AN EMPRICAL INVESTIGATION OF CUSTOMER SATISFACTION

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Abstract: This research has proposed a conceptual framework to investigate the effects of customers' perceived service quality and perceived product quality on customer satisfaction. To test the conceptual framework, structural equation modeling has been used to analyze the data collected from 1530 customers shopping from 102 stores belonging to four Turkish supermarket chains in Istanbul. The results of the study indicate that perceived service quality and perceived product quality are significantly related to customer satisfaction. Customer Satisfaction Index was also obtained and investigated according to supermarket chains.

Key words: Dimensionality, Customer satisfaction index, Service quality, Product quality

Introduction

Customer satisfaction is a key issue for organizations in today's competitive market place. To improve product and service quality, and maintain customer loyalty within a highly competitive marketplace, it became a central concern for companies and organizations. A key motivation for the growing emphasis on customer satisfaction is that high customer satisfaction lead to a stronger competitive position resulting in higher market share and profit (Fornell, 1992). Customer satisfaction is also generally assumed to be a significant determinant of repeat sales, positive word-of-mouth, and customer loyalty. Satisfied customers return and buy more, and they tell other people about their experiences (Fornell, et al., 1996). Thus, dynamic structure and intense competition in retail markets especially in supermarkets increase the need for supermarket retailers to use strategies focused on customer satisfaction (Okumuş & Temizerler,2006). The supermarket sector is characterized by increased competition, an enhanced opportunity to analyze markets, and greater shopper expectations. These aspects suggest that customer satisfaction management is especially critical and supermarket mangers recognize that customer satisfaction plays a key role in a successful business strategy.

Customer satisfaction is well known and established concept in several disciplines and different types of satisfaction have been identified. In line with Oliver (1989) we perceive satisfaction as a post-consumption evaluation or "A pleasurable level of consumption related fulfillment" (Blomer,2002). In this study we define the customer satisfaction is an affective reaction (Menon & Dubé,2000) in which the customers' needs, desires and expectations during the course of service and product quality experience have been met or exceeded (Lovelock,2001). Supermarkets offer a variety of products and services simultaneously so that, for the customer, there is more to visiting a store than the mere acquisition of consumption products. Differences in the "shopping experience" between retail outlets (e.g., store ambience, disposition of associates, store services) are often as important to the customer as differences in the physical characteristics of the products offered (e.g., quality) (Gómez, McLaughlin, Wittink, 2004).

The antecedents of customer satisfaction have been widely studied in the case of service companies. Results of most of the published studies identify positive influences of the perception of service quality on customer satisfaction. However, there is only a very limited number of studies examining the relationship both of the service and product quality on customer satisfaction in the supermarkets. In this study, a conceptual framework is proposed that analyses the effects of perceived service quality and perceived product quality on customer satisfaction in the supermarkets. To test the framework, structural equation modeling techniques are applied to a representative sample of four major supermarket chains in Istanbul. This paper is organized as follows: in the next section, we discuss and develop the conceptual model. We then describe the data, and we elaborate the statistical model. We conclude with the presentation of results and a discussion of possible extensions for future research.

Methods

CONCEPTUAL MODEL OF CUSTOMER SATISFACTION

The conceptual framework of this study builds upon the works from several disciplines such as retailing, consumer behaviour, marketing, and psychology. The conceptual models found in the literature mainly dealt with the image in consumer/shopping behaviour, store selection, store image and different levels of evaluations embedded in satisfaction structure (Noyan & Gölbaşı Şimşek,2011). We test the conceptual model introduced below on data collected by four large supermarket chains form their own shoppers. The proposed model has three latent variables, Perceived Service Quality (PSQ) and Perceived Product Quality (PPQ) are exogenous constructs, and Customer Satisfaction (CS) is endogenous construct based on the various areas in which the survey questions were asked. The aim of this paper is to improve empirical knowledge about the impact of supermarket satisfaction. Two distinct dimensions of perceived quality are identified: quality of service and quality of product. Our prime interest is in assessing some disregarded antecedents of customer satisfaction in terms of perceived service quality and perceived product quality.

DATA AND MEASURES

Data were collected from a sample of costumers of four supermarkets belonging to same Turkish store chain in Istanbul. 1530 correctly –filled-out questioners were collected across at least 15 customers per store for each of about 102 stores. The sample was found to be representative for the costumers of the local supermarket chain in terms of gender, age, number of household members ad net house hold income. The design of the questionnaire was based on multiple-item measured scales that have been validated and found to be reliable in previous research. All determinants were measured on ten-point Likert scales ranging from completely disagree to completely agree. The measurement items of the different constructs and their origin are shown in Table 1. Table 1 provides the results of the measurement model after the unreliable items were eliminated.

Reliability and Validity of Measures

At the first step, Exploratory Factor Analyses (EFA) were carried out using Maximum Likelihood (ML) extraction method with Promax rotation. ML factor analysis proceeds on the assumption that the data have a multivariate normal distribution, which in turn implies that each individual variable is normally distributed. Violation of this assumption may lead to distorted factor analytic results. West and Curran (1995) suggested that the ML can produce useful results as long as the skewness of each observed variable is less than 2.0 and kurtosis is less than 7.0. It can be seen from Table 1 that all the items of PSQ, PPQ, and CS meet these criteria.

Table 1. DESCRIPTIVE STATISTICS FOR THE ITEMS OF LATENT VARIABLES (N=1530)

	Items	**Mean**	**Std. Deviation**	**Skewness**	**Kurtosis**
	Service Quality Perceptions (Cronin et al., 2000)				
Q1	Staff have knowledge about products and campaigns.	7.78	1.849	-1.015	.915
Q2	Staff have enough experience to help customers.	7.77	1.833	-.952	.782
Q3	Staff are affable.	7.80	1.831	-.991	.932
Q4	Staff are polite and respectful.	7.81	1.813	-.946	.770
Q5	Staff are easy to reach.	7.82	1.748	-.920	.761
Q6	Easy to communicate with staff.	7.75	1.805	-1.001	1.058
Q7	Staff give understandable responses to questions.	7.75	1.842	-.934	.738
Q8	Staff are reliable.	7.79	1.759	-.887	.697
Q9	There is a sales person who is ready to help at any moment.	7.50	1.994	-1.010	.904
Q10	Staff strive to understand my needs.	7.65	1.831	-.887	.718
Q11	Cashiers are careful.	7.76	1.829	-.997	1.063
	Product Quality Perceptions (Sirohi et al., 1998)				
Q12	The products of vegetable-fruit department are very high in quality.	7.43	1.959	-.934	.754
Q13	The products of meat-fish department are very high in quality .	7.46	1.855	-.837	.612
Q14	Hot/frozen ready-made foods are very high in quality.	7.50	1.782	-.739	.385
Q15	The products of bakery department are very high in quality.	7.48	1.851	-.743	.269
Q16	Packaged-frozen products are very high in quality.	7.51	1.785	-.703	.307
Q17	Not packaged dried foods (dried beans, pasta, grain,…) are very high in quality.	7.60	1.808	-.899	.842
Q18	Milky products are very high in quality.	7.62	1.766	-.727	.244
Q19	There are no out-of-date products on shelves.	7.36	1.895	-.758	.346
Q20	In general, products of this supermarket are very high in quality.	7.85	1.784	-.950	.776
Q21	The products of vegetable-fruit department are very high in quality.	7.58	1.752	-.772	.618
	Customer Satisfaction (Brumly,2002)				
Q22	I think, shopping with this supermarket is a good decision.	7.16	1.766	-.391	-.176
Q23	This supermarket takes customer satisfaction as a goal.	7.20	1.716	-.414	-.180
Q24	I am satisfied with preferring this supermarket.	7.20	1.753	-.401	-.324
Q25	I am satisfied with shopping this supermarket.	7.28	1.748	-.406	-.333
Q26	In general, I am satisfied with this supermarket.	7.23	1.757	-.444	-.163
Q27	I am satisfied with pricing to product quality by this supermarket.	7.13	1.856	-.477	-.105
Q28	I am really satisfied with this supermarket.	7.22	1.820	-.501	-.002

Factor analysts have developed a wide range of techniques that may be used to decide the number of factors to extract. Empirical investigations have shown that these techniques not always point to same number of factors and experts have recommend that analysts (a) consider the information provided by several techniques, and (b) make a final decision on the number of factors against the background of the theoretical meaningfulness and interpretability of the factors obtained (Preacher & MacCallum, 2003).

The following techniques and criteria were used to decide the number of factors to retain. These empirical criteria include the popular eigenvalues-greater-than-one (eigenvalues>1) criterion (KG; Guttman, 1954; Kaiser, 1960) and the scree test (Catell,1978), as well as the less commonly applied techniques of parallel analysis (PA; Horn,1965) and the minimum average partial test (MAP; Velicer,1976). From the result of simulation studies of Zwick&Velicer (1982,1986) and Glorfeld (1995), KG rule tends to underestimate and PA overestimate the number of factors. It is better to extract too many rather than too few factors. Underextraction leads to distortion of the extracted factors. In contrast, overextraction generally does not distort the character of the major factors (Wood, Tataryn & Gorsuch, 1996). Fortunately, there is increasing consensus among statisticians that two less well-known procedures, PA and MAP test, are superior to other procedures and typically yield optimal solutions to number of factor problem (Wood et al., 1996; Zwick & Velicer, 1982, 1986). These procedures are statistically based, rather than being mechanical rules of thumb. In PA, the focus is on the number of factors that account for more variance than the components derived from random data. The MAP test uses a principal components analysis followed by an examination of a series of matrices of partial correlations. Specifically, on the first step the first principal component is partialed out of the correlations between the variables of interest, and the average squared coefficient in the off diagonals of the resulting partial correlation matrix is computed. On the second step, the first two principal components are partialed out of the original correlation matrix and the average squared partial correlation is again computed. These computations are conducted for (number of items-1) steps, where p is the number of variables. The number of components is chosen to be the step number in the analyses that resulted in the average squared partial correlation. O'connor (2000) wrote codes for SAS and SPSS for the PA and MAP procedures. After examination all of the above procedures, scree plot in Figure 1, KG rule and PA analysis with its results given in Table 2, and the MAP test showed three factors solution.

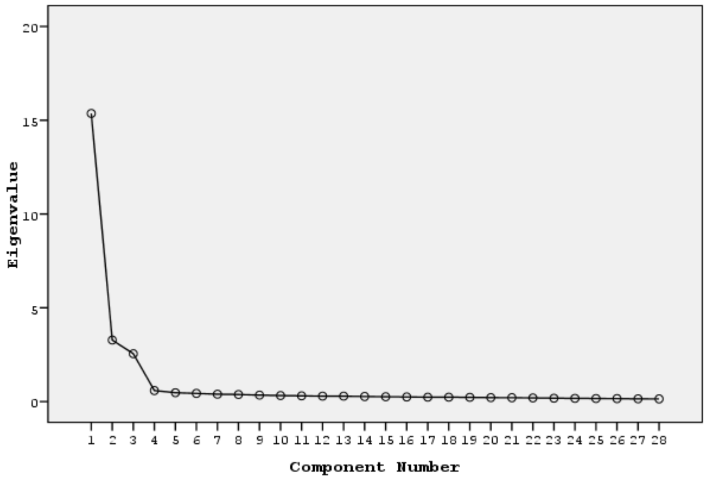

Figure 1. SCREE PLOT

Table 2. RAW DATA EIGENVALUES, MEAN & 95 % RANDOM DATA EIGENVALUES

Root	Raw Data	Means	95%
1	**15.362805**	**1.25872**	**1.28798**
2	**3.276793**	**1.22092**	**1.24454**
3	**2.547975**	**1.19358**	**1.2114**
4	0.585774	1.17214	1.18694
5	0.471483	1.15014	1.16676
6	0.434512	1.13256	1.14657
7	0.388863	1.11386	1.13045
8	0.377663	1.09594	1.11087
9	0.342143	1.07905	1.09317
10	0.318059	1.06347	1.07933
11	0.30225	1.04796	1.06116
12	0.288822	1.03206	1.04577
13	0.285798	1.01695	1.02958

14	0.26725	1.00077	1.01468
15	0.255466	0.98555	0.99751
16	0.243713	0.97171	0.98197
17	0.231403	0.95881	0.97387
18	0.230225	0.94329	0.95594
19	0.22358	0.92805	0.94083
20	0.210547	0.91341	0.92491
21	0.204868	0.89917	0.91362
22	0.194927	0.88424	0.8966
23	0.178643	0.86899	0.88017
24	0.171382	0.85126	0.86496
25	0.160737	0.83492	0.84892
26	0.156878	0.81655	0.83146
27	0.146141	0.79659	0.8155
28	0.1413	0.76935	0.79237

Going forward to three factors solution, Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was .977 indicating higher sampling adequacy. The first factor accounted for 54.867 %, the second factor accounted for 11.703% and third factor accounted for 9.100% of the total variance. These three factors accounted for 75.670% of the total variance. The communality values of observed variables ranged from .595 to .835. Pattern loadings are shown in Table 3, which are noticeable higher on underlying factor indicating construct validity from the exploratory points of view.

Table 3. PATTERN LOADINGS

items	Factors		
	PSQ	PPQ	CQ
Q1	**.874**	.028	-.046
Q2	**.889**	.016	-.021
Q3	**.901**	-.031	.019
Q4	**.898**	-.030	.018
Q5	**.903**	-.023	.014
Q6	**.905**	-.022	.005
Q7	**.909**	-.007	.009
Q8	**.854**	.001	.033
Q9	**.797**	.044	-.011
Q10	**.831**	.044	-.021
Q11	**.755**	.055	.037
Q12	-.046	**.877**	-.021
Q13	-.021	**.892**	-.023
Q14	.025	**.906**	-.053
Q15	.031	**.885**	-.024
Q16	.013	**.886**	-.013
Q17	.020	**.824**	.010
Q18	.005	**.818**	.039
Q19	-.058	**.813**	.019
Q20	.116	**.610**	.132
Q21	.056	**.788**	.056
Q22	.003	.051	**.864**
Q23	.012	.064	**.843**
Q24	.009	.019	**.892**
Q25	-.009	.007	**.914**
Q26	-.018	.019	**.889**
Q27	.028	-.072	**.901**
Q28	.004	-.027	**.911**

The second goal of the study in order to reach acceptable measurement model, was to confirm that each measure taps facets of the three latent constructs (convergent validity) and that the constructs are distinct from each other (discriminant validity). Confirmatory Factor Analysis (CFA) was used for establishing the validity of the constructs.

Unidimensionality is a necessary condition for reliability and construct validation (Mak & Sockel, 2001, p.271). The unidimensionality of the constructs was analyzed by specifying a measurement model for each construct. According to Jöreskog and Sörbom (1993), a goodness of fit index (GFI) of 0.90 or above suggests that each of the construct is unidimensional.

Convergent validity is examined by using the Bentler-Bonett normed fit index (NFI) (Bentler & Bonett,1990). As seen from the Table 4, all of the construct have GFI and NFI values above 0.90 indicating that all of the construct are unidimensional and, convergent validity was achieved for all the construct. Acceptable model fits are indicated by goodness of fit indices, and RMSEA (Root Mean Square Error of Approximation) values below 0.08 and, SRMR (Standardized Root Mean Square Residual) below 0.05 represent an acceptable model fit (Browne & Cudeck, 1992)

Table 4. GOODNESS OF FIT INDICES FOR UNIDIMENSIONAL CONSTRUCTS

Latent Constructs	GFI	NFI	RMSEA	SRMR
PSQ	0.94	0.97	0.085	0.019
PPQ	0.91	0.96	0.11	0.029
CS	0.98	0.99	0.064	0.011

In assessing discriminant validity the factor correlation matrix given in Table 5 was examined, and showed that three factors did not overlap substantially. To test discriminant validity, CFA was performed on selected pair of scales, allowing correlation between two construct. The analysis was rerun with the correlation the two constructs fixed at 1. A chi-square difference tests were conducted for these unrestricted and rectricted models. The results suggest that for three pairs of constructs, the two-factor solutions were better than the single factor solutions ($p<0.01$).

Table 5. INTERCORRELATIONS OF THE LATENT CONSTRUCTS

	PSQ	PPQ	CS
PSQ	1		
PPQ	0.61	1	
CS	0.57	0.62	1

The factor loadings and construct reliabilities for the measurement model are presented in Table 6. The individual item loadings (lambdas) on the constructs were all highly significant ($p<0.001$, t value >10) with values ranging from 0.733 to 0.901. All the individual scales exceeded the recommended minimum standards proposed by Bagozzi and Yi (1988) in terms of construct reliability (composite reliability greater than 0.70). Şimşek & Noyan's (2012) generalized theta coefficient $-\theta_G-$ for composite reliability of the total scale was 0.9614, which indicates high reliability of total scores.

Table 6. STANDARDIZED CFA COEFFICIENTS AND CONSTRUCT RELIABILITY

Constructs	Items	Loadings	t	Item Reliability (R^2)	Constructs Reliability
PSQ	Q1	0.850	*	0.723	0.968
	Q2	0.876	46.401	0.768	
	Q3	0.885	47.252	0.783	
	Q4	0.882	46.959	0.778	
	Q5	0.890	47.788	0.792	
	Q6	0.885	47.295	0.783	
	Q7	0.900	48.882	0.810	
	Q8	0.860	44.788	0.739	
	Q9	0.792	38.933	0.628	
	Q10	0.825	41.662	0.681	
	Q11	0.784	38.247	0.614	
PPQ	Q12	0.815	*	0.665	0.956
	Q13	0.851	40.543	0.724	
	Q14	0.880	42.735	0.774	
	Q15	0.881	42.821	0.776	
	Q16	0.878	42.603	0.771	
	Q17	0.818	38.184	0.668	
	Q18	0.823	38.581	0.678	
	Q19	0.753	33.951	0.567	
	Q20	0.733	32.707	0.537	
	Q21	0.837	39.569	0.701	
CS	Q22	0.879.	*	0.773	0.959

	Q23	0.870	48.589	0.757	
	Q24	0.897	51.869	0.804	
	Q25	0.901	52.513	0.813	
	Q26	0.871	48.698	0.759	
	Q27	0.845	45.779	0.714	
	Q28	0.875	49.154	0.765	

*Fixed parameter for scaling purpose

Structural Model

The reliability and validity analysis results indicate that the scales for the constructs appear to have satisfactory measurement qualities. After measurement model was built, a structural model with latent variables considered adding proposed structural paths between latent constructs. The proposed model was analyzed via ML estimation using covariance matrix of observed variables as input. Table 7 reports goodness of fit indices, parameter estimates and their t- values for the structural model. The overall $\left(\chi^2_{(347)} = 1935.72,\ p<0.01\right)$, which is expected given the large sample size (Bagozzi & Yi, 1988). All other goodness of fit indices are within the acceptable ranges (GFI=0.91, AGFI=0.90, SRMR=0.031, CFI=0.96, NFI=0.96, NNFI=0.96, RMSEA=0.058 and, CN=325.81). All of the fit indices indicate that the proposed model exhibits good fit to the data.

Table 7. SUMMARY OF THE RESULTS FROM PROPOSED MODEL

Path	Estimate	Standard Error of Estimate	Standardized Estimate	t-value
PSQ → CS	0.307	0.027	0.311	11.563*
PPQ → CS	0.415	0.027	0.427	15.290*
Squared Multiple Correlation (SMC) = 0.44				

$\chi^2_{(347)} = 1935.72,\ p<0.01$

Goodness of Fit Index (GFI) = 0.91
Adjusted Goodness of Fit Index (AGFI) = 0.90
Standardized Root Mean Square Residual (SRMR)= 0.031
Comparative Fit Index (CFI) = 0.96
Normed Fit Index (NFI) = 0.96
Non-Normed Fit Index (NNFI) = 0.96
Root Mean Square Error of Approximation (RMSEA) = 0.058
Critical N (CN) = 325.81

*p<0.01

In accordance with the parameter estimates shown in Table 7, Perceived service quality and Perceived product quality have direct positive and significant effects on Customer satisfaction. From standardized estimates, the effect of Perceived service quality was lower than the effect of Perceived product quality, their effects on Customer satisfaction were comparable in terms of magnitude. From the SMC value in Table 8, 44% variance of Customer satisfaction was explained by Perceived service quality and Perceived product quality, which indicates a fairly high level of explanatory power.

Discussion and Conclusions

The main purpose of this study was carried out modeling Customer Satisfaction using Perceived Service Quality and Perceived Product Quality as exogenous latent constructs. A well fitting structural and accompanying measurement models were developed. It was concluded that Perceived Service Quality and Perceived Product Quality affect Customer Satisfaction positively, and their effects on Customer Satisfaction were comparable in terms of effect sizes. Therefore, policy makers in Turkish retailing sector should be consider Service Quality as well as Product Quality to provide satisfied customers.

We also obtained Customer Satisfaction Index (CSI) using the Structural Equation Modeling (SEM) approach. To investigate positions of four different supermarkets chain (labeled by A,B,C and, D), they were grouped into two classes as economy class and non-economy class supermarkets according to their customer profile, brand and variety of products. As for the analysis of group (classes of economy vs. non-economy) differences, Kruskal-Wallis Tests were performed following evidence on factorial invariance. Table 8 shows the test results and suitable descriptive statistics of supermarkets.

Table 8. COMPARISONS OF FOUR DIFFERENT SUPERMARKET CHAINS

Index	Groups	N	Mean Rank	Rank Order	Chi-Square	df	p
PSQ	Economy A	405	712.25	4	23.641	3	.000
	Economy B	405	853.86	1			
	Non-Economy C	450	741.34	3			
	Non-Economy D	270	753.10	2			
PPQ	Economy A	405	710.30	4	29.955	3	.000
	Economy B	405	711.06	3			
	Non-Economy C	450	850.88	1			
	Non-Economy D	270	787.66	2			
CS	Economy A	405	836.42	1	17.314	3	.001
	Economy B	405	771.01	2			
	Non-Economy C	450	722.47	4			
	Non-Economy D	270	722.58	3			

According to Kruskal-Wallis Tests, the group differences of PSQ, PPQ and, CS indexes were found statistically significant ($p<0.01$). As seen from the above Table, economy class supermarkets have higher Customer Satisfaction Index while they have lower Perceived Product Quality Index. On the other hand, non-economy class supermarkets with lower Perceived Service Quality Index have lower Customer Satisfaction Index. The second conclusion can be made from the above results that, the single strategy (such as Service Quality or Product Quality going alone) is not enough to achieve customer satisfaction. And it is clear that, some other determinants of customer satisfaction in addition to PSQ and PPQ should be required.

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