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Developing a service quality scale in context of organized grocery retail of India

Service
quality scale

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Abstract

Purpose – The purpose of this paper is to check the reliability and validity of a well-acknowledged scale developed by Pratibha A. Dabholkar (1996) in the context of Indian organized grocery retail and also to identify new aspects of service quality with respect to grocery retail from literature that have not been taken into account in earlier studies and to finally develop a new scale to measure service quality of organized retail grocery stores with consultation from several experts.

Design/methodology/approach – In order to achieve the objectives of the research, both descriptive and exploratory research designs have been employed such that a survey of 800 respondents was undertaken as part of descriptive research whereas exploratory research was conducted to add new dimensions to the existing service quality measurement model so as to develop a new comprehensive scale.

Findings – The results of the study suggest that all the five dimensions of Dabholkar's model are not suitable to measure service quality in Indian organized grocery retail stores. Therefore, a new instrument with total four dimensions has been developed.

Practical implications – The study is of great importance for the retailers as it offers a more comprehensive and specific scale to measure service quality of organized grocery retail stores.

Originality/value – This research supports and makes contribution to the previous research on development of service quality measurement scales in Indian context.

Keywords India, Grocery, Organized retail, Retail service quality, Service quality instrument

Paper type Research paper

Introduction

According to Ministry of Food Processing Industries, "The food and grocery market of India is the sixth largest market in the world with retail contributing 70% of the sales. It constitutes the largest proportion of India's retail sector and is expected to reach Rs 61 lakh crores by 2020" (Indian Food Industry, 2016). However, Indian retail industry comprises largely of unorganized "mom and pop stores" characterized by limited space, limited variety of products, limited staff, limited supply control, unstandardized accounting procedures, unavailability of capital for expansion, etc. (Gummesson, 2004). But, with an increase in the disposable incomes, increase in young population, urge for better standard of living, more number of women in the workforce, Indian consumers have become more sophisticated, informed and aware. Thus, they are more attracted toward organized retail arrangement characterized by better quality of products, longer shelf life, better shopping experiences with music, lighting, courteous and friendly employees, car parking facilities, etc. Customers today have become more informed which makes their expectations and perceptions with respect to service providers more oriented to change, thus, making the process of measurement and management of service quality a difficult task for the service provider (Vargo, 2004). The traditional differentiation tools used by grocery retailers such as low price, discounts and promotions, etc. have become almost redundant as the same is leading to a vicious circle of price war. As the offerings of grocery retailers are quite similar, there is a great need to make efforts for the betterment of service quality so as to better satisfy the customers and make them loyal. Brown (1989) suggested that effective service quality is the key to attain competitive position in the marketplace. The perceptions



regarding the service quality of grocery retailers vary on the basis of individual instincts, geographic location, demographic characteristics, etc. Each and every service has distinct characteristics and also the drivers affecting the various characteristics are distinct for B2C and B2B customers. Although, there is a vast literature on the concept of service quality, no agreement has yet been attained on the scale or tool for the measurement of service quality in case of organized grocery retail sector. Existing instruments include scales developed either for the measurement of perceived service quality in general or for the measurement of retail services in general. Among such instruments, the scale developed by Dabholkar (1996) known as Retail Service Quality Scale (RSQS) has attained great popularity as a measure of service quality in context of retail sector. Several researchers have examined the validity of RSQS in context of grocery retail of developed countries such as Singapore (Mehta, 2000), South Africa (Dabholkar, 1996) and the USA and South Korea (Kim and Jin, 2001), etc. and have found it appropriate for measuring service quality. However, almost all previous researches have focused primarily on developed countries (Herbig, 1996) and service quality perceptions of Indian consumers is still unexplored (Gupta, 2004). Since the previous scales have been developed in context of countries which have a more mature retail environment, applying the same measures to relatively undeveloped Indian markets without adaptation would be inappropriate. It has, thus, become imperative to understand the priorities of Indian customers and allocate the resources accordingly for their effective utilization (Sachdev, 2004).

Thus, the first and foremost objective of this study is to evaluate the applicability of RSQS in context of Indian organized grocery retail and to further develop an organized grocery RSQS in context of Indian retail environment. The focus of this study is neither on services in general nor on services of a particular format of organized retail, but on organized retail in general constituting of hypermarkets, supermarkets and convenience stores. This study also makes an attempt to find out the most influential determinant of overall service quality. Thus, this research study adds to the previous researches by focusing on an under researched sector. As almost all the previous scales have been developed and validated with respect to western countries and also none of them focuses solely on organized grocery retailers, this study will have great implications for Indian grocery retailers.

Literature review

Zeithaml (1996) denoted quality as “superiority or excellence” and, thus, perceived quality has been defined as “consumer’s judgment about a product’s overall excellence or superiority.” Kotler (2000) has defined quality as the sum total of all the features and characteristics of a service or product which can satisfy the stated and implied needs. Lewis and Booms (1983) are the pioneers of service quality research as they defined service quality as a “measure of how well the service level delivered matches the customer’s expectations.” This was further supported by Parasuraman (1988) who defined service quality as a perceived judgment that results from an evaluation process but refer to quality as “an elusive and indistinct construct.”

A large number of researchers have given varied views on the service quality measurement instrument generally classified under two schools of thoughts: Nordic and American. The Nordic approach has been defined by Gronroos (1984) who defined service quality in terms of technical quality and functional quality. The technical dimension deals with the outcome obtained whereas the functional dimension deals with the relationship between the customer and the organization (Gronroos, 1990). Several researchers have supported the Nordic school of thought and have suggested that service quality should be measured in terms of technical quality and functional quality (Baker and Lamb, 1993; Gronroos, 1990; Babakus and Boller, 1992).

The conceptualization based on American school of thought is put forth by Parasuraman (1985) who identified ten key determinants of service quality: access, communication, competence, courtesy, credibility, tangibility, reliability, responsiveness, security and understanding the customer. Parasuraman (1985) defined service quality as the gap between perceptions and expectations, also known as GAP 5. Thus, the greater the difference, the more is the requirement for the betterment of service quality by the service provider. However, after further refinements Parasuraman (1988) developed a scale which has 22 items and five dimensions namely reliability (the ability to fulfill the promises done in a precise manner), assurance (the ability of the employees to give assurance to customers and, thereby, develop faithfulness in them), tangibles (the physical appearance of all the tangibles in the store environment such as equipments, employees, etc.), empathy (the ability of the employees to serve the customers efficiently and personally) and responsiveness (the ability to solve the queries of customers instantly). Olgun Kitapci (2013) investigated the perceptions of 505 supermarket customers in Turkey and concluded that only four out of five dimensions of SERVQUAL, i.e. empathy, tangibility, assurance and responsiveness have a positive relationship with customer satisfaction. Vazquez (2000) conducted a study on selected supermarket chains of Spain and developed a new scale called as CALSUPER consisting of four dimensions namely: physical aspects, reliability, personal interaction and policy. Siu (2003) conducted a study on Japanese supermarkets in Hongkong and found out that the dimension namely problem solving has emerged as a sub-dimension of personal interaction and a new dimension has also been suggested which is called as trustworthiness. Researchers have argued that SERVQUAL model is not very apt to measure the perceptions of customers with regard to retail stores where both goods and services are offered for sale. (Agrawal and Gaur, 2006; Mehta, 2000). This led to the need to add more dimensions to the existing SERVQUAL model.

Thus, Pratibha A. Dabholkar (1996) conducted a study using triangulation approach such that phenomenological interviews were conducted for three customers of retail stores, in-depth interviews were conducted for a total of six customers and a qualitative study was undertaken so as to track three customers' reflection while their actual purchase in US retail markets. Combining the results of these investigations along with the review of literature and taking SERVQUAL model as a base, a new hierarchical model known as RSQS was developed such that it consisted of five dimensions (physical aspects, reliability, personal interaction problem solving and policy) and six sub-dimensions (appearance, convenience, promises, doing it right, inspiring confidence and courteousness/helpfulness). RSQS model is more comprehensive than SERVQUAL and consists of 28 items in total, 17 out of which have been adapted from the SERVQUAL scale. The physical aspects dimension of RSQS model is more comprehensive than the tangibles dimension of SERVQUAL in the sense that it measures both appearance and convenience with regard to the physical facilities such as store layout, public areas, etc. The dimension namely reliability measures the competency to fulfill the commitments and has a related connotation in both the models. The construct namely personal interaction of RSQS incorporates both "assurance and responsiveness" dimensions of SERVQUAL and measures the capacity of the employees to respond to the customer's queries quickly and efficiently and to assure them that they have made the right decision. Dimension namely problem solving measures a new aspect of service quality, i.e. the ability of the employees to solve customer's problems related to their shopping experience. Another new dimension namely policy measures the customers' perceptions regarding factors such as parking, operating hours, mode of payment, etc. However, in order to determine the applicability of RSQS in Indian retail sector, Kaul (2007) conducted a study in Indian apparel retail and concluded that there is a high co-linearity among the different dimensions and sub-dimensions restricting the usefulness of the scale as a tool for identifying the significant areas of service quality that need consideration. Sikdar (2014)

also conducted a similar study to assess the validity of RSQS in apparel sector and concluded that the five-dimensional structure is not valid in case of Indian markets, in spite a four-factor structure excluding the policy dimension is found to be more significant. In study conducted by Torlak (2010) in Turkey based on supermarkets, it was revealed that RSQS has four dimensions namely reliability, policy, physical aspects and personal interaction such that the dimension namely problem solving has emerged as a sub-factor of personal interaction dimension. Huang (2009) conducted a study on Taiwanese supermarket customers and found out that the maximum impact on service quality is exerted by two dimensions namely reliability and personal interaction. Tanwar (2012) examined the impact of customers' perceptions of service quality on behavioral intentions in case of organized food retail stores and concluded that "appearance" has the greatest influence followed by the others factors of RSQS instrument by Pratibha A. Dabholkar (1996). Kim and Jin (2001) conducted a study on discount store customers of the USA and Korea and concluded that there is a difference in the customers perceptions of service quality in both the markets. As there is no consensus in the number of dimensions and the importance of various dimensions across different sectors and different countries, there is a need for the development of a more comprehensive scale valid in a specific country and a specific context.

The need for a modified scale

It is quite evident from the review of literature that neither SERVQUAL nor RSQS is valid across all countries and sectors. Also, there are various problems associated with their factor structure and dimensions. In the previous researches, only the tangible dimension of service has been focused upon and the tangible dimensions are said to have consisted of physical facilities, equipment, personnel, etc. The importance of physical product and price has been overlooked (Baker *et al.*, 1994) and rarely investigated (Julie Baker, 2002). In the present day's highly competitive marketplace, retailers fail to differentiate their stores solely on the basis of products, price, place and promotion. There is a need to offer a unique environment to improve the customer's experience with the retailing environment so that they can make better purchase decisions (Kotler, 1994). Researchers such as Darden (1983) found that physical attractiveness of a store had a greater impact on patronage intentions than merchandise quality, price level or location. The features and attractiveness of a store's environment affect the customer's perceptions of store's merchandise and service quality (Julie Baker, 2002). Retail business is truly a service business and, thus, retail stores should not only provide physical product but also offer value-added services to attain competitive advantage (Davies, 2006). Dhurup (2005) has identified a structure with three constructs (atmospherics, physical interaction and shopping convenience) of supermarket service quality by undertaking a complex and multi-stage process of scale development. Parikh (2006) questioned the validity of the factor structure of RSQS model as the factor analysis in his study resulted in a factor structure which is quite different from the proposed structure because of generalized framework of several statements leading to ambiguity, e.g. "This store has modern looking equipment and fixtures" is very vague and lacks precision. The physical facilities at this store are visually appealing is also very ambiguous as it does not point out to any specific physical facility. Researchers have argued that there are several important factors such as personal interaction, physical cues, variety and assortment that need to be considered in order to improve the shopping experience of a customer, of which only some are measured using SERVQUAL model (Dhurup, 2005). Although a pure service and retail environments have various common dimensions, however, measures of retail service quality are complex and must include additional dimensions (Siu, 2001). As the consumer's preferences are associated with culture, each and every culture has a set of service quality dimensions associated with it which is very unique.

(Xiande Zhao, 2002; Feinburg, 1995). Almost all previous service quality measurement instruments have been developed and validated in context of western countries, the same will not be applicable to Asian countries. Thus, we intend to develop a scale applicable in context of Indian organized grocery retail avoiding the critiques of the existing scales.

Research methodology

In our research, we have deployed both descriptive and exploratory research design in order to achieve our objective to test the validity of existing RSQS model and then to explore the service quality variables of organized grocery retail stores. To be more explicit, cross-sectional design has been used such that data has been collected from only one sample of population at a single point of time (Malhotra, 2010). Bentler (1985) suggested a ratio of 5:1 of sample size per free parameter. However, Nunnally, 1967 proposed to have a sample size of at least ten times the number of free parameters in order to ensure a strongly kurtosis data. Thus, the target sample size of 450 for this study meets all the requirements. The data has been collected from primary sources as our aim is to find the current information about the customer's perception of service quality of selected organized grocery retail stores. In order to collect data, we found survey approach as more appropriate for our study as it takes a sample out of the customers of grocery stores to make an inference about this population. The survey was carried out in the mall intercept-type situation so that the respondents can give more meaningful responses by analyzing the actual environment which is still fresh in his mind and relating it to the questions asked (Pratibha A. Dabholkar, 1996). In order to conduct a survey, a respondent can be approached via a mail, internet/e-mail, telephone or personal approach (Bryman and Bell, 2011). For the purpose of our study, we chose personal approach because "face to face communication" is deemed to be more appropriate in our case so that the questions or problems that are not understood by our test subjects could be identified.

The research has been undertaken in three phases.

In the first phase, a survey was conducted using existing RSQS instrument developed by Dabholkar. The data has been collected from the customers of grocery store of different sizes, i.e. Big Bazaar (hypermarket), Reliance Fresh (supermarket) and 24/7 convenience stores so as to understand the perceptions of grocery customers comprehensively. Factor analysis was conducted on a sample size of 242 so as to verify the validity of the construct. In order to check the reliability, Cronbach's α test was conducted.

In the second phase of research, an in-depth literature review was conducted in order to identify the additional variables to measure service quality so as to develop an extended instrument. After identifying the constructs, subject experts and industry experts were consulted for their suggestions. Based on it, an extended instrument with 45 items and 8 dimensions was developed.

In the third phase of study, the extended instrument was used to collect data from customers of organized grocery retail stores of different sizes (Big Bazaar, Reliance Fresh and 24/7 convenience stores) so as to develop a grocery RSQS 0.450 usable responses were received in total, out of which 225 were used to conduct factor analysis and identify the different factors on the basis of item loading, further 225 responses were used to conduct confirmatory factor analysis in order to confirm the model which we got as a result of exploratory factor analysis. Another survey of 100 respondents was conducted using the new modified instrument so as to check the validity and reliability of the new scale.

Hypothesis

H1. The service quality dimensions of grocery RSQS has no relationship with the overall service quality.

Data analysis

As RSQS scale developed by Dabholkar has originally been developed and validated in the USA, this study aims to test its applicability in context of Indian organized grocery retail stores covering hypermarkets, supermarkets and convenience stores. The items which state that “Employees in this store treat customer’s courteously on telephone” and “The store has its own credit card” have been deleted because they are not relevant in context of Indian markets as suggested by several industry and academic experts as well as various previous researchers (Kaul, 2007; Kaushik, 2015). This is because generally organized retail stores do not offer their phone contact details and do not welcome customers to interact on phone. Also, no retailer offers its exclusive credit card in India. Thus, only 26 out of the total 28 items were included in the survey instrument. An equal number of respondents were selected from each of the stores so as to have a representative sample. Out of the total 250 responses, 8 were discarded because of incomplete responses, thereby, resulting in total 242 usable responses. In order to test reliability and validity of retail service quality model using Amos 16.0., confirmatory factor analysis with traditional structural equations approach (or total disaggregation) was conducted so as to do a detailed analysis for testing of the construct.

With a view to test the reliability of each of the dimensions of RSQS separately, Cronbach’s α was calculated as indicated in Table I. As measures with Cronbach’s α of greater than 0.8 are considered as reliable, we can conclude that there is a high degree of internal inconsistency.

Several measures such as content validity, convergent validity, discriminant validity and criterion-related validity can be used to check the validity of the instrument. As RSQS instrument has been validated in context of USA by Pratibha A. Dabholkar (1996) and has been supported by many researchers later on, the instrument can be said to have a good content validity. In order to determine convergent validity, composite reliability along with average variance extracted (AVE) can be used (Hair *et al.*, 1998) (Table I). The AVE is the average variance that a construct is able to explain. The AVE values for all the dimensions of RSQS are less than the minimum recommended value of 0.5 (refer to Table I). Composite reliability is a measure of overall reliability as against Cronbach’s α which is a measure of individual item reliability. All dimensions except policy were found to exceed the threshold value of 0.7. However, the overall convergent validity is not satisfactory and thus, we can conclude that the measures which should be related theoretically are not actually related.

According to Fornell (1981), “Discriminant validity compares the shared variance among indicators of a construct (i.e. AVE) with the variance shared between constructs (i.e. correlations).” In order for a construct to achieve discriminant validity, the square root of the AVE should be greater than its correlations with other constructs (Fornell, 1981). Table II shows the correlations between constructs and the square root of the AVE for each of the constructs. However, when we look down the columns or across the rows of Table II, we can clearly see that the square root of AVE for each construct is greater than the correlations between the constructs, hence the model could not achieve discriminant validity also.

Dimensions	Cronbach’s α	Convergent validity composite reliability	Average variance extracted
Physical aspects	0.711	0.704	0.327
Reliability	0.797	0.810	0.466
Personal interaction	0.883	0.885	0.496
Problem solving	0.724	0.731	0.478
Policy	0.668	0.686	0.368
Aggregate	0.931		

Table I.
Validity analysis

Goodness-of-fit: the modification indices in the output of confirmatory factor analysis obtained by using Amos 8.0. and as shown in Table III suggests that there is a poor fit between the data and the model as all the values are less than the suggested threshold values by different researchers.

Based on the results obtained, it is clearly evident that all the five dimensions of RSQS model are not suitable for measuring service quality of organized grocery retail in Indian context and, thus, there is a need for modification of the scale.

The second phase

Scale was developed by following the guidelines provided by widely acknowledged researchers such as Nunnally (1978) and Churchill (1979). Steps followed include generation of initial scale items through extensive literature review, screening of items and purification with the help of expert reviewers, formal pre-test of refined items and rectification, additional test and then final survey in the actual field for validation. In order to define service quality domain, an extensive review of literature was conducted on the basis of which initial list of 59 items associated with five key dimensions based on RSQS scale was developed (refer to Table IV). The list was then reviewed by two academicians and two industry experts so to achieve face validity of the constructs. After the initial screening, a total of 17 items were dropped. Items such as ATM and drugstore service were dropped on account of being not supported by Indian laws and regulations. Items such as credit availability, home delivery of orders, etc. were rejected on account of inapplicability in Indian organized retail store environment. Rest of the items such as after-sales service, product assortment, well laid and clearly marked aisles, trained employees, etc. were dropped on account of repetition. Experts opined to add seven more items specific to organized grocery retail such as secure baggage counters, pre-cleaned and hygienic grocery products, spacious and handy shopping carts, own products with proper packaging and correct description, loyalty and reward programs, availability of catalogues, loyalty cards, shopping bags, etc. and availability of adequate number of sales persons, thus, leading to an instrument comprising 49 items. The survey instrument was then given to two more academicians and experts with specialization in marketing and retail for review, which resulted in a further reduction of four more items on account of confusion risk and inference

	Policy	Physical aspects	Reliability	Personal interaction	Problem solving
Policy	0.607				
Physical aspects	0.818	0.572			
Reliability	0.750	0.773	0.683		
Personal interaction	0.863	0.773	0.821	0.704	
Problem solving	0.784	0.619	0.796	0.959	0.691

Table II.
Discriminant validity
as represented by
square root of
AVE values

Indices	This study	Threshold value	Sources
χ^2/df	2.286	≤ 3	Gefen (2000)
Goodness-of-fit index (GFI)	0.895	≥ 0.90	Hoyle (2003)
Adjusted goodness-of-fit index (AGFI)	0.654	≥ 0.80	Chau (2001)
Normalized fit index (NFI)	0.791	≥ 0.90	Hair <i>et al.</i> (1998)
Tucker-Lewis index (TLI)	0.839	≥ 0.90	Bagozzi and Yi
Comparative fit index (CFI)	0.868	≥ 0.90	Bagozzi and Yi
Root mean square error of approximation (RMSEA)	0.073	≤ 0.10	Robert <i>et al.</i> (1996)

Table III.
Fit indices

S.no.	Items	Origin of the items
1	This store has modern looking equipments and fixtures (attractive shelves, sign boards, etc.)	Plooy (2007), Santos (2002), Dabholkar (1996)
2	The physical facilities in this store such as sit-down tables are visually appealing	Bianchi (2009)
3	Materials associated with this store's service such as shopping bags, catalogs, loyalty cards, etc. are visually appealing	Dabholkar (1996)
4	This store has clean, attractive and convenient public areas such as washrooms, aisles, etc.	Dabholkar (1996)
5	This store has proper lighting	Min (2010), Julie Baker (2002), Hoyle (2003), Michael Levy (2007), Varley (2006), Gustafsson (2000)
6	The employees in this store have a neat and clean appearance	Bianchi (2009)
7	This store provides a clean shopping environment outside the store	Watkins (1976), Hessian (2008), Sarah Wambui Kimani (2012), Min (2010), Banning and Weber (1994), Gustafsson (2000), Bianchi (2009), Terblanche (2004), Moore (2006), Niren Sirohi (1998)
8	The store layout at this store makes it easy for customers to move around in the store	Terblanche (2004), Niren Sirohi (1998), Burke (2005), Chan (2010), Dabholkar (1996)
9	The store layout at this store makes it easy for customers to find what they need	Gustafsson (2000), Seiders (2000), Bianchi (2009), Ruoh-Nan Yan (2011), Zhao (2010), Bitner (1990), Dabholkar (1996), Terblanche (2004)
10	This store provides secure baggage counters to keep your personal luggage	Experts opinion
11	The store is located at a convenient location which is easy to reach	Min (2010), Banning and Weber (1994), Solgaard (2003), George Panteloukas (2012), Watkins (1976), Gustafsson (2000), Berry <i>et al.</i> (2002), Laskk (2000), Seiders (2000)
12	The store tries to keep the customer's waiting time to the minimum by providing sufficient delivery and billing counters	George Panteloukas (2012), Dhurup (2005), Min (2010), Banning and Weber (1994), Karen L Katz (1991), Michael K. Hui (1997), Piyush Kumar (1997), Taylor (1994), Hirogaki (2014), Dhruv Grewal (2003), Watkins (1976), Heller (1998)
13	This store offers quality snacks and tea or coffee counters for customers	Marsden (2009), Gustafsson (2000)
14	This store provides pre-cleaned and hygienic grocery products	Experts opinion
15	This store provides spacious and handy shopping carts	Experts opinion
16	This store has provision for special requests such as making a special item available on customer's requests, keeping the shopping bags ready by the pickup time for on call delivery, etc.	Chan (2010), Vazquez (2000), Huang (2009)
17	When this store promises to do something by a certain time such as repairs, exchange, etc., it will do so	Dabholkar (1996)
18	This store performs the service right the first time	Newman (2001), Dabholkar (1996)
19	This store makes special efforts to keep the item available at all times	Seiders (2000), Heller (1998), Liu (2001), Fernie (2008), Dabholkar (1996)
20	This store ensures error free billing	Dabholkar (1996), Gustafsson (2000)
21	While purchasing products from this store, I get value for money	Gustafsson (2000), Bianchi (2009), Moore (2006), Niren Sirohi (1998), Solgaard (2003), Singh and Powell (2002), Arnold <i>et al.</i> (1983), Miranda (2005), Dahlgaard (2007)

Table IV.
Service quality variables identified from literature and experts suggestions

(continued)

S.no.	Items	Origin of the items
22	This store provides correct and precise information about the products on being asked	Vazquez (2000)
23	This store offers quality own brand products with proper packaging and correct descriptions	Experts opinion
24	Customers feel safe in their transactions with this store	Gustafsson (2000), Bianchi (2009), Michael Levy (2007), Dabholkar (1996)
25	Employees in this store have knowledge regarding new products, prices and other variations of the store	Seiders (2000), Jean C. Darian <i>et al.</i> (2001), Dabholkar (1996)
26	The behavior of employees in this store instills confidence in customers	Gounaris (2008), Gagliano (1994), Dabholkar (1996)
27	This store insists on personal satisfaction through personalization and individual attention	Vazquez (2000), Cheung (2001), Dabholkar (1996)
28	Employees in this store tell customers exactly when the services will be performed	Dabholkar (1996)
29	The employees in this store behave in a courteous and friendly way	Gustafsson (2000), Tauber (1972), Sutton (1988), Berry <i>et al.</i> (2002), Lemmink (1998), Bianchi (2009), Adelowore and Jamal (2008), Thorsten Hennig-Thurau (2004), Dabholkar (1996)
30	Employees in this store are never too busy to respond to customer's requests	Dabholkar (1996)
31	Employees in this store give prompt service to its customers	Dabholkar (1996)
32	The employees in this store have a good attitude at checkout and provide bagging services	Hirogaki (2014)
33	The store willingly handles returns and exchanges	Dhurup (2005), Vazquez (2000), Kathleen Seiders (2000), Bianchi (2009), Heller (1998), Dabholkar (1996)
34	When a customer has a problem, this store shows sincere interest in solving it	Dabholkar (1996)
35	Employees in this store are able to handle customer's complaints directly and immediately	Kelley (2001), Vazquez (2000), Michel (2001), Widing (1991), Huang (2009), Halstead (1992), Dabholkar (1996)
36	The store has convenient operating hours	Dabholkar (1996), Dhurup (2005), Karen L Katz (1991), Watkins (1976), Gustafsson (2000), Berry <i>et al.</i> (2002), Seiders (2000), Hansen (1977)
37	This store offers high quality merchandise	Dabholkar (1996)
38	This store provides plenty of convenient parking for customers	Dhurup (2005), Dabholkar (1996), Lai (1997), Dr Liu (2011), Bainbridge (2012), Browne and Swartz (2006), Marsden (2009), Watkins (1976), Berry <i>et al.</i> (2002), Seiders (2000), Hansen (1977)
39	The store accepts most major credit cards	Marsden (2009), Seiders (2000), Bianchi (2009), Dabholkar (1996)
40	This store offers a reasonable choice of brands	Gustafsson (2000)
41	This store offers a wide variety of goods	Gustafsson (2000), Seiders (2000), Singh and Powell (2002), Hoch (1999), Dellaert (1998), Vazquez (2001)
42	This store offers discounts and promotions	Fox (2004), Bianchi (2009)
43	Materials associated with this store's service such as shopping bags, catalogs, loyalty cards, etc. are sufficiently available	Experts opinion
44	This store offers loyalty or reward programs	Experts opinion
45	This store has adequate number of sales persons to aid customers	Experts opinion

(continued)

Table IV.

MD

S.no.	Items	Origin of the items
46	ATM (having some kind of banking service in a convenience store)	Marsden (2009)
47	Drugstore service (the ability to buy over the counter medicines)	Marsden (2009)
48	Ventilation	Min (2010)
49	Timely delivery	Seiders (2000)
50	After-sales service	Lindquist (1974-1975)
51	Product assortment	Gustafsson (2000), Bianchi (2009), Arnold <i>et al.</i> (1983), Koelemeijer (1999), Louviere (1987), Stassen (1999), Solgaard (2003), Hoch (1999), Van Herpen (2002)
52	Credit availability	Berry <i>et al.</i> (2002), Savitt (1997)
53	Employees in this store treat customers courteously on the telephone	Dabholkar (1996)
54	Trained employees	Seiders (2000)
55	The staff put fresh goods always and check the goods' expiry date regularly	Yongmei Xu (2013)
56	Well laid out and clearly marked aisles	Heller (1998)
57	Home delivery of orders placed by customers via phone, fax or internet/telephone and internet access	Seiders (2000)
58	Additional services (ATMs, dry cleaning services, banking services, postal services, copy centers and internet access)	Gaboda (1997), Heller (1998)
59	This store provides its own credit card	Dabholkar (1996)

Table IV.

problem, thus, ending up with an instrument with 45 items. As suggested by Bahia and Nantel (2000), it is preferred to have an over inclusive scale rather than a truncated one in the initial stages of the scale development, thus, we decided not to eliminate any of the RSQS items a priori and also include the items suggested by experts.

Analysis of the third phase

The final questionnaire was then utilized to collect responses from customers of one leading hypermarket, i.e. Big Bazaar, one leading supermarket, i.e. Reliance Fresh and one leading Convenience store, i.e. 24/7 selected on the basis of maximum number of outlets in Delhi. A list of branches of these stores was then accessed from their respective websites. The entire Delhi region was divided into four zones, i.e. east, west, north and south and the number of branches of each store in various zones was noted (refer to Table V). The data to be collected from each of the branch was determined by proportionately dividing the target sample size of study which is 450.

In this phase, the extended instrument with 45 items was used to develop a scale to measure service quality of organized grocery retail stores in Indian context. To identify the factors into which 45 items of service quality can be divided, we conducted exploratory factor analysis using a sample data of 225 respondents. In order to ensure adequacy of sample, Kaiser-Meyer-Olkin which is a measure of sampling adequacy was

Table V.
Zone wise distribution
of branches

Number of branches	East	West	North	South	Central	NCR	Total
Big Bazaar	2	4	2	2	3	17	30
Reliance Fresh	17	14	3	6	4	11	55
24/7	1	6	7	13	4	11	42
Total	20	24	12	21	11	39	127

employed which revealed a value of 0.952 (Table VI) which was considerably higher than the threshold score of 0.70 (Hair, 2006). The Bartlett's test (with a χ^2 value of 2820.590) established that there is a high correlation among the service attributes and factor analysis could be performed on the study. Exploratory factor analysis using principal component analysis and varimax rotation with Kaiser normalization was conducted to obtain a meaningful representation of the factor structure as varimax rotation enables us to identify each variable with a single common factor. As specified in Table VI, the number of factors with eigenvalue greater than 1 amounted to 4. All those variables which have low loadings and low item to total correlations have been detected and a total of 22 items were deleted which resulted into a 23-item grocery service quality scale (refer to Table VII). Factor 1 consisting of seven items has been named as physical aspects such that it includes physical environment as well as tangibles related to the store. The second dimension comprises of items influencing the assurance and confidence of customers during the service delivery process and, thus, can be referred to as trustworthiness. Most of the items in the third dimension essentially relate to the personal interaction of employees while serving the customers. Thus, this dimension can be called as personal attention. The last dimension has been denoted as policy as it largely consist of items related to store's product line, product assortment and payment mode.

Researchers have argued that exploratory factor analysis is only the first step toward scale development, a subsequent confirmatory factor analysis is considered essential for scale refinement and validation (Churchill, 1979). Thus, the four factors extracted on the basis of exploratory factor analysis were evaluated for further construct validity using Amos ver. 21.0. (refer to Figure 1). A total data of 225 respondents was used for the purpose of conducting confirmatory factor analysis.

Initially, the goodness-of-fit indices was found to be marginally below the threshold values. After a close examination of the modification indexes and loadings, two items were further deleted which were affecting the model fit (Byrne, 2001), thus, resulting into improved model fit indices as reported in Table VIII and a 21-item organized grocery RSQS comprising four dimensions namely: physical aspects, trustworthiness, personal attention and policy. For each path, *t*-statistics was found to be significant and critical ratios were also found to be greater than the standard errors (Joreskog, 1989). The next step was to identify if overall retail service quality may be viewed as a higher-order factor to the four dimensions identified as before. In order to do so, we modeled overall service quality as second-order factor correlating with the four dimensions (Figure 2). Total disaggregation analysis of this model also found an excellent fit ($\chi^2/df - 2.371$, GFI - 0.912, CFI - 0.912, RMSEA - 0.057). This suggests that customers not only evaluate retail service quality on the basis of the four dimensions but they also consider overall retail service quality as a higher-order factor underlying these dimensions.

Reliability and validity analysis

In order to test the reliability and validity of the new modified scale, a further data of 100 more respondents was collected using the 21-item organized grocery service quality scale.

Kaiser-Meyer-Olkin measure of sampling adequacy	0.952
<i>Bartlett's test of sphericity</i>	
Approx. χ^2	2820.590
df	276
Sig.	0.000

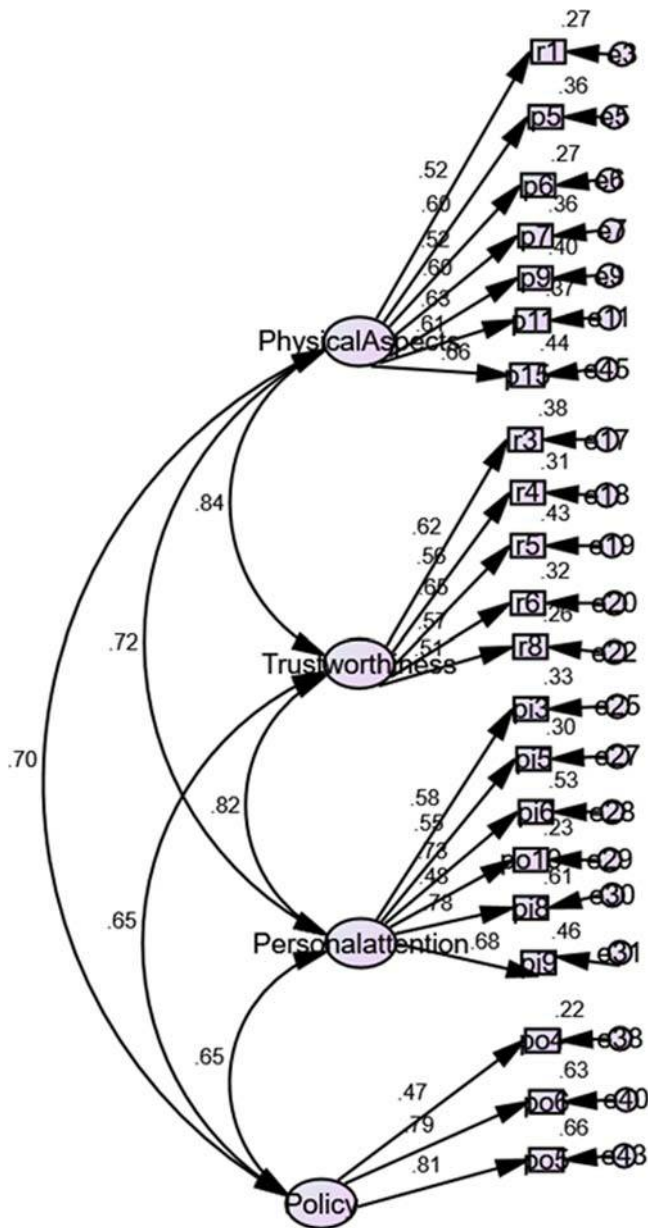
Table VI.
KMO and
Bartlett's test

MD

Items	Abbr.	Physical Aspects	Trustworthiness	Personal attention	Policy
This store provides a clean shopping environment outside the store	P7	0.724			
This store has modern looking equipments and fixtures (attractive shelves, sign boards, etc.)	P1	0.708			
The employees in this store have a neat and clean appearance	P6	0.673			
This store has proper lighting	P5	0.672			
The store layout at this store makes it easy for customers to find what they need	P9	0.635			
The store is located at a convenient location which is easy to reach	P11	0.588			
This store has provision for special requests such as making a special item available on customer's requests, keeping the shopping bags ready by the pickup time for on call delivery, etc.)	R1	0.559			
This store provides spacious and handy shopping carts	P15	0.545			
<i>Cronbach's α</i>		<i>0.994</i>			
The employees in this store have a good attitude at checkout and provide bagging services	P19		0.742		
Employees in this store tell customers exactly when the services will be performed	P15		0.738		
Employees in this store give prompt service to its customers	P18		0.731		
This store has adequate number of sales persons to aid customers	Po10		0.639		
The behavior of employees in this store instills confidence in customers	P13		0.542		
The employees in this store behave in a courteous and friendly way	P16		0.530		
<i>Cronbach's α</i>			<i>0.995</i>		
This store ensures error free billing	R5			0.786	
While purchasing products from this store, I get value for money	R6			0.591	
This store performs the service right the first time	R3			0.565	
This store makes special efforts to keep the item available at all times	R4			0.524	
This store offers quality own brand products with proper packaging and correct descriptions	R8			0.425	
<i>Cronbach's α</i>				<i>0.989</i>	
The store has convenient operating hours	Po1				0.770
The store accepts most major credit cards	Po4				0.664
This store offers a reasonable choice of brands	Po5				0.615
This store offers a wide variety of goods	Po6				0.502
<i>Cronbach's α</i>					<i>0.985</i>

Table VII.
Factor structure derived from output of EFA

The reliability score as measured by Cronbach's α for each of the four variables of the service quality construct was found to be greater than the minimum threshold value of 0.7 which supports the suitability of the scale for measuring service quality of organized grocery retail stores. The modified 21-item scale has a very high Cronbach's α of 0.998 with values of "Cronbach's α if item deleted" ranging from 0.996 to 0.998 which clearly indicates



Service quality scale

Figure 1. CFA-based measurement model of the four dimensions of service quality

that the reliability would not increase even if any item is deleted. The Cronbach's α of each of the individual dimensions, i.e. physical aspects (0.994), Trustworthiness (0.989), personal attention (0.995) and policy (0.985) (Table XI) are much above the threshold value which indicates that each dimension makes an important contribution in the measurement of overall service quality.

In order to test the relationship between the dependent variable which is overall service quality and independent variables, i.e. the four dimensions of the new scale, a multiple regression analysis was conducted. Before proceeding further with the analysis, the various assumptions of multiple regression were verified at the initial stage. In order to check the presence of outliers, Cook's distance test was used, as the maximum value = 0.055 which is less than 1, it can be concluded that the data are free from outliers. The presence of multicollinearity has been checked using co-linearity statistics as mentioned in Table IX (physical aspects, tolerance = 0.479, VIF = 2.089, trustworthiness, tolerance = 0.481, VIF = 2.079, personal attention, tolerance = 0.494, VIF = 2.023 and policy, tolerance = 0.582, VIF = 1.719). The assumption related to independent errors has been verified and found to be positive using Durbin-Watson statistic (Durbin-Watson value = 1.820, refer to Table IX). The data was found to be normal after analyzing the histogram and the P-P plot. Hence, all the assumptions of regression analysis have been successfully met. The results in Table X clearly reveal that there is a relationship between each of the four dimensions of service quality and the overall service quality as $\text{sig} \leq 0.05$ for all the four dimensions.

Validity of the instrument was also assessed using various validity methods such as convergent validity, content validity and criterion-related validity. As the instrument has been constructed on the basis of an extensive literature review and has also been validated by several experts, the content validity appears to be adequate enough.

Convergent validity is confirmed on the basis of composite reliability and AVE as suggested by Hair *et al.* (1998) (Table XI). Since all the four dimensions of the scale have a positive association with the overall service quality, the criterion-related validity is also said to be achieved.

Conclusion

This study has made an important contribution to the service quality literature by developing a valid and reliable scale specific to measuring service quality of organized grocery retail stores. The scale measures overall service quality through four specific dimensions. The dimension physical aspects includes items related to cleanliness, modernity of the infrastructure used, layout, time and location convenience, etc. The dimension namely trustworthiness takes into account aspects of service quality such as safety and security, authenticity, etc. The third dimension namely personal attention measures attributes such as courteousness of employees, their knowledge and training and their ability to deliver service efficiently. The last dimension covers aspects related to store's policies such as operating hours, payment modes, product lines offered, etc. As compared to the previous more popular scales measuring service quality such as SERVQUAL, SERVPERF, RSQS, etc., this scale is more specific and comprehensively measures the attributes related to an organized grocery retail store in Indian context. The effects of factors such as environment, price, distance, promotion, etc. have also been taken into consideration which was previously ignored. Unlike, RSQS model, the new measure is a comparatively simplified

Goodness-of-fit model indices	This study	Recommended value	Sources
χ^2/df	2.352	≤ 3	Boudreau (2001)
Goodness-of-fit index (GFI)	0.915	≥ 0.90	Hoyle (2003)
Adjusted goodness-of-fit index (AGFI)	0.892	≥ 0.80	Chau (2001)
Tucker-Lewis index (TLI)	0.902	≥ 0.90	Yi (1988)
Comparative fit index (CFI)	0.914	≥ 0.90	Yi (1988)
Root mean square error of approximation (RMSEA)	0.056	≤ 0.10	Robert <i>et al.</i> (1996)
PCLOSE	0.068	≥ 0.05	Robert <i>et al.</i> (1996)

Table VIII.
Fit indices

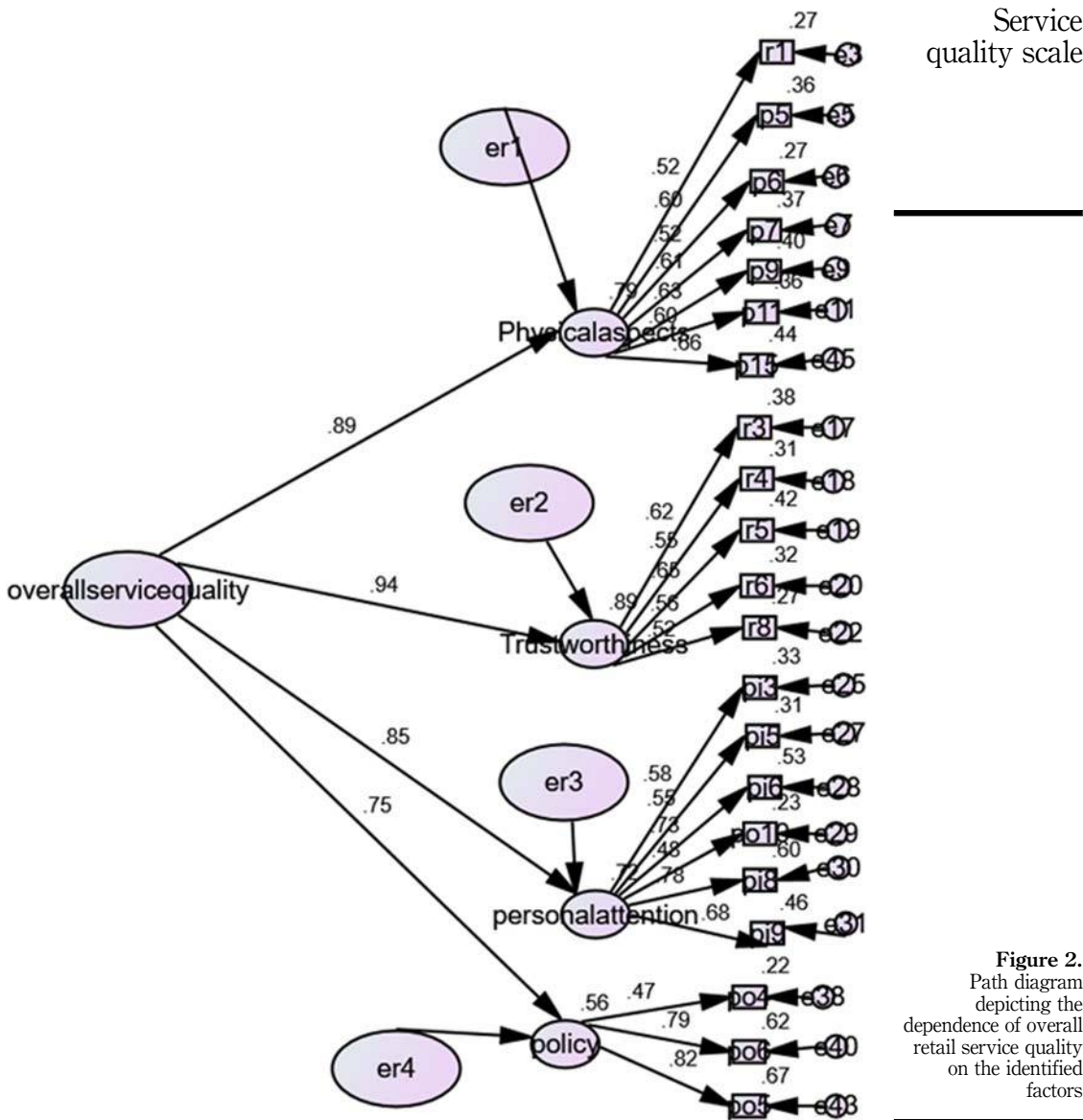


Figure 2. Path diagram depicting the dependence of overall retail service quality on the identified factors

Model	<i>R</i>	<i>R</i> ²	Adjusted <i>R</i> ²	SE of the estimate	Durbin-Watson
1	0.998	0.997	0.997	0.037	1.820

Notes: Predictors: (Constant), policy, reliability, personal, physical; dependent variable: overall service quality

Table IX. Model summary

model without the presence of sub-dimensions (Martinez, 2010; Ladhari, 2008). The scale is of immense importance for the marketing managers and service marketers who will be able to measure and improve the service quality perceptions of their customers by focusing on more relevant aspects and will also be able to enhance the customer experience by formulating different strategies based on customer segmentation. Further, the performance level of various units of an organization can be measured and tracked independently and can also be compared with the competitors' (Cronin, 2001). The results (Table IX) show that physical aspects dimension is the most influential indicator of the overall service quality on the basis of the values of standardized regression coefficient ($\beta=0.387$) followed by personal attention ($\beta=0.312$), trustworthiness ($\beta=0.280$) and policy ($\beta=0.209$). The relatively higher β of physical aspects dimension indicates that the organized retailers must make efforts to improve the physical facilities including the layout, infrastructure, public areas, etc. in order to have a differential competitive advantage. Further, efforts must also be made toward training and development of employees as personal attention between the employees and the customers plays an important role in creating a positive image of the overall service quality of the service provider. Relatively lower emphasis can be made on policy dimension because customers probably are not able to differentiate and make their preference for a particular store on the basis of policies which are generally similar across various stores and are more dependent on external factors.

Research implication and limitations

The scale developed in this study can be used further to examine each of the dimensions in depth. Further, there is a need to examine the interrelationships between grocery retail service quality and other service constructs such as customer satisfaction, behavioral intentions, loyalty, etc. Since, the number of dimensions and the degree of importance of each of the dimensions is not static across all countries, further studies can check the validity and reliability in other countries as well.

The major limitation of this study is that it is restricted to only Delhi NCR areas and the sample size is relatively small. Thus, due care should be taken while generalizing the findings. Furthermore, the scale construction is based entirely on literature and experts opinion.

Table X.
Coefficients

Model 1	Unstandardized coefficients		Standardized coefficients			Co-linearity statistics	
	<i>B</i>	SE	β	<i>T</i>	Sig.	Tolerance	VIF
(Constant)	0.024	0.010		2.542	0.011		
Physical aspects	0.337	0.003	0.387	98.444	0.000	0.479	2.089
Trustworthiness	0.239	0.003	0.280	71.249	0.000	0.481	2.079
Personal attention	0.268	0.003	0.312	80.451	0.000	0.494	2.023
Policy	0.149	0.003	0.209	58.592	0.000	0.582	1.718

Note: Dependent variable: overall service quality

Table XI.
Validity analysis

Construct	Internal reliability Cronbach's α	Convergent validity composite reliability	Average variance extracted
Physical aspects	0.994	0.86	0.44
Trustworthiness	0.989	0.80	0.47
Personal attention	0.995	0.86	0.43
Policy	0.985	0.744	0.505

In subsequent studies, primary qualitative research with grocery store customers should be given priority. Also, as the study is specifically based on organized grocery retail, it cannot be generalized to other retail sectors. Other unexplored sectors should be targeted in future researches. Although perfect rating scale exists seldom, but some findings are more reliable and valid than the others (Devlin, 1993). Therefore, this paper supports the view point that validation is a never ending process and, thus, replication of the existing studies are always welcomed for the improvement of the measures.

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