Scale Development Process: Service Quality in Car Rental Services

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Abstract: This paper aims to provide an example for developing a measurement scale by using car rental services as a case. To do so, both qualitative and quantitative methods are utilized in three fundamental stages recommended by Churchill (1979) and Parasuraman, Zeithaml & Berry (1988). In following their footsteps, the first qualitative research was undertaken in the form of 23 in-depth interviews which produced 61 items that described user perceptions. Then, a quantitative study was undertaken to purify the scale items, examine dimensionality, reliability, factor structure and validity. After a rigorous statistical analysis an 18-itemed scale with six factors emerged. The paper also introduces the setting of the research and presents need for scale development briefly which is followed by discussion, implications and limitations.

Keywords: Scale development, measurement, fundamental stages, value of fit measures, models, car rental services, North Cyprus.

1. Introduction

Questionnaires are the most commonly used method of data collection in field research and over past several decades hundreds of scales have been developed to assess various attitudes, perceptions and opinions of customers, employees, managers so on to examine hypothesized relationships with other constructs or behaviors (Hinkin, 1995). Some of these scales had validity and reliability problems thus were not accepted and used in literature. On the other hand, some scales like SERVQUAL developed by Parasuraman, Zeithaml and Berry (1988) are widely cited and replicated, yet had criticized by some researches (for instance, Cronin and Taylor, 1992; 1994). For a scale to be successful, it should have a sound literature support and should survive various rigorous statistical tests like validity and reliability. To do so, this study utilizes both qualitative and quantitative methods in three fundamental stages recommended by Churchill (1979) and Parasuraman, Zeithaml & Berry (1988).

Tourism is one of the most thriving sectors in the world. World Tourism Organization (UNWTO, 2006) has reported that international arrivals have reached an all time record of 808 million tourists, with a 5 percent increase, in 2005. Especially among the other means of transport systems such as railway, air and water 45% of tourists preferred to use land as a means which suggests around 350 million tourist arrivals were correspond to trips, visiting friends and relatives, health, leisure, recreation reasons with available rent-a car services, buses, taxies and so forth (UNWTO, 2006). The transportation services have an important role in tourism since the essence of tourism requires some sort of movement from - to or in between locations. Car rental agencies, along with many other factors, have played a vital role in increasing the ease of transportation by providing a service where tourists can easily travel within their destinations. In this sense, car rental service is important for tourist satisfaction, retention and the expansion and capacity of rent a car business in the tourism industry in the international markets. Thus, the car rental service is preferred as an example to show the steps of scale development process. Besides, there is a need for both an industry specific and a country/culture specific quality measurement for different services (Churchill & Peter, 1980; Mattila, 1999; Hofstede, 2001; Yavas & Konyar, 2002; Ozer, 1999), which is also valid for rent a car business as an important part of the tourism and travel processes.

There will be five sections in this study. First, conceptualization and operationalization of service quality measures in literature will be discussed briefly. Second, the steps in developing new scale will be specified. Third, methodology used in the study will be explained in detail. Fourth, results and discussion of the findings will be given. Finally, recommendations, limitations and future research implications will be provided.

2. Relevant literature

Over the past several years, there have been a variety of debates in the literature in consideration of service quality conceptualization and measurement. The reason was apparent that service quality may achieve two important crucial goals for a service organization that are finding and retaining satisfied or repetitive

customers. In fact, service quality can be defined as a customer's perception of the overall superiority of an organization's excellence in providing service (Zeithaml, 1998).

Parasuraman et al. (1985; 1988) suggested that the customers' appraisal of the overall service quality depend on the gap between the actual performance and their expectations. Also, they claimed that customers evaluate service quality by using five criteria such as tangibles, reliability, responsiveness, assurance, and empathy. Among these tangible dimensions could be the least important and the reliability dimension was of most concern to customers. After that these authors developed an instrument called SERVQUAL that has been the most widely used tool in measuring customer's perception of service quality. Numerous researchers conducted the five dimension model in different sectors in different countries that some researches confirmed the five dimension model (e.g. Gabbie & Neill, 1996; Bojanic & Rosen, 1994; Mehta & Durvasula, 1998; Lam & Zhang, 1998) but some others failed (e.g. Carman, 1990; Babakus & Boller, 1992; Brown, Churchill & Peter, 1993; Ryan & Cliff, 1996). In consideration of other significant studies in the literature, it seems that service quality concept includes technical and functional quality (Grönroos, 1984); service product, service environment, and service delivery (Rust & Oliver, 1994); and interaction quality, physical environment quality, and outcome quality (Brady & Cronin, 2001).

Although, a lot of studies have been examined and practiced SERVQUAL model as a framework in measuring service quality, there has also been extensive criticism directed towards this measure in the marketing literature. These criticisms have mainly revolved around the interpretation and implementation of the instrument in the service industry (Newman, 2001; Arasli et al., 2005). One of the biggest problems in the usage of SERVQUAL measurement is its dimensional structure that the researchers in different contexts reported different factors for expectations, perceptions and gap scores. Thus, shortcomings concerning its universality and divergent and convergent validity issues were have also been questioned (Buttle, 1996; Carmen, 1990; Cronin & Taylor, 1994). Despite the criticism, SERVQUAL has been widely used since it "…provides the basic skeleton…which can be adapted or supplemented to fit the characteristics or specific research needs of a particular organization…" (Parasuraman et al., 1988, p. 31). While there are some practitioners, scholars and academics who believe that this topic seems to come to the end of its life in the literature in the 2000's, still there are some opponent researchers who thinks that some industries did not hear the siren call of this concept and more adaptations and theoretical applications are required in their field. For example, Khan (2003) suggested ECOSERV for measuring quality expectations in ecotourism. Actually, it seems that this concept would not lose its attractiveness in all fields yet and will be able to continue to attract many researchers in the next several years.

Even though, several scales have been replicated, adapted and developed to measure services such as SERVQUAL (Parasuraman et al., 1985; 1988), SERVPERF (Cronin & Taylor, 1992; 1994) in hotels, clubs and travel agencies, DINESERV (Stevens, Knutson & Patton, 1995) in food and beverage establishments, LODGSERV (Knutson, *et al.*, 1990) in hotels, and SERVPERVAL (Petrick, 2002) in airlines, SYSTRA-SQ (Aldlaigan & Buttle, 2002) in bank services, SITEQUAL (Yoo & Donthu, 2001) in internet shopping, E-S-QUAL (Parasuraman, Zeithaml & Malhotra, 2005) in electronic services, SELEB (Toncar et al., 2006) in education services and scale not named (Law & Hsu, 2006) in hotel web sites. However, less attention has been paid to the development of measures of service quality in car rental services. Extensive investigation of the literature, on services in general, tourism in particular, such as keyword search on major academic data bases like Proquest, Elsevier, Ebsco, Science Direct, etc. and search engines like Scholar Google, Yahoo and Google, revealed that there was no previous validated scale about quality of car rental services.

In fact, no scale currently exists to assess rent a car quality in the tourism industry as a whole. To date, relatively little is known about car rental business of the tourism industry, including how it may influence tourism and hospitality industry. This study aims to fill this gap in the relevant literature. Ozer (1999) recommended the development of industry specific quality measurements for a better fit to the nature of the industry. In echoing to this, the current study attempts to develop a new multi-item measurement scale for assessing the perceived quality in car rental services. To do so, eight steps approach proposed by Churchill (1979) and modified and used by Parasuraman, *et al.* (1988) will be followed by using the tourists visiting North Cyprus. These eight steps are in turn: "specify domain of construct, generate sample of items, collect data, purify the measure, assess reliability with new data, assess construct validity and finally develop norms" (Churchill, 1979, p. 66).

To operationalize these steps, grounded approach (Tabachnick & Fidell, 1996) will be employed by the use of both quantitative (in form of in-depth interview) and qualitative (in form of close ended survey instrument) techniques. In grounded approach, the concept is developed according to the collected data and the

hypotheses related to this concept are improved in the research process. The hypotheses are then tested in the research process to come up with some conclusions (Ozen, 2000). The reason of using both data collection techniques is to get the advantages of both techniques, quantitative (collecting data from large samples, expressing research findings in numerical terms and being more objective) and qualitative (exploring the research topic in greater depth, getting the bigger picture of reality and being more familiar with the subject area). The development of a scale measuring rent a car quality will facilitate studies investigating the prevalence, causes, and affects of car rental business of the tourism industry in North Cyprus.

Churchill & Peter (1980, p. 538) concluded that "…although measures in social sciences are never universally valid for all applications and in fact, the development of valid measures is a never-ending process, better measurement can only increase the quality of marketing research and theory…".

In echoing Churchill & Peter's (1980) recommendation and considering the lack of previously developed scale exclusively for car rental services, it was deemed valuable to develop a measurement scale, in accordance with the procedure for scale development recommended by Churchill (1979). This procedure is found to be useful and adopted in various studies (most recently; Caro & Garcia, 2007; Chu & Murrmann, 2006; Toncar et al., 2006; Karatepe, Yavas & Babakus, 2005; McMullan, 2005; Millan & Esteban, 2004).

3. Methodology

Churchill (1979) stressed the necessity of constructing a sound conceptual specification while developing a new measurement scale. In this sense, researchers benefit from the existing scales as starting point in their development efforts such as emotional labor (Chu & Murrmann, 2006), travel agency services (Millan & Esteban, 2004), service quality perceptions (Caro & Garcia, 2007) and SERVQUAL (Frochot & Hughes, 2000). Due to the lack of such a luxury, qualitative research was carried out to identify the factors which determine the service quality perceptions of car rental customers.

Twenty three in depth interviews were conducted in February and March 2006 with tourists visiting North Cyprus where a judgmental sampling approach was used. Judd, Smith, & Kidder (1991, p. 136) defined judgmental sampling or purposive sampling as "picking cases that are judged to be typical of the population in which we are interested, assuming that errors of judgment in the selection will tend to counterbalance one another". Interviewees asked open-ended questions about their expectations, criteria and past experiences about car rental services. Moreover, additional add-hoc questions were asked to clarify the given responses and enhance the productivity of the interview process. Interviewees were selected from three tourist destinations of North Cyprus; Kyrenia, Nicosia and Famagusta. Each interview last between 15 - 20 minutes and tape recorded. No incentive given to respondents.

Recorded interviews were studied by following the guidelines of a content analysis (Hinkins, 1995; Petrick, 2002; Millan and Esteban, 2004) to create compositions of all answers. Subsequently statements related to the respondents' quality expectations from car rental services were carefully highlighted. Researchers generated 61 distinctive statements for the content categorization. In order to form the factors statements with similar characteristics were grouped. The grouping process was carried out individually and collectively and resulted with the identification of seven factors.

Initial purification of the scale started with the assessment of content and face validity through a panel of experts as recommended by Caro & Garcia (2007). Sixty-one items, under seven factors reviewed by five experts, two car rental company owners and three academics knowledgeable in services marketing field. Experts suggested deletion of twelve items and rewording of some items. No recommendation was made concerning the labeling of the factors.

4. Analysis and results

4.1 Quantitative research: first stage purification

Resulting 49-items transformed into pilot questionnaire and used to collect data for first stage purification. This stage is mainly serving the confirmation purpose of newly developed scales' psychometric properties (Chu & Murrmann, 2006). A five-point Likert scale (Likert, 1932) ranging from (1) 'strongly disagree' to (5) 'strongly agree' was used.

The sample of the pilot study consisted of tourists staying in 4 and 5 star hotels in Kyrenia region during March 2006 with non-probability judgmental sampling technique. 320 questionnaires were distributed to respondents and they were requested to fill out the questionnaires in a self-administered manner. 213 questionnaires were returned and found to be useful, which represents a 66.6% response rate. This number is close (4.35 times) to the adequate rule of thumb sample size of five folds the number of items. More than half (54.9%) of the respondents were male, between the ages of '18-37' (40.8%) and had a minimum of an undergraduate degree (44.1%). Moreover, majority of the respondents were Turkish (74.2%) and more than one third of them (34.3%) reported that in last two years they rented at least 3 cars.

Churchill (1979) and Parasuraman et al. (1988) suggested that the purification of an instrument begins with the computation of Cronbach's alpha coefficient, item-to-total correlation and exploratory factor analysis (EFA). The value of the coefficient alpha ranged from .43 to .78 for seven factors which necessitate the removal of some items to improve the alpha values. Nunnally (1970) recommended omission of the items (<.30) with low corrected item-to-total correlations. Factor loadings obtained from EFA with Varimax rotation were further considered to test the factors and eliminate the poor performing items. As suggested by Chu & Murrmann (2006, p. 1183) after each omission "…alpha values were recomputed for the remaining items and the new corrected correlations were evaluated for further deletion of items". Totally twenty-five items were deleted from the instrument; see Table 1 for the results of pilot study with remaining 24 items. Factors and item numbers of RENTQUAL scale at this initial stage, were as follows; security (3 items), handing over (4 items), policy (3 items), comfort (4 items), ergonomics (3 items), delivery (4 items), accessibility (3 items).

Table 1: Results of pilot study: scale items, corrected item-to-total correlations, factor loadings, Cronbach's alpha scores (n=213)

Items	ITTC*	Factor loadings						
		F1	F2	F3	F4	F5	F6	F7
The car should have air condition	.490	.837						
The seats of the car should be comfortable	.439	.776						
The cars' interior should be spacious	.408	.685						
The car should have electrical windows	.359	.555						
Company should deliver the car to where I want	.523		.758					
Company should allow me to return the car to where I want	.522		.754					
Employee of the company should inform me about the cars' functions and accessories	.521		.635					
Employee of the company should inform me about previous accidents of the car, if any	.496		.677					
Car should be very clean when I receive it	.452			.815				
Car should have enough gas when I receive it	.440			.713				
Local maps and tourist information should be provided when I receive the car	.390			.635				
Additional information about the location should be provided while receiving the car	.336			.572				
Car should have no technical problem	.451				.873			
Car should have necessary safety features like ABS, Airbags…	.367				.734			
Car should have insurance and collusion damage waiver	.340				.710			
Car should have ergonomic features for customers with disabilities or special needs	.501					.820		
Car should have manual and automatic gear option	.490					.794		
Car should have hydraulic or electrical steering system	.439					.631		
Company should easily be accessible	.533						.857	
Employee of the company should be reachable at anytime	.492						.733	
Employee of the company should be available to meet with me in case of extraordinary situations like accident, technical problem…	.343						.591	
I should be allowed to choose method of payment	.370							.653

Items	ITTC*	Factor loadings						
		F1	F2	F3	F4	F5	F6	F7
Company should allow one day renting	.345							.636
Company should be tolerant towards unlikely delays in the return of the car	.302							.560
Cronbach's α		.78	.63	.68	.67	.84	.79	.47
Variance explained (%)	27.44		9.37	8.46	6.25	5.70	5.18	4.44
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.72						
Bartlett's test of sphericity (significance level)		.000						
Eigenvalue		6.59	2.25	2.03	1.50	1.38	1.24	1.07

Note: * Item-to-total correlations, Overall Cronbach's α = .743, Approx. χ^2 = 1038.07, df = 276, total variance explained (%) = 66.84, F1 = comfort, F2 = delivery, F3 = handing over, F4 = security, F5 = ergonomics, F6 = accessibility, F7 = policy.

4.2 Quantitative research: initial scale

Second stage purification of the RENTQUAL scale was carried out with a new data set. For this purpose modified version of pilot instrument was used. The sample of the main study consisted of tourists staying in 3, 4 and 5 star hotels in Kyrenia, Famagusta and Nicosia regions during May and June 2006 with non-probability judgmental sampling technique. 1000 questionnaires were distributed to respondents and they were requested to fill out the questionnaires in a self-administered manner. 726 questionnaires were returned and found to be useful (72.6% response rate).

Table 2: Demographic breakdown of the final stage respondents (n= 726)

	F	%
Age		
18-27	366	50.4
28-37	157	21.6
38-47	114	15.7
48 and above	89	12.3
Gender		
Female	190	26.2
Male	536	73.8
Education		
Secondary / High School	268	36.9
Vocational School	124	17.1
Undergraduate / Graduate	334	46.0
Country of origin		
Turkey	449	61.9
Cypriot	112	15.4
Other	165	22.7
Motivation of travel		
Holiday / relaxation	393	54.1
Professional / business travel	169	23.3
Visiting friends / relatives	109	15.0
Other motivations	55	7.6
Frequency of renting car in last 2 years		
None	42	5.8
1 - 3 times	418	57.6
4 - 6 times	211	29.0
More than 6 times	55	7.6

Overwhelming majority (73.8%) of the respondents were male, between the ages of '18-37' (72.0%) and had an undergraduate or graduate degree (46.0%). Moreover, majority of the respondents were Turkish (61.9%) and visiting North Cyprus with holiday purpose (54.1%). Finally, more than half of them (57.6%) reported that in last two years they rented one to three 3 cars. Only minor group (5.8%) among the respondents stated that they did not rent any car within last two years.

In order to further refine the initial scale, the purification procedure followed same steps as those used in the first stage (computation of coefficient alpha, item-to-total correlation and factor analysis, but this time confirmatory factor analysis (CFA) used (Nunnally & Bernstein, 1994; Churchill, 1979). The value of the coefficient alpha ranged from .42 to .78. The results of CFA of initial scale established the attainment of seven factors. Nunnally (1978) suggested factor loading of .40 as cutoff value for new scale development studies. As can be seen from Table 3 most of the items had factor loadings greater than Nunnally's (1978) recommendation, except three items, which later omitted from the final scale.

Table 3 also lists the measurement error, t-values and coefficient of determination (R^2) scores. Millan & Esteban (2004) reported R^2 scores as relative measure of fit for each structural equation. Hair *et al.* (1995) recommended the deletion of items whose R^2 scores lower than .50. In echoing Hair *et al.*'s (1995) recommendation following items deleted: 'the car should have electrical windows' from comfort factor (R^2 = .45) and 'employee of the company should inform me about previous accidents of the car, if any' from delivery factor (R^2 = .42) and 'additional information about the location should be provided while receiving the car' from handing over factor (R^2 = .43).

Table 3: Confirmatory factor analysis of initial scale

Factors and items	Factor loading		Measurement error		R^2
	λ_i	*t*	E_i	*t*	
Factor 1. Comfort (COM) (α = .757)					
The car should have air condition	.66	6.80	.49	5.42	.57
The seats of the car should be comfortable	.74	7.46	.46	4.95	.54
The cars' interior should be spacious	.78	6.16	.91	5.76	.60
The car should have electrical windows	.74	6.94	.58	5.34	.45
Factor 2. Delivery (DEL) (α = .782)					
Company should deliver the car to where I want	.50	5.25	.51	5.66	.64
Company should allow me to return the car to where I want	.41	3.55	.79	6.35	.57
Employee of the company should inform me about the cars' functions and accessories	.58	6.18	.42	4.91	.55
Employee of the company should inform me about previous accidents of the car, if any	.35	4.87	.29	5.86	.42
Factor 3. Handing over (HAN) (α = .701)					
Car should be very clean when I receive it	.63	6.58	.43	4.95	.68
Car should have enough gas when I receive it	.71	7.73	.29	3.47	.63
Local maps and tourist information should be provided when I receive the car	.46	4.01	.85	6.32	.54
Additional information about the location should be provided while receiving the car	.40	4.93	.40	6.02	.43
Factor 4. Security (SEC) (α = .752)					
Car should have no technical problem	.80	13.43	.40	4.70	.69
Car should have necessary safety features like ABS, Airbags…	.43	5.97	.38	6.77	.63
Car should have insurance and collusion damage waiver	.76	6.58	.50	6.50	.56
Factor 5. Ergonomics (ERG) (α = .726)					
Car should have ergonomic features for customers with disabilities or special needs	.84	10.07	.22	5.68	.62
Car should have manual and automatic gear option	.74	8.41	.34	4.92	.57
Car should have hydraulic or electrical steering system	.68	7.50	.43	5.64	.52
Factor 6. Accessibility (ACC) (α = .728)					
Company should easily be accessible	.72	9.94	.17	3.99	.65
Employee of the company should be reachable at anytime	.65	6.27	.38	4.21	.63
Employee of the company should be available to meet with me in case of extraordinary situations like accident, technical problem…	.47	3.84	.84	6.84	.54
Factor 7. Policy (POL) (α = .426)					
I should be allowed to choose method of payment	.51	4.81	.48	4.92	.43
Company should allow one day renting	.32	3.24	.57	6.29	.52
Company should be tolerant towards unlikely delays in the return of the car	.36	3.86	.80	5.99	.51

Note: All loadings are significant at $p < .01$

4.3 Quantitative research: final scale

The final stage for scale development was to reevaluate the factor structure of the RENTQUAL using CFA with maximum likelihood estimation in LISREL 8.54 (Jöreskog & Sörbom, 2003). Although, the CFA results for initial RENTQUAL scale, composed of 21 items under 7 factors, generate reasonable fit (CFI = 0.92, IFI = 0.92, NNFI = 0.91), yet there was still room for further improvement of the fit indices (GFI = 0.89, AGFI = 0.85, NFI = 0.90, RFI = 0.89, RMSR = 0.05, RMSEA = 0.072). The data were subsequently subjected to a purification process which first leaded some items of the policy factor and then deletion of the factor itself. As a result, final RENTQUAL scale, consisting of 18 items loaded onto six factors emerged (Table 4).

Table 4: Confirmatory factor analysis of final scale

Factors and items	Mean scores	Factor loading		Measurement error		R^2
		λ_i	t	E_i	t	
Factor 1. Comfort (α = .758)	**4.04**					
The car should have air condition	4.14	.81	25.70	.15	4.91	.81
The seats of the car should be comfortable	4.04	.71	20.85	.40	12.74	.56
The cars' interior should be spacious	3.95	.68	15.78	.34	17.11	.74
Factor 2. Delivery (α = .745)	**4.44**					
Company should deliver the car to where I want	4.45	.74	25.65	.18	6.73	.76
Company should allow me to return the car to where I want	4.37	.60	16.04	.44	16.64	.66
Employee of the company should inform me about the cars' functions and accessories	4.50	.56	19.32	.32	14.31	.55
Factor 3. Handing over (α = .709)	**4.22**					
Car should be very clean when I receive it	4.28	.78	25.93	.20	9.28	.73
Car should have enough gas when I receive it	4.21	.75	26.24	.19	8.80	.75
Local maps and tourist information should be provided when I receive the car	4.17	.61	18.40	.42	16.87	.52
Factor 4. Security (α = .752)	**4.54**					
Car should have no technical problem	4.55	.75	23.07	.14	7.82	.70
Car should have necessary safety features like ABS, Airbags…	4.48	.68	20.23	.27	12.34	.63
Car should have insurance and collusion damage waiver	4.58	.52	16.23	.31	16.27	.57
Factor 5. Ergonomics (α = .746)	**3.98**					
Car should have ergonomic features for customers with disabilities or special needs	4.08	.78	21.66	.35	9.58	.74
Car should have manual and automatic gear option	4.03	.70	18.33	.38	14.02	.67
Car should have hydraulic or electrical steering system	3.83	.66	17.12	.32	15.11	.62
Factor 6. Accessibility (α = .728)	**4.40**					
Company should easily be accessible	4.52	.79	18.20	.14	16.61	.81
Employee of the company should be reachable at anytime	4.38	.76	27.21	.34	6.31	.62
Employee of the company should be available to meet with me in case of extraordinary situations like accidents, technical problems…	4.30	.66	22.33	.31	13.38	.59

Note: Overall α = .862, all loadings are significant at .01 level.

The final RENTQUAL scale provided and reasonable fit for the data (χ^2 = 564.68, p = 0.00, CFI = 0.94, IFI = 0.94, NFI = 0.93, NNFI = 0.93, GFI = 0.92, AGFI = 0.89, RFI = 0.91, RMSR = 0.04, RMSEA = 0.072). Table 4 lists the factor loadings, measurement error, t-values and R^2 scores. Detailed analysis of Table 4 shows that all factor loadings are statistically significant and show a value higher than the recommended .40 level (Gerbing & Anderson, 1993; Hair *et al.*, 1995; Jöreskog, 1993; Millan & Esteban, 2004).

Table 5: Goodness of fit measures comparison of RENTQUAL scales at each stage

	Pilot scale	Initial scale	Final scale
Absolute fit measures			
Value of the χ^2 and significance level	1102.70 (p= 0.00)	564.68 (p= 0.00)	417.55 (p= 0.00)
Noncentrality parameter (NCP)	871.70	466.68	186.55
Goodness of fit index (GFI)	0.73	0.89	0.92
Root mean square residual (RMSR)	0.11	0.05	0.04
Root mean square of approximation (RMSEA)	0.094	0.072	0.071
Expected cross-validation index (ECVI)	6.04	1.71	0.92
Incremental fit measures			
Adjusted goodness of fit index (AGFI)	0.64	0.85	0.89
Normed fit index (NFI)	0.76	0.90	0.93
Non-normed fit index (NNFI)	0.83	0.91	0.93
Comparative fit index (CFI)	0.86	0.92	0.94
Incremental fit index (IFI)	0.86	0.92	0.94
Relative fit index (RFI)	0.72	0.89	0.91
Parsimony fit measures			
Normed χ^2 (χ^2 / df)	1.81	4.71	4.77
Parsimony goodness of fit index (PGFI)	0.56	0.68	0.75
Parsimony normed fit index (PNFI)	0.64	0.69	0.79
Akaike information criterion (AIC)	1240.70	666.68	555.55
Critical N (CN)	56.48	178.45	199.98

Table 5 is a replica of Millan & Esteban's (2004, p. 542) Table 9, where they compare initial and final versions of their multiple-item scale measuring customer satisfaction in travel agencies services in Spain. More recently, Chu & Murrmann (2006) followed a similar analysis to compare alternative models (null, two and three factor models) with their HELS scale. By following their steps, various goodness of fit measure listed in order to create a comparison base for three stages of newly developed RENTQUAL scale (Table 5). More specifically, absolute, incremental and parsimony fit measures of pilot scale (n=213), initial and final scales (n=726) are provided.

The criteria for assessing the indices were established following the recommendations of; Aaker & Bagozzi (1979) (Normed $\chi^2 = \chi^2/df$, higher is better, p closer to .00), Jöreskog (1993) and Jöreskog & Sörbom (1996) (GFI and AGFI > .90, RMSEA and RMSR = values closest to zero taken as good fit), Nunnally & Bernstein (1994) (NFI and NNFI > .90), Widaman & Thompson (2003) (IFI and RFI > .90), Kelloway (1998) and Chow (1987) (NCP and ECVI = values closest to zero taken as good fit), Kaplan (2000) (AIC = model with lowest score shows better fit, Critical N = critical number of observation) Gerbing & Anderson (1993), (CFI = values closest to zero taken as good fit), Tanaka (1993) (PGFI and PNFI = model with higher score shows better fit).

The overall evaluation of the goodness of fit measures shows significant increase from pilot to initial and from initial to final scales. When compared to the pilot scales' results, there is a significant improvement in initial scale in terms all fit measures (for instance GFI, AGFI, NFI and CFI leaped from .73, .64, .76 and .86 to .89, .85, .90 and .92 respectively). This can be explained by the radical increase in sample size, from 93 to 726. Although resulting scores initial scale might indicate acceptable fit, there was still room for improvement. Thus through the systematic deletion of low performing items was necessary to further improve the fit measures. Omission of one factor and three items resulted in moderate increases in fit measures (for instance GFI, AGFI, NFI and CFI leaped from 89, .85, .90 and .92 to .92, .89, .93 and .94 respectively).

In order to provide support for discriminant validity, Pearson product-moment correlations among the study factors were computed. For this purpose, composite scores for each factor were calculated by averaging scores representing that dimension. Table 6 shows the significant correlations among the factors. The highest correlation occurred between 'delivery' and 'handing over factors' (0.65) and reversely, the lowest correlation was found between delivery and comfort factors (0.37). Bauer, Falk and Hammerschmidt (2006) recently assessed their newly developed scales' discriminant validity by utilizing conservative Fornell/Larcker

test. Fornell & Larcker (1981) recommended that shared variance among any two constructs should be less than the average variance extracted (AVE) of each factor (Table 6). Means and standard deviations of dimensions composite scores were also calculated. Overall, these results provide additional support for the discriminant validity of the RENTQUAL scale (Anderson & Gerbing, 1988).

Table 6: Construct correlation matrix (Φ), means and standard deviations of the RENTQUAL scale

Factors	COM	DEL	HAN	SEC	ERG	ACC
Comfort (COM)	*.87**					
Delivery (DEL)	.37	*.84*				
Handing over (HAN)	.46	.65	*.87*			
Security (SEC)	.49	.58	.57	*.89*		
Ergonomics (ERG)	.50	.49	.64	.60	*.76*	
Accessibility (ACC)	.50	.49	.64	.60	.60	*.74*
Means	4.04	4.44	4.22	4.54	3.98	4.40
Standard Deviations	.77	.62	.61	.57	.72	.66

Note: Composite scores are calculated by averaging items representing that factor. Responses range from 1 to 5. Higher scores indicate favorable responses. *AVE shown as italic on diagonal. All correlations are significant at the $p < 0.001$.

To sum up, the RENTQUAL scale, when assessed as a whole, shows a good fit, as in general the items show convergent validity and reliability in their underlying factors (Tables 4 and 5). Final version of RENTQUAL scale has 18 items under six factors with three items each. Table 5 lists the mean scores for each item and factor, given italic. Mean scores were calculated by averaging respondents ratings of the scale items on five point Likert scale, ranging from 1 = 'strongly disagree' to 5 = 'strongly agree'.

5. Discussion and conclusion

This paper aims to provide an example for developing a measurement scale by using car rental services as a case. To do so scale development steps recommended by Churchill (1979) and Parasuraman et al. (1988) followed. Qualitative study in form of in depth interviews was undertaken to develop items, after that quantitative study was employed to purify the scale items, examine dimensionality, reliability, factor structure and validity. Finally, 18-item RENTQUAL scale with 6 factors comfort, delivery, safety, handing over, ergonomics and accessibility, emerged, please see Appendix.

Analysis of findings revealed that security, with the mean score of 4.54 out of 5.00, is the most important factor in car rental services. Furthermore, respondents ranked the necessity of having insurance and collusion damage waiver as the most important item under the security factor in particular and scale in general (mean score 4.58). This result is consistent with destination marketing literature findings (Law, Cheung & Lo, 2004).

Second most important factor found to be the delivery procedures of the car, mean score is 4.44. Respondents stated that they need particular technical instructions about the car during the delivery, mean score 4.50. Cronin & Taylor (1992) underline the importance of delivery process in the customers' overall service quality perception. In the light of this finding, management/owners should ensure that the condition of car rentals, services offered to the tourists in delivery activities on time and as promised. In addition, once a desired rent a car service quality is provided to satisfy the expectations of tourists, efforts should be exerted to maintain it over repeated service encounters, since satisfaction over time result in perception of service quality (Parasuraman, Berry & Zeithaml, 1986).

The next highest factor appeared to be the accessibility, in other words respondents reported that they want to contact the car rental company without having problem, mean score 4.40. More specifically, they want to reach the company and the employee of the company anytime they want (mean score 4.52). Accessibility factor, with similar statements, received considerable attention and many researchers found significant relationship between accessibility and both service quality perception and post purchase attributes (Parasuraman et al., 1988; Johnston, 1995).

Handing over the rented car found to be the next most important factor (mean score 4.22). Receiving clean car reported to be the most important item under this factor with mean score 4.28. Although meaning may sound close to the delivery factor, yet items under this factor are differ from delivery by being more tangible. A careful comparison between these two factors shows that delivery is more process related while handing over about the condition of the rented car (cleanliness), having enough petrol and inclusion of local maps or

tourist information in the car. Although the factor successfully survived from the harsh purification stages, it calls for replication to further assess the robustness.

Comfort of the rented car found to be one of the least important factors (mean score 4.04). The reason for this low ranking can be the fact that majority of the car rental companies purchasing newest models not to loose their competitive edge and left behind their competitors. This perhaps created an environment where majority of the cars are new and comfortable models, which in return might increased the expectations of the customers from the rental car to be air conditioned, comfortable and specious. Among comfort items, the availability of the air conditioning stated to be the most important feature (mean score 4.14) which is not a surprising result when the hot climate of Cyprus considered.

Finally ergonomics judged to be the least important factor while renting car (mean score 3.98). However having special features for customers with special needs stated to be the most important item in the factor. Although it is ranked as the least important factor, yet some ergonomics measures that can be practiced to satisfy the service quality expectations of the rent a car users.

With the growth in international tourism and interest in quality improvement and assurance models and measures, the quality of rent a car services look more promising in the future than present. Concerning the role and the importance of these services regarding their capacity and contribution to the tourism phenomena, there are a very few number of studies that report empirical findings. Most of these studies are either conceptual or qualitative in nature and are focused on the surfaced parts of the service industry such as banks, hotels, insurance with limited emphasis on the international tourist's demand factors. However, it would not be an exaggeration if it is suggested that a destination's success in the eye of the tourist is totally depends on both core and sub industry's performances. This study contributed to the conceptual and methodological advancement of service quality and rent a car businesses literature by developing RENTQUAL, a scale to measure the service quality perceptions of the tourists.

5.1 Limitations and implications for future study

The findings of this research should be interpreted in the light of the following limitations. There is continuing debate on using either gap scores that is perception minus expectation (Parasuraman et al., 1986; 1991) or just perceptions (Cronin & Taylor, 1992). The first limitation is with a tourist sample distribution, having the respondents fill out two questionnaires; one before the car rental usage and another after was not possible due to budgetary and follow up constraints. As Carman (1990) cogently discussed both; expectation and perception measures most of the time cannot be used simultaneously. Regarding the limitations of the study in this respect, only the perception items were conducted.

After purifying their HISTOQUAL scale, Frochot & Hughes (2000) analyzed possible relations between scale factors and overall quality perception, revisit intention (again) and cost of service (price). Similarly, Karatepe, Yavas & Babakus (2005) assessed the relationships between newly developed bank service quality scale, customer satisfaction and purchase intention. The second limitation of this paper is only service quality perceptions were studied so inclusion of dependent factors like; overall perceived quality (Brady & Cronin, 2001), customer satisfaction (Nash, Thyne & Davies, 2006), repurchase intension (Janga & Feng, in press) and word-of-mouth intension (Yuksel, Kilinc & Yuksel, 2006) can provide further insights, thus highly recommended.

The third limitation is the use of judgmental sampling technique as one of the non-probabilistic sampling techniques. Perhaps the use of one of the probabilistic techniques would provide the chance of generalizing the results more confidently. As a closing note, replication studies with large sample size elsewhere would be fruitful for further generalizations of the newly developed RENTQUAL scale.

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Appendix. The RENTQUAL questions

1. The car should have air condition.
2. The seats of the car should be comfortable.
3. The cars' interior should be spacious.
4. Company should deliver the car to where I want.
5. Company should allow me to return the car to where I want.
6. Employee of the company should inform me about the cars' functions and accessories.
7. Car should be very clean when I receive it.
8. Car should have enough gas when I receive it.
9. Local maps and tourist information should be provided when I receive the car.
10. Car should have no technical problem.
11. Car should have necessary safety features like ABS, Airbags etc.
12. Car should have insurance and collusion damage waiver.
13. Car should have ergonomic features for customers with disabilities or special needs.
14. Car should have manual and automatic gear option.
15. Car should have hydraulic or electrical steering system.
16. Company should easily be accessible.
17. Employee of the company should be reachable at anytime.
18. Employee of the company should be available to meet with me in case of extraordinary situations like accidents, technical problems.

