has a large variety of products.
	AST3	0.791 <sup>***</sup>	Everything I need is at this store.
Atmosphere	ATM1	0.910 <sup>***</sup>	This store is a pleasant place to shop.
	ATM2	0.823 <sup>***</sup>	This store is attractive.
	ATM3	0.715 <sup>***</sup>	This store is not a pleasant place to shop. (r-c)
Convenience	CON1	0.857 <sup>***</sup>	The store layout at this store makes it easy for customers to find what they need.
	CON2	0.876 <sup>***</sup>	The store layout at this store makes it easy for customers to move around in the store.
	CON3	0.823 <sup>***</sup>	Shopping from this store is an efficient way to manage my time.
Employees	EMP1	0.903 <sup>***</sup>	Employees in this store give prompt service to customers.
	EMP2	0.887 <sup>***</sup>	This store gives customers individual attention.
	EMP3	0.878 <sup>***</sup>	This store's employees are very friendly.
Product Quality	PQ1	0.895 <sup>***</sup>	There is a high likelihood that products bought at this store will be of extremely high quality.
	PQ2	0.861 <sup>***</sup>	This store's merchandise is of low quality. (r-c)
	PQ3	0.918 <sup>***</sup>	Overall, this store sells high quality merchandise.
Product Value	PV1	0.836 <sup>***</sup>	This store is reasonably priced.
	PV2	0.876 <sup>***</sup>	This store is a good product for the price.
	PV3	0.818 <sup>***</sup>	This store doesn't offer value for money. (r-c)
Private Brands	PB1	0.626 <sup>***</sup>	Products from the brand of this store don't match my expectations. (r-c)
	PB2	0.901 <sup>***</sup>	I would consider the products from the brand of this store to be a good buy.
	PB3	0.908 <sup>***</sup>	Products from the brand of this store match my requirements.
<i>Nomological network</i>			
Attitudes	ATT1	0.943 <sup>***</sup>	How do you feel about this store? I am not particularly fond of it/ I am very fond of it.
	ATT2	0.936 <sup>***</sup>	How do you feel about this store? I don't like it at all/ I like it a lot.
Loyalty	LOY1	0.862 <sup>***</sup>	I consider myself to be loyal to this store.
	LOY2	0.838 <sup>***</sup>	This store would be my first choice.
	LOY3	0.721 <sup>***</sup>	I will not patronize another store if products are available at this store.
	LOY4	0.862 <sup>***</sup>	Even if products are available in other stores, I would prefer to buy them at this store.
Word-of-Mouth Communication	WOM1	0.908 <sup>***</sup>	How do you refer to this store when you talk to your friends, relatives and associates? I never recommend shopping at this store/ I strongly recommend shopping at this store.
	WOM2	0.918 <sup>***</sup>	How do you refer to this store when you talk to your friends, relatives and associates? I don't hesitate to say bad things about this store/ I don't hesitate to say good things about this store.

Note: (r-c): reverse-coded item; <sup>\*\*\*</sup>  $p < 0.001$ .

Hair & Sarstedt, 2019) favor the PLS-SEM method for four reasons. First, the latter is a causal-predictive approach (Jöreskog & Wold, 1982), focused on explaining the variance in the model's dependent variables (Chin et al., 2020). It is therefore of particular interest regarding the goal of this study to explain the key target construct of consumer loyalty. Second, PLS expansion and recent statistical developments have shifted the approach into the realm of explanation and predictive evaluation, providing a framework that allows for combination of the theory-driven model with data-based estimation and validation (Shmueli et al., 2016). This corroborates the prediction perspective of the study. Third, the RBE model is specified as a hierarchical model with non-normal data and relative complexity due to the inclusion of mediators, and PLS has proven its capacity to address such specific model attributes (Hair et al., 2019; Sarstedt et al., 2020). Fourth, this approach is advantageous because component scores obtained with the algorithm can be used in subsequent analyses such as application of the two-stage disjoint approach to model the HCM in this study (Becker et al., 2023; Chin, 2010). For the PLS model creation, estimation and validation, we used the software SmartPLS 4 (Ringle et al., 2022) and the SEMinR package (Ray et al., 2021) for advanced tests.

#### 4. Results

We established the model's validity and then demonstrated the relevance of inclusion of the two mediators across various validity criteria. In the first stage of the PLS analysis, we ensured that the measures used as operationalizations of the underlying constructs were both reliable and valid (measurement model validity). Once the first stage is established, the second stage consists of the model coefficient assessment (structural model validity).

##### 4.1. Model estimation and assessment

General guidelines from Hair et al., (2020) enabled evaluation of the measurement model. Specific guidelines from Becker et al. (2023) and Sarstedt et al. (2019) were used to develop and assess the hierarchical component model with the disjoint two-stage approach, and from Nitzi et al. (2016) to develop the mediation analysis. More specifically, the PLS-SEM algorithm was set up with 300 iterations, a stop criterion of  $10^{-7}$  and the use of path weighting. Significance tests were derived from the percentile bootstrapping method, as recommended by Aguirre-Urreta and Rönkkö (2018), for all p-values and confidence intervals with 10,000 subsamples, the no sign changes option and a two-tailed test with a significance level of 0.05. The confidence interval provides a range for the actual magnitude of the parameter of interest, which gives an indication of its stability. Confidence intervals are even more suitable when used in a PLS-SEM model evaluation with a percentile bootstrapping procedure, as there are no distributional assumptions, such as a normal distribution (in comparison to parametric significance tests using p-values), providing excellent results in terms of coverage and balance (Aguirre-Urreta & Rönkkö, 2018; Sarstedt et al., 2023).

##### 4.2. Measurement model analysis

Evaluation of the reflective measurement models by means of standard evaluation criteria (Hair et al., 2020; 2022) was applied to all latent variables, that is, the eight RBE dimensions and three outcome variables (ATT, WOM and LOY). This procedure also holds for the measurement model of the higher-order construct RBE with interpretation of the relationships between the higher-order construct and its eight lower-order components (Becker et al., 2023). The assessment for indicator reliability showed that item loadings exceeded the threshold value of 0.7 for all items except AST1 (0.643), AST2 (0.683) and PB1 (0.626), which were slightly under the threshold but still considered acceptable (Table 1). Indeed, removal of these items was considered, but this deletion did not lead to an increase in composite reliability. The results

for internal consistency reliability (Cronbach’s alpha, composite reliability  $\rho_C$  and reliability coefficient  $\rho_A$ ) yielded satisfactory levels of above 0.70 for all values of  $\rho_A$  except assortment which showed a  $\rho_A$  of 0.534, falling under the 0.6 threshold for exploratory research (Hair et al., 2022). The average variance extracted (AVE) values were all above 0.50, indicating that the convergent validity criterion was supported (see Table 2).

Discriminant validity assessment is based on Henseler et al.’s (2015) heterotrait-monotrait (HTMT) criterion. The latter is defined as the mean value of the item correlations across constructs (i.e., the heterotrait-heteromethod correlations) relative to the geometric mean of the average correlations for the items measuring the same construct (i.e., the monotrait-heteromethod correlations; Sarstedt et al., 2019; Ringle et al., 2023). None of the HTMT percentile confidence intervals—derived from bootstrapping with 10,000 samples, one-tailed, and with  $\alpha = 0.05$ —included the threshold value of 0.90, and only one value fell to the more conservative threshold of 0.85 (ATT-WOM: 0.879) (Franke & Sarstedt, 2019), which is not an issue for conceptually similar constructs (Hair et al., 2022) (see Table 3). This validity assessment<sup>3</sup> is of high importance, as all RBE dimensions conceptualized as lower-order constructs met the discriminant validity criteria, relative to one another and also relative to RBE outcomes, which is important insofar as they are reflectively measured first-order constructs (Hair et al., 2021).

The second step of the measurement model analysis focuses on the HCM. To begin, we used the Bayesian Information Criterion (BIC) for model selection and compared a model in which there was a direct relationship between loyalty and the eight dimensions to the proposed model where RBE is an HCM and an antecedent of loyalty. We found that the latter yielded the lowest BIC with a substantial difference (-188 versus -168), therefore statistically justifying the HCM. Then, in order to corroborate the RBE measurement model as a reflective-reflective second-order construct (frequently referred to as Type I HCM; Jarvis et al., 2003), the assessment began with the Confirmatory Tetrad Analysis (CTA) (Gudergan et al., 2008; Hair et al., 2022). Since large sample sizes can lead to a low standard error from the tetrad value estimation, thereby triggering errors in hypothesis testing (Bauldry & Bollen, 2016), we ran the CTA procedure selecting only half of the sample (i.e., 167 observations) with a random process. Regarding the number of lower-order dimensions, a large number of model-implied non-redundant vanishing tetrads was computed. To account for the multiple testing problem, we based the analysis on the 90 % Bonferroni-corrected and bias-adjusted confidence intervals (Hair et al., 2022). The result reveals that eighteen tetrads vanish of a total of twenty. The

bounds of the confidence interval for the two remaining tetrads were very close to zero (i.e., 0.001 and -0.005), providing reasonable evidence of the alternative formative measurement model specification.<sup>4</sup> Moreover, the composite reliability  $\rho_C$ , is above the cutoff of 0.7 for all variables of the HCM supporting the reflective option (Chin, 1998). Therefore, we validate the RBE construct as a reflective HOC to pursue the assessment.

Based on application of the disjoint two-stage approach, we focused on the reflective measurement model of the higher-order component RBE. The eight dimensions had loadings ranging from 0.584 to 0.825 with only one value falling below 0.6 for the access variable (Table 4). Cronbach’s alpha (0.871),  $\rho_A$  (0.883) and  $\rho_C$  (0.899) of RBE were at satisfactory levels for composite reliability and AVE (0.529) was above the critical value of 0.5 for the convergent validity evaluation, as presented in Table 2. The last evaluation is related to discriminant validity. With all values significantly below the cutoff of 0.85 for the three outcome constructs and RBE, discriminant validity was confirmed (Table 3).

### 4.3. Structural model

The first step to evaluating structural model constructs is ruling out multicollinearity (Hair et al., 2020). Collinearity assessment in structural models is based on variance inflation factor (VIF) values. For our model, all VIF values were found to be lower than the threshold of 5 and even below the more restrictive level of 3 (Petter et al., 2007), therefore confirming no multicollinearity problem (Table 5). We then proceeded with evaluation of the size and significance of the path coefficients, explanatory ( $R^2$ ) and predictive power. Table 5 shows details regarding the structural model evaluation with the size and significance of path coefficients. RBE demonstrated significant ( $p < 0.05$ ) effects on its three consequences (ATT: 0.740; WOM: 0.205; LOY: 0.308). More precisely, the coefficient of the direct effect of RBE on loyalty was strong and significant ( $\beta = 0.308$ , [0.187, 0.425]) allowing us to validate H1. The  $R^2$  values, as a measure of in-sample prediction of an endogenous construct, or explanatory power, showed pronounced and significant levels for all RBE consequences (ATT: 0.548; WOM: 0.557; LOY: 0.556). The following section reports our core results and key statistic criteria regarding the model hypotheses with the mediation assessment.

### 4.4. Mediation analysis

Following the recommendation of Preacher and Hayes (2008), we used the full model to proceed with analysis of each of the two individual mediating effects (i.e., the test of attitudes as a mediator and the test of WOM as a mediator) and testing for the double mediation (i.e., the test of attitudes and WOM as joint or serial mediators). Table 6 reports the results of the mediation assessment. To begin with the mediation analysis (Zhao et al., 2010), the indirect path from RBE to loyalty via attitudes was significant ( $\beta = 0.174$ , [0.073, 0.277]) allowing us to validate H2. With the combination of the positive direct effect, this path identifies a complementary mediation of attitudes toward the retailer in the relationship between RBE and consumer loyalty. The indirect path from RBE to loyalty via WOM was significant ( $\beta = 0.06$ , [0.020, 0.11]), thus validating H3. This mediated effect and the positive direct effect identify a complementary mediation of WOM communication in the relationship between RBE and consumer loyalty. Lastly, the total indirect effect of RBE on loyalty is strong and significant ( $\beta = 0.359$ , [0.265, 0.458]), thus demonstrating the joint mediation of attitudes and WOM communication. Since the specific indirect effect from RBE to loyalty via attitudes and WOM communication was significant ( $\beta = 0.126$ , [0.067,

**Table 2**  
Reliability and validity statistics.

	Cronbach’s $\alpha$	$\rho_A$	Composite reliability $\rho_C$	Average variance extracted (AVE)
Access	0.727	0.737	0.846	0.648
Assortment	0.515	0.534	0.750	0.502
Atmosphere	0.758	0.827	0.859	0.672
Convenience	0.812	0.814	0.889	0.727
Employees	0.868	0.869	0.919	0.791
Product Quality	0.871	0.877	0.921	0.795
Product Value	0.797	0.805	0.881	0.711
Private Brands	0.760	0.844	0.859	0.676
RBE	0.871	0.883	0.899	0.529
Attitudes	0.867	0.870	0.938	0.883
Loyalty	0.842	0.862	0.893	0.677
WOM	0.801	0.803	0.909	0.834

<sup>3</sup> HTMT confidence intervals, Fornell-Larcker test and crossloadings are available upon request.

<sup>4</sup> We executed further investigations by replicating the CTA procedure with a significance level of 0.05. In this situation, all tetrads vanished, confirming the reflective measurement model specification.

**Table 3**  
Discriminant validity assessment (HTMT criterion).

	Access	Assortment	Atmosphere	Convenience	Employees	P Quality	P Value	P Brands	Attitudes	Loyalty	WOM
<i>RBE dimensions</i>											
Access											
Assortment	0.566										
Atmosphere	0.502	0.515									
Convenience	0.490	0.591	0.689								
Employees	0.367	0.519	0.726	0.610							
Product Quality	0.461	0.658	0.778	0.494	0.601						
Product Value	0.611	0.816	0.713	0.740	0.622	0.607					
Private Brands	0.544	0.774	0.468	0.531	0.425	0.555	0.710				
<i>RBE outcomes</i>											
Attitudes	0.456	0.683	0.813	0.642	0.636	0.640	0.735	0.552			
Loyalty	0.376	0.640	0.631	0.644	0.516	0.552	0.643	0.553	0.775		
WOM	0.398	0.597	0.737	0.546	0.577	0.631	0.603	0.487	0.879	0.795	
RBE	-	-	-	-	-	-	-	-	0.839	0.749	0.749

**Table 4**  
HCM measurement model estimates.

First-order dimensions	Loading	Weight	p-value	95 % Confidence interval	
				2.5 %	97.5 %
Access	0.584	0.113	0.000	0.447	0.696
Assortment	0.653	0.153	0.000	0.581	0.723
Atmosphere	0.794	0.211	0.000	0.737	0.84
Convenience	0.751	0.179	0.000	0.686	0.804
Employees	0.733	0.173	0.000	0.646	0.799
Product Quality	0.760	0.183	0.000	0.699	0.814
Product Value	0.825	0.192	0.000	0.775	0.864
Private Brands	0.689	0.156	0.000	0.617	0.753

**Table 5**  
Structural model estimates.

Relationships	Std Beta	p-value	95 % Confidence interval		VIF	f <sup>2</sup>
			2.5 %	97.5 %		
Attitudes -> Loyalty	0.235	0.000	0.099	0.369	2.979	0.042
Attitudes -> WOM	0.582	0.000	0.458	0.701	2.213	0.346
RBE -> Attitudes	0.740	0.000	0.669	0.801	1.000	1.213
H1: RBE -> Loyalty	0.308	0.000	0.187	0.425	2.308	0.092
RBE -> WOM	0.205	0.001	0.080	0.331	2.213	0.043
WOM -> Loyalty	0.291	0.000	0.165	0.417	2.260	0.085

0.194]), we conclude that the relationship between RBE and consumer loyalty is sequentially mediated by attitudes toward the retailer and WOM communication (supporting H4).

From a statistical perspective, comparison of alternative models using the Bayesian Information Criterion (BIC) confirms these results

**Table 6**  
Synthesis of mediation effects.

Relationship	Type of effect	Std Beta	p-value	95 % Confidence Interval[2.50 % – 97.50 %]		Sig (p < 0.05)	VAF	Conclusions
RBE-> LOY	Direct effect	0.308	0.000	0.187	0.425	Yes	46.2 %	Significant direct effect <b>H1 supported</b>
RBE->ATT->LOY	Specific indirect effect	0.174	0.001	0.073	0.277	Yes	26.1 %	Individual mediating effect of ATT <b>H2 supported</b>
RBE->WOM->LOY	Specific indirect effect	0.060	0.010	0.020	0.110	Yes	9 %	Individual mediating effect of WOM <b>H3 supported</b>
RBE->ATT->WOM->LOY	Specific indirect effect	0.126	0.000	0.067	0.194	Yes	18.9 %	Serial mediating effect of ATT and then WOM <b>H4 supported</b>
RBE->LOY	Total indirect effect	0.359	0.000	0.265	0.458	Yes	53.8 %	Joint mediating effect of ATT and WOM
RBE->LOY	Total effect	0.667	0.000	0.598	0.729	Yes		Significant total effect

Note: VAF: Variance accounted for.

(Sharma et al., 2021). The procedure shows that the BIC value was lowest when two mediators were included in the model as compared to alternative models including only one mediator, whether it was ATT or WOM (BIC values with two mediators: -249; with ATT only: -231; with WOM only: -242). This provides substantial support for the proposed model. However, when comparing different models with two mediators, the BIC values were too close to reasonably favor one model over the other in respect to this criterion. In this regard, the aforementioned in-sample analysis (e.g., R<sup>2</sup>, path coefficient size and significance) provides primary support.

An approach recently proposed by Danks (2021) was applied to calculate the predictive contribution of the mediator (PCM) which is of particular interest when evaluating a model that includes mediation effects in a predictive perspective. The assessment was developed with the SEMinR package (Ray et al., 2021). We calculated the PCM metric for the proposed model with the inclusion of the two sequential mediators (referring to H4). With a value of 0.099, this test validated a predictive contribution, according to Danks' (2021) initial rule of thumb, falling between moderate (0.05 – 0.1) and strong (>0.1) levels. We also created and tested alternative models permitting comparison of PCM values (see Supplementary Material SM1). Interestingly, the sequential effect of RBE on consumer loyalty via attitudes and WOM communication provided the highest PCM and supported the predictive power of the two sequential mediators. The results of this recent analysis assessing the predictive contribution of the mediator delivered additional *post hoc* evidence to support the generalizability of the proposed mediators. Moreover, these findings substantiate our theoretical framework that considers attitudes and WOM communication as two mediators insofar as these two variables yielded an improved predictive accuracy of consumer loyalty (Danks, 2021).

We can increase the confidence in these results by performing advanced methods that are particularly useful when BIC values are

closed (Sarstedt & Moisescu, 2023). Thus, computing Akaike weights and using these values with bootstrapping allow to quantify the model selection uncertainty (Rigdon et al., 2023; Sarstedt & Moisescu, 2023). These analyses provide support for the proposed model (see Supplementary Material SM2).

4.5. Prediction-oriented analysis

Predictive model assessments are considered to be an essential step in the evaluation process (Sharma et al., 2019; Shmueli & Koppius, 2011). We applied two distinct methods with a PLS<sub>predict</sub> approach (Shmueli et al., 2016) and a cross-validated predictive ability test (CVPAT; Lienggaard et al., 2021; Sharma et al., 2023). First, we employed a k-fold cross-validation procedure to evaluate the out-of-sample predictive performance of the RBE model. With this technique, the data are randomly partitioned into k equally sized subsamples, the model is estimated using k-1 of the subsamples and predictions are generated for the remaining subsample, which serves as a holdout set (Shmueli et al., 2016). We applied this method following recent guidelines (e.g., Shmueli et al., 2019) based on 10 folds, as this number meets minimum sample size requirements and 10 repetitions of the algorithm ensure a more stable estimate of the predictive performance of the PLS path model. The focus was on consumer loyalty as the key target construct for which we wanted to assess the model’s predictive relevance. The Q<sup>2</sup><sub>predict</sub> value must be positive to indicate that the prediction outperforms the most naïve benchmark, which is the mean of the indicator of the training sample. Table 7 illustrates that the Q<sup>2</sup><sub>predict</sub> values for the final construct of loyalty were strictly positive, identifying a relevant prediction. With all skewness and kurtosis measures with values between - 2 and + 2, the distribution of prediction errors is not highly non-symmetric (Hair et al., 2022), thus supporting selection of the root mean squared error (RMSE) as the appropriate criterion (Shmueli et al., 2019). Based on this criterion, the PLS approach produced lower prediction errors than the naïve linear model (LM) benchmark for three of the four indicators of the loyalty construct, suggesting that the model has a medium predictive power and that the model did not over-fit the data (Sharma et al., 2019; Shmueli et al., 2019).

The second test in the predictive model assessment was the CVPAT. This test is quite useful here for assessing the predictive accuracy at the construct level and to compare alternative models for their predictive accuracy. After validating in-sample explanatory analysis, and in addition to the Bayesian information criterion (BIC), this test can help validate the relevance of the hypothesized mediation effects on the focal construct (consumer loyalty) with a significantly better out-of-sample predictive accuracy than a naïve benchmark (Sharma et al., 2023, p. 1662). We report below the main results of the CVPAT analysis (predictive power evaluation and model comparison) that meet the minimum standards of predictive validity for the RBE model and provide detailed information and optional tests in a Supplementary Material (SM3).

This test focused on prediction of consumer loyalty as the target

Table 7  
Predictive power assessment.

Item	PLS-SEM		LM	PLS-SEM - LM
	Q <sup>2</sup> predict	RMSE	RMSE	RMSE
att1	0.504	0.755	0.758	-0.003
att2	0.450	0.769	0.761	0.008
<b>loy1</b>	<b>0.364</b>	<b>1.134</b>	<b>1.150</b>	<b>-0.016</b>
<b>loy2</b>	<b>0.433</b>	<b>0.781</b>	<b>0.773</b>	<b>0.008</b>
<b>loy3</b>	<b>0.100</b>	<b>1.492</b>	<b>1.500</b>	<b>-0.008</b>
<b>loy4</b>	<b>0.238</b>	<b>1.191</b>	<b>1.194</b>	<b>-0.003</b>
wom1	0.280	1.031	1.038	-0.007
wom2	0.380	0.934	0.938	-0.004

Note: Rows in bold indicate the indicators of the construct of interest for prediction

Table 8  
CVPAT Benchmark results for predictive model assessment.

Focus on Loyalty	Average loss difference	p-value
CVPAT <sup>benchmark...IA</sup> <sub>construct</sub>	-0.473	0.000
CVPAT <sup>benchmark...LM</sup> <sub>construct</sub>	-0.014	0.495

construct. We conducted the predictive model assessment using two benchmarks, namely the indicator average (IA) and the linear model (LM), the latter being more conservative. The results indicate that the model had significantly lower average loss (-0.473; p < 0.001) than the IA prediction benchmark—in other words, a lower prediction error (Table 8). The model average loss was then compared to the LM prediction benchmark. While the difference value was negative (-0.014), this difference is not statistically significant. Consequently, we can only conclude that although the model meets the minimum standards of predictive validity (i.e., it outperforms the IA benchmark), it does not exhibit strong predictive validity (i.e., it does not outperform the LM benchmark) (Sharma et al., 2023).

This analysis complements in-sample explanation-oriented analyses (e.g., R<sup>2</sup>) and prediction-oriented tools on the indicator-level (e.g., PLS<sub>predict</sub>) with a test of predictive accuracy at the construct level. If the last optional step of the test is not significant, results of this CVPAT assessment as a whole lead to similar conclusions to those of the PLS<sub>predict</sub> evaluation. This reinforces the quality of the results by demonstrating the ability to validate the model beyond the data set (i.e., without over-fitting), therefore supporting its predictive accuracy.

5. General discussion

Through application of the PLS-SEM and some of its methodological extensions to the specific context of retailer brand equity, this study is the first to provide evidence that RBE can be used to explain and predict consumer loyalty across multiple effects. The contribution lies in understanding the interactions between RBE and loyalty with two mediators. The values of the direct effect (0.308) and total indirect effect (0.359) explicitly demonstrate the cumulative composition of this relationship where attitudes mediate the relationship between RBE and WOM, and WOM subsequently mediates the relationship between attitudes and loyalty toward the retailer. This composition was also supported by analyzing the variance accounted for (VAF) (Henseler, 2021) (Table 6). In this regard, consumer attitudes and WOM communication individually and sequentially mediate the influence of RBE on loyalty. With a VAF of 18.9 %, the serial mediation effect is clearly substantial. Therefore, we extend existing research by suggesting that retailers can develop marketing activities to build brand equity across the specified subdimensions, which in turn engages the consumers in a virtuous cycle by increasing positive attitudes toward the retailer, positive WOM communication and ultimately consumer loyalty.

This study responds to calls to develop a reliable measurement of brand equity for retailers (Ailawadi & Keller, 2004; Keller & Lehman, 2006; Verhoef et al., 2009) that combines brand equity operational drivers and conceptual consumer variables in a specific network with consistent levels of in-sample validity and predictive power, thereby going beyond previous studies on the topic (e.g., Anselmsson et al., 2017; Chebat et al., 2010; Swoboda et al., 2016; Troiville et al., 2019). Across a systematic validation procedure with in-sample and out-of-sample evaluations, we find support for the refined conceptualization of a retailer brand equity nomological network. Our results show satisfactory quality levels especially regarding the complexity of the conceptual model where the implementation of eight first-order dimensions and two mediators may lead to non-significant results. Taken together, our results confirm the relevance of RBE specification as a hierarchical component model and its network as proposed in this research, which is of crucial importance in science (Cronbach & Meehl, 1955; MacKenzie

et al., 2011).

## 6. Theoretical contributions

By testing a refined, theoretically relevant RBE conceptualization (Ailawadi & Keller, 2004; Anselmsson et al., 2017) and demonstrating an improvement of the RBE nomological network with specific relationships between RBE and its marketing outcomes, this study offers several important contributions to the discipline. The first contribution of this research is its single model integration of operational dimensions and several marketing outcomes (attitudes, WOM and loyalty). Prior research has frequently studied either the drivers of brand equity (Swoboda et al., 2013) or the consequences of RBE (Chebat et al., 2010) but has not tested and validated all of these relationships in a single model, leading to an incomplete representation of RBE (MacKenzie et al., 2011). Our results also underline that attitudes, WOM communication and loyalty are different theoretical concepts that are clearly discriminated by consumers. Consequently, this result extends the current literature on marketing outcomes, and we encourage scholars to avoid measures that aggregate items related to overall attitude, WOM communication and loyalty into a single construct, as has been done in the past (e.g., Herhausen et al., 2019; Vogel et al., 2008; Zeithaml et al., 1996). These concepts are closed to some extent since they are psychological constructs that reference a brand (Park et al., 2010). They are also frequently employed to measure brand operational performance from a consumer perspective (Katsikeas et al., 2016). Therefore, this consumer discrimination requires scholars to organize their brand equity concepts to gain a more precise understanding of the effects of brand equity on marketing outcomes.

Second, and from a methodological standpoint, these results are permitted by the conceptualization and operationalization of RBE as a multidimensional hierarchical component model. Indeed, the HCM enables testing a framework of hypothesized relations of different levels of abstraction. The eight subdimensions are operational drivers for retailers, easily understood and evaluated by consumers, and falling under an overall abstraction referring to RBE, which is theoretically meaningful and parsimonious to use (Law et al., 1998). This parsimony advantage allows the multidimensional model to be tested while simultaneously including and testing potential mediators. Theoretically speaking, the test of direct relationships between concrete first-order RBE dimensions and RBE consequences has clear limitations, and as demonstrated in this study with the tetrad analysis and BIC criterion, is statistically inferior. Future studies are therefore encouraged to take advantage of such hierarchical models.

Third, drawing on an HCM serves the purpose of testing complex models with mediations. Mediation effects help identify and determine the boundaries of a theory (Cheah et al., 2021; Cortina et al., 2021; Nitzl et al., 2016). The total effect of RBE on loyalty is strong and takes four significant paths: the direct relationship, the mediated effect through attitudes, the mediated effect through WOM and the serial mediation of attitudes and WOM together. The entire mediation sequence emphasizes the importance of building brand equity to increase loyalty to the retailer, as evidenced by RBE enhancing positive attitudes and WOM communication, and thus developing loyalty.

Finally, the thorough evaluation process reinforces the findings. Indeed, the complementary procedures (e.g., model selection criterion, model comparison, confirmatory tetrad analysis, HTMT criterion), and more specifically, the out-of-sample predictive power assessment with two complementary tests (PLS<sub>predict</sub> and CVPAT) enhance the impact of this research, as it suggests its strong applicability. Until recently with the emergence of predictive analytics (Shmueli & Koppius, 2011; Shmueli et al., 2016, 2019), many earlier studies in the field (e.g., Anselmsson et al., 2017; Arnett et al., 2003; Chebat et al., 2010; Pappu & Quester, 2006; Swoboda et al., 2016; Troiville et al., 2019) did not apprehend the out-of-sample prediction performance but only tested a causal-predictive approach. Therefore, this research is the first to

validate an accurate predictive power of RBE relationships. The failure to validate a sufficient prediction level may suggest that the phenomenon under investigation is naturally unpredictable, but more frequently it suggests that the theory is weak, the indicator measures are biased, or the model is overfitted (Sharma et al., 2019; Shmueli & Koppius, 2011). Out-of-sample prediction assessment is still underdeveloped in business research with very few articles mobilizing such methods. This research may shed light on its usefulness and provide a relevant blueprint for the process. Indeed, practical recommendations inherently result from a predictive scenario and should not be derived from purely explanatory results (Sarstedt & Danks, 2022). The establishment of the model's predictive power allows provision of managerial recommendations.

### 6.1. Managerial implications

Retail companies must continually improve their business models to provide a better experience to consumers and build brand equity. The latter has always been considered a strategic resource (Bharadwaj et al., 1993) that provides a competitive advantage and positively contributes to the performance of the firm owning the brand (Datta et al., 2017). In this regard, the RBE conceptual definition, mediated relationships and predictive accuracy allow derivation of relevant operational perspectives. First, the way RBE is defined and conceptualized has important managerial consequences. Brand equity (BE) has often been described as too complex and not very usable (Ailawadi & Keller, 2004; Ailawadi et al., 2003; MSI, 1999; Rojas-Lamorena et al., 2022). In this study, we avoid relying on other psychological constructs frequently used in past research on BE or RBE (e.g., Arnett et al., 2003; Pappu & Quester, 2006; Yoo et al., 2000) because these constructs add even more complexity and may have limited interest for practitioners. We prioritized a concrete and operational measurement of RBE, and as such, our results will differ from results based on a classic brand equity approach to RBE (Aaker, 1991; Keller, 1993), even if under the same name. The measurement is fundamentally different, and therefore the tracking of brand equity or follow-up conclusions will also be different and more managerial-oriented. Furthermore, the multiple relationships between the variables must be viewed as part of a consistent system. In terms of managerial implications, this set of interaction effects indicates a virtuous cycle where consumers may be more involved with the retailer since all of these variables evolve in the same direction. Hence, changes to the dimensions will affect all of these relationships. Finally, the predictive validity assessment performed in this study, as a required condition for developing managerial recommendations (Sarstedt & Danks, 2022), reinforces application of the results in different contexts.

Considering these advantageous features of the proposed model, the findings can assist executives and managers in developing a relevant consumer-centric brand strategy in several ways. Indeed, retailers can use these findings to i) better understand how to build brand equity, ii) act in accordance with consumer knowledge, and iii) track brand equity performance. First, managers try to assess the consequences of their choices about marketing activities—such as assortment planning or development of private labels—on the performance of the brand, for example in terms of consumer loyalty. The RBE model offers an understanding of the added value creation process with a holistic view that integrates these operational variables. Once created with the eight subdimensions, the RBE measure allows retailers to focus on its relationships, as a global key performance indicator, with consumer-based marketing outcomes. Second, a manager can leverage an identified specific brand equity driver as an area to target for improvement (e.g., weaknesses) or as a distinctive advantage to maintain over competitors (e.g., strengths). They may also build brand equity by leveraging RBE as a whole, therefore retaining a balance between investments across dimensions. Managers can use this framework to categorize and target customers according to their evaluation of RBE dimensions (e.g., low/high RBE score) or the magnitude of the relationship between RBE and marketing outcomes (e.g., low/high RBE impact on consumer loyalty

predictions). Third, retailers can monitor on a regular basis the brand equity building process and refine and adapt the model to their own specificities or those of their retail sectors. The developed tracking may be relevant in a longitudinal perspective or across geographic areas and consumer specific segments. It can also serve as a benchmark tool to enhance performance and involve the retailer’s sales teams.

6.2. Limitations and future research

As with any research, this study is subject to limitations. We provide support for the internal and external validity of this model; however, caution should be exercised in attempting to generalize the current findings beyond the purpose of this study. For example, clicks and bricks strategies with omni-channel retailers may bring a different conceptual framework and different results (Verhoef et al., 2015). We believe that these new business models necessitate new retail mix and brand equity drivers to suit new consumer behaviors. Our study paves the way for future research aiming to further develop understanding of the drivers of retailer brand equity and investigate this new digital environment.

While the current article considers three customer-centric marketing outcomes, the inclusion of customer-level (e.g., SOW) or accounting (e.g., profit) performance outcomes may improve the model, as well as the understanding of complex RBE relationships. Replication studies can provide different results according to their ecological contexts. We particularly have in mind the two individual mediators that can increase, decrease or reinforce/weaken the serial mediation effect, hence, underlying complementary results. The interplay between theoretical constructs remains a challenging but exciting topic in social sciences and even more so in the case of consumer mindset constructs. In this regard, alternative conceptualizations not tested in this study (e.g., WOM as an outcome of loyalty) may be considered as a limitation. These alternative conceptual models or other specific relationships (reciprocal effects, feedback and loops, etc.) are also research opportunities that should be investigated, as they are relatively untested and highly pertinent.

Further research should also examine application of the model to identified consumer targets. For example, we would encourage employing RBE measures with specific consumers such as heavy private label buyers (Ailawadi et al., 2008), deal prone consumers (Ailawadi et al., 2001) or consumer segments grouped according to their motivations (e.g., hedonic and utilitarian; Babin et al., 1994; Childers et al., 2001) in a moderation analysis. Finally, further research should focus on the long-term management of retailer brand equity. For example, high brand equity likely leads to a stronger relationship with specific

attitudes and even development of attachment, that is, a bond connecting consumers with retailers (Park et al., 2010), as observed with powerful product brands (e.g., Apple, Tesla, Harley-Davidson). Such positive brand equity levels in the retail sector may lead to a different use of promotional strategies (e.g., discounts) that are known to lower margins and profits (Ailawadi et al., 2006; Gauri et al., 2017). Thus, we hope that our findings motivate other researchers to explore the relationship between the retailer as a brand, operational marketing strategies and organizational performance.

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CRedit authorship contribution statement

**Julien Troiville:** Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization, Writing – original draft, Writing – review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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Appendix A

Definitions and measures of latent variables.

	Definition	Supporting literature	Measurement scales
<i>RBE Dimensions</i>			
Access	Retailer access refers to the location of the store and the relative shopping costs associated with the consumer shopping. The access dimension denotes the access convenience.	Seiders et al. (2005)	Seiders et al. (2005); Chowdhury et al. (1998)
Assortment	Assortment refers to the variety of goods and services simultaneously offered in the store.	Gómez et al. (2004)	Chowdhury et al. (1998); Troiville et al. (2019)
Atmosphere	In-store atmosphere refers to the enjoyable and pleasant properties of the shopping trip. The atmosphere contributes to the hedonic value (Babin et al., 1994) with the aesthetic or the visual appeal of the store (Mathwick et al. 2001).	Grewal et al. (2003) Mathwick et al. (2001)	Grewal et al. (2003)
Convenience	The dimension convenience refers to the extent to which retailers make shopping easy for customers. Convenience is associated with efficiency (Mathwick et al. 2001) and is related to the utilitarian dimension (Babin et al., 1994).	Dabholkar et al. (1996)	Dabholkar et al. (1996); Mathwick et al. (2001)

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	Definition	Supporting literature	Measurement scales
Employees	The employees dimension refers to the competence of retailer employees as perceived and evaluated by customers.	Dabholkar et al. (1996)	Dabholkar et al. (1996)
Product Quality	The product quality dimension refers to customer evaluations of the level of quality of merchandise sold in retail stores. In the grocery sector, product quality evaluation concomitantly relates to experiences with the product, for example, with previous consumption and to subjective perceptions linked to extrinsic product attributes.	Szymanowski & Gijsbrechts (2012) Richardson et al. (1994)	Arnett et al. (2003)
Product Value	The product value dimension refers to customer evaluations of the level of value of merchandise sold in retail stores. Value means what is received and what is given and is activated at the same time as perceptions of price and quality.	Zeithaml (1988) Hallowell (1996)	Sweeney & Soutar (2001)
Private Brands	Private brands are “owned and branded by organizations whose primary economic commitment is distribution rather than production” (Schutte 1969). These brands are also referred to as retail brands, private label or store brands as opposed to manufacturer’s brands (or national brands).	Schutte (1969) Kumar & Steenkamp (2007)	Dodds et al. (1991); Arnett et al. (2003)
RBE Outcomes			
Attitudes	Attitudes toward the retailer as a brand is a psychological construct that is part of brand associations. “Brand attitude strength has implications for marketing-relevant consumption behaviors, such as brand purchase, repeat purchase, and willingness to recommend a brand” (Park et al., 2010).	Keller (1993) Park et al. (2010)	Chebat et al. (2010)
Loyalty	Retailer loyalty is defined as “a deeply held commitment to rebuy or repatronize a preferred product or service consistently in the future” (Oliver 1997).	Arnett et al. (2003) Yoo et al. (2000)	Yoo et al. (2000)
Word-of-Mouth Communication	Word-of-mouth communication is defined as “informal, person-to-person communication between a perceived noncommercial communicator and a receiver regarding a brand, a product, an organization, or a service”.	Harrison-Walker (2001)	Chebat et al. (2010)

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## Appendix B

## Sample demographic.

Demographic Variable	Category	Frequency	Percentage
Gender	Male	156	46.6
	Female	179	53.4
Age	18–30 years old	86	25.7
	31–40 years old	125	37.3
	41–50 years old	62	18.5
	51–60 years old	44	13.1
	61 years old and above	18	5.4
Home improvement retailer	Home Depot	185	55.2
	Lowe's	122	36.4
	Others	28	8.4
Household size	1	80	23.9
	2	96	28.7
	3	73	21.8
	4	57	17.0
	5 and above	29	8.7
Annual Income	Less than \$25,000	53	15.8
	\$25,000 - \$50,000	82	24.5
	\$50,000 - \$75,000	85	25.4
	\$75,000 - \$100,000	61	18.2
	\$100,000 - \$125,000	25	7.5
	\$125,000 - \$150,000	11	3.3
	More than \$150,000	18	5.4
Loyalty/membership card	Yes	87	26.0
	No	248	74.0

## Appendix B. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jbusres.2024.114650>.

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