



Journal of Service Management

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Article information:

To cite this document:

Allard C.R. van Riel, Janjaap Semeijn, Dina Ribbink, Yvette Bomert-Peters, (2012) "Waiting for service at the checkout: Negative emotional responses, store image and overall satisfaction", Journal of Service Management, Vol. 23 Issue: 2, pp.144-169, <https://doi.org/10.1108/09564231211226097>

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Waiting for service at the checkout

Negative emotional responses, store image and overall satisfaction

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Abstract

Purpose – In retail settings, customer satisfaction is generally associated with a global evaluation of the store, i.e. the store image. Waiting for service is not part of the store image dimensions, but it does play an increasingly important role in the retail experience where waits are often inevitable. The present study seeks to investigate how waiting for service at the checkout counter influences overall satisfaction, along with the store image.

Design/methodology/approach – The study combines services marketing and waiting literature. Data were collected in various supermarkets in The Netherlands. A partial least squares regression technique is used to analyze the data.

Findings – The paper demonstrates an important and complementary role of the behavioural construct “negative response to the wait” in explaining overall customer satisfaction in a retail environment. The effect of customers’ negative emotional response to the wait on satisfaction is partially mediated by store image, and explained variance in the dependent variable increases by 24 percent when the effect of the wait at the checkout is included.

Research limitations/implications – Measuring customer satisfaction without taking into account the effects of various waits during the retail experience will produce incomplete results.

Practical implications – Moreover, a range of controllable factors influences the customer’s wait. Intelligently managing these factors can mitigate negative effects on customer satisfaction, or even increase the overall evaluation of the service. Specific recommendations for service managers and a research agenda are provided.

Originality/value – The study combines service marketing and waiting literature to address the issue of waiting in line and tests the theory with real-world data from a field study.

Keywords Retailing, Service operations, Field research, Customer satisfaction

Paper type Research paper



Introduction

The checkout is an essential and inevitable part of many, if not all, retail service encounters. Waiting at the checkout is often difficult to avoid, but at the same time it is a frequently occurring and much disliked experience (Davis and Heineke, 1998; Haynes, 1990). Although waiting may sometimes generate positive emotions[1], such as anticipation and hope, most supermarket customers are irritated, bored, frustrated, and unhappy to various extents, while waiting at the checkout of a supermarket. A negative mental state thus arises from their appraisal of the waiting experience (Bagozzi *et al.*, 1999). This negative emotional response to waiting may be due to the increased importance and value placed on time in our society (Heineke and Davis, 2007), and the fact that waiting at a checkout is generally perceived as a waste of time, unproductive and not generating value for the customer. Research suggests that customers experience the service encounter in a series of snapshots of extreme moments (Burt *et al.*, 1995; Nguyen and Belk, 2007). To a certain extent, the episode of waiting at the checkout can even be considered a – negative – peak experience (Kahneman *et al.*, 1997; Verhoef *et al.*, 2004) in the service encounter, since it is often perceived as one of the most dissatisfying episodes of the shopping process (Caballero *et al.*, 1985). According to Verma *et al.* (1999) these peak experiences play a more important role in the overall evaluation of the service encounter than other elements of the service experience.

In marketing literature, waiting is often associated with a lack of perceived service quality or even service failure and customer dissatisfaction (Bitner *et al.*, 1990; Clemmer and Schneider, 1993; Tom and Lucey, 1995). It has also been suggested to play a role in the perceived severity of service failures (Craighead *et al.*, 2004). In that respect, customers' negative emotional responses to waiting appear to be more influential than other store quality perceptions or store image (Houston *et al.*, 1998; Larson, 1987). As a consequence, service managers appear rightfully concerned about the effects of negative emotional responses to waiting for service (Arnold *et al.*, 2005; Taylor, 1995). Customers and their attitudinal and behavioral responses to service should be an integral part of service design and value creation (Hume *et al.*, 2006; Johnston, 2005; Roth and Menor, 2003; Tseng *et al.*, 1999).

Waiting and queuing have been studied extensively in operations management. However, the operations literature generally fails to incorporate the psychological aspects and costs associated with waiting (Seawright and Sampson, 2007). While studies on customers' attitudinal responses to waits (Bendoly *et al.*, 2006; Hui and Tse, 1996; Seawright and Sampson, 2007; Stewart, 2003; Taylor, 1995; Tom and Lucey, 1995) appear relevant to developing a better understanding of how customers experience waiting, only a few determinants of the waiting experience have actually been investigated within this particular subset of operations management research.

Most empirical studies in the domain of waiting have been conducted in banking (Chebat *et al.*, 1995; Hui *et al.*, 1997; Katz *et al.*, 1991), at airports (Dawes and Rowley, 1996; Folkes *et al.*, 1987), or in experimental settings simulating a hospital, bank, purchase or consultancy experience (Dellaert and Kahn, 1999; Dubé *et al.*, 1989; Pruyn and Smidts, 1998, 1999). Few studies have focused on lines at retail outlets (Jones and Peppiatt, 1996; Tom and Lucey, 1995), which are nonetheless an intrinsic part of the retail service experience (Rafaeli, 1989). Little is therefore known about how or to what extent waiting at the checkout of a supermarket affects satisfaction (Haynes, 1990),

or what the relative contribution of any negative emotional response to the wait is, compared to other antecedents of satisfaction. There is abundant research on wait related elements in the service design that can be influenced by service managers (Roth and Menor, 2003; Voss *et al.*, 2008), but these studies have addressed only a limited number of factors (Baker and Cameron, 1996; Cameron *et al.*, 2003; Pruyn and Smidts, 1998).

In this study, we investigate antecedents of customers' negative emotional response to waiting at the checkout of supermarkets, and its consequences for store image and customer satisfaction. As suggested by Rust and Chase (1999) and Kellogg and Nie (1995), we aim to develop a better understanding of psychological aspects of waiting in line (Bendoly *et al.*, 2006). The current study investigates how various aspects of the service design may influence the customer experience (Cook *et al.*, 2002; Roth and Menor, 2003) and aims to turn this understanding into actionable recommendations for service managers. Managing the wait experience properly could allow organizations to directly improve their competitiveness (Hill and Joonas, 2005; Johnston, 2005; Kumar, 2005). We also respond to the call to apply field study methodologies in service operations research (Meredith, 1998; Meredith *et al.*, 1989). Following Seawright and Sampson's (2007) suggestion to further investigate factors influencing the perceived duration of a wait, we build on their conceptual model to include factors from Maister's (1985) theoretical work and empirically validate it with field data.

Literature review

Waiting

A wait starts at the moment the customer is ready for the service encounter and ends when the encounter starts (Taylor, 1994). In the following paragraphs, we examine waiting at the checkout counter, i.e. waiting for the final service encounter (Haynes, 1990), and its effects on satisfaction. We first explore the concept of negative emotional response to the wait, and contrast it with store image, and we then investigate its antecedents and consequences in a grocery store setting. The research model used in the study is shown in Figure 1.

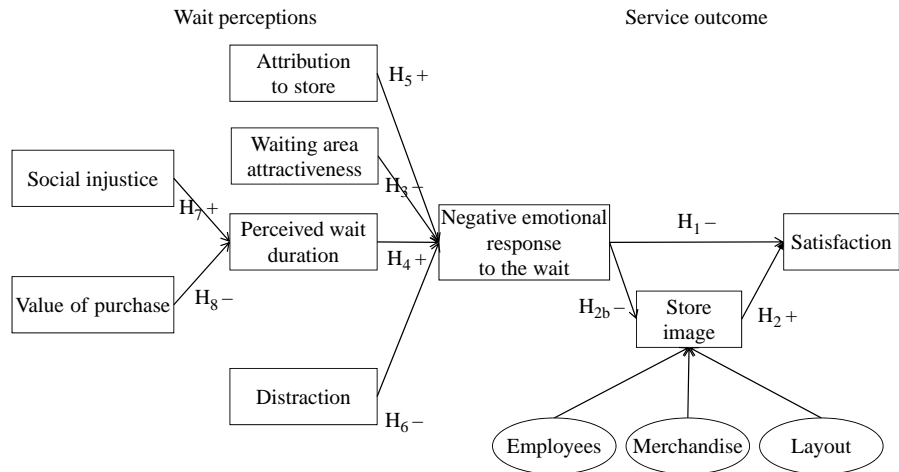


Figure 1.
The conceptual model

The customer's negative emotional response to the wait

Waiting during or, as investigated in the present study, before service delivery is suggested to affect customer satisfaction directly (Bitner *et al.*, 1990; Clemmer and Schneider, 1993; Tom and Lucey, 1995). In particular cases, this relationship does not appear to hold. For example, Pruyn and Smidts (1998) did not find a significant effect of the wait evaluation on satisfaction in the case of service in a hospital setting. Although patients may still develop a negative emotional response in this case, hospital waits may be perceived as an uneventful, fair, and necessary part of the experience, passively undergone by the patient, and therefore fail to affect satisfaction.

However, we expect the effect of a negative emotional response to the wait on overall satisfaction to be significant in a shopping situation. Customers may not perceive the wait as a necessary part of their retailing experience, as it does not add value for them (Davis and Vollmann, 1990). In the case of supermarket checkouts, situational factors may vary, even between lines, affecting customers' response to the wait. Buying groceries is an everyday experience, and the wait situation can easily be assessed by customers and compared to past experiences (Dasu and Rao, 1999). Finally, it was found that customers who develop a positive emotional response to the wait are likely to better evaluate their overall shopping experience and vice-versa (Taylor, 1994, 1995; Westbrook, 1987). We therefore hypothesize:

- H₁.* A negative emotional response to the wait directly and negatively affects satisfaction.

Store image

Above, the negative emotional response to the wait at the checkout is conceptualized as an antecedent of satisfaction. In previous research customers were found to evaluate their shopping experience using various dimensions (Dick *et al.*, 1995; Hui *et al.*, 1997). The concept of store image is often used to explain satisfaction with a store. Several store characteristics, which appear unrelated to how customers respond to the wait, converge in this concept. Bloemer and de Ruyter (1998, p. 501) define store image as "a consumer's perceptions of a store on different (salient) attributes." Three fundamental dimensions of store image have been identified:

- (1) the store's physical layout or servicescape (Bitner, 1992; Richardson *et al.*, 1996; Zeithaml *et al.*, 1993);
- (2) its products or merchandise; and
- (3) interactions with store personnel (Baker *et al.*, 1994; Grewal *et al.*, 2003).

In line with previous research, we hypothesize that next to customers' emotional response to the wait:

- H_{2a}.* Store image directly and positively affects satisfaction.

Since store image is the outcome of a global assessment of the store, generally measured after the checkout, we hypothesize that store image perceptions are directly affected by the customer's negative emotional response to the wait. This effect can be explained using mood-congruency theory: mood tends to bias perceptions and evaluations in a mood-congruent direction (Gardner, 1985). In a negative emotional response to the wait, we can expect several elements that influence the

customer's mood, such as irritation, boredom, frustration, and unhappiness, which will in turn affect the overall evaluation of the store. Therefore:

H_{2b} . The effect of the negative emotional response to the wait on satisfaction is mediated by store image.

Waiting area attractiveness

The relationship between the (physical) store environment and satisfaction has been studied before (Baker *et al.*, 1994). Customers rely on tangible cues and physical evidence, such as the appearance and layout of the physical facilities, to develop expectations (Zeithaml *et al.*, 1993) and make quality judgments (Zeithaml *et al.*, 2008). Attractiveness of a waiting area has been associated with higher levels of customer satisfaction (Grewal *et al.*, 2003; Pruyn and Smidts, 1998). In our view, waiting areas in supermarkets are hardly ever attractive. However, a particularly untidy waiting area may actually lead to a negative emotional response to the wait, rather than directly to dissatisfaction, because it conditions the wait. Conversely, a particularly tidy waiting area would lessen customers' negative response to the wait. Thus, we hypothesize the following, in partial accordance with Pruyn and Smidts (1998):

H_3 . Perceived waiting area attractiveness decreases customers' negative emotional response to the wait.

Perceived wait duration

Waiting is a subjective experience (Baker and Cameron, 1996; Hornik, 1984) and not necessarily directly related to objectively measured wait times. Taylor (1994) observed only an indirect effect between actual wait time and satisfaction, which was confirmed by Pruyn and Smidts (1998). Often, customers' perceptions of time differ from objectively measured time (Hirsh *et al.*, 1956; Hornik, 1984). Perceived duration of the wait, more than objective duration, seems to affect consumer experiences, evaluations, and behaviors (Barnett and Saponaro, 1985; Dubé *et al.*, 1991; Seawright and Sampson, 2007; Yan and Lotz, 2006). Perceived wait duration should therefore be considered a key construct in explaining customer responses to the wait (Hornik, 1984). Hence, we hypothesize:

H_4 . Perceived wait duration directly increases the negative emotional response to the wait.

Attribution to the store

How customers understand why they have to wait affects how waiting is experienced. "Wait attribution theory is concerned with how people make wait attributions – how they explain events and assign causes or blame for various outcomes" (Clemmer and Schneider, 1993, p. 215). When a wait is longer than expected, customers try to figure out why this is the case. In a retail context, a customer may, for example, attribute the cause of an unusually long wait to a slow customer in front of him or her, or to an inefficient and slow cashier. Conversely, a quick checkout procedure can be attributed to efficient cashiers or a sufficient number of checkout counters.

Bitner (1990) showed that a provider's perceived level of control over a service failure affects the evaluation of the service. Taylor (1994) found a negative effect of perceived control on waiting time perceptions. The more the wait is attributed to factors not controlled by customers, but by the store, the more negatively the wait is felt. Therefore:

H_5 . Attribution to the store of the causes for the wait increases the negative emotional response to the wait.

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Distraction

Awareness of the passage of time results in boredom (Maister, 1985). Time passing without anything happening negatively affects how customers respond to the wait and subsequently evaluate service (Jones and Peppiatt, 1996). Distraction increases mental activity and takes attention away from the passage of time (Katz *et al.*, 1991; Zakay, 1989; Zakay and Hornik, 1991). When time is perceived to be filled, less attention is paid to the passage of time, resulting in less of a negative emotional response (Antonides *et al.*, 2002; Taylor, 1995).

Larson (1987, p. 897) suggest for example that “an actual wait reduction may not be as important as imaginative lobby design,” illustrated by the observation that live entertainment in a bank setting, in the form of music and exhibitions, resulted in less of a negative emotional response to the wait. Pruyn and Smidts (1998) failed to find empirical support in hospital settings, where the reason for the visit may be a broken leg or a painful cut. How distraction can help reduce the negative emotional response under such conditions is more difficult to imagine, than for grocery customers waiting at a checkout counter. In the latter situation, we expect distraction to reduce the negative response to the wait and, hence, influence the service evaluation (Hui *et al.*, 1997). Therefore:

H_6 . Distraction directly reduces the negative emotional response to the wait.

Social injustice

Much research has focused on perceived fairness and justice as antecedents of satisfaction in the context of service failures. Previous research suggests that waits that are perceived to be unfair will feel longer than waits that seem fair (Haynes, 1990; Jones and Peppiatt, 1996; Maister, 1985). Notions of fairness are central to explanations of customer satisfaction (Tax *et al.*, 1998). It is likely that a perceived lack of fairness while queuing also plays a role in the development of an emotional response. Maister (1985) and Larson (1987) refer to the concept of social injustice in wait settings. Larson (1987, p. 896) suggests that “in customers’ perceptions of queues, fear of social injustice can often dominate queue waiting times.” Incidents may occur, which can be perceived as unfair. For example, after having stood in line for ten minutes, a customer is about to be assisted. Then an additional checkout line opens and “newcomers” scurry over to the new register, where they are served approximately in a last-come, first-served manner (Larson, 1987; Zhou and Soman, 2008). Sometimes, different priority rules, such as express checkouts, are applied to different customer categories. If customers do not spend approximately equal amounts of time waiting, this may also create perceptions of injustice (Rafaeli *et al.*, 2002; Zhou and Soman, 2008). Based on the aforementioned scenarios, we hypothesize that:

H_7 . Social injustice increases perceived wait duration.

Value of purchase

The more valuable a service, the longer a customer appears willing to wait (Jones and Peppiatt, 1996; Maister, 1985). If customers have a shopping cart full of groceries, they are more likely to be tolerant than when they are waiting to pay for only a few items.

Verbeke *et al.* (1996), for example, consider the total monetary purchase amount per shopping trip an important factor in determining customers' reactions to out-of-stock situations in a grocery store. The lower the perceived purchase value of the service for which one stands in line, the more aggravating the wait is perceived to be. The following hypothesis is thus formulated:

H_8 The value of the purchase directly reduces perceived wait duration.

Method

Design of the field study

To empirically validate the theoretically developed model, a natural field setting was chosen. This approach has the advantage that it offers variance across the factors that are needed to test the model: in the supermarkets under consideration, we routinely see lines of various lengths, due to various causes and in changing settings (Taylor, 1994). To minimize carry-over effects from experiences during prior shopping-trips and during trips to other supermarkets, we chose to ask customers to respond to a questionnaire about their evaluations and perceptions immediately following their service experience.

Sampling

Questionnaires were distributed to customers at three supermarkets over a two-week period, during busy hours with relatively long lines: 11 am-1 pm and 4 pm-6 pm. By sampling customers from three different supermarket chains (Edah, C1000, and Albert Heijn) at various locations in The Netherlands, we increased the variance in the data and obtained greater generalizability of the results (Clemes *et al.*, 2000). Dutch shoppers are not particularly polite when waiting in line, but behave generally in a civil manner (Rafaeli and Sutton, 1990).

Respondents were told that the study investigated the relationship between shopping experiences and customer satisfaction. Customers were explicitly instructed to focus on their most recent shopping experience. About 50 completed questionnaires were obtained from customers at each chain. This so-called "complete-case-approach," excluding questionnaires with obvious missing values (Hair *et al.*, 2007) resulted in a total sample of 150 cases.

Although the three stores studied each have a large assortment of products and services, sell many different brands, and have relatively large sales volumes, the three selected chains vary substantially in terms of store design, quality and assortment of merchandise, image, pricing, and promotion strategies. Table I compares the stores. The sample is described in Table II. The majority of the respondents were women (70 percent). More than half of the respondents were between 25 and 55 years of age. 40 percent of the respondents reported that they go grocery shopping two to three times a week. This frequency is fairly typical for The Netherlands, where families have relatively small fridges and freezers, and like to have fresh produce on the menu.

Questionnaire design

A questionnaire containing topically organized, structured, and disguised (i.e. not revealing the purpose of the study, see Judd *et al.*, 1991) statements was used to measure the constructs. Multiple-item scales were constructed in an attempt to increase validity and reliability (Peter, 1979). Respondents were asked to indicate the extent to which they agreed or disagreed with 41 statements. Seven-point Likert-type scales

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three grocery stores

	Albert Heijn	Edah	C1000
Store type	Neighborhood store	Supermarket	Supermarket
Number of employees	80	45	150
Store area (m^2)	1,100	1,148	800
Number of products in stock	8,000	9,500	7,000
Number of checkout aisles	7	6	7
Store-owned parking lot	Yes	Yes	Yes
Length of checkout belt (number of shoppers unloading carts simultaneously)	1-2	3-4	2
On the left of checkout	Drinks + candy	Cigarettes	Cigarettes (three rows)
On the right of checkout	Magazines + videos	Cigarettes + plastic bags	Trash bags + candy (three rows)
Distance from aisles to start of checkout belt (in meters)	3	3.5	2.5

	<i>n</i>	%
<i>Gender</i>		
Male	45	30
Female	105	70
<i>Age</i>		
< 25	32	21.3
25-40	47	31.3
41-55	44	29.3
> 55	27	18
<i>Store visits per week</i>		
< 1	4	2.7
1	24	16
2-3	75	50
> 3	47	31.3
<i>Weekly visits to "this" store</i>		
< 1	25	16.7
1	43	28.7
2-3	60	40
> 3	22	14.7
<i>Purchase amount (€)</i>		
< 10	12	8
10-25	52	34.7
26-50	54	36
> 50	32	21.3

Table II.

Sample demographics

were anchored by "strongly disagree" (1) and "strongly agree" (7) with the midpoint labeled "neutral." Appendix Table AI provides an overview of all items used in the survey.

We had to use a single source to measure both the independent and the dependent variables. To control for common method variance (CMV) bias, a range of procedures was followed. First, our items were formulated as clear, concise and specific as possible,

mostly based on 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. We made some slight changes to the questionnaire based on the comments, and four ambiguous questions, leading to substantial cross loading of items, were deleted from the questionnaire. This approach is known to limit CMV produced by item characteristics (Spector, 1994). Furthermore, we stressed that no right or wrong answers existed, and that we were looking for answers best describing their specific experience.

Measures

Items used in our study are presented in Appendix Table AI. Most items were adopted from the literature, sometimes slightly modified to suit the retailing context, while a few new items had to be developed specifically for the purpose of this study. Existing scales were borrowed from published studies in the domains of waiting and queuing, store image and customer satisfaction. The questionnaire was constructed in English and then translated into Dutch. Single back-translation was used to assure equivalence of meaning.

Satisfaction consists of a rational and an emotional component (Yu and Dean, 2001). Thus, items corresponding to both dimensions of satisfaction were included in the questionnaire: we used three questions relating to “rational satisfaction” and three questions relating to “emotional satisfaction.” The questions were taken from a scale developed by Oliver (1993) and customized for the present study. Based on measures developed and tested by Semeijn *et al.* (2004) and Wu and Petroschius (1987), nine store image items were included in the questionnaire. Store image was operationalized as a second order formative construct with three dimensions: employees, merchandise, and layout. Negative emotional response to the wait was measured with four items, adapted from previous studies to fit the retail waiting environment (Katz *et al.*, 1991; Mehrabian and Russell, 1974; Schmitt *et al.*, 1992). Attribution to store was measured with items adapted from Taylor (1994) and Folkes *et al.* (1987), and waiting area attractiveness items were modified from a scale developed by Bitner (1990). The perceived wait duration was measured based on a scale developed by Kellaris and Kent (1992). Based on reflections in Zakay and Hornik (1991), a measure for distraction was derived. Finally, social injustice was measured based on research by Larson (1987), and Zhou and Soman (2008), while Maister (1985), Haynes (1990), and Verbeke *et al.* (1996) guided the development of a measure for value of purchase.

Analysis

The data were first investigated on a descriptive level. Before conducting any other analyses, we screened for missing values. Despite the complete case approach, some values were missing in our data, but they were missing in fewer than 2 percent of cases. To maintain an acceptable sample size, and only in cases where this had little consequence (i.e. when only one or two observations of randomly distributed items were missing), we substituted missing values with the means (Hair *et al.*, 2007). This approach is known to produce a minimal change in correlation coefficients and no change in the regression coefficients (McKnight *et al.*, 2007). Furthermore, the distributions of all variables were checked for normality, and no extreme cases were found. Customer satisfaction is somewhat negatively skewed, as participants in the study were relatively

satisfied with the shopping experience. This finding is in line with Fornell (1992), who argues that in more homogenous industries with less opportunity for differentiation (such as non-durable goods which included the categories basic and other foods) overall customer satisfaction scores are relatively high.

Harman's one factor test was used to test for a bias caused by CMV. In this test, all items are subject to an exploratory factor analysis (EFA). CMV exists if (1) a single factor emerges from the unrotated factor solution, or (2) a first factor explains the majority of the variance in the variables (Podsakoff and Organ, 1986). When we conducted a principal component factor analysis of all items used in this study, we identified 11 factors with eigenvalues higher than 1.0. Moreover, the largest eigenvalue accounted for less than 25 percent of the total variance, well below the rule-of-thumb cut-off value (Podsakoff and Organ, 1986). This finding indicates that the measures we took to reduce CMV were successful, and that CMV bias is not a serious problem in the data.

EFA and confirmatory factor analyses (CFA) were performed on all items, since measurement instruments from different studies were combined. An EFA, using maximum likelihood (Fabrigar *et al.*, 1999) and direct oblique rotation, to avoid loss of valuable information, and to obtain a reproducible solution (Costello and Osborne, 2005) was used to verify if the items and sometimes rephrased wordings successfully reflect the same factors as intended in the original articles (Thompson, 2007). Through these analyses, a few items that exhibited low communality (< 0.40), high levels of cross-loadings (i.e. loaded on more than one component with values > 0.30 , a value that is commonly used in the literature) or did not load highly (< 0.70) on the expected factors were excluded from the analysis. For most factors, we maintained at least three strong (> 0.50) loading items (Costello and Osborne, 2005). The purification of the scale was done focusing on face validity of the factors (Preacher and MacCallum, 2003). A list of the retained items after CFA in SmartPLS (Ringle *et al.*, 2005), their means and standard deviations, as well as factor loadings and *t*-values for the total sample are presented in Appendix Table AI. As can be seen from this table, nearly all remaining items load highly (> 0.60) and significantly on their respective constructs, while composite reliability measures, and Cronbach's Alpha exceed 0.60 for each construct (Nunnally and Bernstein, 1994), warranting convergent validity of the factors.

Significant differences in the means among stores, obtained using one-way ANOVA, are reported in Table III. The results of a Chow test (Thomas, 1997), a special *F*-test, which tests for regression parameter stability over various sub-samples, suggested that pooling of the data from the three supermarkets was permissible. Table III shows that customers at the three supermarkets had significantly different perceptions for three of the nine factors; first, the extent to which customers perceived their time at the checkout to be engaging (distraction) was quite low in general (mean = 2.58). In this dimension, Albert Heijn scored significantly ($p = 0.034$) worse than the other two stores. Second, customers seemed to perceive a high level of social injustice while waiting (mean = 4.62). Although only marginally significant, customers at Albert Heijn perceived the highest level of social injustice, while customers at C1000 ranked the lowest for this metric ($p = 0.090$). Finally, we identified significant ($p = 0.024$) differences in the perceptions of how organized and tidy the waiting area was. C1000 customers appeared to be most satisfied with the appearance of the waiting area.

Table III.
Means of all factors
for the three different
supermarkets

	Sample mean	Edah mean	C1000 mean	AH mean	<i>F</i>	Sign.
Satisfaction	4.23	4.10	4.48	4.12	0.537	0.219
Employees	4.52	4.37	4.59	4.59	0.660	0.518
Merchandise	4.07	3.89	4.18	4.15	0.632	0.533
Layout	4.24	3.92	4.44	4.37	0.522	0.200
Negative emotional response to the wait	3.78	3.78	3.69	3.87	0.141	0.869
Attribution to store	2.62	2.44	3.04	2.38	1.840	0.162
Waiting area attractiveness	4.18	3.75	4.59	4.21	3.847	0.024 **
Perceived wait duration	4.52	4.57	4.13	4.88	2.332	0.101
Distraction	2.58	2.57	2.95	2.21	3.449	0.034 **
Social injustice	4.62	4.52	4.35	4.98	2.440	0.090 *
Value of purchase	3.40	3.40	3.50	3.30	0.551	0.577

Note: Significant at: *0.10 and **0.05 levels

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 (square root of the AVE appears on the diagonal of Table IV). Generally, our reflective measures show excellent reliability and validity values, with the exception of merchandise and layout, which show acceptable reliability (Hair *et al.*, 2007). In Table IV, correlations between factors are reported.

Significant correlations exist between dependent and independent variables. All of the hypothesized relationships show moderate to strong correlations (>0.50).

PLS regression

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 relationships in the conceptual model. The objective of PLS is to maximize the amount of explained variance in the dependent variable(s) (Henseler *et al.*, 2009; Streukens *et al.*, 2010). There are various reasons to select the PLS methodology. First, our sample was not homogeneous as it consisted of three sub-samples from different supermarket chains. Whereas Maximum likelihood estimations, using Lisrel or Amos, are very sensitive to violations of multivariate normality (Shah and Meyer Goldstein, 2006), PLS is known to be robust in the case of non-normality as a result of heterogeneity among groups of observations (Streukens *et al.*, 2010). PLS can derive estimates for factor loadings that are often overestimated, while path coefficients may be underestimated (Hsu *et al.*, 2006). These negative effects may be balanced by increasing the sample size and the number of indicators per construct (Chin and Newsted, 1999). Given the exploratory nature of the present research and our emphasis on theory development, PLS was particularly useful given its prediction-oriented nature (Barclay *et al.*, 1995; Fornell and Cha, 1994).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Satisfaction (1)	0.813										
Employees (2)	0.473**	0.848									
Merchandise (3)	0.565**	0.538**	0.747								
Layout (4)	0.679	0.528	0.577	0.777							
Neg. emotional response to the wait (5)	0.575**	0.295**	0.328**	0.418**	0.852						
Attribution to store (6)	-0.423	-0.190*	-0.335**	-0.297**	-0.693**	0.887					
Waiting area attractiveness (7)	0.380**	0.414**	0.316**	0.403**	0.349**	-0.247**	0.950				
Perceived wait duration (8)	-0.504**	-0.251**	-0.363**	-0.373**	-0.687**	0.720**	-0.316**	0.878			
Distraction (9)	0.331**	0.185*	0.212*	0.308**	0.388**	-0.179*	0.338**	-0.183*	0.823		
Social injustice (10)	0.238**	0.238**	0.233*	0.239*	0.576**	-0.693**	0.242**	-0.498**	0.170	0.871	
Value of purchase (11)	0.399**	0.369**	0.377**	0.335**	0.285**	-0.073	0.301**	-0.233**	0.205*	0.071	0.858

Notes: Significant at: *0.05 and **0.01 levels; square root of AVE on the diagonal

Table IV.
Correlation coefficients
between all factors
in the model

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Another advantage of PLS is that we can run the analyses with relatively small sample sizes and complex models (Cassel *et al.*, 2000), since the assumption of normality is not necessary (Chin, 1998). The accepted rule of thumb regarding the required sample size of PLS is consistent with requirements for multiple regressions (Barclay *et al.*, 1995). Generally, the ratio between the number of observations and the number of independent variables needs to be within the range of 5-30 (Guadagnoli and Velicer, 1988). In our model, we have eight independent variables and our sample consists of 150 observations. Thus, the ratio is 19, which is well within the recommended range.

Figure 2 shows the empirically validated model. It appears that all except one of the hypothesized relationships are confirmed. The hypothesized direct effect of waiting area attractiveness on customers' negative emotional response to the wait was not found (H_3). Instead, the state of the waiting area affects the perceived duration of the wait. Negative response to the wait and store image were found to directly influence customer satisfaction.

Structural model testing

Standardized PLS path coefficients, as well as the corresponding t -values and R^2 metrics for each explained variable, are shown in Figure 2. Only significant effects are shown in the figure. Following Liljander *et al.* (2009), to assess both the measurement model and the structural model, we calculated the goodness-of-fit (GOF) value as suggested by Amato *et al.* (2004) and Streukens *et al.* (2010). This value provides insight in the weighted average of explained variance in the endogenous variables:

$$GOF = \sqrt{\overline{\text{communality}} \times \overline{R^2}} \quad (1)$$

$\overline{R^2}$ represents the average of all R^2 values found in the empirically validated model:

$$\overline{\text{communality}} = \frac{1}{p} \sum_{j=1}^J p_j \text{communality}_j \quad (2)$$

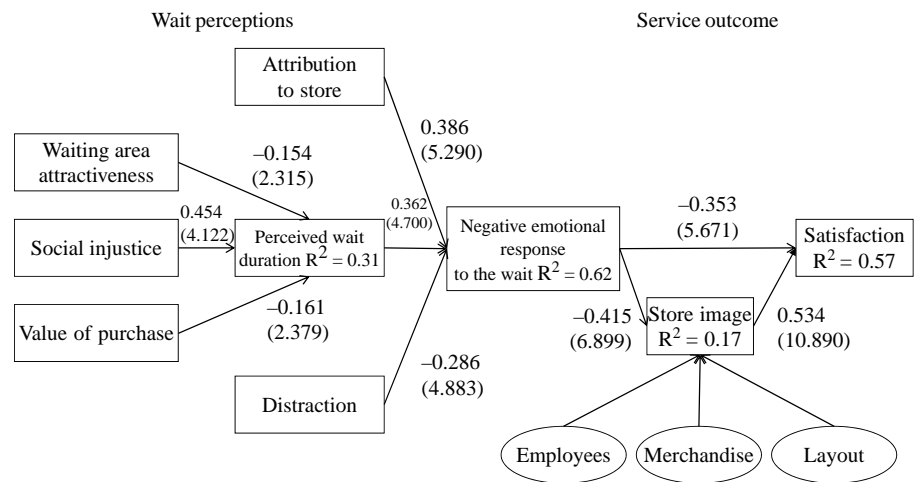


Figure 2.
The empirically
validated model

Formula (2) calculates the term *communality*. Communality_j provides an indication of the quality of construct j 's representation in the final factor solution and equals the AVE for construct j . Coefficient p_j equals the number of items used for measuring construct j . p represents the total number of items. The GOF value for the present model is 0.45, which is decent and of the same order of magnitude as the 0.48 for the European Consumer Satisfaction Index (ECSI) model reported by Tenenhaus *et al.* (2005).

Findings

Negative emotional response to the wait directly and strongly influences satisfaction ($\beta = 0.353$, $t = 5.671$), supporting H_1 : the more the customers disliked their time in line, the lower their level of satisfaction with the overall shopping experience. The amount of explained variance in overall satisfaction increased by 24 percent when we included the variable "emotional response to the wait" in the model, increasing R^2 from 0.46 to 0.57. As predicted in H_{2a} , a strong positive relationship was found between store image and satisfaction ($\beta = 0.534$, $t = 10.890$). Furthermore, store image was hypothesized to mediate the effect of the negative emotional response to the wait on overall satisfaction. The mediation effect was tested in two steps. To decide about the status of the mediation, partial or full, we used a method advocated by Shrout and Bolger (2002): it was investigated whether there was a significant direct effect of the negative emotional response to the wait – the independent variable (IV) – on satisfaction – the dependent variable (DV) – without including the mediating variable (MV) store image. This effect was highly significant. Subsequently, store image was included. All effects (IV \Rightarrow MV, MV \Rightarrow DV, and IV \Rightarrow DV) were significant. This observation points at partial mediation. To confirm the mediation effect, its significance was calculated by bootstrapping the product of the IV \Rightarrow MV and MV \Rightarrow DV effects as suggested by Efron and Tibshirani (1993). All effects were found to be significant, and the mediation was concluded to be partial lending support to H_{2b} .

In the following subsections, we present the empirically validated antecedents of the emotional response to the wait metric and our findings for each.

Perceived wait duration

Perceived wait duration appears to strongly affect the negative emotional response to the wait ($\beta = 0.362$, $t = 4.700$) which provides support for H_4 . The longer customers perceive a wait to last, the more negative their emotional response to the wait.

Attribution to store

In line with H_5 , attribution to the store seems to strongly increase the negative emotional response to the wait ($\beta = 0.386$, $t = 5.290$). The more the service provider is perceived to have control over the duration of the wait, the more unpleasant the wait.

Distraction

Distraction appears to have a significant effect on the negative emotional response to the wait ($\beta = -0.286$, $t = 4.883$). Therefore, H_6 is supported. When customers perceive their time as engaging or purposeful, their negative emotional response to the wait is lower, which is consistent with previous findings. According to the "resource-allocation theory" (Zakay, 1989), distractions will divert people's attention away from the wait, resulting in less boredom and frustration.

Lack of social justice

It appears that perceived social injustice is indeed a very important antecedent of perceived duration of the wait ($\beta = 0.454$, $t = 4.122$), supporting H_7 . Waits appear longer when social justice seems to be lacking. This finding is in line with predictions by Larson (1987) and Sasser *et al.* (1979), based on anecdotal evidence from airport and restaurant studies.

Value of purchase

Supporting H_8 , we find that the perceived purchase value in the shopping cart showed a significant, direct and negative effect on perceived duration of the wait ($\beta = -0.161$, $t = 2.379$). In other words, waits are perceived longer when customers have less value in their basket, and shorter when the value of the purchase is higher.

Waiting area attractiveness

Only an indirect effect on negative emotional response to the wait was found for the state of the waiting area, via perceived duration of the wait ($\beta = -0.154$, $t = 2.315$). A tidy, well-organized waiting environment apparently reduces the perceived duration of the wait, but it does not influence the negative emotional response of customers directly. Thus, we find no empirical support for H_3 .

Conclusions

The objective of the study was to investigate the effect of negative emotional responses to waiting at the checkout on satisfaction, and to develop a better understanding of its antecedents. In our study, negative emotional response to the wait as well as store image exert a strong positive effect on satisfaction. The negative emotional response to the wait plays a role that is complementary to other evaluation dimensions, while also affecting the perceived store image. Thus, productively managing the wait can have a substantial effect on the bottom line, since satisfied customers are generally more loyal and more profitable.

The significant mediation effect of store image implies that positive evaluations of interactions with a service provider prior to a wait can be ruined by a negative emotional response to the wait. However, waits do not necessarily have a strong negative impact on service evaluations. The final service encounter experience affects satisfaction in ways that depend on how the wait is managed (Katz *et al.*, 1991; Rafaeli *et al.*, 2002). A well managed, attractive and equitably perceived waiting environment, that provides sufficient distraction to the waiting customer, can positively contribute to overall satisfaction.

Theoretical implications

We have demonstrated the important and complementary role of the construct of “negative emotional response to the wait” in explaining customer satisfaction. An investigation of customer satisfaction with a store without taking into account the various waits appears incomplete. Attribution to the store and perceived duration of the wait appear to be the most important antecedents of the negative response to the wait. The effects of attribution to the store and distraction in this study were found to be similar to those found in prior studies investigating lines and delays in very different settings. To further complete the model suggested by Taylor (1994, 1995),

we also included the factors value of purchase, waiting area attractiveness, and social injustice. These variables affect the negative emotional response to the wait through perceived wait duration.

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Managerial implications and recommendations

Customer experiences at the checkout have a significant effect on evaluations of service and subsequent satisfaction levels. Successfully managing service operations surrounding the checkout, by making use of insights from services marketing, can provide businesses with a substantial advantage (Ellinger *et al.*, 2006). Our results suggest a negative, direct and strong relationship between a negative emotional response to the wait and satisfaction. Waits therefore require a proactive management approach, to prevent or minimize any negative impacts on satisfaction.

A major implication of this study is that managing waits is not limited to reducing the actual wait times. Instead, perception management strategies, aimed at reducing the perceived duration and attribution of responsibility for the wait to the store, can reduce the negative impact of waits on satisfaction. Certainly, opening more checkout counters at peak operating hours, implementing training programs to increase checkout speeds and using faster scanning technologies will all reduce actual waiting times. However, space constraints, fluctuating customer volumes and the difficulty in predicting demand for services, together with associated cost constraints, limit the potential results of these strategies. Therefore, making the wait appear shorter by means of “perception management” may be an attractive and less costly alternative. Our study shows that a variety of manageable perceptions offer potential in achieving increased satisfaction.

Make the waiting area appear tidy and well-organized. Tidiness indirectly influences the negative response to the wait. Customers who have second thoughts about their product selections often leave behind bruised fruits, or other undesired products, in the area around the checkout counter. When customers experience slow service in an untidy environment, they may also attribute it to the store, as the appearance of the waiting area reflects the extent to which store management cares about its customers. It appears very important therefore, that managers make sure that the waiting area appears tidy and explicitly assign this task to their staff.

Offer customers engagement opportunities. Perceived “idle time” while standing in line was found to aggravate the negative response to the wait. Offering customers engagement opportunities, so that they stop thinking about the wait itself, can increase satisfaction levels by mitigating the negative response to the wait (Tom and Lucey, 1995). Placing video displays, interactive information screens, mirrors, magazines (Haynes, 1990) or free, relevant literature (such as nutritional information flyers and leaflets with next week’s promotions) next to the checkout lines can help both distract and entertain customers. Free Wi-Fi and 3D barcodes could be provided, directing customers with a Smartphone to special offers and promotions, or offering them vouchers.

Promote social justice. The role of social injustice was shown to be indirect, but other authors attach significant value to this issue (Maister, 1985). We therefore recommend taking social justice seriously in the design of the service system and not giving priority to customers who, according to generally accepted equity rules, are not “supposed” to be treated in an advantageous or faster way. Maister (1985, p. 121)

recommends that, whenever priority rules are used, “the service provider must make serious efforts to ensure that these rules match with the customer’s sense of equity.” According to Zhou and Soman (2008), equity in total waiting time should also be a concern to operations managers.

Express lanes and self-service checkouts. Opening up express lanes, possibly with self-service checkout scanners, can be a good strategy for addressing the impact of purchase value on perceived duration of the wait. Customers who buy only a few items exhibit less tolerance for waiting in line. Bennett (1998) found that express lanes as such are not perceived as unfair. When express lane cashiers serve customers with too many products, however, the other customers in the express lane may become dissatisfied as a result of perceived injustice.

Limitations and suggestions for further research

The present study furthers our understanding of the relationships between sentiments regarding the wait time at checkout, negative emotional response to the wait, store image, and satisfaction. The theory could be further refined. Generalizing the results to other waiting situations and settings should be done with some caution. The results are likely transferable to other short-wait situations, such as at banks and other retail outlets, but they may not generalize to the long-wait environments encountered in airports or hospitals. Also, waiting in line in very dissimilar situations, for example in queues for attractions in an amusement park may be perceived differently, since the wait there may actually serve to increase anticipation and suspense (Koo and Fischbach, 2010). To improve reliability, future research should use better measures, specifically for the various dimensions of the retail experience. Future investigations of the differences between wait-perceptions across a variety of supermarket formulas, but also across in-store specialty departments –, e.g. fresh fish and meat, bakery, deli – and their relationship to the wait could lead to further insights. We did not consider the role of the cashier in the study, whilst interactions between the cashier and customers could also be considered responsible for part of the negative response to the wait. Some encounters give rise to strong negative emotions in customers. In future research explicit attention could therefore also be paid to the role of the cashier, for example to the emotional competences of this contact employee. Future research could also investigate the effects of different layouts and set-ups to determine which aspects are most appropriate in the context of supermarket checkouts to reduce the perceived duration of the wait. Fillers can have different effects on waiting customers (Munichor and Rafaeli, 2007). Therefore, additional research is needed to determine a good balance in engaging, while not annoying, the customer.

In our sample, males and females were not equally well represented. In the population of supermarket visitors this is neither the case, so we believe that the sample is representative for this population. The unequal distribution may, however, have consequences for generalizability to other domains.

Several recommendations are made in this article on how to manage customers’ wait perceptions. Investigations of how these perception strategies can best be implemented seem to be a logical next step: should stores “fill time” by installing TV screens, or should they instead engage customers with free samples and flyers? Should the strategies differ between supermarket formulas, or by customer segment?

Next to the advantage of making observations in a real life situation, field research also has its limitations as a result of the difficulty to control for unobserved factors, and the complexity of the observed reality. To develop an in-depth understanding of customers' negative responses to waits in supermarkets, and to differentiate between waiting in different parts of the store (fresh fish, bread, dairy, deli, checkout), more, possibly qualitative, research would be required. In addition, the short and specific data collection period may further limit the generalizability of our findings. Customers might be less patient during the pre-Christmas shopping season than at other times. Experimental designs could also be used to investigate the effects we found in more detail, and to better isolate the causes of the effects we found. Customer experiences with waiting at self-service technologies that substitute interactions with store personnel could also be an interesting area of research.

Finally, do cultural and social differences lead to differences in negative response to the wait? This question is especially relevant for supermarket chains with locations across the globe.

Note

1. For a definition of "emotion" we refer to Bagozzi *et al.* (1999, p. 184), who conceptualize it, referring to the work of Lazarus (1991) and Oatley (1992) as "a mental state of readiness that arises from cognitive appraisals of events or thoughts; [...] and may result in specific actions to affirm or cope with the emotion."

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Construct/measures	Loading	<i>t</i> -value	Mean	SD
<i>Satisfaction</i> ($\alpha = 0.90$; $CR = 0.92$)			4.23	1.24
It was a good decision to shop at [...] and not in a different store	0.726	17.211	4.43	1.51
I prefer this [...] when comparing it with other supermarkets	0.729	17.871	3.89	1.66
Today's shopping experience at [...] was as expected	0.764	21.235	4.56	1.59
Buying my groceries at this [...] today was a pleasant experience	0.881	54.511	4.18	1.53
I felt good today when shopping at [...]	0.885	48.301	4.27	1.45
I liked shopping at [...] today	0.859	35.067	4.09	1.44
<i>Employees</i> ($\alpha = 0.80$; $CR = 0.88$)			4.52	1.09
The employees of this [...] were friendly today	0.882	44.318	4.85	1.30
The employees of this [...] are knowledgeable	0.919	76.802	4.53	1.26
Employees were willing to find custom solutions to questions	0.735	12.914	4.17	1.28
<i>Merchandise</i> ($\alpha = 0.62$; $CR = 0.79$)			4.07	1.43
This [...] offers a broad assortment of products	0.806	20.336	4.03	1.84
This [...] sells high-quality products	0.808	21.322	4.67	1.36
Products I needed were available	0.620	8.513	4.47	1.81
<i>Layout</i> ($\alpha = 0.66$; $CR = 0.81$)			4.24	1.59
It was easy to find products on offer	0.676	11.245	4.53	1.30
Physical facilities at [...] are visually appealing	0.785	18.479	3.72	1.90
This [...] has a clear store layout	0.858	31.142	4.47	1.57
<i>Negative emotional response to the wait</i> ($\alpha = 0.87$; $CR = 0.91$)			3.78	1.69
I was relaxed while standing in line (reverse coded)	0.728	10.447	3.87	1.90
I felt frustrated while standing in line today	0.901	59.056	4.28	1.88
I was bored during the wait	0.898	59.693	3.53	2.06
I disliked my time in the queue	0.867	35.276	3.45	2.09
<i>Attribution to store</i> ($\alpha = 0.86$; $CR = 0.92$)			2.62	1.91
Wait was longer than necessary due to too few checkout counters	0.898	40.407	2.37	2.21
The store was to blame for my longer than necessary wait	0.924	64.339	2.17	2.20
Employees at the checkout worked slowly	0.839	32.686	2.83	2.10
<i>Waiting area attractiveness</i> ($\alpha = 0.90$; $CR = 0.91$)			4.18	1.55
I perceived the waiting area as neat	0.443	1.980	4.37	1.54
I found the waiting area organized	0.957	14.658	3.99	1.72
<i>Perceived wait duration</i> ($\alpha = 0.85$; $CR = 0.91$)			2.47	1.75
I had to wait a long time at checkout today	0.930	79.137	2.70	2.13
I thought I would never get out of this line today	0.914	61.380	1.93	1.93
The wait today was shorter than expected (reverse coded)	0.782	19.853	2.78	1.93
<i>Distraction</i> ($\alpha = 0.80$; $CR = 0.86$)			2.58	1.44
While waiting today, I felt occupied by things around me	0.797	8.654	2.47	1.77
I felt I was being distracted while waiting	0.737	7.202	2.26	1.62

(continued)

Table AI.
Items and CFA for
constructs

Construct/measures	Loading	<i>t</i> -value	Mean	SD
There were plenty of things to do and look at while I stood in line	0.910	29.298	3.00	1.75
<i>Social injustice</i> ($\alpha = 0.84$; $CR = 0.90$)			4.62	1.50
I had the feeling that people with few products received preferential treatment	0.761	4.756	4.83	1.47
I had the feeling that people who joined the queue later got served before me	0.923	4.999	4.75	1.75
It seemed to me that service in other queues was faster	0.918	4.921	4.26	1.89
<i>Value of purchase</i> ($\alpha = 0.87$; $CR = 0.91$)			3.40	1.62
The products I just bought are important to me	0.983	12.165	4.51	1.51
I really needed the products I bought	0.918	10.617	4.67	1.61
My shopping cart was entirely filled today	0.542	4.257	2.15	1.88
I had the feeling I bought a lot of goods today	0.915	12.808	2.28	1.92

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