Managing in-store logistics: A fresh perspective on retail service

Olfa Bouzaabia

Allard van Riel

Janjaap Semeijn

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Abstract

Traditional retailers still insist on using price, product, and promotion as sources of competitive advantage. This emphasis typically ignores the potential of in-store logistics operations in the creation of customer value. A major objective of retail customers is to navigate the retail servicescape in an efficient, convenient, enjoyable and effective manner. In-store logistics operations largely determine how and to what extent the customer may achieve this objective. However, customer-perceived indicators of in-store logistics performance, such as product returns, order information, opening hours, and product availability and accessibility, have been largely ignored in research on retail service. We investigate the role of in-store logistics in determining customer outcomes such as store image, satisfaction and loyalty intentions.

A model is developed based on extant research in the areas of logistics service quality, service logic, store image, and customer loyalty. To test the plausibility of the model, 200 supermarket customers were surveyed in an exploratory field study. Data were analyzed by

means of structural equation modeling in SmartPLS.

Results show that customers may derive a substantial share of their satisfaction from interactions with in-store logistics operations. Customer-perceived performance of these operations – an important element of the retail servicescape – directly influences customer satisfaction, but also through its influence on store image.

By better understanding the role of in-store logistics in the retail value creation process, managers can leverage their logistics capabilities. We provide detailed suggestions on how to improve in-store logistics performance.

We investigate customer-perceived in-store logistics performance in retailing and its effects on customer outcomes in a field study.

Introduction

Trends in today's markets, such as increased globalization, consolidation among suppliers and the ensuing increase in their bargaining power, as well as well-informed and increasingly demanding customers have led to a hyper-competitive (D'Aveni, 1994), increasingly complex retailing environment. Various threats prompt retailers to rethink their competitive strategies, and thus, they have started seeking more innovative ways to differentiate themselves from their competitors and have begun to view a distinctive service experience as vital to attracting and retaining customers (Van Riel, 2012). In daily practice, however, many retailers typically use transactional approaches and emphasize 'product, price, place and promotion' (Zineldin and Philipson, 2007) to achieve competitive advantage, rather than improving the retail service experience (Vargo and Lusch, 2008).

Usually, customers using retail services want to navigate a store's servicescape (Bitner, 1990, 1992) as conveniently and enjoyably as possible. Their interaction with the servicescape leads to a "cognitive evaluation of the service experience" (Sandström *et al.*, 2008, p. 112), which influences their decision to patronize the store or not. We contend that the retailer's logistics operations, and its in-store logistics in particular (Samli *et al.*, 2005), determine for a large part how customers experience this interaction (Yazdanparast *et al.*, 2010). Stores can differentiate their offering by streamlining the shopping experience and making the customer's use of the service more convenient and satisfactory (Sandström *et al.*, 2008).

In-store logistics operations, consisting of the handling, arranging, ordering and processing of merchandise within the store (Samli *et al.*, 2005), can thus directly convey value to the customer in terms of convenience and time saving, through an effortless interaction with the retail servicescape. Little is known about how this interaction can be improved in a resource efficient way, however. Relatively few studies have focused on in-store logistics

operations (Kotzab *et al.*, 2007; Kotzab and Teller, 2005; McKinnon *et al.*, 2007; Samli *et al.*, 2005), especially from a customer perspective, notwithstanding their potential to help retailers differentiate the customer experience and to create a competitive advantage.

In marketing, a customer-based view of retail service has been developed (Hartman and Spiro, 2005). In retailing theory, however, customer-observable indicators of in-store logistics performance are lacking. In this article, we aim to investigate the role of customer-perceived in-store logistics performance on store evaluation, conceptualized as store image, defined by (Bloemer and De Ruyter, 1998, p. 34) as "the complex of a consumer's perceptions of a store on different attributes," customer satisfaction and loyalty intentions. We specifically adopt a customer perspective to investigate the role of in-store logistics operations.

The present study takes the first step in developing a better understanding of the role of in-store logistics in creating customer loyalty in a retail environment. Based on our study, retail store managers and designers could give due emphasis to in-store logistics operations, mitigating their potentially negative impacts and turning them into drivers of an effortless retail experience.

We combine insights from three research areas: logistics and service operations management, retail store image research, and services marketing. Hypotheses are derived, and an empirical study, based on data from 200 retail customers, is used to test our hypotheses. The results are discussed, and managerial implications and a research agenda are presented.

Review of the literature and theory development

In the following paragraphs, we define the core constructs used in this study. We then derive hypotheses and summarize them in a theoretical model. We first discuss the concepts of satisfaction and customer loyalty (intentions) and their roles in a retailing context. Because the store image construct is generally used to capture customers' beliefs regarding retail store

quality, we posit store image as a central construct that mediates the effects of in-store logistics performance perceptions on behavioral responses. The research model used in the study is presented in Figure 1.

Insert Figure 1 about here

Satisfaction and Loyalty

The relationship between satisfaction and loyalty has been widely discussed in the literature. Oliver (1999) suggests that loyalty develops in three steps. First, cognitive loyalty develops. Over time, emotional and intentional forms of loyalty become factors. For retailers, intentional loyalty is a highly desirable outcome of the shopping experience (Keiningham *et al.*, 2012). Intentional loyalty is based on stable beliefs regarding the quality and value of the service and strong emotional ties to the service provider. Satisfaction with the service is regarded as a necessary, though insufficient, condition for the development of intentional loyalty. Satisfaction is a result of a positive evaluation of the quality and value of various service elements. Customers compare their actual experiences with the retailer's service with their expectations and desired outcomes. Satisfaction will therefore depend on the competitive structure of the market, the degree of differentiation, customer involvement and the shopping experience (Anderson *et al.*, 1994; Anderson *et al.*, 1997). In line with previous research, we expect that:

H_1: Satisfaction with the service experience is directly and positively associated with customer loyalty.

Store image

Martineau (1958) suggests that competitive differentiation in retailing could be based on store image, defined as the "personality" of a store in the customer's mind (Burt and Mavromatis, 2006; Chang and Tu, 2005). It has been debated whether store image should be viewed as the sum of distinct parts (Lindquist, 1974; Oxenfeldt, 1974) or as the overall perception

customers have of a store (Dichter, 1985; Doyle and Fenwick, 1974). Some studies have tried to identify the fundamental elements or dimensions that contribute to store image (Burt and Mavromatis, 2006). We use the definition of store image by Bloemer and De Ruyter, "the complex of a consumer's perceptions of a store on different (salient) attributes" (1998, p. 34) because it represents a global evaluation of the relevant elements of the service experience. It is a customer's set of beliefs about a store's relative attractiveness. Customer perceptions of store image vary across countries, geographical regions, market sectors and store formats and are considered relative to existing competition (Burt and Mavromatis, 2006; Cardozo, 1974; Hansen and Deutscher, 1977; Hirschman *et al.*, 1978; Martineau, 1958).

In a retail setting, customers evaluate their service experience in various dimensions (Dick *et al.*, 1995). There are three commonly mentioned dimensions of the retailing experience. The first dimension is the store's servicescape or physical environment. Many argue that satisfaction with the service experience increases when the store makes it easy for customers to find the products they are looking for, when the layout of the store seems logical, and when there are enough signs (Bitner, 1992; Richardson *et al.*, 1996). The second dimension is the store's products or merchandise (Bloemer and De Ruyter, 1998). Finally, the third dimension involves the interactions with store personnel (Baker *et al.*, 1994; Semeijn *et al.*, 2004; Wu and Petroshius, 1987). Personal interactions with the service provider are considered crucial to customer satisfaction (Bitner, 1990; Bitner *et al.*, 1994; Hartline *et al.*, 2000) because they reflect both the quality of the personnel and the ease with which customers can interact with the service provider. Andreassen and Lindestad (1998) found that corporate image is the most important driver of customer satisfaction. Store image reflects how a customer experiences a store, taking into account cumulative experiences in the three dimensions of the store image construct. Satisfaction results from comparing an actual experience with prior expectations (Oliver, 1980). In the case of a store visit, these prior

expectations are based on more than just the customer's prior experience with the store, as marketing programs and word of mouth from other customers also play a role. We therefore propose that how a customer experiences a store, as reflected in the store image, will directly affect their satisfaction with the shopping experience:

H_2: Store image is directly and positively associated with satisfaction with the service experience.

In-store logistics performance

When customers decide where to shop or whether to return to a retailer, the quality of logistics services was found to be an important factor (Bienstock *et al.*, 1997; Rafiq and Jaafar, 2007). Mentzer *et al.* (2001) examine logistics service quality from a customer perspective, but do this mostly in a B2B context (e.g., Davis and Mentzer, 2006). Timeliness, availability, and delivery conditions create value for customers and function as criteria for customer evaluations of logistics operations (Mentzer *et al.*, 2001; Mentzer *et al.*, 1999; Zineldin, 2004). Extant literature thus generally focuses on logistics operations outside the store, connecting the store with its suppliers and its customers. In this section, we focus on logistics operations occurring inside the store, in the so-called 'last 50 meters' (McKinnon *et al.*, 2007), and examine the relationship between perceived in-store logistics performance and store image. We demonstrate that in-store logistics operations influence the interaction between the customer and the store. The observable outcomes of these operations affect the customer's evaluation of the store, or the store image. In many cases, performance on in-store logistics will affect the potential of the customer for value co-creation.

Co-creation of value occurs in the interactions between the customer and the service provider (Grönroos, 2011). During these interactions, in-store logistics operations are instrumental in influencing the customer experience. Convenience lets customers make better use of their valuable time, and is therefore an important dimension of customer value

(Pihlström and Brush, 2008). In the case of a retail store, convenience includes entering and leaving the store quickly and finding the merchandise easily. It also includes the ease with which products can be identified and accessed. Layout is an example of a design cue that may influence customers' expectations of their ability to move efficiently through a store (Titus and Everett, 1995). Some stores focus on providing a convenient infrastructure (e.g., by using signage, designated recreational areas, or specially adapted shopping carts) or various services that facilitate the shopping process, such as information services, sales advice and self-service technologies (Baker *et al.*, 2002; Beatson *et al.*, 2006; Tang *et al.*, 2001).

Stock-outs and effective shelf management. Procter & Gamble refer to the customer's retail shelf experience as the "first moment of truth" (Nelson and Ellison, 2005), the first seven seconds a customer has with a product on the store shelf. Only when present, can the customer evaluate a product and decide whether or not to purchase it. Product presence is one observable outcome of in-store logistics operations.

Shelf management includes timely replenishment of stock without impeding access to other products. Poor in-store logistics performance often manifests through so-called shelf stock-outs, i.e., the product not being available to the customer even though there is sufficient stock at the retailer's location. Customers perceive shelf stock-outs as any other stock-out, i.e., with similar effects. Various consequences of stock-outs have been reported, such as negative effects on the image the customer holds of the store (Rulence, 2003), on the level of customer satisfaction (Mentzer *et al.*, 1989; Novack *et al.*, 1994), and on customer loyalty (Keebler *et al.*, 1999) and profitability (Trautrims *et al.*, 2009). Shelf stock-outs occur frequently when retailers carry inventory of a stock keeping unit (SKU) in two or more locations, e.g., on the shelves in a customer accessible area and in a non-accessible backroom (Berman and Larson, 2004), or in places where the customer cannot find the product. Although keeping inventory in a backroom was originally intended to serve the consumer

better through reduced lead time, it often deteriorates the customer experience at the retail shelf (Raman *et al.*, 2001; Waller *et al.*, 2008).

Product information. Different types of product information are used in customer decision making, such as the sell-by date, product characteristics, expected availability, and order information. The information provided clearly affects how the customer perceives the retail service. With adequate information, customers can make better purchase decisions (Mentzer *et al.*, 1999; Mentzer *et al.*, 1997), which creates value for them. Customers are generally well aware of information provided in-store and how the store addresses complaints.

Shopping conveniences. Some aspects and facilitators of the shopping experience can have a disproportionate influence on the customer perception of the store (Van Riel *et al.*, 2012). For instance, checkout lanes and their associated waiting time, and the availability of shopping aids such as packaging materials and shopping carts (Silberer and Friedemann, 2011) may directly affect customer outcomes.

Returns. Returns are yet another area where in-store logistics can make a difference. Customers care about returns (Dabholkar *et al.*, 1996). A return is merchandise or returnable packaging taken back to the retailer (Dunne *et al.*, 1992). Receptacles for returning packaging, such as empty bottles, must be accessible and clean. A service desk should be available for receiving unwanted or defective merchandise.

Because of a lack of previous research, we will not formulate separate hypotheses regarding the effects of each of the discussed dimensions of in-store logistics performance. Rather, global effects on service outcomes are hypothesized:

$H_{3a:}$ Customer perceived in-store logistics performance is directly and positively associated with satisfaction.

Next to the association between customer perceived in-store logistics performance and satisfaction, we also expect that the customer's evaluation of the store, as reflected in the store image, will improve if in-store logistics operations are well executed.

$H_{3b:}$ Customer perceived in-store logistics performance is directly and positively associated with store image.

When confronted with the apparent consequences of poor (good) in-store logistics performance, a customer will evaluate a store differently. For instance, experiencing a shelf stock-out will add extra weight to the 'merchandise' dimension in the evaluation of the store. Consequently, we expect that:

$H_{3c:}$ The relationship between customer perceived in-store logistics performance and satisfaction is mediated by store image.

Methodology

To empirically validate the theoretically developed model, a natural field setting was chosen. This approach has the advantage of offering sufficient variance across the factors that are needed to test the model. To minimize carry-over effects from experiences during prior shopping-trips and during trips to other supermarkets, we chose to survey customers about their evaluations and perceptions immediately after their retail service experience. We collected our data by intercepting customers exiting several large supermarkets located in a medium-size city in Belgium. Of the respondents, 52.5% were male, and 47.5% were female. Of our respondents, 31% were between ages 45 and 54, 21.5% between 35 and 44, 19.5% between 55 and 64, and 18.5% were between 25 and 34. Most of the respondents, 71.5% percent, were married. Fifty percent of the households consisted of 3-5 members, 28% of two members, and single households accounted for 18.5%. Two hundred questionnaires were completed and retained for further analysis. The sample is described in Table I.

Insert Table I about here

A questionnaire containing topically organized, structured and disguised statements (Judd *et al.*, 1991) was used to measure the constructs. Multiple-item scales were constructed to increase validity and reliability (Peter, 1979). Respondents were asked to indicate the extent to which they agreed or disagreed with 37 statements. Seven-point Likert-type scales were anchored by 'strongly disagree' (7) and 'strongly agree' (1) with the midpoint labeled 'neutral'.

To mitigate consequences of common method variance (CMV) bias, several choices were made in the research design (Podsakoff *et al.*, 2003). First, our items were formulated as clearly, concisely and specifically as possible based on relevant and previously validated scales. A pre-test was conducted among 19 customers to identify and eliminate any overly complex or ambiguous items. We identified some issues regarding the wording of the items and made some slight changes to the questionnaire based on the comments. This approach is known to minimize CMV as a result of item characteristics (Spector, 1994). Furthermore, we stressed that there were no right or wrong answers and that we were looking for the answers that best described the respondents' specific experience.

Most items used in our study were adopted from Anglo-Saxon literature and sometimes slightly modified to suit the retailing context. The questionnaire was constructed in French. Double-back translation was used to assure equivalence of meaning.

The items corresponding to *satisfaction* were taken from a scale developed and tested by Oliver (1980). *Loyalty* was measured with items adapted from Zeithaml *et al.* (1996). Based on measures developed and tested by Semeijn *et al.* (2004), eleven *store image* items were included in the questionnaire. *Store image* was modeled as a hierarchical construct (Wetzels *et al.*, 2009), consisting of three reflective first-order constructs: merchandise, personnel and physical layout. These first-order constructs act as formative indicators of the second-order construct (Jarvis *et al.*, 2003).

Similarly, customer perceived in-store logistics performance was modeled as a hierarchical construct consisting of five first-order reflective constructs that act as formative indicators for the second-order construct. The first-order constructs were measured with a range of items adapted from Garrouch *et al.* (2011) and Mentzer *et al.* (1999). The causal relationship is inverted and goes from the first-order constructs to the latent second-order construct such that they explain the construct and provide it with meaning. In-store logistics performance reflects the customer's perception of performance while interacting with the store's servicescape. Finding higher levels of perceived in-store logistics performance does not assume that performance is increased on all dimensions at the same time; in other words, it does not assume correlations among its dimensions, whereas an increase in performance on any of its dimensions will improve perceived performance.

Data analysis

The data were first investigated on a descriptive level. SmartPLS performs a Confirmatory Factor Analysis (CFA) while estimating the structural model (Gefen and Straub, 2005) to the extent that convergent and discriminant validity of the factors is assessed. We report a listing of the retained items, the quality statistics obtained in the CFA, and means and standard deviations for the total sample in Table II. As shown in this table, all remaining items load adequately (> 0.60) and significantly on their respective constructs, with some exceptions that have item loadings < 0.50, while composite reliability measures equal or exceed the cutoff value of 0.70 for all except one of the reflective constructs (Nunnally and Bernstein, 1994). Table II provides an overview of the items used in the analysis, their descriptive statistics, and an overview of factor loadings, means, standard deviations, and t-values.

Insert Table II about here

Fornell and Larcker (1981) suggest that the average variance shared between a construct and its measures should be greater than the variance shared between that construct and other

constructs in the model. Discriminant validity is therefore considered sufficient if the square root of the average variance extracted (AVE) for a given factor is greater than the correlations between this factor and any of the other factors. The square root of AVE and correlations between constructs are presented in Table III. From this table, it can be seen that there is some overlap between the constructs of store image and perceived in-store logistics performance. This is not entirely unexpected because the store image construct contains physical and service aspects. The purpose of our study was the exploration, from a customer perspective, of in-store logistics performance, and its effects on satisfaction. We therefore accept the consequences of reduced discriminant validity between these two constructs.

Insert Table III about here

Significant correlations exist between dependent and independent variables. All of the hypothesized relationships show moderate to strong correlations (> 0.50). The hypotheses were tested by simultaneously estimating the proposed structural equations using a Partial Least Squares (PLS) approach (Chin, 1998). PLS path modeling, a prediction-oriented, variance-based approach, was used to simultaneously estimate all hypothesized relationships. In PLS the amount of explained variance in the dependent variable(s) is maximized (Henseler *et al.*, 2009; Streukens *et al.*, 2010). We chose to use PLS, because it allows the analysis of complex models with relatively small sample sizes (Cassel *et al.*, 2000), while being robust in the case of non-normality as a result of heterogeneity among groups of observations (Streukens *et al.*, 2010). Given the exploratory nature of the present research, the PLS approach was particularly useful given its prediction-oriented nature (Barclay *et al.*, 1995; Fornell and Cha, 1994).

Results

As expected, a strong positive relationship was found between satisfaction and loyalty (β = 0.744; t = 25.725), as seen in Figure 2. A strong association between store image and

satisfaction was also found (β = 0.470; t = 6.124). Therefore, the data support hypotheses H1 and H2. The PLS results show a direct positive association between in-store logistics performance and satisfaction (β = 0.209, t = 2.379), supporting hypothesis H3a, and an indirect effect through the store image construct (β = 0.704, t = 15.160), which supports H3b.

In H3c, store image was hypothesized to mediate the effect of in-store logistics performance on satisfaction. To test for mediation, we first estimated the direct effect of the independent variable (IV), in-store logistics performance, on the dependent variable (DV), satisfaction. This effect was strong and significant (β = 0.539; t = 8.340), explaining approximately 29% of the variance in the DV. When we included the mediating variable (MV), store image, the direct relationship between IV and DV remained significant. This implies that the effects of perceived in-store logistics performance on satisfaction are partially mediated by store image. To confirm the mediation effect, we bootstrapped the product of the effects between IV and MV and MV and DV, according to the method proposed by Efron and Tibshirani (1993). The t-value of the mediation effect is 5.648, which points at a highly significant partial mediation. A very substantial percentage of variance in store evaluation, in the form of store image (r^2 = 0.50), appears to be explained by perceived in-store logistics performance, reinforcing our notion of the important role of logistics operations with respect to customer evaluations of a store and their satisfaction. The observed mediation can be interpreted as follows: apart from directly increasing customer satisfaction, a high level of perceived in-store logistics performance also gives physical and service elements in the store more weight in the total evaluation, which in turn may lead to even greater satisfaction.

Standardized PLS path coefficients as well as the corresponding t-values and R-square metrics for each explained variable are shown in Figure 2. In the same figure, we also report R^2_a, the adequacy coefficient (Cf., Edwards, 2001), for the formative in-store logistics performance construct. Although this coefficient should be used with some care (MacKenzie

et al., 2011), the value of 0.41 indicates that the formative dimensions do not - on average - share a majority of variance with the construct, which points again at the need to carefully further develop the measurement instrument. Only significant effects are shown in the figure.

Insert Figure 2 about here

We would also like to know to what extent the various first-order in-store logistics constructs contribute to the second order construct. The loadings of the first-order constructs on the second-order construct do not necessarily give a completely accurate indication of the amount of variance they explain in the second order construct, since they may be correlated and thus share variance. To determine their unique contribution to the second-order construct we have calculated betas based on the correlation matrix of the latent constructs. The relative effects of the various in-store logistics dimensions are reported in Table IV.

Insert Table IV about here

Discussion and conclusion

The present study highlights the role of in-store logistics operations in generating customer satisfaction and loyalty to the store. Insights from our study allow retail service managers and store designers to improve the design, planning and execution of in-store logistics operations, thereby benefitting store image and customer satisfaction. We investigated the effect of perceived logistics performance on the behavioral intentions of customers. Hypotheses were developed based on recent service and operations management literature and then tested in a field study of grocery shoppers at Belgian supermarkets. Our exploration of the concept of in-store logistics operations and the subsequent empirical results show the importance of this construct in explaining customer satisfaction. The effect is partially mediated by store image. These insights are consistent with Samli *et al.* (2005), who take an expanded view of in-store logistics by including store and departmental layout in the servicescape. We consider in-store

logistics instrumental in helping the customer navigate the retail servicescape efficiently and effectively, facilitating the in-store service process and the way in which customers experience and co-create value. By improving design, planning and control of in-store logistics operations (Samli *et al.*, 2005), a distinctive shopping experience can be created. Inversely, when customers experience the consequences of inadequate in-store logistics, their future patronage intentions are adversely affected (Arnold *et al.*, 2005). We have rank-ordered the measured dimensions in order of customer perceived importance.

Theoretical implications

This study combines three research domains: logistics and service operations management, retail store image, and services marketing. The article leads to an improved understanding of the role of in-store logistics in how customers interact with the servicescape, and may facilitate the development of in-store logistics improvement strategies. The framework also allows a novel understanding of what is needed to design and develop a value co-creation experience in a retail environment.

The mediating role of store image in the link between logistics operations and customer behaviors creates further questions regarding the antecedents of store image. The added value of in-store logistics operations from the perspective of the customer was explained in our study: excluding in-store logistics performance from any store-related analysis would ignore a substantial part of the reality of retail service offerings. In-store logistics should be understood as an interrelated set of activities, which could, if well managed, facilitate the co-creation of value by means of generating customer satisfaction and loyalty.

Managerial implications

The present study provides managers with a better understanding of how to achieve competitive advantage by facilitating customers in the creation of value through in-store

logistics operations. Based on the results of the study, several actionable recommendations can be made to managers in charge of in-store logistics operations in supermarkets. Operations management can play a key role in building retail customer loyalty by focusing on those operational elements that directly affect the creation of value for the customer. In the first place, we observe that the effect sizes of the measured in-store logistics dimensions vary. Retail store managers should probably give priority to the dimensions with the highest beta values, as reported in Table IV. Remarkable is that shelf stock-out does not appear to have the highest priority, at least from a customer perspective. This finding could be mitigated by the breadth and depth of the product assortment on offer, since customers will most probably be less hindered by a stock-out if there are plenty of alternatives. In stores where few or no alternatives are available, a stock-out may have a more serious effect on customer satisfaction, than in stores where many alternatives are sold. Furthermore, product information has definitely the highest beta, and should therefore be dealt with in the first place, closely followed by the availability of shopping aids and the way the store deals with returns. The last position is taken by the accessibility of products. Customers do not seem to worry too much about the accessibility of products, but this effect could be mitigated by the presence and the quality of service personnel, since they could help customers reach the products.

Based upon the results of our study, we suggest that retail outlets: 1) provide accurate and up-to-date information about products to service staff, and make sure that products and shelves carry accurate and sufficient information; 2) make shopping aids such as carts, bags, cartons and other packaging materials easy to find and use; 3) facilitate product returns by making the collection point easily accessible, not hindered by rejected bottles and empty crates or cartons; 4) check that stock is on the shelves instead of in the backroom and replenish products before they run out; 5) facilitate access to products and especially avoid impeding customers' access by placing products too high, too low, or simply out of sight or

reach, while organizing fast and 'invisible' replenishment without hindering customers by blocking aisles.

We conclude with the general suggestion that retailers plan their logistics processes and infrastructure so that shopping is facilitated and becomes a joyful experience, by, for example, designing a ‘‘comfortable, tidy and friendly’’ physical environment.

Limitations and further research

Our investigation was largely exploratory and was conducted in a Belgian grocery-store setting. It would be desirable to replicate this study across a wider variety of store types, and compare in-store logistics performance among store types. Our data exhibit limited variance in the service quality dimensions, while shopping conditions may vary considerably depending on the time of day and logistical activity in the store. Because store image does not explain all variance in customer satisfaction in our study, exploring further dimensions of the retail service experience appears useful. Another limitation is the relatively low discriminant validity in the measurement of store image and perceived in-store logistics performance in this study. Although the concepts are theoretically distinct, it clearly remains challenging to operationalize and measure the two constructs adequately. Generally, our study is a call to investigate the customer value creating elements of the retail service experience that can help retailers win over customers and stay competitive.

Further research

Our data collection was largely exploratory and conducted in a single country. It would be desirable to replicate this research in a broader variety of stores, spread over several geographical locations to allow a generalization of the results and compare performance on in-store logistics among stores and countries. The construct of in-store logistics performance should be further refined, and a more sophisticated measurement instrument needs to be

developed and validated, allowing a better distinction between the perception of value-creating logistics activities in the store and the resulting image of the store.

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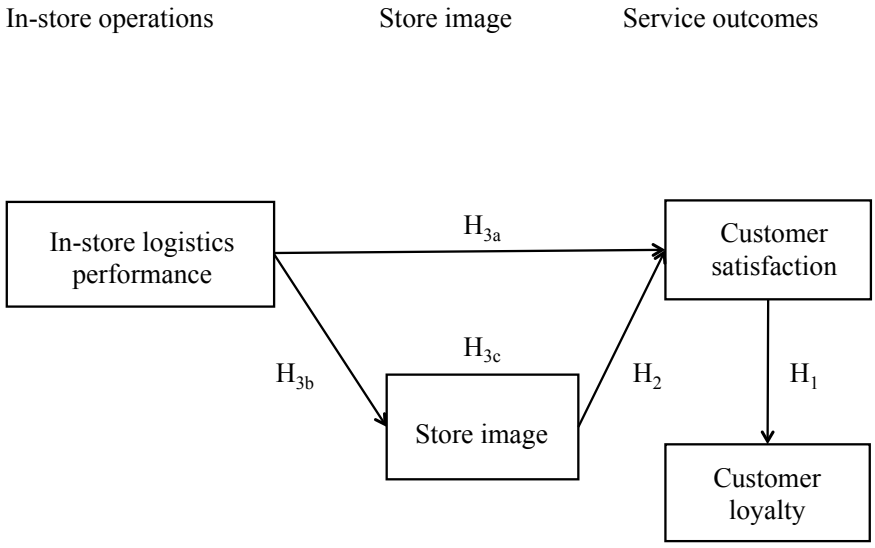

Figure 1 Conceptual model

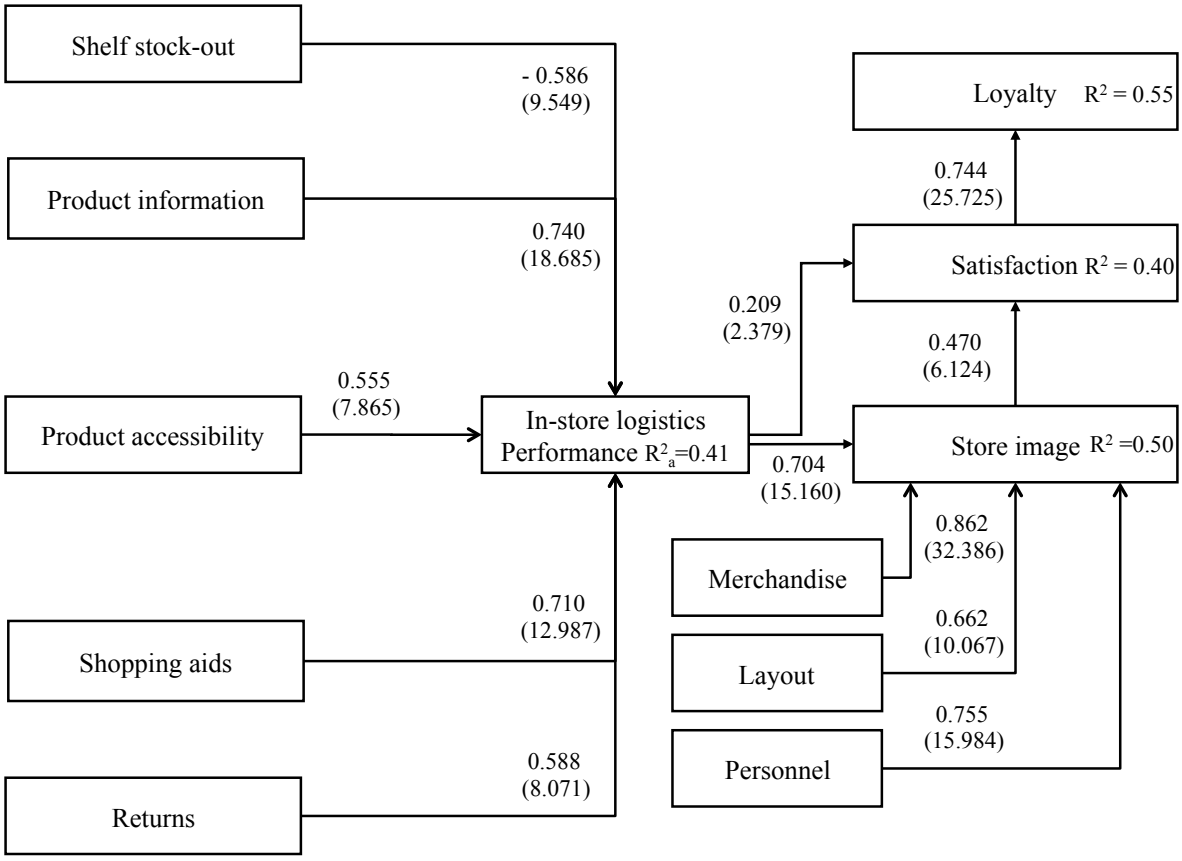

Figure 2: Empirically validated model

Table I Sample demographics

	N	%		N	%
Gender			Civil status		
Male	105	52.5	Single	34	17.0
Female	95	47.5	Married	143	71.5
Age			Divorced	15	7.5
25 - 34	37	18.5	Widower	8	4.0
35 - 44	43	21.5			
45 - 54	62	31.0			
55 - 64	39	19.5			
Family size					
1	37	18.5			
2	56	28			
3 - 5	100	50			
> 5	7	3.5			

Table II Descriptive statistics of items used (rc = reverse coded)

Construct/Measures	Loading	t-value	Mean	SD
Store image (CR = 0.84)				
Merchandise (CR = 0.83)				
This store offers high-quality merchandise	0.693	18.049	5.3	0.95
This store offers a broad assortment	0.650	22.612	5.3	0.90
All brands you planned to buy were available	0.724	10.487	4.2	1.50
Merchandise is available when needed	0.787	14.149	4.3	1.15
Layout (CR = 0.83)				
Physical facilities are visually appealing	0.803	8.852	4.9	1.19
Store layout is clear	0.842	8.100	5.1	1.22
It is easy to find products in promotion	0.817	25.285	4.8	1.40
Personnel (CR = 0.81)				
When lodging a complaint, I was satisfied with the responses provided	0.602	6.831	4.5	1.30
Employees are well informed	0.714	14.199	4.4	1.35
Employees are courteous	0.731	12.000	5.0	1.31
Employees are willing to find custom solutions	0.817	25.064	4.6	1.29
Satisfaction (CR = 0.92)				
I am satisfied with my choice to visit this store	0.810	28.976	4.9	1.20
I am satisfied with my visit to this store	0.875	34.237	4.7	1.27
I am disappointed to have been in this store (rc)	0.839	27.559	5.7	1.62
It was a good idea when I decided to visit this store	0.810	28.403	4.9	1.09
I am not happy to have been in this store (rc)	0.814	24.118	5.5	1.73
Loyalty (CR = 0.90)				
I will encourage friends and relatives to do business with this store	0.834	32.549	4.9	1.20
I say positive things about this store to other people	0.803	22.471	4.7	1.20
I would recommend this store to someone who seeks my advice	0.856	44.644	4.6	1.10
I consider this store my first choice	0.689	46.251	4.3	1.30

I will do more business with this store in the next few months	0.873	21.284	4.9	1.20
In-Store Logistics Performance				
Shelf stock-out (CR = 0.71)				
In this store, the shelves are well-stocked (rc)	0.713	5.176	4.3	1.49
During my visit, I noticed stock-outs of products that were of interest to me	0.764	4.248	2.9	1.60
Returns (CR = 0.79)				
One can easily return empty bottles	0.810	14.868	4.5	1.60
No problems when returning merchandise	0.812	17.617	4.5	1.46
Shopping aids and convenience (CR = 0.70)				
In this store, sufficient carrier bags are provided by the cashiers	0.746	4.084	5.4	1.10
In this store, there are enough shopping carts	0.908	17.802	5.5	1.10
In this store, the number of cash registers open during peak hours is sufficient	0.892	8.540	3.5	1.90
This store has convenient hours of operation	0.526	3.014	5.7	1.07
Product accessibility (CR = 0.71)				
In this store, supply bothers me during the visit (rc)	0.684	4.136	3.6	1.20
In this store, all products can be easily reached	0.801	8.218	5.0	1.30
Information (CR = 0.67)				
The sell-by dates are well indicated on the products	0.754	9.276	5.3	1.30
Prices on the product labels are correct	0.506	3.936	5.3	1.47
In the store, information was available about stock-outs	0.645	4.655	3.6	1.59
In this store, information on product features is sufficient	0.383	2.586	5.3	1.10

Table III Correlations among the factors

	1)	2)	3)	4)
In-store logistics 1)	**-**			
Loyalty 2)	0.461	**0.794**		
Store image 3)	0.704	0.570	**0.560**	
Satisfaction 4)	0.540	0.744	0.617	**0.830**

Square root of AVE on the diagonal.

Table IV Beta values in-store logistics

Dimension	Beta values
Product accessibility	0.227
Shelf stock-out	0.250
Returns	0.306
Shopping aids	0.343
Product information	0.400