Determinants of Retail Service Quality: An Exploratory Factor Analysis Approach in Supermarket Context

Kajenthiran Konalingam
Department of Marketing, University of Jaffna

Abstract

The world is getting hyper-competitive and consumer trends are evolving in quality traits, hence the Retail Service Quality (RSQ) has become one of the most popular areas of academic investigation. For that reason, this paper seeks to identify empirically the factors which influence the Retail Service Quality of supermarket in the Sri Lankan context. In order to explore the determining factors of RSQ, exploratory factor analysis has been used to analyze the data. The sample of this study comprised 500 customers of selected supermarkets in Jaffna and the data was collected through a self-administered questionnaire which was designed from previously validated scales. At the same time, this questionnaire was constructed with 30 retail service quality items covering 5 RSQ dimensions. The findings suggest that, five identified factors/components are significantly influence on RSQ in the supermarket industry in Jaffna Sri Lanka. Further, the study empirically proved personal interaction, convenience, problem solving, policy, and appearance are the main motivators of RSQ in the customers' view which have been detected by exploratory factor analysis. Further, results revealed that dimensions extracted from the analysis accounted for 57.630 percent of the total variance. Moreover, the research provides insight into the development of measures for RSQ, and the relationships between RSQ and its determinants.
Keywords: RSQ, Exploratory Factor Analysis, Supermarket, Sri Lanka

1. Introduction

The retail environment is changing very rapidly and the customers also have more concern with retail service and product quality (Yuen & Chan, 2010). Therefore, retailers today have to differentiate themselves by meeting the needs of their customers better than the competition. There is general agreement that a basic retailing strategy for creating competitive advantage is the delivery of high service quality (Berry, 1986; Bharti, Agrawal, & Sharma, 2014; Gopalan & Satpathy, 2013). Because enhancing RSQ will enable retailers to create greater customer value which would make customers more loyal to a particular store or retailer (Karjaluoto, Jayawardhena, Pihlström, & Leppäniemi, 2015). Thus, creating and delivering customer's need-based value is a precondition for retailers to survive in today's competitive marketplace (Deb, 2014). Therefore, it is essential to investigate factors having compelling effect on RSQ.

Despite the fact, there is scant research investigate the determinates of retail service quality in the context of grocery retail, especially in Sri Lanka, the studies in this area are in infant level. As a result this study scrutinize the determinant factors of RSQ and develop a scale to measure the RSQ in developing county like Sri Lanka. Further, this study provide a significant contribution to the field of retail service quality in Sri Lankan perspective and findings of the study will also provide a useful information for the retailers to enhance their store's service quality by improving the specific dimensions of RSQ. Whilst, the rest of the paper proceeds as follows: Section 2 is the literature review, research methods are discussed in Section 3, the analysis and results are presented in Section 4, and it proposed a RSQ model finally, section 6 summarizes the findings while providing the conclusion.

2. Literature Review

Retail service quality is widely accepted concept in the world of retail marketing. Further, as a broadly accepted concept, retail service quality has the wide range of measurements, which have been discussed by various research findings in the developed and developing countries (Amorim & Saghezchi, 2015; Ananth, Ramesh, & Prabaharan, 2010; Dabholkar, Thorpe, & Rentz, 1996; Kim & Jin, 2002; Sin & Cheung, 2002; Sivapalan & Jebarajakirthy, 2017; Sivathaasan, Chanaka, & Achchuthan, 2014; Yuen & Chan, 2010). While, SERVQUAL and SERVPERF have been empirically tested in a number of studies involving "pure" service setting, it has not been successfully adapted to and validated in a retail store environment (Dabholkar et al., 1996; Feinberg, 1995; Finn, 1991; Ivanauskiene & Volungenaite, 2014; Mehta, Lalwani, & Li Han, 2000). Because, service quality in retailing is different from any other product/service environment (Bishop Gagliano & Hathcote, 1994; Carman, 1990; Dabholkar et al., 1996; Finn, 1991), it is a combination of product and services, retailer are expected to have an impact on service quality more than on product quality (Dabholkar et al., 1996).

For this purpose, Dabholkar et al. (1996) developed the Retail Service Quality Scale (RSQS) for measuring retail service quality. They identified five basic components to evaluate retail service quality. The components are physical aspects (retail store appearance and store layout), reliability (retailers keep their promises and do the right things), personal interaction (retail store personnel are courteous, helpful, and inspire confidence in customers), problem solving (retail store personnel are capable to handle returns and exchanges, customers' problems and

complaints), and policy (retail store's policy on merchandise quality, parking, operation hours, and credit cards.) These five dimensions were expected to be distinct, but highly correlated. Three of the five basic dimensions of RSQS have two sub dimensions each. RSQS includes 28 items which of 17 items were extracted from SERVQUAL and 11 items developed from literature review and their qualitative research. Factors determining retail service quality is illustrated in Figure I: Retail Service Quality Scale.
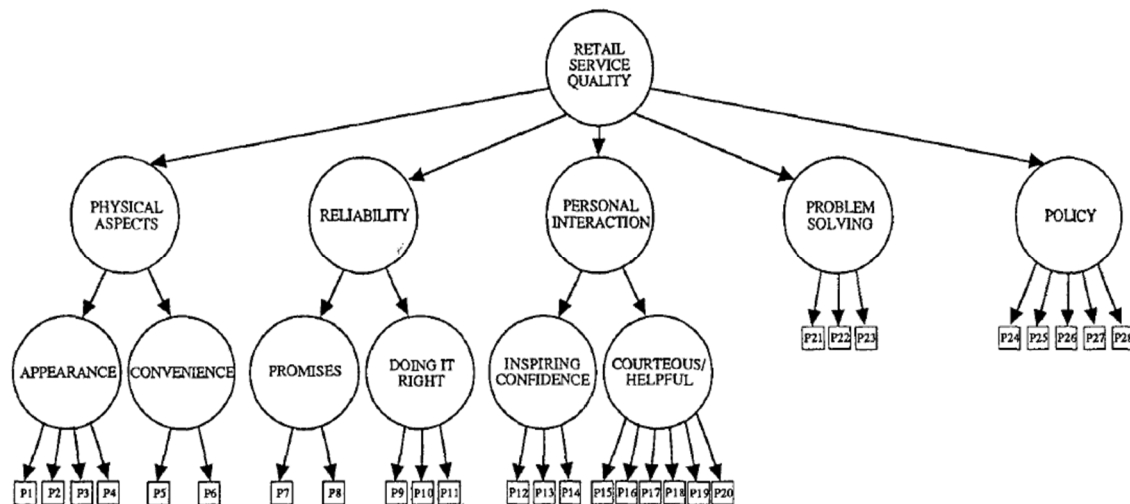

Figure I: Retail Service Quality Scale (RSQS)

Source: Dabholkar et al. (1996)

Therefore in line with above fact, Dabholkar et al. (1996), have been already tested and verified in many countries. Moreover, marketing scholars suggest, concept of retail service quality scale might be an appropriate measure in the service quality perceptions of supermarkets (Finn, 1991; Mehta et al., 2000; Sin & Cheung, 2002; Thenmozhi & Dhanapal, 2011; Wong & Sohal, 2003). Further this concept might be used as a basic retailing strategy for enhancing customer value, satisfaction, retention and loyalty relating to retail stores (Arun, Manjunath, & Shivashankar, 2012; Demirci-Orel & Kara, 2015; Ha, Minh, Anh, & Matsui, 2015; Sivapalan & Jebarajakirthy, 2017; Ushantha, Wijeratne, & Achchuthan, 2014). Thus the researcher used this RSQ model to identify the factors which affect the retail service quality of supermarkets in Sri Lankan context.

3. Method
3.1 The Study Sample
The main motivation for this study is to find the factors which influence on Retail service quality of supermarkets in Sri Lankan context. Therefore, the population of the study is comprised the customers of the most leading three supermarket brands in the Jaffna, Sri Lanka. The selected supermarkets are TCT Trade Center, Annai Naaga Food City (ANFC), and Cargills supermarket outlets in Jaffna. Systematic quasi-random sampling method was used to select the respondents of the study. Because this sampling method permits the analysis of possible selection bias or error (Oly Ndubisi, 2007). A survey was conducted to collect the data from the sample respondents and the respondents were approached within the premises of supermarkets. The data were collected from 27th 0f July 2017 to 13th of August 2017. During that period Monday, Wednesday, Friday and the weekend days also selected by the researcher for the purpose of data collection. Research assistants were assigned to conduct the survey in above supermarket outlets from 10.00 a.m. to 4.00 p.m. on the above mentioned days in week. In this context, the structured questionnaire was given to five consumers in every one hour who shopped at supermarket outlets and who confirmed their willingness to response to the questionnaire. They received information about the purpose of the survey, and they were assured of their anonymity. Paper-based surveys were distributed to 500 customers. Of these, 427 customers responded to the surveys and returned them. Of these, 54 surveys had missing data, and so were discarded. Table I, presents the demographic profiles of the respondents.

3.2 Measures and instrument development
Self-administered questionnaire was used to collect the data. This survey instrument has empirically validated scales, however, these scales were modified to suit the retailing and supermarket context, where appropriate. The scales of RSQ included 30 items under the five dimensions: physical aspect, reliability, personal interaction, problem solving and policy. This means that, physical aspect was operationalized using six items; reliability, using six items; personal interaction using ten items; problem solving using three items and policy using five items. Of this 30 items, first 28 items were adopted from Dabholkar et al. (1996) and last two from Verma and Duggal (2015). A self-administered questionnaire was used in this research, which consists of two sections. The first section

contains the demographic profile of respondents and the other section contains the questions that measuring the factors affecting retail service quality of the supermarkets. A seven-point Likert type scale anchored at 1 for strongly disagree and 7 for strongly agree was used for items operationalizing all the constructs.

Table I: Demographic profile of the respondents (*n* = 373)

Category	*n*	*%*
Name of the supermarket		
TCT Trade Centre	84	22.5
Annai Naaga Food City	40	10.7
Cargills Food City	249	66.8
Gender		
Male	172	46.1
Female	201	53.9
Age		
Below 17	2	0.5
18 – 30	257	68.9
31 – 40	75	20.1
41 – 50	24	6.4
51 and Above	15	4.0
Educational Qualification		
GCE (O/L)s and Below	20	5.4
GCE (A/L)s	159	42.6
Graduate	99	26.5
Post Graduate	31	8.3
Professionals	24	6.4
Other	40	10.7
Occupation		
Government	136	36.5
Private	118	31.6
Business	22	5.9
Self-employed	15	4.0
Other	82	22.0
Monthly Income		
Below LKR. 25,000	126	33.8
LKR. 25,000 to LKR. 50,000	159	42.6
LKR. 50,000 to LKR. 75,000	58	15.5
LKR. 75,000 to LKR. 100,000	16	4.3
Above LKR. 100,000	14	3.8

To ensure content validity, the survey instrument was vetted by four academics who are experts in marketing and consultancy and three store managers from each brand of supermarket chains. The survey instrument, originally written in English, was translated into Tamil, the respondents' first language. The survey instrument was translated back into English and was cross-checked by two other bilingual researchers to ensure the reliability and validity of translation. The respondents had the option of responding to either the English or Tamil language survey based on their language proficiency.

Further, before the researcher finalized the research instrument, researcher conducted the pilot study to reduce the language biasness. In the pilot study, nine questionnaires were issued to final year management students, Faculty of Management Studies and Commerce, University of Jaffna and seven questionnaires were issued to the customers of the supermarket. During the pilot study, some inconvenience words to the respondents were changed by the researcher with the help of the respondents of the pilot study. Furthermore Exploratory Factor Analysis (EFA) was conducted as a data analysis technique to identify the factors influence on RSQ and the Statistical Package for Social Science (SPSS) version 23.0 software was employed to analyse the data.

4. Analysis and Result

EFA was performed to identify the determining the factors of RSQ in Jaffna, Sri Lanka. Because Conducting factor analysis can yield a sense of awe regarding the power of these methods to inform judgment regarding the dimensions underlying constructs (Thompson, 2004). Moreover, exploratory factor analysis (EFA) has been one of the most widely used statistical procedures in psychological research and evaluate the soundness of current practices (Fabrigar, Wegener, MacCallum, & Strahan, 1999). Exploratory factor analysis is a general name denoting a class of procedures primarily used for data reduction and summarization (Gnanadesikan, 2011; Hair, Black, Babin, Anderson, & Tatham, 1998; Jöreskog & Sörbom, 1993; Malhotra, 2007). Besides, as extraction

method of Principal Component Analysis (PCA) followed Varimax with Kaiser Normalization rotation, was applied (Aier, Riege, & Winter, 2008), which is the default method of extraction in many popular statistical software packages , including SPSS (Costello & Osborne, 2005). Further, the data used in this study is fit for further statistical analysis after ensuring the reliability and validity of the data set.

4.1 Reliability Test

The internal consistency among items within each dimension should be verified before employing factor analysis (Sivathaasan et al., 2014). This internal reliability is generally verified by Cronbach's alpha and this value may vary from 0 to 1(Nunnally, 1978). Hair et al. (1998), suggested that the value Cronbach's alpha is more than 0.7 indicates a strong internal consistency among the construct. Reliability measurements for each factors are shown in Table II.

Table II: Reliability Measurement

Factors	Factor Reliability
Factor 1	0.745
Factor 2	0.782
Factor 3	0.773
Factor 4	0.789
Factor 5	0.816

Based on the above table, the statistics show that all variables exhibited values ranging 0.745 to 0.816, which suggests that the data is reliable and consistent with acceptable research standards. Further, the overall Cronbach's alpha is 0.818.

4.2 Validity Test

Factorability of 30 items in respect of retail service quality also needs to be tested prior to the analysis. Hussin and Iskandar (2013), proposed that test of validity involved in two steps. First, Kaiser-Meyer-Olkin (KMO) is performed to measure the sampling adequacy, which exceeds recommended value of 0.5 (Kaiser, 1974). Furthermore, values between 0.5 and 0.7 are mediocre, values between 0.7 and 0.8 are good, values between 0.8 and 0.9 are great and values above 0.9 are superb (Hutcheson & Sofroniou, 1999). The second, the significance of the study is measured by performing Bartlett's Test of Sphericity and the significant value should be .05 or smaller (Pallant, 2011). The following Table III, shows the output of KMO and Bartlett's Test.

Table III: KMO & Bartlett's Test of Sphericity

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.942
Bartlett's Test of Sphericity	Approx. Chi-Square	5527.492
	df	435
	Sig.	.000

In terms of Table III, the value of Kaiser-Meyer-Olkin (KMO) is 0.942, which falls into the range of being superb whilst, the Bartlett's Test of Sphericity is significant (Chi-square = 5527.492, p<0.05). Both results indicates the suitability and validity of the data which is collected for this study.

4.3 Exploratory Factor Analysis (EFA)

The study employed EFA to identify the component factors from 30 items related to RSQ by using Principal Component Analysis (PCA) with Varimax rotation. To determine how many components or factors to extract, it needs to consider a few pieces of information provided in the output (Pallant, 2011). Generally two crireria are used in EFA anasysis (Sivathaasan et al., 2014), the first criterion is using Kaiser's criterion, which is the most commonly used Eigen value criteria (Beavers et al., 2013), stating that only factors with an Eigen value of 1 or more are retained for further investigation (Beavers et al., 2013; Costello & Osborne, 2005; Guttman, 1954; Kaiser, 1960; Pallant, 2011). The Table IV, explian the criteria of the five components in this study.

Table IV: Matrix of Total Variance Explained

Description	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Eigenvalue	11.525	1.974	1.435	1.307	1.048
% of explained Variance	18.039	11.861	10.777	9.158	7.796
Cumulative % of explained variance	18.039	29.899	40.676	49.835	57.630
Number of Items	8	5	4	3	2

The eigenvalues for each component are listed in the above Table IV. Further, the eigenvalues of all five components are recorded above 1. Factor 1 (Personal Interaction), contained eight items and explained 18.039% of the variance in the data with an eigenvalue of 11.525. While a loading of five items in factor 2 (Convenience), accounted for 11.861% of the variance with an eigenvalue of 1.974. Meanwhile, factor 3 (Problem Solving), contained four items, which accounted for 10.777% of the variance with an eigenvalue of 1.435. Further, factor 4

(Policy) explained 9.158 % of the variance with an eigenvalue of 1.4.07. Finally, factor 5 (Appearance) loaded with two items, accounted for 7.796% of the variance with an eigenvalue of 1.048. These five components explain a total of 57.630 per cent of the variance. (See Cumulative % column).
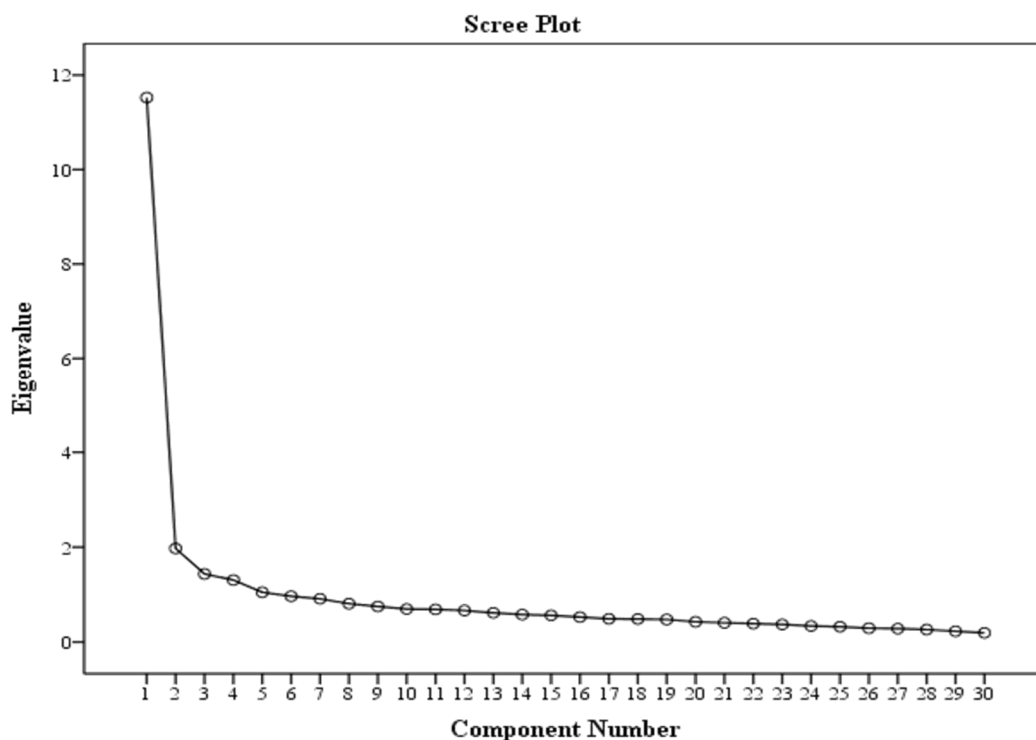

Figure II: Scree plot

This scree plot shows that the first five factors account for most of the total variability in data. The eigenvalues for the first five factors are all greater than 1.The remaining factors account for a very small proportion of the variability and are likely unimportant .

Furthermore, the Second criterion is that, items with a loading smaller than 0.5 (low factor loadings) on any factor are deleted. For parsimony, only factors with loadings above 0.5 are considered significant (Hair, Black, & Babin, 2010; Pal & Bagai, 1978). Finally, items that demonstrated cross-loadings greater than 0.5 or more than one factor are dropped, assuming that no pure measures of a specific construct are provided (Olorunniwo, Hsu, & Udo, 2006). This is explained by the Table V.

Table V: Summary of the Factor Loading structure.

Latent Variable	Items	Item No	Mean	SD	Factor loading	Item Reliability
Personal Interaction (Factor 1)	The behavior of employees in this supermarket instills confidence in you	PI1	6.36	0.72	0.807	0.919
	Employees in this supermarket have the knowledge to answer your questions / doubts	PI2	6.14	0.97	0.767	0.919
	Employees in this supermarket are never too busy to respond to your requests	PI3	6.14	1.02	0.698	0.919
	Employees in this supermarket give prompt service to you	PI4	6.36	0.71	0.658	0.921
	You feel safe in their transactions with this supermarket	PI5	6.43	0.72	0.652	0.921
	Employees in this supermarket tell you exactly when services will be performed	PI6	6.35	0.75	0.600	0.920
	Employees in this supermarket are consistently courteous with you	PI7	6.13	1.01	0.599	0.917
	This supermarket gives you individual attention	PI8	5.85	1.19	0.586	0.920
Convenience (Factor 2)	The supermarket layout makes it easy for you to find what you need.	CO1	6.26	0.91	0.767	0.922
	The supermarket layout makes it easy for you to move around in this store	CO2	6.24	0.90	0.741	0.924
	This supermarket insists on error-free sales transactions and records	CO3	6.10	0.97	0.623	0.921
	This supermarket has clean, attractive and convenient public areas.	CO4	6.33	0.85	0.621	0.922

	In this supermarket, you could able to get goods & services when you want it	CO5	6.23	0.89	0.520	0.921
Problem Solving (Factor 3)	When you have a problem, this supermarket shows a sincere interest in solving it	PR1	5.92	1.16	0.810	0.920
	Employees of this supermarket are able to handle your complaints directly and immediately	PR2	5.96	1.03	0.717	0.920
	This supermarket willingly handles returns and exchanges	PR3	5.91	1.17	0.653	0.918
	Employees in this supermarket treat you courteously on the telephone.	PR4	5.77	1.25	0.590	0.920
Policy (Factor 4)	This supermarket has operating hours convenient to all their customers	PO1	6.32	0.92	0.693	0.922
	This supermarket accepts most major credit cards	PO2	6.37	0.92	.689	0.924
	This supermarket offers high quality merchandise	PO3	6.23	1.00	0.557	0.922
Appearance (Factor 5)	This supermarket has modern-looking equipment and fixtures.	AP1	6.32	0.76	0.676	0.924
	The physical facilities at this supermarket are visually appealing.	AP2	6.40	0.66	0.538	0.923

Factor1. Personal Interaction: One of the critical factors that affect the Retail service qualiy of the suprmarket is personal interaction. This factor obtains Cronbach's alpha score of 0.745. In the customer view point, the employees of the supermarkets are providing a prompt service to their customers at the same time, they have the knowledge to answer the customers' inquires. Therefore, the employees of the have the individual attention on each customers. Thus the customers feel safe in their transactions with this supermarket, which has the highest mean of 6.43 and a standard deviation of 0.72. Further, it carried factor loadings ranged from 0.807 to 0.586 with 18.039% of variance.

Factor 2. Convenience: The convenience is another factor which influences the retail service quality of supermarkets in Jaffna, Sri Lanka. This factor has the third highest Cronbach alpha score of 0.782 with a set of five items. A majority of the respondents agree that, they could able to buy the needed goods & services in their convenient time and the supermarket layout makes it easy for them to find what they need. Further, customers agree that, the supermarkets ensure on error-free sales transactions and records. Customers perceived that the supermarkets have clean, attractive and convenient public areas, which has the the highest mean of 6.33and a standard deviation of 0.85. Factor loadings of these variables ranged from 0.767 to 0.520. A variance of 11.861was explained by this factor.

Factor 3. Problem Solving: One of the features that determine retail service quality of supermarket is problem solving, which comprises, how the employees of this supermarket are able to handle the customers' complaints directly and immediately. This study proved that, supermarket employees show a sincere interest in solving customer problems. This factor has Cronbach's alpha score of 0.773, which consisted of four variables with loadings ranging from 0.810 to 0.590. The percent variance explained by this factor was 10.777 %.

Factor 4. Policy: Policy is an important factor influencing on retail service quality. This factor has the second highest Cronbach alpha score of 0.789. The respondents also emphasize, the supermarkets accept most major credit cards and they offer high quality merchandise to their customers. This factor comprised three variables and factor loadings of these variables ranged from 0.693 to 0.557. A variance of 9.158 was explained by this factor.

Factor 5. Appearance: One of the attributes that determines retail service quality is appearance of the supermarket, which has highest Cronbach's alpha score of 0.816. This factor consist of two variables modern-looking equipment and fixtures and visual facilities of the supermarket. They carried factor loadings of 0.676 and 0.538 with 7.796 % of variance.

As a result of exploratory factor analysis, a model of factors influencing retail service quality is proposed with the above five factors such as: personal interaction, convenience, problem solving, policy and appearance. This model shown in Figure III, was derived from statistical evidence.
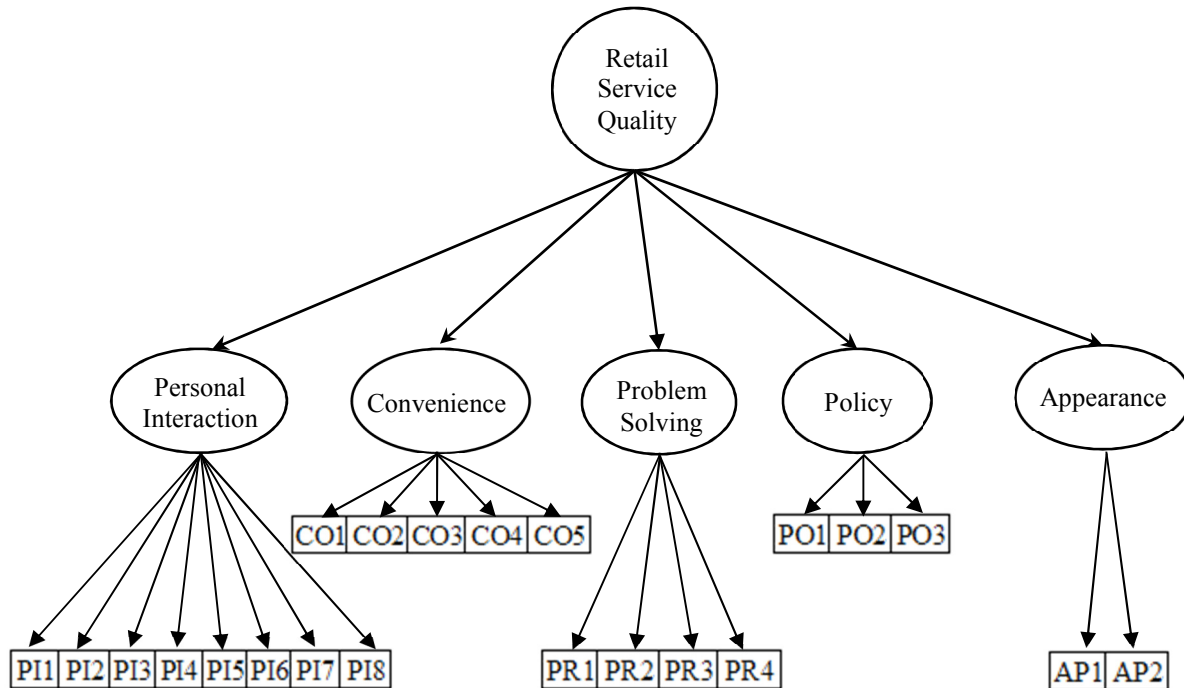
Figure III: Proposed Model for Retail Service Quality

In addition, researcher employed Pearson correlation test, in order to find the statistical relationship between retail service quality and its components.

Table V: Descriptive statistics and Correlation matrix for study variables

Construct	M	SD	1	2	3	4	5	6
1. Personal Interaction	6.22	.689	1					
2. Convenience	6.23	.675	.557**	1				
3. Problem Solving	5.89	.958	.703**	.475**	1			
4. Policy	6.31	.733	.544**	.436**	.515**	1		
5. Appearance	6.36	.590	.401**	.486**	.367**	.339**	1	
6. Retail Service Quality	6.20	.562	.843**	.754**	.837**	.745**	.638**	1

*Note: **. Correlation is significant at the 0.01 level*
M= Mean, SD= Std. Deviation,

Results of Pearson correlation of all factors that affect the RSQ have been carried out the above table. Results indicated that, the factors such as, personal interaction (r=0.843), Problem Solving (r=0.837) and convenience (r=0.754) had a strong positive relationship with RSQ. Meanwhile, policy (r=0.745) and appearance (r=0.638) had the moderate positive relationship with RSQ. All correlations were significant at 0.01 level. Whilst, descriptive analysis ensured, appearance has the highest mean of 6.36, whereas problem solving has the lowest mean of 5.89. Even though mean & standard deviation are in the same level among all the constructs approximately. Based on the mean value all the respondents perceived that above factors are favourable to RSQ.

5. Conclusion

There have been numerous studies have attempted to identify factors determining the RSQ in supermarket context. Through an empirical investigation, this study make an effort to develop an instrument, determining dimensions of retail service quality of Supermarket sector in Sri Lanka. The aforesaid model was modified by re-examining the RSQ scale, originally developed by Dabholkar et al. (1996). A total of 30 statements or items were considered in the questionnaire. Exploratory factor analysis was employed to identify the dimensions of the retail service quality and after the 2nd run of factor analysis; five factors or components were identified with 22 key variables. Those five dimensions were classified as the first order factors of retail service quality dimensions of supermarkets in Sri Lankan context. These measures are labeled as: personal interaction, convenience, problem solving, policy and appearance. Furthermore, factors extracted from the analysis accounted for 57.630 % of the total variability. Thus, it is recommended that the management of supermarkets pay specific focus on their personal interaction, convenience, problem solving, policy, and appearance aspects to provide a better services to their customers in the retailing industry. This study has focused only the supermarket customers in Jaffna. Studies in different countries might give different findings. Thus, this may call for further investigation to determine whether this concept is unique among emerging countries like Sri Lanka. Moreover, retail service quality should be taken into various

service industries, provinces and districts. Besides, the concept like retail service quality should be connected with customer behavior specifically customer satisfaction, customer loyalty and customer retention to get more insights in marketing practices of retail supermarkets.

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