

# **Consumer Food Satisfaction: Fulfilment of Expectations or Evaluation of Performance?**

By

Torben Hansen<sup>1</sup>  
Professor, ph.d.

---

<sup>1</sup>Torben Hansen, Department of Marketing, Copenhagen Business School, Solbjerg Plads 3, 2000 Frederiksberg, Denmark.

Tel.: + 45 38 15 21 00; Fax: + 45 38 15 21 01; E-mail: [th.marktg@cbs.dk](mailto:th.marktg@cbs.dk)

*This research was partly supported by a research grant from the Danish Council for Strategic Research, Programme Commission on Food and Health.*

# **Consumer Food Satisfaction: Fulfilment of Expectations or Evaluation of Performance?**

## **Abstract**

This paper investigates whether consumers when buying food products are likely to form expectation-performance comparisons or whether they are more likely to base their satisfaction assessment on performance evaluation. Three different experiments were conducted in order to investigate the problem setting. The food products used were shrimps (experiment A), cheese (experiment B) and potato-chips (experiment C). In contrast to the suggestions put forward in the literature on satisfaction research the results did not show disconfirmation to have any significant effect on satisfaction. The results also revealed that a higher task involvement increased respondents' propensity to incorporate performance perceptions in their assessment of disconfirmation. However, a higher task involvement did not affect the relation between disconfirmation and satisfaction, which remained insignificant across involvement levels.

*Key words:* Satisfaction – expectancy-disconfirmation model – food – experimental studies

## **Introduction**

Consumer satisfaction has gained increasing attention in recent years (e.g., Peterson and Wilson, 1992; Fornell *et al.*, 1996; Spreng and Mackoy; 1996; Bernhardt *et al.*, 2000; Ofir and Simonson, 2005). Most writers agree that satisfied consumers represent a value for a company. In fact, Peterson and Wilson (1992) point out that “satisfying customers is the primary *obligation* of a company” (p. 61). Previous research indicates that satisfaction has impact on ROI (Anderson *et al.*, 1994), shareholder value (Ittner and Larcker, 1996), higher marketshare and profit (Fornell, 1992; Homburg and Rudolph, 2001), customer loyalty (Bearden and Teal, 1983; Kristensen *et al.*, 2000), and overall firm performance (Anderson and Sullivan, 1993).

Most studies on consumer satisfaction have been conducted within the comparison standards (CS) paradigm, which posits that consumers hold preconsumption preferences, observe product performance, compare performance with their standards, form confirmation or

disconfirmation perceptions, combine these perceptions with standards levels, and then form summary satisfaction judgments (cf. Mick and Fournier, 1999). The expectancy-disconfirmation model is dominant within the CS paradigm (Maute and Forrester, 1993; Martensen and Grønholdt, 1998) and indirectly addresses the way consumers respond to consumption experiences (Montfort et al., 2000). Although the expectancy-disconfirmation model have formed background for many studies in service marketing (e.g. Fornell, 1992; Cadotte *et al.*, 1996; Spreng and Mackoy, 1996; Oliver and Swan, 1989) it has been widely used in relation to physical products as well (e.g., Churchill and Surprenant, 1982; Nield *et al.*, 2000). The full expectancy-disconfirmation model encompasses four constructs: expectations, performance, disconfirmation, and satisfaction (Churchill and Surprenant, 1982). According to the expectancy-disconfirmation model consumers form expectations towards a product on the basis of some internal and/or external cues. The product is then experienced and evaluated, and the outcome (i.e., the performance of the product) is then compared with the expectations. As a result of this process the expectations are either confirmed or disconfirmed. In the case of negative disconfirmation the consumer becomes more or less unsatisfied which may have negative consequences for the repeat purchase of the product. When the expectations are confirmed - or perhaps even exceeded leading to 'positive disconfirmation' (Churchill and Surprenant, 1982; Rust and Oliver, 1994) – the consumer becomes satisfied, which may have positive consequences for the repeat purchase of the product.

In other words, consumer expectations are believed to be key determinants of consumers' satisfaction and loyalty. Other things being equal, comparing expectations with actual performance is, however, more cognitively demanding than just evaluating the product based on experienced product performance – that is, without integrating expectations in the evaluation. Thus, if consumers can determine their level of satisfaction by the mere product evaluation during consumption experience they may hesitate to use extra cognitive resources for the purpose of integrating expectations in their satisfaction assessment procedure. This is due to the fact that consumers' mental resources are limited and that therefore no extra resources are likely to be applied if a sufficient result can be reached with the application of fewer resources. For example, recent research (Hansen *et al.*, 2006) suggests that when patronizing supermarkets, consumers may be more inclined to look for mental justification based on an evaluation of supermarket performance than to seek (dis-)confirmation of expectations. Other evidence (Ofir and Simonson, 2005) suggests that measuring consumers' expectations just prior to a consumption experience may (negatively) impact subsequent

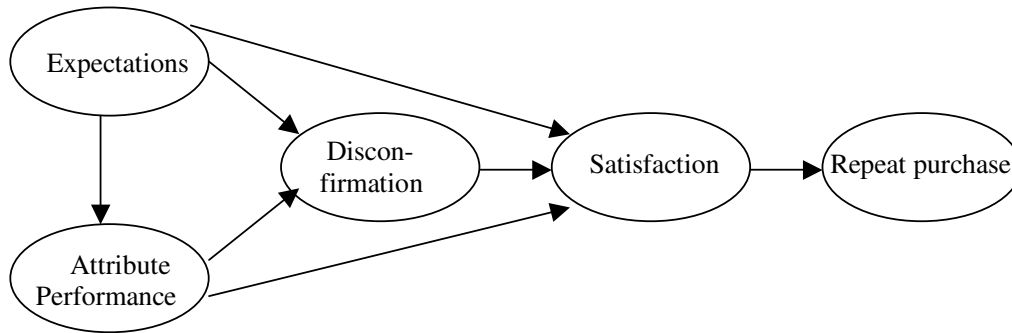
evaluations of that experience. Stating expectations enhances task involvement leading to an increased willingness to use cognitive resources, which in turn seems to lead consumers' to engage in a more 'critical' evaluation procedure in which special emphasis will be put on negative aspects. Thus, the mere measurement of expectations prior to a consumption experience may subsequently lead to more negative satisfaction measurements because of the researchers interference with consumers' satisfaction assessment procedure. If consumers' are in fact likely to form expectations-performance comparisons (as proposed by the CS paradigm) then 'fulfilment of expectations' should be a better predictor of consumer satisfaction than performance evaluation. On the other hand, if consumers' are unlikely to engage in the more mentally demanding task of comparing expectations with performance then performance evaluation should be a better predictor of consumer satisfaction than fulfilment of expectations.

The purpose of this paper is to investigate whether consumers when buying food products are likely to form expectation-performance comparisons or whether they are more likely to base their satisfaction assessment on performance evaluation. The choice of food products was primarily based on the following considerations. Firstly, consumers buy most food products frequently. Therefore, consumers are often 'close' to their previous expectations when they experience a food product. As a consequence, it seems within reason to assume that consumers are capable of actually recall their expectations 'correctly' (as it is implicitly assumed in the expectancy-disconfirmation model) when they are about to experience the product in the usage-situation. Secondly, food management in general can be regarded as one of the most dynamic and competitive areas of business organization. Facing a near-saturated food market, being the case in most Western countries, food managers must find new ways to differentiate themselves from other suppliers and thereby seek to create satisfaction, or even loyalty, towards their own products.

### **The expectation-disconfirmation model**

Figure 1 displays a graphic representation of the basic expectancy-disconfirmation model (e.g., Montfort *et al.*, 2000) with the extension of the 'repeat purchase' variable.

Figure 1. The expectancy-disconfirmation model



In the model, disconfirmation is regarded as a central intervening variable since it basically is the degree of disconfirmation that is believed to generate satisfaction and dissatisfaction (Oliver, 1977; Churchill and Suprenant, 1982; Oliver and DeSarbo, 1988; Oliver, 1996). In the expectancy-disconfirmation model expectations are assumed to have an indirect effect on satisfaction through disconfirmation. Furthermore, consumers can be thought to assimilate expectation levels to satisfaction levels in order to avoid the dissonance that could be the result of a divergence between expectations and satisfaction levels (Szymanski and Henard, 2001). In addition, Spreng and Mackoy (1996) and Montfort *et al.* (2000) among others found that expectations had a direct influence on perceptions of performance. Performance has been recognized to have a direct effect on satisfaction (e.g., Halstead *et al.*, 1994; Oliver and DeSarbo, 1988; Montfort *et al.*, 2000). Szymanski and Henard (2001) propose that "modeling performance as a separate predictor of satisfaction follows directly from the notion of value-percept diversity; that is, customers are likely to be more satisfied with the offering as the ability of the offering to provide consumers what they need, want, or desire increases relative to costs incurred" (p. 17). Although a few exceptions exists (e.g., Westbrook, 1981; Swan and Oliver, 1991) a positive relationship between performance and satisfaction has been found by numerous writers including Tse and Wilson (1988) and Oliver (1993). Szymanski and Henard (2001) found in their meta-analysis that performance was correlated with disconfirmation and satisfaction to a significantly degree. Satisfied consumers can be expected to be more likely to buy a food product again than less satisfied consumers. This relationship is evidenced by e.g., Bearden and Teal (1983), LaBarbera and Mazursky (1983), and Szymanski and Henard (2001).

A number of critical remarks can, however, be related to previous research dealing with the expectancy-disconfirmation model. First, most studies do not allow consumers' expectations to be formed *before* the experiences - as expectations and experiences most often are investigated in the same survey. This introduces the risk that respondents in order to avoid cognitive dissonance adjust their expectations to the same level as their performance evaluation (refer to Montfort *et al.*, 2000; Szymanski and Henard, 2001) making the confirmation/disconfirmation results less valid. Second, most satisfaction surveys do not account for 'real life' settings in which there normally is a time-span between the formation of expectations in the buying situation and the experiences made in the usage situation. Third, even for the same food product consumers may form their expectations and performance evaluations under various conditions (e.g., different prices, different usage purposes, and the like). The stability of the results should therefore be investigated across various contexts. Seeking to comply with such important aspects, three experimental studies were carried out as described in the next section.

## **Methodology**

Three different experiments were conducted in order to investigate the problem setting. The food products used were shrimps (experiment A), cheese (experiment B) and potato-chips (experiment C). In all three experiments, two criteria guided the selection of the applied food products: (1) The products selected should not require any complex cooking procedures in order for the products to remain unchanged during the experiments, which included both manipulated buying situations (for the measurement of expectations) and usage situations (for the measurement of performance, disconfirmation, satisfactions, and repeat purchase). (2) The products used in experiments A and B are often offered in supermarkets, specialty food stores, *etc.* without any brand attached to the products. The product used in experiment C ('Kims Indian Summer Chips') was at the time of the experiment at the introductory stage in the Danish marketplace and was not well known among consumers. We wished to avoid well known brands in the experiments since respondents may already have gained experiences towards such brands and may therefore 'know' the performance of the products in advance (Andrews and Valenzi, 1971; Render and O'Connor, 1976; Dodds *et al.*, 1991) and subsequently – for that reason – may be less inclined to engage in expectations-performance comparisons.

### *Experimental designs*

*Experiment A:* 160 respondents were recruited, all undergraduate and graduate students from various universities in the Copenhagen region. The respondents participated in the experiment one at a time. After the respondent was welcomed s/he was accompanied to a neutral room containing two chairs, one table, and one dish containing the shrimps. The respondent was asked to imagine that s/he intended to buy the shrimps for a meal at home and was asked questions concerning attribute expectations. After accomplishing the first part of the experiment the respondent was guided to another room. The respondent was seated and asked to butter cover a slice of white bread with shrimps. After tasting the shrimps the respondent was then asked a number of questions concerning performance, disconfirmation, satisfaction, repeat purchase, arousal level, pleasure-feeling and general involvement in relation to the purchase of shrimps.

*Experiment B:* Experiment B was conducted in the same way as experiment A except that the meal consisted of cheese. For the purpose of experiment B another 160 respondents were recruited, also undergraduate and graduate students from universities in the Copenhagen region. The respondents participated one at a time in the experiment and were guided through the same procedure as in experiment A.

*Experiment C:* 241 graduate students participated in experiment C. One at the time subjects were welcomed and were guided to a neutral room containing two chairs, one table with a package of chips and a shelf comprising additional ten packages of chips. After the respondent was seated s/he was asked to take a look at the package of chips found on the table. Like in a potential buying situation the respondent was allowed to touch the package and then answered questions concerning attribute expectations. After accomplishing the first part of the experiment the respondent was guided to another neutral room. The respondent was seated and asked to taste the potato chips. Like in experiments A and B the respondent was then asked a number of questions concerning performance, disconfirmation, satisfaction, repeat purchase, pleasure-feeling, arousal level and general involvement in relation to the purchase of potato-chips.

### *Manipulations of tasks and exposures in experiments*

In each of three experiments between-subjects manipulations of the applied food products were employed. Exposing respondents to different product combinations and asking them to perform different tasks enhance the possibility of obtaining significant variations in respondents' response to the constructs (expectations, performance, disconfirmation, satisfaction, and repeat purchase) applied in the basic model (refer to Figure 1) of this study. The manipulations employed in the experiments intended to create variations in respondents' cognitive activity (i.e., manipulations of price-level and task involvement) and affections (i.e., manipulations of scent and physical surroundings), refer to below. These manipulations allow us to investigate (a) whether the cognitive activity level moderates the propensity to engage in expectations-performance comparisons (as suggested earlier) and (b) whether affections (i.e., variations in pleasure-feeling created by manipulations in scent (buying situation; experiment C) and physical surroundings (usage situation; experiments A and B) would affect respondents' propensity to use cognitive resources to conduct expectations-performance comparisons.

In experiments A and B, manipulations were carried out as follows. A 2 (high/low price) \* 2 (high/low purchase involvement) \* 2 (less elegant physical surroundings/elegant physical surroundings) between subjects design was carried out. Price and purchase involvement (buying shrimps or cheese for daily situations (low involvement task) or for situations with guests (high involvement task) were both manipulated as between subjects factors in a simulated buying situation. Physical surroundings were manipulated as a between subjects factor in a simulated usage situation. In experiment C, *scent type* was manipulated as a between subjects factor, with subjects randomly assigned to either a congruent (n=80), an incongruent (n=77) or an unscented (n=84) condition. In the experiment, the congruent scent was a 'potato chips odor' and the incongruent scent was a 'grape fruit odor' (which is known to be pleasant to most people). An expert in the field developed both odors, which during the experiment were sprayed homogeneously on the package of the potato chips. Each respondent was exposed to a new package and the room in which the experiment was conducted was carefully aired between the entrances of each respondent. In the usage situation no between subjects manipulations were utilized. By undertaking different experimental designs and manipulations (e.g., purchase involvement was manipulated in experiments A and B – but not C), the stability (validity) of the produced results in various contexts can be examined in the subsequent analyses.



### *Measurements*

*Expectations:* Respondents were asked about their expectations towards three items describing the food products, namely consistency, freshness, and good taste. The selection of these items were made on the basis of ten depth interviews with a broad variety of consumers, meetings with food producers, as well as reviewing prior research results on the most important consumer choice criteria for various food products (e.g., Bisogni et al., 1987; SOU, 1994; Sørensen et al., 1996). The expectations were measured on a 7-point Likert scale; that is the word ‘expectation’ was not included in the questionnaire (refer to the results obtained by Ofir and Simonson, 2005; see above) – respondents were instead asked to state the degree of agreement/disagreement to the statement that consistency, freshness, and good taste could be related to the manipulated food products.

*Performance:* Respondents were asked to evaluate the same items as used in the measurement of expectations. All items were measured on a 7-point Likert scale.

*Disconfirmation:* Disconfirmation could be measured by calculating the gap scores between expectations and performance. However, this measurement method has received a great deal of criticism in literature (e.g., Teas, 1993; Spreng and Mackoy, 1996). Spreng and Mackoy (1996) propose instead that respondents for each attribute are asked for their subjective assessment of the difference between ‘what you expected and what you received’. Following Spring and Mackoy, respondents were asked whether they thought the performance of the three items correspond with their prior expectations towards either the shrimps or the cheese. A 7-point measurement scale with endpoints ‘much worse than my expectations’ (= 1) and ‘much better than my expectations’ (= 7) was used.

*Satisfaction:* Satisfaction is primarily an affective response to a specific consumption experience (Linder-Pelz, 1982; Gotlieb et al. 1994). According to e.g., Johnson and Fornell (1991) and Hackl et al. (2000) satisfaction should be treated as a latent construct, which calls for a multi-item measurement. However, it is not uncommon to find studies using only a single-item measurement (refer to Peterson and Wilson, 1992). In our study, we chose to measure satisfaction using a 7-point Likert scale in combination with a 7-point semantic scale. The Likert-scale measured the respondents’ level of agreement with the following statement: ‘I am satisfied with the shrimps/cheese/potato-chips’, while the semantic scale measured the respondents reaction to the following statement: ‘How would you describe your degree of

satisfaction with the shrimps/cheese/potato-chips'? The end-points of the semantic scale were 'very unsatisfied' (=1) and 'very satisfied' (=7) respectively.

*Repeat purchase:* Repeat purchase was measured by obtaining the respondents response to the following two statements: (1) 'In your opinion, how likely is it that you would buy these shrimps/this cheese/these potato chips at some time in the near future?' Answers were given on a 7-point semantic scale ranging from 'totally unlikely' (=1) to 'most likely' (=7). (2) 'Compared to other shrimps/cheese/potato chips of the same type how would you describe your willingness to buy these shrimps/this cheese?' Answers were given on a 7-point semantic scale with endpoints 'much lower' (=1) and 'much higher' (=7) respectively. As the design of the study did not allow the measurement of actual behavior 'purchase intention' was used as a substitute for 'repeat purchase'.

*Involvement:* Task involvement was measured using Mittal's (1989) Purchase Involvement Scale (PIS).

*Arousal:* Arousal level (which is treated here as an indicator for respondents' cognitive awareness in the experiments) was measured by the 'arousal' dimension of Mehrabian and Russel's (1974) PAD Scale. Arousal can be conceptualized as "a feeling state varying along a single dimension ranging from sleep to frantic excitement" (Mehrabian and Russel, 1974, pp. 18-19).

*Pleasure-feeling:* Pleasure-feeling was measured by the 'pleasure' dimension of Mehrabian and Russel's (1974) PAD Scale. Pleasure can be conceptualized as: "pleasure is a feeling state that can be assessed readily with self-report, such as semantic differential measures, or with behavioural indicators such as smiles, laughter, and, in general, positive versus negative facial expressions" (Mehrabian and Russel, 1974, pp. 18-19).

#### *Manipulation checks of tasks and exposures in experiments*

*Task involvement:* The level of task involvement was manipulated by setting two different buying purposes (experiment A and B). Low involvement (LI): Buying shrimps/cheese for daily purposes. High involvement (HI): Buying shrimps/cheese for guest purposes. If the manipulations had succeeded it should be expected that subjects who were asked to buy shrimps or cheese for guest purposes would score higher on the involvement scale compared

to subjects who were asked to buy for daily purposes. A one-sided group means t-test resulted in a t-value of  $-2.190$  ( $p\text{-value}=0.015$ ) for shrimps, and a t-value of  $-1.742$  ( $p\text{-value}=0.042$ ) for cheese. Both these results indicate that subjects perceived the manipulations of the task-variable as intended. In both experiments A and B task involvement was positively correlated with arousal level ( $r=0.29$  and  $0.32$ ,  $p\text{-values}<0.01$ ) indicating that the high task involvement manipulation produced a higher cognitive activity as compared to the low task involvement manipulation. The applied involvement scale had Cronbach alpha values of  $0.68$  and  $0.73$ , respectively and the applied arousal scale had Cronbach alpha values of  $0.76$  (two items deleted) and  $0.82$  (two items deleted), respectively.

*Price-level:* The price-level was manipulated in experiments A and B by setting a low price and a high price, respectively. At the end of the experiments price-manipulations were measured by exposing subjects to the following statements: (1) 'Compared to the average market price of shrimps/cheese the price of these shrimps/this cheese is in my opinion'. A 7-point semantic scale with end-point 'much lower' and 'much higher' was employed. (2) 'In my opinion the price of these shrimps/this cheese is'. A 7-point semantic scale with scale-end points 'very low' and 'very high', was employed. A one-sided group means t-test for subjects exposed to low and high prices, respectively, resulted in a t-value of  $-5.292$  ( $p\text{-value}<0.001$ ) for shrimps, and a t-value of  $-9.732$  ( $p\text{-value}<0.001$ ) for cheese. The 'low price' was in both experiments perceived to be just below marketprice ( $3.83$ , shrimps;  $3.18$ , cheese) on the semantic scale concerning statement (1), while the 'high price' in both experiments was perceived to be just above average marketprice ( $4.93$ , shrimps;  $4.84$ , cheese). The manipulated 'high price' level resulted in a higher level of arousal among respondents in experiment B ( $p\text{-value}=0.032$ ) but not in experiment A ( $p\text{-value}=0.243$ ) (one sided group means t-test).

*Physical surroundings:* On the basis of the above-mentioned explorative studies ( $n=10$ ), two different usage situations were constructed and manipulated. One usage situation was constructed to represent elegant physical surroundings and one usage situation was constructed to represent less elegant physical surroundings (refer to Hansen, 2005 for further details). Asking another 20 students (unrelated to the main sample and instructed not to reveal their participation) to compare the two types of surroundings carried out manipulation checks of the variation in the physical surroundings. All students perceived the manipulated elegant surroundings to be more elegant than the manipulated less elegant surroundings. Elegant

physical surroundings resulted in a higher pleasure-feeling among respondents in experiment B (p-value=0.006) but not in experiment A (p-value=0.329) (one-sided group means t-test). The applied scale for pleasure-feeling had Cronbach alpha values of 0.82 and 0.84, respectively.

*Scent:* Olfactory stimuli are likely to follow an inverted U-shape function; as odors get more intense, reactions tend to become more negative (Spangenberg et al. 1996; Henion 1971). That is, an odor in low concentrations may invoke a pleasant feeling while the same odor in high concentrations may be considered nauseating. It was therefore important that the concentration of scent used in experiment C was balanced so that it would reach the olfactory system - but not to a degree where it might cause negative reactions. The following precautions were taken to ensure this. First, an expert in the field (an experienced developer of odors) developed both odors (chips-scent and grapefruit-scent) and provided guidance as to what concentration would be appropriate (during the experiments the scents were sprayed homogeneously on the packages of the potato chips using an advanced instrument). Second, a pre-test involving ten additional students (unrelated to the main sample and instructed not to reveal their participation) were exposed to the suggested concentration of chips-scent and grape-fruit scent, respectively, and asked for their opinions. All respondents were capable of sensing the concentrations when sprayed on the chips-package, and also agreed that the concentrations were fairly low and unlikely to invoke negative emotions. Respondents exposed to the chips scent condition showed a significantly ( $<0.01$ ) higher level of pleasure-feeling than did respondents exposed to the grape fruit scent condition and the unscented condition (ANOVA, LSD comparisons). No other differences in pleasure-feeling were significant. Cronbach's alpha of the pleasure-feeling measurement scale was 0.81 (one item deleted).

## **Results**

The relations displayed in the conceptual model in Figure 1 were for all three experiments translated into separate Lisrel models, each consisting of a measurement part (confirmatory factor analysis) and a structural equation part (simultaneous linear regression). The relationships between the variables were estimated by maximum likelihood estimation. The framework was tested using a two-stage analysis (refer to Anderson and Gerbing, 1988). First, the measurement model is developed by conducting confirmatory factor analysis on the

applied multi-item scales. Next, the measurement model and the structural equation paths are estimated simultaneously to test the proposed model (overall model).

### *Measurement model*

The results of the measurement model, including the standardized factor loadings, SE, t-values, construct reliabilities, and proportion of extracted variance are for all experiments displayed in Table 1. All factor loadings were significant ( $p < 0.01$ ) which demonstrates that the chosen generic questions for each latent variable reflect a single underlying construct. The reliabilities and variance extracted for each variable indicate that the model was reliable and valid. All composite reliabilities exceed 0.70, except one which is close to 0.70. Variance extracted estimates were all above 0.40.

*Table 1. Confirmatory Factor Analyses Results*

Construct/indicator	Standardized factor loading <sup>a</sup>			Construct reliability <sup>b</sup>			Extracted variance <sup>c</sup>		
	Exp. A	Exp. B	Exp. C	Exp. A	Exp. B	Exp. C	Exp. A	Exp. B	Exp. C
ξ1 Expectations				0.71	0.70	0.73	0.45	0.44	0.48
X1	0.55	0.51	0.70						
X2	0.62	0.69	0.50						
X3	0.82	0.77	0.84						
η1 Attribute performance				0.72	0.69	0.76	0.47	0.43	0.52
X4	0.57	0.55	0.71						
X5	0.69	0.72	0.58						
X6	0.78	0.68	0.85						
η2 Disconfirmation				0.75	0.74	0.78	0.51	0.49	0.56
X7	0.75	0.70	0.94						
X8	0.71	0.75	0.52						
X9	0.67	0.64	0.72						
η3 Satisfaction				0.80	0.70	0.95	0.66	0.54	0.90
X10	0.73	0.79	0.96						
X11	0.89	0.68	0.94						
η4 Repeat purchase				0.73	0.75	0.84	0.58	0.60	0.73
X12	0.77	0.82	0.76						
X13	0.75	0.73	0.94						

Notes:

<sup>a</sup> The first item for each construct was set to 1.

<sup>b</sup> Calculated as  $\frac{\sum(\text{Std. Loadings})^2}{\sum(\text{Std. Loadings})^2 + \sum \xi_i}$

<sup>c</sup> Calculated as  $\frac{\sum \text{Std. Loadings}^2}{\sum \text{Std. Loadings}^2 + \sum \xi_i}$

The reliabilities and variance were computed using indicator standardized loadings and measurement errors (Hair et al., 1998). All items load significantly ( $t\text{-value} > 1.96$ ) on their corresponding latent construct, which indicates that convergent validity is obtained. These initial model considerations indicate that the constructs do exist and that they are tapped by the measures used. The measurement model fits well to the data. The values of the comparative fit index (CFI=0.96, experiment A; 0.91, experiment B; 0.92, experiment C) are in all experiments above the recommended threshold of 0.90 for a satisfactory goodness of fit (Bentler, 1992). Also, the point estimate of RMSEA shows values of 0.04 (experiment A), 0.07 (experiment B), and 0.07 (experiment C) which in all cases are below the recommended level of 0.08. Thus, we can conclude that the unidimensionality criterion is satisfied.

#### *Overall model fit*

We used three types of fit measures to assess the overall fit of the model. (1) *Absolute fit measures*: The chi square statistic was 75.29 (d.f. = 58,  $p = 0.063$ ) for experiment A; 77.43 (d.f. = 58,  $p = 0.045$ ) for experiment B and 92.52 (d.f. = 58,  $p = 0.003$ ) for experiment C. In experiment C the p-value was close to zero indicating an unacceptable absolute model fit. However, the values of the goodness of fit index (GFI) were 0.947 (experiment A); 0.946 (experiment B) and 0.912 (experiment C), which in all cases are well above the acceptable level of 0.9 (Bollen and Long, 1993). Furthermore, the coefficient of determination,  $R^2$ , for 'satisfaction' was 0.72 (experiment A); 0.81 (experiment B) and 0.80 (experiment C) indicating a good explanation of this concept and a good structural model fit. (2) *Incremental fit measures*: The incremental fit measures provide support to the model. The adjusted goodness of fit index (AGFI) showed values at 0.902 (experiment A); 0.901 (experiment B) and 0.896 (experiment C) which are above – or very close to - the threshold of 0.9. In addition, the Tucker-Lewis index amount to 0.968 for experiment A; 0.953 for experiment B and 0.952 (experiment C) and the Bentler and Bonett normed fit index gave the following values: 0.932 (experiment A) and 0.910 (experiment B) and 0.908 (experiment C). All these values (except one) exceed the suggested 0.9 threshold which indicates that the improvement of fit over the null model is substantial (Dröge, 1989). (3) *Parsimonious fit measures*: One measure applicable for evaluating a single model is the normed chi-square measure (Hair et al., 1998). The computed values of 1.30 (experiment A); 1.34 (experiment B) and 1.60 (experiment C) fall within the proposed threshold limits for this measure (Jöreskog, 1970;

Carmines and McIver, 1981). To conclude, support is provided for the overall model as proposed.

### Results

The estimates of the structural equation coefficients and the p-values are displayed in Table 2.

Table 2. Estimation results for experiments A, B and C.

Estimates of structural equation (standardized) coefficients			
Relations	Experiment A	Experiment B	Experiment C
Expectations→Performance	0.55**	0.71**	0.88**
Expectations→Disconfirmation	0.21	0.15	0.08
Performance→Disconfirmation	0.61**	0.71**	0.31
Expectations→Satisfaction	0.03	0.31	0.21
Performance→Satisfaction	0.90**	0.93**	0.92**
Disconfirmation→Satisfaction	0.25	0.17	0.12
Satisfaction→Repeat purchase	0.54*	0.57*	0.90**

\*\* : Significant on 1% level.  
\* : Significant on 5% level.

The relationship between disconfirmation and satisfaction as often proposed in the literature could not be confirmed in the experiments. The standardized regression weights of 0.25, 0.17, and 0.12 had all p-values >0.10. The strength of the relationship between expectations and satisfaction suggests that expectations did not affect satisfaction directly in any of the experiments (p-values were in all studies > 0.10). However, the effect of expectations on attribute performance is highly significant in all experiments; standardized weights of 0.55, 0.71, and 0.88, respectively, with p-values < 0.01. Also the indirect impact of expectations on satisfaction through attribute performance is rather high (experiment A:  $0.55 \times 0.90=0.50$ ; experiment B:  $0.71 \times 0.93=0.66$ ; experiment C:  $0.88 \times 0.92=0.81$ ) and significant (p-values <0.01) in all studies. In contrast, the indirect effect of expectations on satisfaction through disconfirmation is low and insignificant in all experiments (experiment A:  $0.21 \times 0.25=0.05$ ; experiment B:  $0.15 \times 0.17 = 0.03$ ; experiment C:  $0.08 \times 0.12=0.01$ ).

As can be seen from Table 1 the primary predicting element of consumer satisfaction is attribute performance. In all experiments attribute performance had large direct effects on satisfaction (0.90, 0.93, and 0.92 respectively;  $p$ -values $<0.01$ ) but show only low and insignificant indirect effects on satisfaction through disconfirmation experiment A:  $0.61 \times 0.25=0.15$ ; experiment B:  $0.71 \times 0.17=0.12$ ; experiment C:  $0.88 \times 0.12=0.11$ ).  $P$ -values were  $>0.10$  in all studies. Finally, even though satisfaction does not *totally* predict repeat purchase the standardized coefficients of 0.54, 0.57 and 0.90 ( $p$ -values $<0.01$ ) indicate that food suppliers should certainly view the creation of consumer satisfaction as a key competitive factor. The next section investigates whether these results are moderated by contextual factors.

#### *Contextual moderators*

To investigate whether the results obtained differ across experimental manipulations, a series of multi group analyses were conducted (Table 3). The results revealed that performance level has a positive effect on disconfirmation for respondents with high task involvement (standardized coefficients of 0.77, experiment A and 0.86, experiment B;  $p$ -values $<0.01$ ), but not for respondents with low involvement. The findings also showed that the path between satisfaction and repeat purchase is unlike (in both experiments A and B) for respondents exposed to the low-price level and the high-price level; for respondents exposed to the low involvement and the high involvement task and for respondents exposed to the less elegant and the elegant physical surroundings. No other contextual moderators produced significant differences across groups.



Table 3. Multi-group analysis results for unconstrained models

Path	Experiment A						Experiment B						Experiment C		
	Low price	High price	Low invol.	High invol.	Eleg. surr.	Less elegant surr.	Low price	High price	Low invol.	High invol.	Eleg. surr.	Less elegant surr.	No odour	Chips odour	Gr. fruit odour
Expectations→Performance	0.30	0.61	0.51	0.57	0.68	0.49	0.54	0.85	0.63	0.74	0.74	0.50	0.79	0.86	0.92
Expectations→Disconfirmation	0.25	0.18	0.25	0.20	0.25	0.11	0.16	0.12	0.25	0.14	0.22	0.08	0.06	0.08	0.14
Performance→Disconfirmation	0.41	0.72	<b>0.28</b>	<b>0.77<sup>b</sup></b>	0.55	0.64	0.48	0.80	<b>0.38</b>	<b>0.86<sup>a</sup></b>	0.46	0.75	0.21	0.39	0.17
Expectations→Satisfaction	0.08	0.01	0.12	0.02	0.08	0.05	0.51	0.27	0.45	0.22	0.21	0.44	0.21	0.14	0.05
Performance→Satisfaction	0.88	0.91	0.92	0.83	0.94	0.83	0.89	0.90	0.81	0.94	0.95	0.78	0.95	0.90	0.88
Disconfirmation→Satisfaction	0.23	0.30	0.24	0.32	0.31	0.21	0.18	0.21	0.10	0.32	0.20	0.11	0.06	0.14	0.02
Satisfaction→Repeat purchase	<b>0.28</b>	<b>0.70<sup>a</sup></b>	<b>0.28</b>	<b>0.68<sup>a</sup></b>	<b>0.70</b>	<b>0.29<sup>b</sup></b>	<b>0.20</b>	<b>0.69<sup>a</sup></b>	<b>0.21</b>	<b>0.72<sup>a</sup></b>	<b>0.80</b>	<b>0.33<sup>a</sup></b>	0.96	0.92	0.94

Note: Standardized coefficients, which are unequal across the two groups, are shown in bold. Only group-differences in which at least one coefficient is significant are marked.

<sup>a</sup> P-value<0.01

<sup>b</sup> P-value<0.05

Involvement was median split.

The results should be interpreted with the notion that the sample size for each of the models is around 80, which is below minimum requirements for standard methods of structural equation modelling.

However, since the obtained (unequal) differences in all cases are quite large we feel confident to interpret (with caution) the results.

## **Discussion and conclusion**

In contrast to the suggestions put forward in the literature on satisfaction research our results did not show disconfirmation to have any significant effect on satisfaction. One possible explanation of this result might be the degree of consumer involvement in food products. Thus, the buying of food products often can be regarded as a limited problem solving, or even routinized, process (Steenkamp, 1989) in which the consumer compares the food products which are present in the consumers evoked set (Howard and Sheth, 1995). In such a 'low involvement' process the consumer may not be willing to engage cognitive resources for the purpose of comparing expectations with attribute performance. To investigate whether variations in involvement (within the food products category) would modify the relation between disconfirmation and satisfaction, task involvement was manipulated in experiments A and B. While a higher task involvement increased respondents' propensity to incorporate performance perceptions in their assessment of disconfirmation, a higher task involvement did not affect the relation between disconfirmation and satisfaction, which remained insignificant across involvement levels.

However, as pointed out by Szymanski and Henard (2001) the lack of willingness to engage in expectation-performance comparisons could also be due to the use of students as respondents in the experiments: "...having less-defined cognitive structures and being more outward focused...could mean that the more cognitive and inward-focused factors such as expectations, disconfirmation, and affect play less of a role in student participants' satisfaction assessments" (p. 20). However, in their meta-analysis Szymanski and Henard did not find evidence in support of this effect. It could not be shown that the use of students versus non-student had a moderation effect on the relationship between disconfirmation and satisfaction. Therefore, we feel confident to suggest that satisfaction for food products at least is not just a matter of disconfirmation. In addition, empirical evidence exists in support of this view. Hackl *et al.* (2000) found in a study of the Austrian food retail market that 'quality' (ie. performance) had the largest predictive power in explaining satisfaction. Montfort *et al.* (2000) obtained a similar result. Furthermore, Spreng and Mackoy (1996) argue on the basis of an empirical examination of a model of perceived quality and satisfaction that "managers should not believe that simply meeting (or exceeding) predictive expectations will satisfy consumers" (p. 210). If satisfaction is *not* simply a result of meeting consumers' expectations, then food managers using the expectations-disconfirmation approach may not be focusing on the correct things (refer to Spreng and Mackoy, 1996). Managers may be urged to attempt to

lower expectations so that they will provide a product which is better than expected and which therefore may lead to higher satisfaction (Peters, 1987). However, if this is not a complete picture, then managers may fail in their attempt to satisfy their consumers (Spreng and Mackoy, 1996). Such considerations are further evidenced by the result, that the greatest predictive power to explain satisfaction is shown by attribute performance. That is, in their effort to get more satisfied consumers food managers should include attempts to improve consumers perceived attribute performance. The results of the present study also bring support to the view often proposed in the loyalty literature that consumers' level of mental (i.e., cognitive and/or affective) activity during the process of learning about the product and its attributes may influence whether consumers' would afterwards become 'loyal', i.e., conduct a repeat purchase. The more mental resources a consumer has 'investigated' in reaching a positive level of satisfaction, the more inclined is the consumer to transform her/his reached satisfaction into a repeat purchase as such a transformation would minimize loss of mental resources.

## References

Anderson, E. W. and M. W. Sullivan (1993), The Antecedents and Consequences of Customer satisfaction for Firms, *Marketing Science*, 12 (2), 125-143.

Anderson, E.W., C. Fornell, and D. R. Lehmann (1994), Customer satisfaction, market share, and profitability: findings from Sweden, *Journal of Marketing*, Vol. 58, No. 3, 53-66.

Anderson, J. C. and Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach, *Psychological Bulletin*, 103(3), 411-423.

Andrews, I.R. and E.R. Valenzi (1971), Combining price, brand, and store cues to form an impression of product quality, *Proceedings of the 79<sup>th</sup> annual Convention of the American Psychological Association*, pp. 649-650.

Bearden, W.O. and J.E. Teal (1983), Selected Determinants of Consumer Satisfaction and Complaint Reports, *Journal of Marketing Research*, Vol. XX, February, pp. 21-28.

Bernhardt, K.L., D. Naveen, and P.A. Kennett (2000), A Longitudinal Analysis of Satisfaction and Profitability, *Journal of Business Research*, 47, pp. 161-171.

Bisogni, C.A., R.J. Glenna, and J.M. Regenstein (1987), What is fish quality? Can we incorporate consumer perceptions?, in D.E. Kramer and J. Liston (Eds.), *Seafood Quality Determination*, pp. 547-563.

Bollen, K.A. and J.S. Long (1993), *Testing Structural Equation Models*, London, SAGE Publications.

Cadotte, E.R., R.B. Woodruff, and R.L. Jenkins (1987), Expectations and Norms in Models of Consumer Satisfaction, *Journal of Marketing Research*, XIV (August), pp. 305-314.

Carmines, E. and J. McIver (1981), Analyzing Models with Unobserved Variables: Analysis of Covariance Structures, in G. Bohrnstedt and E. Borgatta (Eds.), *Social Measurement: Current Issues*, Beverly Hills, Calif.: Sage.

Churchill, G.A. and C. Suprenant (1982), An Investigation Into the Determinants of Customer Satisfaction, *Journal of Marketing Research*, Vol. XIX (November), pp. 491-504.

Dhalokia, Utpal M., and Vicki G. Morwitz (2002), The Scope and Persistence of Mere-Measurement Effects: Evidence from a Field-Study of Customer Satisfaction Measurement, *Journal of Consumer Research*, 29 (September) 159-167.

Dodds, W.B., K.B. Monroe, and D. Grewal (1991), Effects of Price, Brand, and Store Information on Buyers' Product Evaluations, *Journal of Marketing Research*, Vol. 28, pp. 307-319.

Dröge, C. (1989), Shaping the Route to Attitude Change: Central Versus Peripheral Processing Through Comparative Versus Noncomparative Advertising, *Journal of Marketing Research*, Vol. XXVI (May), pp. 193-204.

Fornell, C. (1992), A national customer satisfaction barometer: The Swedish experience, *Journal of Marketing*, Vol. 56, No. 1, pp. 6-21.

Fornell, C., M.D. Johnson, E.W. Anderson, J. Cha, and B.E. Bryant (1996), The American Customer Satisfaction Index: Nature, purpose, and findings, *Journal of Marketing*, Vol. 60, October, pp. 7-18.

Gotlieb, J.B., D. Grewal, and S.W. Brown (1994), Consumer Satisfaction and Perceived Quality: Complementary or Divergent Constructs?, *Journal of Applied Psychology*, Vol. 79, No. 6, pp. 875-885.

Hackl, P., Scharitzer, D. and Zuba, R. (2000), Customer satisfaction in the Australian food retail market, *Total Quality Management*, 11(7), 999-1006.

Hansen, T., H.S. Solgaard & T.U. Thomsen (2006), Consumer Supermarket Satisfaction: A Matter of Preference Structure? Paper presented at the 4<sup>th</sup> International Conference on Business, Economics, Management and Marketing, Athens.

Hansen, T. (2005), Understanding consumer perception of food quality: the cases of shrimps and cheese, *British Food Journal*. Bradford, Vol. 107, Iss. 7, 500-525.

Hair, J.F., R.E. Anderson, R.L. Tatham, and W.C. Black (1998), *Multivariate Data Analysis*, Prentice-Hall, Fifth Edition.

Henion, Karl E. (1971), "Odor Pleasantness and Intensity: A Single Dimension", *Journal of Experimental Psychology*, 90(2), 275-79.

Homburg, C, and B. Rudolph (2001), Customer satisfaction in industrial markets: dimensional and multiple role issues, *Journal of Business Research*, 52, pp. 15-33.

Howard, J. A. and J. N. Sheth (1995), A Theory of Buyer Behavior, in: Enix, Cox, and Mokwa (Eds.), *Marketing Classics*, Eight Edition, Prentice Hall, pp. 137-155.

Ittner, C.D. and D.F. Larcker (1996), Measuring the impact of quality initiatives on firm financial performance, in Fedor, D.F. and S. Ghosh (Eds.) *Advances in the Management of Organizational Quality*, Vol. 1, pp. 1-37, JAI Press Inc., Greenwich, Connecticut.

Johnson, M.D. and C. Fornell (1991), A Framework for Comparing Customer satisfaction Across Individuals and Product Categories, *Journal of Economic Psychology*, Vol. 12, No. 2, pp. 267-286.

Jöreskog, K.G. (1970), A General Method for Analysis of Covariance Structures, *Biometrika*, 57, pp. 239-251.

Kristensen, K., A. Martensen, and L. Grønholdt (2000), Measuring customer satisfaction: a key dimension of business performance, *International Journal of Business Performance Management*, Vol. 2, No. 1/2/3, pp. 157-170.

LaBarbera, P.A. and D. Mazursky (1983), A Longitudinal Assessment of Consumer Satisfaction/Dissatisfaction: The Dynamic Aspect of the Cognitive Process, *Journal of Marketing Research*, 20, pp. 393-404.

Linder-Pelz, S. (1982), Toward a theory patient satisfaction, *Social Science and Medicine*, 16, pp. 577-582.

Martensen, A. and L. Grønholdt (1998), *Kundetilfredshed – determinanter og effekter*, Working Paper 104, Institut for Informationsbehandling, Aarhus Business School.

Maute, M.F. and W.R. Forrester (1993), The Structure and Determinants of Consumer Complaint Intentions and Behavior, *Journal of Economic Psychology*, Vol. 14, No. 2, pp. 219-247.

Mehrabian, A. and Russel, J.A. (1974), *An Approach to Environmental Psychology*, The MIT Press.

Mick, D.G. and Fournier, S. (1999), Rediscovering Satisfaction, *Journal of Marketing*, 63(4), 5-23.

Mittal, B. (1989), Measuring Purchase-Decision Involvement, *Psychology & Marketing*, Vol. 6, pp. 147-162.

Montfort, K. Van, E. Masurel, and I. van Rijn (2000), Service Satisfaction: An Empirical Analysis of Consumer Satisfaction in Financial Services, *The Service Industries Journal*, Vol. 20, No. 3, pp. 80-94.

Nield, K., M. Kozak and G. LeGrys (2000), The role of food service in tourist satisfaction, *International Journal of Hospitality Management*, 19, pp. 375-384.

Ofir, C. and I. Simonson (2005), The Effect of Stating Expectations on Customer satisfaction and Shopping Experience, Research Paper No. 1881 February, Research Paper Series, Stanford Graduate School of Business.

Oliver, R. (1977), A Theoretical Reinterpretation of Expectation and Disconfirmation Effects on Posterior Products Evaluation: Experiences in the Field, in R. Day (Ed.) *Consumer Satisfaction, Dissatisfaction and Complaining Behavior*, Bloomington: Indiana University (April), pp. 2-9.

Oliver, R.L. and W.S. Desarbo (1988), Response Determinants in Satisfaction Judgments, *Journal of Consumer Research*, Vol. 14 (March), pp. 495-507.

Oliver, R.L. and J.E. Swan (1989), Consumer Perceptions of Interpersonal Equity and Satisfaction in Transactions: A Field Study Approach, *Journal of Marketing*, Vol. 53 (April), pp. 21-35.

Peterson, R.A. and W.R. Wilson (1992), Measuring Customer Satisfaction: Fact and Artifact, *Journal of the Academy of Marketing Science*, Vol. 20, No. 1, pp. 61-71.

Render, B. and Th. S. O'Connor (1976), The influence of price, store name, and brand name on perception of products quality, *Journal of the Academy of Marketing Science*, 4, pp. 722-730.

Rust, R.T. and R.L. Oliver (1994), Service Quality: Insights and Managerial Implications From the Frontier, in *Service Quality – New Directions in Theory and Practice*, SAGE Publications.

SOU, Statens offentliga utredningar (1994), *Konsumenterna och livsmedelskvaliteten – En studie av konsumentupplevelser*, delbetänkande av Konsumentberedningen, Stockholm,

Spangenberg, Eric R., Ayn E. Crowley and Pamela W. Henderson (1996), "Improving the Store Environment: Do Olfactory Cues Affect Evaluations and Behaviors?", *Journal of Marketing*, 60(2), 67-80.

Spreng, R.A. and R.D. Mackoy (1996), An Empirical Examination of a Model of Perceived Service Quality and Satisfaction, *Journal of Retailing*, Vol. 72(2), pp. 201-214.

Szymanski, D.M. and D.H. Henard (2001), Customer Satisfaction: A Meta-Analysis of the Empirical Evidence, *Journal of the Academy of Marketing Science*, Vol. 29, No. 1, pp. 16-35.



Sørensen, E., K.G. Grunert, and N.A. Nielsen (1996), The impact of product experience, product involvement, and verbal processing style on cognitive structure as measured by the laddering method, *25<sup>th</sup> EMAC conference proceeding*, pp. 2105-2110.

Teas, K. (1993), Expectations, Performance Evaluation, and Consumers' Perceptions of Quality, *Journal of Marketing*, Vol. 53 (October), pp. 18-34.

Tse, D.K. and P.C. Wilson (1988), Models of Consumer Satisfaction Formation: An Extension, *Journal of Marketing Research*, 25 (May), pp. 204-212.