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Building chain loyalty in grocery retailing by means of loyalty programs – A study of 'the Norwegian case'

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ABSTRACT

The aim of the paper is to analyze chain loyalty effects of customers' perceived value of loyalty programs in grocery retailing. It contributes to filling a gap in the literature, as there has been little earlier focus on the links between customers' perception of loyalty program *value* and satisfaction, image, and loyalty, at the chain level. One main finding is that customers' perceived value of a loyalty program has significant direct and moderating effects on chain loyalty, and the moderation effects are chain dependent. Managers should thus consider satisfaction creation, image building, and loyalty program value creation as parallel processes.

1. Introduction

Only three Norwegian companies (houses of brands) - Norges-Gruppen, Coop and the Reitan Group - dominate the grocery retail trade in Norway. These houses of brands are vertically integrated retailers and wholesalers, accounting for a total market share of approximately 96 percent. They consist of various chains with different historical backgrounds and organization, and serve a variety of market segments. The total market share of their main grocery retail chains - the 'soft discount chains' *Kiwi* (NorgesGruppen), *Extra* (Coop) and *Rema* (Reitan Group) - has increased substantially over recent years, reaching almost 70 percent in 2019. Despite this high concentration in the Norwegian grocery retail market, the competition between chains is fierce, and thus comparable to the international trend. This paradox is often referred to as the 'Norwegian case'. Unlike retailing in many other countries, the 'Norwegian case' is characterized by strong national food labels, relatively few private (chain-based) labels, high grocery store density, and high concentration on the food production side. The chains are quite similar with respect to assortment, quality, service, and location, and Norwegian consumers seem to do a lot of shopping across the three main chains. The high competition is attributed to a kind of "power balance" between the production side and the retailer/wholesaler side (Meyer and Norman, 2019), making the "Norwegian case" a particular surveyable case and well suited for empirical testing.

The similarities between the three main soft discount chains regarding assortment, prices, service quality and location, makes it difficult for them to create chain-based customer loyalty. To overcome this problem, the chains have developed chain-specific loyalty programs in order to create 'switching barriers' and collect information necessary for the launching of more efficient marketing campaigns. The aim of this paper is to analyze the chain loyalty impact of such loyalty programs at the grocery chain-level, by using a holistic model of chain loyalty drivers and outcome variables.

Studies in retailing focusing on relationships between constructs at the chain level are scarce (Dorotic et al., 2012; Helgesen et al., 2010), and studies with a holistic view of relationships that include antecedents, mediators and moderators are particularly scarce (Kumar et al., 2013). When measuring the impact of customer loyalty programs most empirical analyses use a dummy variable for loyalty card membership, and this may create a causality problem (Lin and Bennet, 2014). Only a few studies focus on the effectiveness of a loyalty program (e.g., Dowling and Uncles, 1997; Roehm et al., 2002). However, none of these studies analyses the effects of the *value* customers attribute to a loyalty program. In order to be efficient, a loyalty program must create value for the loyalty cardholder (O'Brien and Jones, 1995). As far as we know, there are no empirical analyses to date that test hypotheses regarding the moderating effects of loyalty program *values*. There is, however, some empirical research based on the related concept, switching costs (covering both monetary and non-monetary costs) (Jones et al., 2007; Lam et al., 2004; Nagengast et al., 2014; Nesset and Helgesen, 2014). This paper measures the customers' perceived value of a loyalty program as a construct. The main contribution is the simultaneous estimation of direct, mediating and moderating effects of perceived loyalty program *value* on customer chain loyalty, and the focus on differences

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between retail chains.

The study addresses the following two research questions: (1) How do chain loyalty programs affect customer chain loyalty? (2) Are there differences between the various chains in the way perceived value of the loyalty chain program influences chain loyalty?

The remainder of the paper is structured as follows: The next section describes the context. This is followed by the theoretical framework, including the conceptual model and hypotheses development. Next follows a short discussion of the data and the methodology, after which the results are presented. Finally, the paper addresses theoretical and managerial implications, limitations, and conclusion.

2. Context: 'the Norwegian case'

2.1. Norwegian grocery retail industry

Three companies (houses of brands) dominate the Norwegian grocery retail industry, and in 2019 they had a market share of 96.4%, that is, NorgesGruppen (43.7%), Coop (29.5%), and the Reitan Group (23.2%). While the Reitan Group only has one grocery chain (Rema), NorgesGruppen and Coop have a number of chains. However, it was easy to choose the two grocery chains Kiwi (NorgesGruppen) and Extra (Coop) for comparison with Rema (Reitan Group), owing to the fact that all the three chains are categorized as 'soft discount'. In addition, their total market shares are very high and have increased rapidly the recent years. In 2010, their total market share was 36.4%, and this has increased each year reaching 69.2% in 2019 (ACNielsen, 2019).

2.2. The loyalty programs of the three grocery retailing chains

2.2.1. Kiwi-program

The Kiwi-program (called Trumf) is a customer loyalty program that was launched in 1997 and is owned by the NorgesGruppen. All members (2.2 millions) have a Kiwi-program account where all the bonuses are gathered. When paying in the Kiwi stores, members may either use their Kiwi-card or link their Kiwi-card account to their own debit card (bank account). In all the NorgesGruppen stores the bonus is 1% (or 2% if the member uses Kiwi-card Visa) and 3% (or 4%) on selected Thursdays. This loyalty program also includes some other retailers (e.g. one chain of petrol stations). In addition, the different grocery retail chains of the NorgesGruppen have additional loyalty programs. Thus, Kiwi offers a bonus of 15% on fruit and vegetables and a 'diaper deal' for families with young children. The Kiwi-card account may be used in various ways and money may also be transferred to the member's bank account. Thus, members of Kiwi-card decide when and how they use the bonuses.

2.2.2. Extra-program

The Extra-program (called Coop Medlem) has about 1.5 million members (and owners), and they all have a COOP account where an initial payment (NOK 300 up front) and all the bonuses are registered. In all the Coop stores, the bonus is 1% (or 2% if the member uses Coop Mastercard). Members may also be awarded with various coupons. The loyalty program includes some other retailers (e.g. petrol stations and hotel chains). In addition, Coop's different grocery retail chains have additional loyalty programs, for example, Extra offers a bonus of 11% on fruit and vegetables. All bonuses accumulate during the year and are credited to the Coop account the following year (i.e. a delayed reward).

2.2.3. Rema-program

The loyalty program of Rema (called 'Æ') is app-based. Customers receive a discount of 10% on the rotating 'ten-on-ten' list, (i.e. an updated list of the purchase prices of the members' ten most bought products, not including tobacco, alcohol, medicine and gambling products and services). In addition, members get a bonus of 10% on fruit and vegetables. The discounts are subtracted from the sum of the purchase prices when the customer pays at the checkout (instantly rewarded).

All the three customer loyalty programs offer their members insight into their purchases and discounts. There are, however, differences between them, both in terms of reward redemption options, and how they are organized. This makes it possible to also test whether different loyalty programs have different effects.

3. Conceptual framework and hypotheses development

3.1. Proposed model

A number of frameworks and models are relevant to the conceptual model and the development of the hypotheses. The main concepts (loyalty, satisfaction and image) form the cornerstones of relationship marketing and management (Sheth and Parvatiar, 2000) as well as service marketing and management (Lovelock and Wirtz, 2007; Swartz and Iacobucci, 2000). They are also included in quality models and quality awards for business excellence (Heaphy and Gruska, 1995), in balanced scorecard approaches and models (Kaplan and Norton, 2004) and in various macro-oriented national customer satisfaction index model (NCSIs) (Johnson et al., 2001).

Fig. 1 presents the study's conceptual model and the hypothesized relationships. The model relates closely to NCSI approaches and in particular the Norwegian version of this model (NNCSI). In our model, customers' perceived value of the loyalty program replaces the two commitment constructs found in the NNCSI: 1) affective commitment (serving as a psychological switching barrier) and 2) calculative commitment (representing the economic aspects of attachment to the firm/chain). In the next section the main dependent variables (chain loyalty, chain satisfaction, and chain image), the loyalty antecedents and the relationships between these variables will shortly be discussed but not hypothesized, as they are well known. The focus is on developing hypotheses connected to the effect of loyalty program value (LPV) on chain loyalty.

3.2. Customer chain loyalty

Customer loyalty relates to entities such as suppliers, brands, stores and chains. Loyalty has been defined in various ways (Dick and Basu, 1994; Oliver, 1997), for example, as "a buyer's overall attachment or deep commitment to a product, service, brand, or organization" (Lam et al., 2004, p. 294). Store loyalty has also been perceived as "the biased (i.e. non-random) behavioural response (i.e. revisit), expressed over time, by some decision making unit with respect to one store out of a set of stores, which is a function of psychological (decision making and evaluative) processes resulting in brand commitment" (Bloemer and de Ruyter, 1998, p. 500). Based on these definitions and inspired by Lovelock and Wirtz (2007, p. 629), customer chain loyalty can be understood as "a customer's commitment to continue patronizing a specific chain of entities over an extended period of time". According to Oliver (1997), loyalty may be perceived as being related to a four-stage model consisting of cognitive, affective, conative and action loyalty, consisting of two interrelated components: relative attitude and repeat patronage (Dick and Basu, 1994). According to this view, customer chain loyalty is a concept containing a tripartite attitudinal component (cognitive, affective and conative) and a closely related behavioural component (repeat patronage – retention). This paper addresses customer loyalty as an attitudinal concept.

3.3. Customer chain satisfaction

Customer satisfaction and store satisfaction are also defined in various ways (Demoulin and Zidda, 2009; Kotler and Keller, 2016). The type of satisfaction considered here is cumulative satisfaction (Oliver, 1997; Wolter et al., 2017), implying that customer satisfaction is defined as a customer's "stored evaluation of his or her purchase and

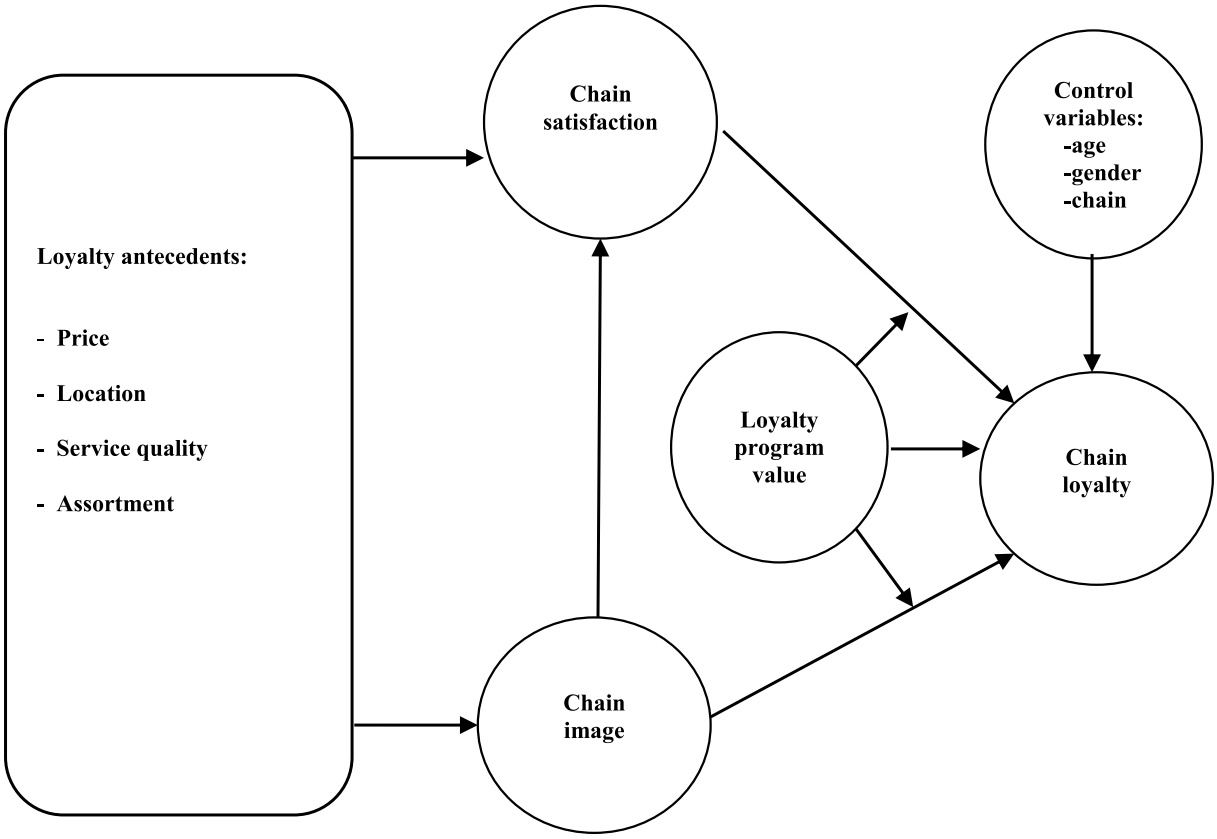

Fig. 1. The theoretical model.

consumption experience to date with a product or service provider" (Olsen and Johnson, 2003, p. 187). The "evaluated objects" in this study are retail grocery chains. Thus, customer chain satisfaction relies on the comparison between the perceived and expected performance of the retail grocery chain. Customers who have positive experiences keep visiting the chain stores. Customer satisfaction is usually found to be the main driver of customer loyalty and repurchase intention (Macintosch and Lockshin, 1997; Szymanski and Henard, 2001).

3.4. Customer chain image

Images are formed by various stakeholders about a variety of entities such as brands, products, countries, organizations and chains (Fombrun, 1996; Grohs and Reisinger, 2014; Helgesen et al., 2010). The concept denoted "image" is perceived and defined in different ways; for example, as a "summary of the impressions or perceptions of a company" (Chun, 2005, p. 95). Store image can be defined as "the way in which the store is perceived by shoppers" (Pan and Zinkhan, 2006, p. 231). Image building is seen as being essential in attracting and retaining customers (Bloemer and de Ruyter, 1998; Helgesen and Nesset, 2007). Images are found to have positive effects on customer loyalty (Hildebrandt, 1988; Johnson et al., 2001), both directly and indirectly via satisfaction (Bloemer and de Ruyter, 1998).

3.5. Antecedents

A number of models and variables (antecedents, attributes and concepts) have been introduced in order to explain variations in satisfaction, image and loyalty in retailing (e.g., Ailawadi and Keller, 2004; Pan and Zinkhan, 2006; Wolter et al., 2017). Antecedents of satisfaction and image are supposed to be drivers of loyalty working through mediating variables such as chain satisfaction and chain image (Baker et al., 2002; Helgesen et al., 2010). Identifying key drivers of chain loyalty (sustainable competitive advantages) is important for customer and market-oriented managers of retail chains.

Regarding retailing, the image is "expressed as a function of the salient attributes of a particular store" (Bloemer and de Ruyter, 1998, p. 501), and measured by attributes such as "product variety, employee service, store atmosphere, process, and product quality and overall attitude" (Collins-Dodd and Lindley, 2003, p. 348). A number of attribute-based dimensions of image have been identified (Gupta and Pirsch, 2008). Analogously, different approaches exist to identify satisfaction drivers such as SERVQUAL (Parasuraman et al., 1988, 1994) and SERVPERF (Cronin and Taylor, 1992), both of which offer evaluation standards independent of any particular retailing and service context. Regarding retailing, one may consider additional drivers (Gómez et al., 2004). This study includes the following antecedents: price, location, service quality and assortment (Kumar et al., 2017; Nesset et al., 2011).

Nowadays, customers have a number of alternatives to choose from and are informed about alternatives available in the marketplace implying that retailers' pricing decisions are becoming increasingly important (Levy and Weitz, 2007). Customers' perceptions of store prices are claimed to influence both satisfaction and image (Ailawadi and Keller, 2004; Kumar et al., 2017; Pan and Zinkhan, 2006).

According to Levy and Weitz (2007, p. 185) "location decisions have strategic importance because they can be used to develop a sustainable competitive advantage". Thus, store location is critical to any retailer's success (Karande and Lombard, 2005). Customers' perceptions of store location are believed to affect both store satisfaction and store image positively (Levy and Weitz, 2007; Pan and Zinkhan, 2006).

Customer service is the set of activities undertaken to make the shopping experience more rewarding for customers. Service quality is thought to have a positive effect on both satisfaction and image (Fullerton, 2005; Pan and Zinkhan, 2006).

Assortment is referred to as the depth of merchandise or the number of different items in a merchandise category. The retailer's offer should

"satisfy the customers' needs", and "the breadth and depth of the assortment in a merchandise category can affect the retailer's brand image" (Levy and Weitz, 2007, p. 337). Customers' perceptions of assortment are thought to affect both satisfaction and image positively (Ailawadi and Keller, 2004; Pan and Zinkhan, 2006).

3.6. Loyalty programs and their effect on chain loyalty

Loyalty programs have a number of objectives such as retaining customers by increasing the switching barriers, enhancing customer loyalty, increasing the share of wallet (SOW), collecting customer information, and customizing the offer to the individual customers (Bridson et al., 2008; Demoulin and Zidda, 2009; Nunes and Drèze, 2006). They provide customers with monetary or financial advantages (e.g., cash rewards, coupons, rebates), and psychological and relational rewards (e.g. specific checkout for loyalty cardholders, invitations to special events).

Zeithaml (1988, p. 14) defines "customer loyalty program value" as a "customer's overall assessment of the utility of the loyalty program based on perceptions of what is given". A number of other definitions are also offered (Walsh et al., 2014; Yoo and Park, 2016). O'Brien and Jones (1995) suggest that five elements will determine the value of a loyalty program: (1) cash value, (2) the choice of redemption options, (3) aspirational value, (4) relevance, and (5) convenience.

Some empirical studies have found positive effects of loyalty programs on customer attitudes in grocery retailing (Leenheer et al., 2007; Liu, 2007; Meyer-Waarden, 2007; Taylor and Neslin, 2005). However, the majority of studies dealing with different effects of loyalty programs on customer loyalty use a dummy variable for loyalty program membership. This has raised concerns about the direction of causality between loyalty programs and customer loyalty. Loyal customers are probably more likely to join a loyalty program, and this leads to a self-selection problem in the empirical analysis (Lin and Bennet, 2014). Another concern with the dummy approach is that it is not able to account for the strength of the relationship between a customer and the chain, and thus does not deal with the efficiency of a loyalty program. According to O'Brien and Jones (1995) the efficiency of a loyalty program is dependent on its design and implementation, and how people perceive the value of such programs.

There are few analyses dealing with effects of customers' *perceived value* of a loyalty program on chain loyalty. There is, however, some relevant analyses on effects of switching costs (Jones et al., 2007; Lam et al., 2004; Nagengast et al., 2014; Nesset and Helgesen, 2014). These articles span different industrial contexts, including the retail industry. Loyalty programs are often associated with 'artificial lock-in', and thus closely related to switching costs. According to Jones et al. (2007, p. 335) "… switching costs are increasingly recognized as a means for keeping customers in relationships, regardless of their satisfaction with the provider. Indeed, a common strategic recommendation is that service firms should increase customer perceptions of switching costs to 'lock' them into a relationship with the service provider." This leads to the following hypothesis:

H1a. An increase in customers' perceived value of a chain loyalty program, will directly increase the customer chain loyalty.

Some studies have also dealt with moderation (interaction) effects of loyalty programs, but the findings are inconclusive (Bombaij and Dekimpe, 2020; Filipe et al., 2017; Lin and Bennett, 2014; Shaikh et al., 2018). This can partly be due to the common use of the dummy variable for loyalty card membership, and thus a general lack of measurement of the loyalty programs' value for the customer. In the above-mentioned switching cost literature, there are arguments for an interaction effect of switching costs and satisfaction on loyalty. According to Lam et al. (2004, p. 298), "… the gap between satisfied and dissatisfied customers in their recommendation disposition is widened in the situation of high switching cost." Some researchers also argue for a non-linear moderating effect of switching costs on the satisfaction-loyalty link, where the positive switching costs (relational and financial) will cause positive effects, and the negative switching costs (procedural) will cause negative effects on the satisfaction-loyalty link (Nagengast et al., 2014). The way we conceptualize loyalty program *value* in our paper will encompass the switching costs concept used in these articles, and in particular those that are related to relational and financial switching costs. Higher positive switching costs will thus be associated with a higher perceived value of the loyalty program. Therefore, it is expected that for a consumer perceiving high loyalty program value the effect of satisfaction on loyalty will be stronger than for a consumer with lower perceived value, leading to the following hypothesis:

H1b. An increase in customers' perceived value of a chain loyalty program, will amplify the effect from customer chain satisfaction to customer chain loyalty (positive moderation).

To our knowledge, there is a lack of analyses dealing with interaction effects of chain image and positive switching costs (and thus perceived loyalty program value) on loyalty. However, since the model predicts a very close relationship between satisfaction and image, we also hypothesize a moderation effect of perceived value of a loyalty program and chain image, leading to the following hypothesis:

H1c. An increase in customers' perceived value of a chain loyalty program, will amplify the effect from customer chain image to customer chain loyalty (positive moderation).

One of the main differences regarding the three chain loyalty programs in our sample is connected to the reward redemption timing. Both Kiwi and Rema offer an instant loyalty reward program (IRP), whereas Extra offers a delayed loyalty reward program. Kim (2013) discusses the importance of the timing of rewards for the efficiency of a loyalty program. An instant loyalty reward program may reduce the uncertainty of redemption compared to a delayed loyalty reward program, and thus strengthen the loyalty program efficiency. An instant loyalty reward program may also reinforce the intention to buy and repurchase due to higher excitement and salience for an instant reward compared to a delayed reward (Dorotic et al., 2014; Taylor and Neslin, 2005). In addition, Zhang and Gao (2016) argue that an instant reward will strengthen the association between repurchasing and collecting rewards, and thus increase the consumers' motivation for collecting rewards. Based on a Dutch household panel data set spanning four supermarket chains, Minnema et al. (2017, p. 207) show that ".both IRPs and bonus programs are effective instruments to stimulate consumer purchase behaviour." This leads to the following hypothesis connected to the second research question:

H2. The effect of customers' perceived value of a chain loyalty program on customer chain loyalty is higher for a chain using an instant loyalty reward program than for a chain with a delayed loyalty reward program.

4. Methodology

4.1. Sample and data collection

Online survey software was used to collect data from customers of the three main Norwegian grocery-retailing chains. Before the survey was distributed on a large scale, a pre-test was conducted on a smaller sample (38) of consumers, and the questions were discussed with professionals within the grocery retail industry. We did not have access to a sampling frame supplying us with the information necessary to do a random sampling. Because our target sample consists of customers that are loyalty program members and thus probably interested in grocery retailing news, we distributed the questionnaire via different food forums, debate and commentary links in electronic grocery market websites, and other social media. Seven hundred and twenty-seven customers completed the questionnaire, 506 of whom had membership

in loyalty programs. These respondents answered all the relevant questions, and they constitute the primary target group for this analysis. The non-member group (n = 221) was also analysed, but mainly for validation purposes. The targeted sample consists of respondents from all counties in Norway and reflects the market shares of the three retailing chains (based on an initial control question regarding first choice). The sample consists of 42% males and 58% females. The mean age of the respondents is 33.1 years, with a standard deviation of 13.2 years. The average age of the Norwegian population was at the same time 39.4 years. Thus, the mean age of the sample is 6.3 years lower than the population average, but reflecting the mean age of the age cohort known as Millennials (Fromm and Garton, 2013).

4.2. Measures and measurements

The questionnaire contains 36 indicators, of which 32 measure the eight latent variables (concepts), and four are control variables (age, gender, and retail chain dummy variables). The indicators of the latent variables use a seven-point Likert scale where '1' indicates *strongly disagree*, and '7' indicates *strongly agree*. All the indicators are treated as reflective measures. Table A1 in the appendix presents the concepts, the scale references and the scales, and Table A2 the items and the statistical metrics of the items.

Regarding the measurement of customers' perceived loyalty program value (LPV), we include three of the five elements that determine a loyalty program's value according to O'Brien and Jones (1995): 1) Cash value ("The loyalty card gives me good deals"); 2) Relevance ("I perceive the loyalty card to be relevant when shopping"); 3) Convenience ("The loyalty card is easy to use"). In addition, we include an overall question of loyalty program recommendation ("I recommend the loyalty card to friends and acquaintances"). A fourth element found in O'Brien and Jones (1995) - choice of redemption options - is indirectly measured by including dummy variables for main chain loyalty program belonging. Choice of redemption options are diverse and thus to a large extent chain dependent. The last element in the O'Brien and Jones concept, aspirational value, is a more status oriented (hedonic) value, and probably not that relevant in the soft discount grocery retail context. This element is therefore omitted in our measure of loyalty program value. It could be argued that such a variable can be measured in a formative instead of a reflective way. Due to the high internal correlations among them, we treat them as reflective measures.

4.3. Analytical approach

The analysis applies a two-step confirmative modelling strategy (Hair et al., 2010) by using the partial least square structural equation modelling (PLS-SEM) approach (Hair et al., 2017). We prefer to use the component-based PLS procedure partly because of its favourable possibilities for handling complex models with relatively small data sets. PLS-SEM is also a preferred method when the data are non-normally distributed, as is often the case in surveys like ours. Since estimation of most of the NCSI models use PLS-SEM, we also use this estimation approach in order to make it possible for comparisons across different sectors.

5. Results

5.1. Measurement models

Table 1 presents total sample standardized coefficients of the latent variables and two measures of convergent validity of the model for the target sample.

All variables show statistically significant loadings, ranging from 0.659 to 0.933. Dijkstra-Henseler's rho (rhoA) exceeds the minimum recommended level (0.70) for all the constructs. Additionally, average variance extracted (AVE) for all the concepts is well above the minimum

Table 1
PLS measurement model: standardized coefficients and reliability (n = 506).

Variables (items/factors)	Symbols	Stand. Coefficients	rhoA[a]	AVE[b]
I recommend … … … to friends and acquaintances	Y_1	0.874		
I speak positively about … … …. .	Y_2	0.889		
I'll also do my purchases from …….. in the future	Y_3	0.755		
I prefer to do my purchases from …….	Y_4	0.848		
Chain loyalty (Y_1–Y_4)	η_1		0.907	0.711
Compared with an ideal chain, I'm satisfied with ….	Y_5	0.868		
Based on my experience I'm satisfied with … … … …	Y_6	0.927		
My visits to … … … …. has always been positive	Y_7	0.815		
All in all I'm satisfied with … … ….	Y_8	0.903		
Chain satisfaction (Y_5–Y_8)	η_2		0.932	0.773
The image of ……. among customers is favourable	Y_9	0.902		
The image of … among my friends/acquaintances is favourable	Y_{10}	0.933		
I think that … … … has a favourable image	Y_{11}	0.932		
The image of. is favourable among the general public	Y_{12}	0.913		
Chain image (Y_9–Y_{12})	η_3		0.957	0.846
I perceive the loyalty card to be relevant when shopping	X_1	0.803		
The loyalty card gives me good deals	X_2	0.859		
The loyalty card is easy to use	X_3	0.659		
I recommend the loyalty card to friends and acquaintances	X_4	0.825		
Loyalty program value (LPV) (X_1 – X_4)	ξ_1		0.868	0.624
… … 's prices are extremely competitive	X_5	0.839		
I'm satisfied with the price level of …….	X_6	0.875		
In my opinion …….'s prices are low	X_7	0.895		
Compared with other retail chains, …..'s prices are low	X_8	0.698		
Price (X_5 – X_8)	ξ_2		0.856	0.690
The location of … … … makes me shop there	X_9	0.706		
The location of … ……. is important for me	X_{10}	0.755		
… … ….. has a good location	X_{11}	0.925		
… … ….. is my local store	X_{12}	0.692		
Location (X_9 – X_{12})	ξ_3		0.856	0.601
… … …..'s employees are courteous to me	X_{13}	0.833		
The waiting time at the cash point of … … … … is short	X_{14}	0.762		
… … …..'s employees are helpful	X_{15}	0.849		
… … …..'s employees pay me attention	X_{16}	0.735		
Service quality (X_{13} – X_{16})	ξ_4		0.873	0.634
… … …'s daily grocery selection is good	X_{17}	0.866		
… … ….. offers the daily groceries that I need	X_{18}	0.885		
	X_{19}	0.918		

(*continued on next page*)

Table 1 (*continued*)

Variables (items/factors)	Symbols	Stand. Coefficients	rhoA[a]	AVE[b]
The goods selection of … … … …. is satisfying				
… … ….. has the daily groceries that I expect to find	X_{20}	0.849		
Assortment ($X_{17} - X_{20}$)	ξ_5		0.932	0.774

[a] Dijkstra-Henseler's rho.
[b] Average Variance Extracted.

recommended value of 0.50. Table A2 in the appendix shows the statistical metrics of all the measured items. The mean value of most of the items are high, and there are both skewness and kurtosis, indicating non-normality. This is quite common in surveys like ours, and one of the reasons why we use the non-parametric bootstrapping procedure in PLS-SEM. Table A3 in the appendix shows the correlation matrix for all indicators. Convergent validity will support convergent construct validity when correlations between the indicators belonging to the same latent variable (construct) are from moderate to high (Gregory, 2007), and this is the case in our sample. Splitting the sample in three according to main retail chain membership does not alter this finding. There is configurational invariance between the three sub-models due to identical models (both the measurement and the structural models), as well as acceptable fit for all the structural models (see Table 3). By running multiple group comparison of the three measurement models, we are also able to accept metric invariance. Only six of the 32 items show significant loading differences between the sub-models. However, two of these belong to the measure of the antecedent variable labelled *location*, a variable that turned out to be a non-significant predictor of chain satisfaction and chain image (see Table 3). Of the four other loadings, one (X_4) belongs to the latent variable *LPV*, one (X_8) to *price*, one (X_{20}) to *assortment*, and one (Y_7) to *chain satisfaction*. Overall, this indicates a reasonable degree of measurement invariance between the three sub-models.

To examine discriminant validity (Table A4), we use both the Fornell-Larcker criterion (Fornell and Larcker, 1981) and the $HTMT_{0.85}$ criterion with 5000 bootstrap subsamples (Henseler et al., 2015). Based on the total sample, the correlations of all pairs of latent variables are less than their respective square rooted VE, which indicates discriminant validity. All HTMT-values are below 0.85, and discriminant validity is also confirmed by this more conservative $HTMT_{0.85}$ criterion. The same pattern applies for two of the sub-samples (Kiwi and Extra). In the Rema sample, there is only one violation of the strict $HTMT_{085}$ criterion, and this concerns the association between chain loyalty and chain satisfaction. However, the HTMT-value for these constructs (0.86) is well below the more liberal $HTMT_{0.90}$ criterion, The correlations between the latent variables are also all in compliance with our *a priori* theoretical model, indicating that the estimated measurement model is valid in a nomological sense.

To test for the common method variance (CMV) with self-reported data (Podsakoff et al., 2003), we adopt a PLS-based procedure suggested by Liang et al. (2007). According to Podsakoff et al. (2003) a latent method factor model is added to the structural model, and the variance of the observed indicators are partitioned into trait, method, and random error components. All the indicators are assumed to be determined by the substantive construct, the method factor, and the error. Because PLS allows an indicator to be determined by only one construct and does not support random errors, Liang et al. (2007) specified a PLS version of this procedure by converting all the indicators to single-indicator constructs. In this case "… all major constructs of interest and the method factor become second-order constructs" (Liang et al., 2007, p. 85). According to Table A5, the method factor loadings are generally very small compared to the substantive factor loadings, even though some of them are significantly different from zero. The method factor variance explained of the indicators are negligible. The average variances explained connected to the substantive factor model and the method factor model are 72.7% and 0.6%, respectively. Thus, CMV is not a significant problem in our model.

5.2. Structural models

Table 2 shows variance explanations, standardized path coefficients and t-values of the base model and four expanded models with the full target sample. The base model gives explained variances of chain loyalty, chain satisfaction and chain image of 59.2%, 69.4%, and 31.3%, respectively. All path coefficients are significant at least at the 5% level, except for the two location effects (on chain satisfaction and on chain image). Three of the four antecedents (*Assortment*, *Price*, and *Service quality*) have significant effects on both chain satisfaction and chain image. Of these, assortment is the most influential antecedent.

By including the direct effect of perceived loyalty program value (Expanded model 1a), the explained variance for chain loyalty increases by 4.3 percentage points, and the LPV-effect is highly significant. In addition, by including two loyalty program value interaction effects (with chain satisfaction and chain image), there is a further increase in chain loyalty of about 0.6 percentage points (Expanded model 1b), but only the interaction between LPV and chain satisfaction is significant. By also including chain dummies (Expanded model 2a) *or* an 'instant reward dummy' (Expanded model 2b), the explained chain loyalty variance further increases by one percentage point.

The expanded model 2b seem to be in accordance with other NCSI-models with respect to the positive significant effects of satisfaction and image on loyalty (Johnson et al., 2001; Helgesen et al., 2010). Chain satisfaction seems to have the strongest direct effect on chain loyalty (0.53), more than 2.5 times higher than the direct effect of chain image on chain loyalty (0.18). Chain image strongly influences chain satisfaction with a path coefficient of 0.24. Loyalty program value (LPV) has a large and significant positive effect on chain loyalty (0.24), thus supporting hypothesis H1a. There is a negative but insignificant effect from the interaction between LPV and chain image on chain loyalty, thus not supporting hypothesis H1c. However, the interaction effect between LPV and chain satisfaction on chain loyalty is positive and significant, giving support to hypothesis H1b. We have also estimated the model without the LPV x Chain satisfaction, but the interaction term LPV x chain mage is still insignificant.

In Johnson et al. (2001) survey data for five different Norwegian service industries (airlines, banks, buses, gas stations, and trains) were analysed based on the Norwegian NCSI model, and estimated by PLS-SEM. The results from these analyses seem to be in accordance with the empirical findings in our model. The variance explained of loyalty and satisfaction is, however, higher in our model than in any of the sectors analysed in Johnson et al. (2001), and in our model there is a substantial increase in variance explanation when comparing a base model without any effects of LPV to an extended model (model 1b) where these effects are included (explained variance of loyalty increases from 59.2 to 64.1 percent).

To further validate the structural model, the estimated coefficients of the target sample model are compared to the coefficients of a similar model for the off-target sample (n = 221). Table A6 in the appendix shows the results of this comparison. There are no significant differences between the two measurement models, and only one of the structural paths in the target sample model is significantly different from the path in the off-target sample model (p = 0.03). By merging the two samples and estimating a full sample model (n = 727), where a dummy for loyalty card membership is also included, it is evident that loyalty card membership positively affects retail chain loyalty with a coefficient value of 0.09 (see column 1 in Table A6). This result is also in accordance with findings in a majority of empirical studies of this kind (Bridson et al., 2008), thus strengthening the validity of our model.

Table 3 shows structural coefficients for the three chain models estimated separately. Variance explanations of the endogenous variables only differ slightly, and are thus close to the values for the full target

Table 2
Structural model results, total sample. Variance explanations and standardized coefficients[a].

	Base model	Expanded model 1a	Expanded model 1b	Expanded model 2a	Expanded model 2b
Paths:	Stand. coeff. (t-value)	Stand. coeff. (t-value)	Stand. coeff. (t-value)	Stand. coeff. (t-value)	Stand. coeff. (t-value)
Chain satisfaction → Chain loyalty	0.61** (12.45)	0.51** (9.73)	0.54** (10.97)	0.53** (11.13)	0.53** (10.27)
Chain image → Chain loyalty	0.18** (3.54)	0.18** (3.58)	0.17** (3.84)	0.18** (3.80)	0.18** (3.88)
Age → Chain loyalty	−0.07[c] (2.47)	−0.06[c] (2.36)	−0.06[c] (2.01)	−0.05 (1.89)	−0.05 (1.92)
Gender → Chain loyalty	−0.08** (2.81)	−0.06[c] (2.06)	−0.05[c] (1.99)	−0.06[c] (2.01)	−0.06[c] (2.03)
Chain image → Chain satisfaction	0.24** (6.25)	0.24** (6.24)	0.24** (6.38)	0.24** (6.25)	0.24** (6.23)
Assortment → Chain satisfaction	0.43** (10.28)	0.43** (10.09)	0.43** (10.20)	0.43** (10.31)	0.43** (10.43)
Assortment → Chain image	0.41** (8.91)	0.41** (8.66)	0.41** (8.64)	0.41** (8.73)	0.41** (8.69)
Price → Chain satisfaction	0.24** (5.20)	0.24** (5.07)	0.24** (4.96)	0.24** (5.22)	0.24** (5.11)
Price → Chain image	0.10[c] (1.96)	0.10[c] (1.98)	0.10[c] (1.93)	0.10 (1.90)	0.10[c] (2.02)
Service quality → Chain satisfaction	0.18** (5.36)	0.18** (5.64)	0.18** (5.58)	0.18** (5.51)	0.18** (5.62)
Service quality → Chain image	0.17** (3.75)	0.17** (3.90)	0.17** (3.96)	0.17** (3.62)	0.17** (3.64)
Location → Chain satisfaction	0.01 (0.10)	0.01 (0.11)	0.01 (0.10)	0.01 (0.10)	0.01 (0.10)
Location → Chain image	−0.05 (0.83)	−0.05 (0.81)	−0.05 (0.83)	−0.05 (0.83)	−0.05 (0.82)
LPV → Chain loyalty		0.23** (6.96)	0.23** (7.25)	0.24** (7.80)	0.24** (7.83)
LPV x Chain satisfaction → Chain loyalty			0.09[c] (2.32)	0.09[c] (2.17)	0.09[c] (2.22)
LPV x Chain image → Chain loyalty			−0.08 (1.69)	−0.07 (1.62)	−0.07 (1.62)
Dummy Extra → Chain loyalty				−0.10** (3.02)	
Dummy Kiwi → Chain loyalty				0.01 (0.25)	
Dummy Instant Reward[b] → Chain loyalty					−0.10** (3.83)
Variance explanations:	**R-square**	**R-square**	**R-square**	**R-square**	**R-square**
Chain loyalty	0.592	0.635	0.641	0.651	0.651
Chain satisfaction	0.694	0.694	0.694	0.694	0.694
Chain image	0.313	0.313	0.313	0.313	0.313

[a] t-values (in parenthesis) are based on bootstrapping with 1000 sub-samples.
[b] Value 1 for the chain with delayed rewards (Extra) and value 0 for the chains with instant rewards (Kiwi and Rema).
[c] $p < 0.05$ (two-sided), **p < 0.01 (two-sided).

sample model (model 2b in Table 2).

The direct effect of LPV on retail chain loyalty is positive and significant for all retail chains, but stronger for the chains with instant rewards (0.28) than for the chain with delayed rewards (0.18). One reason for this low direct effect of LPV for the chain Extra, can be attributed to the delayed reward redemption option. According to Kim (2013), delayed rewards can cause a higher uncertainty regarding the collection of rewards, and lead to a less efficient loyalty program. These findings further strengthen the support of hypothesis H1a.

Table 4 shows the total effects (including both direct and indirect effect) of antecedents, mediators and moderators on chain loyalty, separately for the three grocery chains. The most important driver of chain loyalty is chain satisfaction. Among the antecedents, second to assortment, LPV is the most important driver of chain loyalty for all the retail chains. Even though the direct effect of LPV on chain loyalty show some differences among the chains, none of these is significant, thus not supporting hypothesis H2 with respect to the direct effect.

However, there are significant chain differences regarding the moderating effects of LPV. In the sub-sample for the chain with delayed rewards (Extra), LPV has a significant positive effect (0.20) on the satisfaction-loyalty link, whereas this effect is insignificant for the two other chains. A more or less "speculative" reason for this counterintuitive finding may be associated with a higher uncertainty with respect to consumers' evaluation of a loyalty program with delayed rewards. If such consumers have high confidence in their satisfaction evaluations, a higher level of perceived LPV can imply that the loyalty of the consumers will be less directly affected, but be more affected in terms of giving the satisfaction-loyalty link a higher weight. According to p-values for group comparisons in Table 4, the only significant difference regarding this moderation effect is between Rema and Extra, thus partly supporting hypothesis H2. LPV has a significant negative effect on the image-loyalty link for only one of the chains (Kiwi), but there are no significant differences between chains.

There are also significant chain-differences with respect to the mediation effect of image. The direct effect of image on loyalty is only significant for one of the chains (Kiwi), and for this particular chain the total mediation effect of image on loyalty is significantly larger than for one of the other chains (Rema).

6. General discussion and theoretical implications

The model offered in this study builds on the generic NCSI model and is thus well founded, both theoretically and empirically. Theoretically, it is important to recognize that a generic model like NCSI, with the inclusion of the loyalty program value concept, also enables a simultaneous analysis of three parallel processes that faces any retailer: 1) satisfaction creation, 2) image building, and 3) loyalty program value creation. The last process is important, and may be even more important in a 'post-corona world'. The negative economic consequences of the corona-crisis for consumers all over the world, may lead to a more competitive pressure on grocery retailers in the 'soft discount' segment. In order to meet the challenge of higher competitive pressure, retailers will need to focus even more on how to retain customers by offering them good value for money.

Another important finding that has implications for the theoretical model is connected to the moderation effects and how these effects are chain dependent. For all the chains, the loyalty effect of loyalty program value is the second most important driver of chain loyalty. For customers of the chain with delayed rewards (Extra), the direct effect of the perceived loyalty program value (LPV) is smaller than for the customers of the two other chains (Kiwi and Rema). There are also significant differences regarding the moderation effects of LPV on the satisfaction-loyalty link. LPV has a significant amplifying (positive) effect on the link between satisfaction and loyalty for the chain with the delayed reward scheme (Extra). Thus, when the customers' perceived value of the loyalty program increases, the total effect of chain satisfaction on chain loyalty will be higher. This may be interpreted as a compensation for the lower direct effect of delay in the reward scheme for this chain, but can of course also be due to other differences in this chain's loyalty program compared to the other chains' programs. Another interesting finding is

Table 3
Structural model results, by chain. Variance explanations and standardized coefficients.[a].

	Rema (n = 230)	Kiwi (n = 169)	Extra (n = 107)
Paths:	Stand. coeff. (t-value)	Stand. coeff. (t-value)	Stand. coeff. (t-value)
Chain satisfaction → Chain loyalty	0.60** (11.43)	0.39** (3.96)	0.58** (4.74)
Chain image → Chain loyalty	0.07 (1.37)	0.33** (3.90)	0.12 (1.11)
Age → Chain loyalty	0.04 (0.96)	−0.07 (1.45)	−0.10 (1.47)
Gender → Chain loyalty	−0.10* (2.50)	−0.01 (0.25)	−0.04 (0.59)
Chain image → Chain satisfaction	0.20** (4.38)	0.26** (2.83)	0.43** (6.33)
Assortment → Chain satisfaction	0.43** (7.10)	0.43** (5.05)	0.36** (4.98)
Assortment → Chain image	0.43** (6.18)	0.40** (4.08)	0.27** (3.12)
Price → Chain satisfaction	0.26** (5.05)	0.21 (1.66)	0.14 (1.96)
Price → Chain image	0.05 (0.65)	0.26** (2.55)	0.26** (2.76)
Service quality → Chain satisfaction	0.18** (4.60)	0.18* (2.52)	0.10 (1.42)
Service quality → Chain image	0.14* (2.13)	0.05 (0.54)	0.31* (3.37)
Location → Chain satisfaction	0.01 (0.19)	−0.03 (0.64)	0.06 (0.60)
Location → Chain image	−0.04 (0.39)	−0.01 (0.05)	0.01 (0.03)
LPV → Chain loyalty	0.28** (5.87)	0.28** (5.72)	0.18* (2.50)
LPV x Chain satisfaction → Chain loyalty	0.05 (0.97)	0.09 (1.29)	0.20** (2.77)
LPV x Chain image → Chain loyalty	0.01 (0.04)	−0.18* (2.24)	−0.14 (1.65)
Variance explanations:	**R-square**	**R-square**	**R-square**
Chain loyalty	0.682	0.679	0.613
Chain satisfaction	0.709	0.692	0.687
Chain image	0.295	0.338	0.388

*$p < 0.05$ (two-sided), **$p < 0.01$ (two-sided).
[a] T-values (in parenthesis) are based on bootstrapping with 1000 sub-samples.

that both the loyalty program value (see Table 2) and the dummy membership (see Table A6) show significant effects on chain loyalty. However, the magnitude of the effect with respect to the customers' perceived value of the loyalty program seems to be larger than the effect of just being a member or not. This implies that when building a theoretical model of customer loyalty one should include customers' perceived value of the loyalty program as a concept.

Table 4
Total path effects of chain loyalty drivers and mediators on chain loyalty, by chain (t-values in parenthesis).

Paths	Rema	Kiwi	Extra	p-value group comparisons Rema-Kiwi Rema-Extra Kiwi-Extra
Antecedents:				
Price → Chain loyalty	0.166 (4.717)	0.194 (4.350)	0.174 (2.955)	0.480 0.452 0.575
Location → Chain loyalty	−0.002 (0.042)	−0.014 (0.391)	0.037 (0.467)	0.605 0.341 0.292
Service quality → Chain loyalty	0.138 (4.594)	0.089 (2.451)	0.168 (2.832)	0.849 0.326 0.126
Assortment → Chain loyalty	0.341 (7.266)	0.341 (6.009)	0.300 (4.295)	0.492 0.700 0.690
LPV → Chain loyalty	0.275 (5.870)	0.283 (5.717)	0.182 (2.496)	0.453 0.837 0.868
Mediators:				
Chain satisfaction → Chain loyalty	0.603 (11.430)	0.387 (3.961)	0.575 (4.739)	0.976 0.585 0.108
Chain image → Chain loyalty	0.188 (3.555)	0.434 (7.823)	0.360 (4.637)	0.001 0.041 0.774
Moderators:				
LPV x Chain satisfaction → Chain loyalty	0.048 (0.974)	0.093 (1.289)	0.200 (2.774)	0.305 0.048 0.162
LPV x Chain image → Chain loyalty	0.002 (0.040)	−0.179 (2.242)	−0.135 (1.650)	0.968 0.903 0.360

7. Managerial implications, limitations, and conclusions

A general managerial implication of the findings is that retail managers should recognize that satisfaction creation, image building, and loyalty program value creation are parallel processes. Based on a PLS-based Importance-Performance-Map-Analysis (IPMA), *Assortment* seems to be the most important antecedent for chain loyalty, with a total effect (importance) on loyalty of 0.32, and a rescaled performance measure (0–100) of 71.94. *Loyalty program value* is the second most influential antecedent, with a total effect on loyalty of 0.22 and a rescaled performance measure of 76.96. Both *price* and *service quality* have lower total effect on loyalty compared to *loyalty program value*, but they have comparable performance measures. This indicates that *loyalty program value* is a better candidate for increasing performance and thus enhancing chain loyalty, than price and service quality policies.

The results also show that the three antecedents assortment, price, and service, have very similar total effects on chain loyalty across the different chains. The loyalty program's perceived *relevance* (X_1) and its *cash value* (X_2) to the customer seem to be the most important aspects (items) according to the standardized loadings (see Table 1).

As noted before there is one significant difference between the chains with respect to how perceived loyalty program value will affect chain loyalty, and this is the moderating effect of the chain satisfaction-chain loyalty relationship. There is also only one significant difference between the chains with respect to how mediators mediate relationships between the antecedents and chain loyalty, and this is connected to chain image. Retailers should recognize these differences and enhance chain loyalty through all the three processes.

In addition to creating customer loyalty for the firm or chain and providing benefits to the customers, a loyalty program is also a tool for a firm/chain to collect and process important personalized information about their customers. This gives important insight for enabling adequate customization. Given the problems connected to the ongoing corona-crisis, and the data privacy regulations introduced by the EU General Data Protection Regulation (GDPR) directive, there are reasons to believe that the focus on loyalty programs will increase in the years to come. According to GDPR, customers now have a right to receive all the personal data collected concerning them and they can transmit or share these data with third parties. This will probably change the customers'

perceived value of a loyalty program. A customer now can trade his or her personal information collected through the loyalty program, so one should evaluate the perceived value of a loyalty program in a broader context. "Millennials" are also different from customers belonging to other cohorts in the way they use loyalty cards (Gurău, 2012). They may expect a loyalty program that integrates personalized messages, mobile payment technologies, and gamification options (Hwang and Choi, 2020). This means that retail managers must focus more on how to use new technology to enhance the convenience of using the loyalty card.

A general limitation of this study is the cross sectional data perspective, and the focus on only one country. Another limitation is the low variance explanation of chain image. There is a need for further research on drivers of perceived image within the holistic modelling approach, as well as analyses using longitudinal data and including several countries. Future research should also focus on how to improve the value of the loyalty program by including gamification devices and at the same time cope with the GDPR regulations.

A general conclusion of the findings is that traditional loyalty drivers like location, assortment, price, and service quality are difficult to use for differentiation purposes in grocery retailing. The process of building customer loyalty program value with chain satisfaction may thus be an important avenue for differentiation purposes, with the ultimate goal of achieving long-term customer loyalty and profitability.

Declaration of competing interest

None.

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Appendix

Table A1
Construct measures and references.

Construct	Scale references	Scale and number of items
Chain loyalty	Johnson et al. (2001); Zeithaml et al., 1996	7-Point scale/4 items
Chain satisfaction	Babin and Griffin (1998); Fornell (1992); Ryan et al. (1995)	7-Point scale/4 items
Chain image	Chun (2005); Dowling (1988); Fombrun (1996); Helgesen and Nesset (2007)	7-Point scale/4 items
Loyalty program value (LPV)	O'Brien and Jones (1995); Yi and Jeon (2003)	7-Point scale/4 items
Price	Evanschitzky and Wunderlich (2006); Jain and Srivastava (2000); Johnson et al. (2001)	7-Point scale/4 items
Location	Karande and Lombard (2005); Nesset et al. (2011); Westbrook (1981)	7-Point scale/4 items
Service quality	Bruner II and Hensel (1996); Cronin and Taylor (1992); Cronin et al. (2000); Sweeney et al. (1999)	7-Point scale/4 items
Assortment	Evanschitzky and Wunderlich (2006); Nesset et al. (2011); Semeijn et al. (2004)	7-Point scale – 4 items

Table A2
Statistical metrics of the items (n = 506).

Variables (items/factors)	Symbols	Mean	SD	Skew-ness	Kurto-sis
I recommend … … … to friends and acquaintances	Y_1	5.125	1.286	−0.715	0.079
I speak positively about … … …. .	Y_2	5.304	1.493	−0.809	0.456
I'll do my purchases from …….. in the future	Y_3	5.858	1.342	−0.754	0.115
I prefer to do my purchases from ……..	Y_4	5.630	0.986	−1.024	1.190
Chain loyalty (Y_1–Y_4)	η_1				
Compared with an ideal chain, I'm satisfied with ……..	Y_5	5.170	1.404	−0.979	0.609
Based on my experience I'm satisfied with … … … …	Y_6	5.500	1.193	−1.151	1.381
My visits to … … … …. has always been positive	Y_7	5.148	1.290	−0.793	0.264
All in all I'm satisfied with … … ….	Y_8	5.654	1.091	−1.341	2.528
Chain satisfaction (Y_5–Y_8)	η_2				
The image of ……. among customers is favourable	Y_9	5.231	1.186	−0.569	−0.146
The image of ……. among my friends and acquaintances is favourable	Y_{10}	5.038	1.243	−0.455	−0.230
I think that … … … has a favourable image	Y_{11}	5.217	1.256	−0.638	−0.103
The image of …. is favourable among the general public	Y_{12}	4.947	1.268	−0.308	−0.506
Chain image (Y_9–Y_{12})	η_3				
I perceive the loyalty card to be relevant when shopping	X_1	5.852	1.472	−1.535	1.858
The loyalty card gives me good deals	X_2	5.447	1.489	−1.066	0.805
The loyalty card is easy to use	X_3	6.221	1.089	−1.952	4.700
I recommend the loyalty card to friends and acquaintances	X_4	5.038	1.700	−0.651	−0.283
Loyalty program value (LPV) (X_1 – X_4)	ξ_1				
… … 's prices are extremely competitive	X_5	5.907	1.141	−1.539	3.226
I'm satisfied with the price level of …….	X_6	5.674	1.074	−1.264	2.136
In my opinion …….'s prices are low	X_7	5.626	1.161	−1.228	2.007
Compared with other retail chains, …..'s prices are low	X_8	4.937	1.219	−0.378	−0.002
Price (X_5 – X_8)	ξ_2				
The location of … … … makes me shop there	X_9	5.864	1.383	−1.391	1.489
The location of … ……. is important for me	X_{10}	5.872	1.231	−1.291	1.669
… … ….. has a good location	X_{11}	5.893	1.214	−1.461	2.207

(*continued on next page*)

Table A2 (*continued*)

Variables (items/factors)	Symbols	Mean	SD	Skew-ness	Kurto-sis
… … ….. is my local store	X_{12}	5.443	1.813	−1.050	−0.086
Location (X_9 – X_{12})	ξ_3				
… … …..'s employees are courteous to me	X_{13}	5.759	1.020	−0.993	1.519
The waiting time at the cash point of … … … … is short	X_{14}	5.411	1.165	−0.807	0.552
… … …..'s employees are helpful	X_{15}	5.538	1.119	−0.731	0.196
… … …..'s employees pay me attention	X_{16}	4.583	1.474	−0.256	−0.562
Service quality (X_{13} – X_{62})	ξ_4				
… … ….'s daily grocery selection is good	X_{17}	4.962	1.514	−0.779	−0.117
… … ….. offers the daily groceries that I need	X_{18}	5.486	1.269	−1.180	1.182
The goods selection of … … … …. is satisfying	X_{19}	5.300	1.417	−0.926	0.268
… … ….. has the daily groceries that I expect to find	X_{20}	5.504	1.286	−1.097	0.892
Assortment (X_{17} – X_{20})	ξ_5				
Age	X_{21}	33.134	13.176	1.094	0.050
Gender dummy	X_{22}	0.423	0.494	0.313	−1.910

Table A3
Correlation matrix for the 32 indicators – part 1 (n = 506)

	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}	X_{12}	X_{13}	X_{14}	X_{15}	X_{16}	X_{17}	X_{18}	X_{19}	X_{20}
X_1	1.00																			
X_2	0.68	1.00																		
X_3	0.40	0.43	1.00																	
X_4	0.50	0.56	0.42	1.00																
X_5	0.18	0.28	0.15	0.25	1.00															
X_6	0.29	0.44	0.26	0.35	0.62	1.00														
X_7	0.27	0.37	0.22	0.31	0.69	0.73	1.00													
X_8	0.17	0.27	0.16	0.21	0.51	0.45	0.51	1.00												
X_9	−0.04	- 0.04	0.09	−0.01	0.02	0.03	0.02	−0.03	1.00											
X_{10}	0.08	0.04	0.08	−0.01	0.12	0.11	0.10	0.10	0.56	1.00										
X_{11}	0.00	0.00	0.13	0.00	0.04	0.13	0.08	0.07	0.74	0.48	1.00									
X_{12}	−0.01	−0.02	0.10	0.00	0.02	0.03	0.00	−0.01	0.67	0.39	0.66	1.00								
X_{13}	0.08	0.18	0.13	0.20	0.22	0.26	0.20	0.20	0.19	0.11	0.26	0.21	1.00							
X_{14}	0.18	0.28	0.13	0.14	0.20	0.29	0.20	0.23	0.07	0.06	0.13	0.13	0.47	1.00						
X_{15}	0.12	0.24	0.14	0.22	0.22	0.25	0.21	0.22	0.17	0.10	0.22	0.19	0.66	0.48	1.00					
X_{16}	0.19	0.31	0.14	0.26	0.15	0.28	0.20	0.17	0.11	0.10	0.18	0.15	0.49	0.39	0.58	1.00				
X_{17}	0.31	0.42	0.17	0.31	0.30	0.40	0.35	0.25	−0.07	0.02	0.02	−0.04	0.29	0.38	0.32	0.32	1.00			
X_{18}	0.22	0.29	0.19	0.30	0.32	0.39	0.33	0.26	0.00	0.02	0.06	−0.02	0.27	0.32	0.32	0.20	0.65	1.00		
X_{19}	0.25	0.36	0.19	0.31	0.31	0.44	0.37	0.23	−0.04	−0.04	0.02	−0.02	0.27	0.36	0.32	0.24	0.72	0.81	1.00	
X_{20}	0.36	0.38	0.18	0.26	0.30	0.41	0.36	0.32	−0.08	0.06	0.04	−0.06	0.23	0.30	0.22	0.25	0.66	0.67	0.69	1.00
Y_1	0.32	0.40	0.25	0.51	0.36	0.46	0.40	0.33	−0.05	0.07	0.07	−0.02	0.37	0.34	0.38	0.34	0.50	0.46	0.48	0.42
Y_2	0.34	0.43	0.25	0.50	0.45	0.48	0.46	0.35	−0.03	0.06	0.06	−0.01	0.36	0.35	0.36	0.33	0.54	0.50	0.55	0.48
Y_3	0.26	0.30	0.27	0.31	0.24	0.35	0.25	0.26	0.13	0.15	0.23	0.15	0.33	0.28	0.32	0.28	0.38	0.37	0.37	0.38
Y_4	0.30	0.40	0.28	0.40	0.37	0.45	0.40	0.33	−0.02	0.13	0.06	0.04	0.34	0.33	0.35	0.31	0.48	0.48	0.50	0.44
Y_5	0.25	0.40	0.24	0.30	0.35	0.48	0.41	0.36	−0.05	0.04	0.06	0.00	0.36	0.40	0.34	0.31	0.65	0.53	0.58	0.52
Y_6	0.27	0.43	0.25	0.39	0.44	0.54	0.50	0.35	0.00	0.08	0.09	0.00	0.40	0.43	0.37	0.31	0.62	0.59	0.63	0.55
Y_7	0.20	0.36	0.20	0.32	0.26	0.44	0.34	0.28	−0.01	−0.01	0.08	0.03	0.40	0.40	0.39	0.27	0.53	0.53	0.56	0.47
Y_8	0.24	0.43	0.29	0.38	0.44	0.56	0.50	0.36	0.01	0.09	0.07	0.03	0.37	0.42	0.37	0.26	0.59	0.60	0.63	0.54
Y_9	0.18	0.24	0.11	0.26	0.23	0.30	0.29	0.14	−0.02	−0.01	0.05	0.05	0.31	0.30	0.26	0.21	0.43	0.37	0.43	0.36
Y_{10}	0.15	0.23	0.10	0.25	0.23	0.29	0.29	0.19	−0.04	−0.05	0.01	0.00	0.28	0.31	0.26	0.22	0.47	0.41	0.45	0.36
Y_{11}	0.21	0.31	0.15	0.30	0.28	0.34	0.31	0.18	−0.03	−0.03	0.04	0.02	0.31	0.36	0.26	0.23	0.51	0.46	0.52	0.43
Y_{12}	0.19	0.27	0.10	0.25	0.20	0.31	0.28	0.16	−0.09	−0.04	0.02	−0.04	0.25	0.24	0.22	0.22	0.47	0.34	0.39	0.38

	Y_1	Y_2	Y_3	Y_4	Y_5	Y_6	Y_7	Y_8	Y_9	Y_{10}	Y_{11}	Y_{12}
Y_1	1.00											
Y_2	0.81	1.00										
Y_3	0.50	0.50	1.00									
Y_4	0.60	0.63	0.65	1.00								
Y_5	0.59	0.61	0.46	0.56	1.00							
Y_6	0.62	0.66	0.48	0.60	0.76	1.00						
Y_7	0.53	0.53	0.37	0.46	0.61	0.65	1.00					
Y_8	0.58	0.64	0.48	0.62	0.68	0.83	0.65	1.00				
Y_9	0.44	0.48	0.39	0.43	0.44	0.52	0.44	0.49	1.00			
Y_{10}	0.47	0.51	0.34	0.45	0.49	0.53	0.46	0.48	0.81	1.00		
Y_{11}	0.48	0.55	0.41	0.47	0.52	0.60	0.51	0.56	0.77	0.82	1.00	
Y_{12}	0.47	0.46	0.35	0.40	0.47	0.50	0.44	0.44	0.75	0.81	0.82	1.00

Table A4
Discriminant validity: Fornell-Larcker[#] and HTMT[##]

	Chain loyalty	Chain satisfaction	Chain image	LPV	Price	Location	Service quality	Assort-ment
Total sample (n=506)								
Chain loyalty	**0.84**							
Chain satisfaction	0.75 (0.84)	**0.88**						
Chain image	0.58 (0.63)	0.61 (0.66)	**0.92**					
LPV	0.54 (0.63)	0.46 (0.53)	0.30 (0.33)	**0.79**				
Price	0.54 (0.62)	0.58 (0.65)	0.34 (0.37)	0.42 (0.48)	**0.83**			
Location	0.15 (0.13)	0.10 (0.06)	0.02 (0.05)	0.05 (0.08)	0.13 (0.10)	**0.78**		
Service quality	0.50 (0.60)	0.52 (0.61)	0.37 (0.41)	0.30 (0.37)	0.33 (0.40)	0.24 (0.27)	**0.80**	
Assortment	0.62 (0.70)	0.74 (0.82)	0.53 (0.57)	0.41 (0.48)	0.46 (0.52)	0.04 (0.06)	0.42 (0.48)	**0.88**
Rema sample (n = 230)								
Chain loyalty	**0.864**							
Chain satisfaction	0.78 (0.86)	**0.881**						
Chain image	0.50 (0.55)	0.58 (0.63)	**0.912**					
LPV	0.59 (0.69)	0.50 (0.58)	0.26 (0.12)	**0.780**				
Price	0.64 (0.73)	0.66 (0.75)	0.37 (0.40)	0.52 (0.60)	**0.821**			
Location	−0.13 (0.11)	−0.11 (0.08)	−0.11 (0.08)	−0.06 (0.12)	−0.13 (0.12)	**0.657**		
Service quality	0.56 (0.66)	0.53 (0.62)	0.33 (0.38)	0.35 (0.43)	0.42 (0.52)	0.07 (0.20)	**0.796**	
Assortment	0.69 (0.76)	0.76 (0.83)	0.52 (0.56)	0.49 (0.56)	0.59 (0.67)	−0.18 (0.14)	0.39 (0.46)	**0.885**
Kiwi sample (n=169)								
Chain loyalty	**0.819**							
Chain satisfaction	0.70 (0.81)	**0.873**						
Chain image	0.70 (0.79)	0.64 (0.69)	**0.903**					
LPV	0.53 (0.61)	0.39 (0.43)	0.33 (0.35)	**0.793**				
Price	0.47 (0.57)	0.54 (0.63)	0.43 (0.49)	0.35 (0.42)	**0.807**			
Location	0.20 (0.24)	0.19 (0.21)	0.14 (0.15)	0.13 (0.17)	0.10 (0.15)	**0.834**		
Service quality	0.44 (0.54)	0.55 (0.64)	0.34 (0.37)	0.29 (0.36)	0.30 (0.37)	0.31 (0.38)	**0.785**	
Assortment	0.60 (0.70)	0.74 (0.83)	0.53 (0.57)	0.26 (0.30)	0.39 (0.45)	0.25 (0.27)	0.53 (0.62)	**0.869**
Extra sample (n=107)								
Chain loyalty	**0.812**							
Chain satisfaction	0.73 (0.84)	**0.884**						
Chain image	0.62 (0.70)	0.72 (0.79)	**0.903**					
LPV	0.46 (0.52)	0.45 (0.50)	0.37 (0.39)	**0.831**				
Price	0.50 (0.55)	0.57 (0.63)	0.46 (0.50)	0.47 (0.53)	**0.859**			
Location	0.26 (0.21)	0.21 (0.10)	0.15 (0.08)	0.12 (0.09)	0.23 (0.14)	**0.567**		
Service quality	0.38 (0.46)	0.44 (0.49)	0.44 (0.50)	0.19 (0.22)	0.21 (0.24)	0.22 (0.30)	**0.807**	
Assortment	0.49 (0.55)	0.68 (0.75)	0.50 (0.54)	0.41 (0.46)	0.54 (0.60)	0.08 (0.06)	0.31 (0.35)	**0.882**

[#] Variable correlations and square root of variance extracted on the diagonal (in bold).
[##] HTMT-values in brackets.

Table A5
Common method bias analysis

Constructs	Indicators	Substantive factor loading R1	Variance explained $R1^2$	Method factor loading R2	Variance explained $R2^2$
Chain loyalty	Y_1	0.921**	0.848	0.065	0.004
	Y_2	0.819**	0.671	0.117**	0.014
	Y_3	0.794**	0.630	−0.201**	0.040
	Y_4	0.873**	0.762	−0.031	0.003
Chain satisfaction	Y_5	0.973**	0.947	−0.090*	0.008
	Y_6	0.872**	0.760	0.127**	0.016
	Y_7	0.827**	0.684	−0.013	0.000
	Y_8	0.852**	0.726	−0.065	0.004
Chain image	Y_9	0.918**	0.843	−0.024	0.001
	Y_{10}	0.957**	0.916	−0.036	0.001
	Y_{11}	0.884**	0.781	0.077**	0.006
	Y_{12}	0.946**	0.895	−0.055	0.003
LPV	X_1	0.873**	0.762	−0.100*	0.001
	X_2	0.803**	0.645	0.097**	0.009
	X_3	0.730**	0.533	−0.099*	0.010
	X_4	0.775**	0.601	0.055	0.003
Price	X_5	0.902**	0.814	−0.09*	0.008
	X_6	0.784**	0.615	0.127**	0.016
	X_7	0.898**	0.806	−0.013	0.000
	X_8	0.757**	0.573	−0.065	0.004
Location	X_9	0.907**	0.823	−0.058**	0.003
	X_{10}	0.703**	0.494	0.025	0.001

(*continued on next page*)

Table A5 (*continued*)

Constructs	Indicators	Substantive factor loading R1	Variance explained $R1^2$	Method factor loading R2	Variance explained $R2^2$
	X_{11}	0.877**	0.769	0.054*	0.003
	X_{12}	0.829**	0.687	−0.016	0.000
	X_{13}	0.855**	0.731	−0.034	0.001
Service quality	X_{14}	0.670**	0.449	0.111**	0.012
	X_{15}	0.887**	0.787	−0.045	0.002
	X_{16}	0.773**	0.598	−0.034	0.001
	X_{17}	0.748**	0.560	0.133**	0.018
Assortment	X_{18}	0.951**	0.904	−0.076	0.006
	X_{19}	0.922**	0.850	−0.005	0.000
	X_{20}	0.896**	0.803	−0.051	0.003
Average variance explained			0.727		0.006

*p < 0.05, **p < 0.01.

Table A6
Structural model results total sample, loyalty card members and non-members. Variance explanations, standardized coefficients#, and p-values for group differences.

	Total sample (n = 727)	Non-member sample (n = 221)	Member sample (n = 506)	
Paths:	Stand. coeff. (t-value)	Stand. coeff. (t-value)	Stand. coeff. (t-value)	p-value group comparison[1]
Chain satisfaction → Chain loyalty	0.60** (14.49)	0.60** (9.07)	0.60** (12.11)	0.50 (0.99)
Chain image → Chain loyalty	0.20** (4.39)	0.23** (3.22)	0.19** (3.49)	0.32 (0.64)
Age → Chain loyalty	−0.03 (1.34)	0.04 (0.81)	−0.07* (2.23)	0.04 (0.08)
Gender → Chain loyalty	−0.08** (3.44)	−0.09 (1.94)	−0.08** (2.88)	0.52 (0.96)
Chain image → Chain satisfaction	0.26** (8.45)	0.31** (5.58)	0.24** (6.27)	0.18 (0.35)
Assortment → Chain satisfaction	0.41** (11.40)	0.40** (6.50)	0.43** (10.06)	0.63 (0.74)
Assortment → Chain image	0.37** (9.35)	0.29** (4.07)	0.41** (8.65)	0.94 (0.13)
Price → Chain satisfaction	0.25** (7.24)	0.23** (4.71)	0.24** (5.20)	0.57 (0.85)
Price → Chain image	0.12** (3.12)	0.18** (2.80)	0.10* (1.97)	0.16 (0.32)
Service quality → Chain satisfaction	0.19** (6.37)	0.19** (3.81)	0.18** (5.57)	0.45 (0.89)
Service quality → Chain image	0.23** (5.90)	0.34** (4.81)	0.17** (3.90)	0.03 (0.05)
Location → Chain satisfaction	0.01 (0.55)	0.02 (0.38)	0.01 (0.11)	0.49 (0.80)
Location → Chain image	−0.03 (0.85)	0.01 (0.02)	−0.05 (0.84)	0.27 (0.55)
Dummy Extra → Chain loyalty	−0.08** (2.76)	−0.03 (0.60)	−0.09** (2.66)	0.18 (0.35)
Dummy Kiwi → Chain loyalty	−0.03 (1.15)	−0.08 (1.55)	0.01 (0.02)	0.91 (0.18)
Dummy membership → Chain loyalty	0.09** (3.70)			
Variance explanations:	**R-square**	**R-square**	**R-square**	
Chain loyalty	0.613	0.615	0.599	
Chain satisfaction	0.700	0.720	0.694	
Chain image	0.322	0.371	0.313	

*$p < 0.05$ (two-sided), **$p < 0.01$ (two-sided).
t-values (in parenthesis) are based on bootstrapping with 1000 sub-samples.
1Based on PLS-MGA and Welch-Satterthwait test (in parenthesis).

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