

Customer satisfaction characterized by service quality for revenue collection of Municipal Service in Sri Lanka. A pilot study.

ABSTRACT

Municipal councils of a country are public services organizations which have been operating in a market monopoly. This pilot study was intended to assess the validity of the service quality dimensions which constitute customer satisfaction of municipality service for carrying out the analysis of inference statistic as customer satisfaction is the key drive of revenue collection. The validity of pilot study confirms the path for a comprehensive study. The pilot study selected of 65 customers in one ward of the Municipal area and 48 respondents had successfully responded for the self-administrative questionnaire. Z-scores by capturing values between +1.96 and -1.96 for skewness and kurtosis of all model variables were substantially normal. The residual analysis of four assumptions of normality, homogeneity of variance, linearity, and independence confirmed the validity of all model variables were compatible for linear regression. Cronbach's Alpha indicated that two scales established to constitute the dependent variable of revenue collection needed to be removed and thereby, impact on revenue collection from customer satisfaction reached to a statistically significant value by allowing provisions for Sobel's test for mediating effect.

Keywords: Service Quality Dimensions, Customer Satisfaction, Revenue Collection, Skewness, Kurtosis, Test Residual Analysis,

Introduction

This pilot study was intended to assess the validity of the service quality dimensions which constitute customer satisfaction of municipality service for carrying out the analysis of inference statistic as customer satisfaction is the key drive of revenue collection. The validity of the pilot study confirms the path for the followed by comprehensive study. The degree of customer satisfaction is a measure of gap between the expected service quality and the perceived service quality which is created in the minds of beneficiaries.

Revenue generated by Municipal councils is one of the main sources of funding used for operations and maintenance of the service area by the municipal council of a country. Being a public services organization have been holding a market monopoly. The council members elected by a local government election make decision to provide a substantial service to the community

living within the municipality service area. The metropolitan area of District Capitals falls under the sovereignty of respective Municipal Council and operates without any rivalry of the monopoly of service-market.

Though the organizations have no internal pressure for improving quality measures of their services, the council members receive an immense external pressure from the beneficiaries including voters. Though the market holder captures the freedom of establishing service charges in the absence of competition, satisfaction level of customers to pay the set-price becomes the determinant of revenue generation. Encountering customers' dissatisfaction as their services entities thus the quality of services delivered by the Municipal Council can be assessed by means of identifying key service quality dimensions.

Literature Review

By synthesizing the publications of management scholars and researchers, interdependency among model variables of this study namely, service quality dimensions, customers satisfaction and revenue collection is established. Thereby, the model variables are described by focusing on Municipal Service activities currently being practiced.

Service quality dimensions

Seyed Javadin and Kimasy (2015) consider the service as a process that includes a series of intangible activities occurring in the interactions between customers and service provider systems including employees and physical resources to be a solution for customers' problems. Service quality is an integral aspect of offering an organization in order to improve their loyalty by providing effective and efficient service to their customers (Ojo, 2010). Further, service quality is the degree of achievement that meets customer's standards which is considered as the ultimate measurement of customer expectations (Makumbe and Mukwena 2017).

To determine the dimensions of service quality, various studies have been conducted. Parasuraman et al. (1988, cited in Esmailpour et al, 2017) introduced ten factors as dimensions of service quality via SERVQUAL model, later Parasuraman et al. (1991, cited in Esmailpour et al, 2017) reduced ten dimensions of service quality to five dimensions of tangibility, reliability, responsiveness, assurance (credibility), and empathy. However, Parasuraman et al (1985) describe accessibility being one of ten dimensions as it involves approachability and ease of

contact whereby the degree to which the service is easily accessible by telephone, responding with a reasonable waiting time for service delivery, and location and operating time of the service provider. This pilot study included accessibility as the sixth dimension.

The service quality dimension tangibility determines the presence of physical facilities, machinery, personnel, and communications materials which create the first impression about the organization in the mind of customer. A business should wish all its customers a special good experience and never forget that in the future they are more likely to return (Gunarathne, 2014). Tangibility elements reflect continuity between cultures. (Zakaria, 2013; Hindarsah, 2021).

The service quality dimension responsiveness refers to the company's ability to help its guests provide healthy high quality and quick service since each customer is respected; more if they get the best service possible (Gunarathne, 2014). The ability to assist clients and provide timely service is responsiveness. Instead of approaching the business from the perspective of the customer the method of service delivery and the handling of requests (Nasution et al., 2021). In SERVQUAL 1994 (Pakurár et al, 2019), responsiveness has been rated as the third dimension. This dimension of quality of service is viewed by the quality of service component. However, advances in information technology such as e-mails, websites, and customer service interfaces allow the service provider to react (Johnson & Karlay, 2018).

The service quality dimension assurance describes the degree to which the accountability of service delivery is shouldered by the service providers while serving to the customers. If the customers are not happy with organizational staff, it is very unlikely that the customers will go back to business with the company (Gunarathne, 2014). Assurance is the intelligence and courtesy of the workers and encourages trust and faith in the organization and its employees (Tuncer, 2021). According to Pakurár et al, (2019), confidence means the values and behaviour of workers and the ability of employees to provide friendly, sympathetic, courteous and adequate services. Assurance is performed through the people aspect of service quality (Johnson & Karlay, 2018).

The service quality dimension empathy refers to the service providers' the ability to feel customers' own emotions. Empathy is important in order that customers are unique and specific and understand their needs through personalized or customized service (Moletsane, 2014). If the customers feel they get individualized and quality attention there is a very big chance that they

will return to the company and do business there again (Hallencreutz & Parmler, 2021). Multiple quantitative studies have established dimensions of the model for service quality, which have employed security, reputation and Accessibility to empathy measurement (Pakurár et al, 2019). The quality of this service is recognized by the quality of service aspect (Johnson & Karlay, 2018).

The service quality dimension reliability determines the way that the company conducts and fulfils its promised service quality, and precision in compliance with the defined needs of the company and the customer. The reliability of quality of service is recognized through the human element of quality of service (Johnson & Karlay, 2018). Reliability is much like a first-hand experience, because each customer wishes to know if his or her supplier is reliable and satisfies the set requirements (Gunarathne, 2014).

Customer satisfaction

Kotler (2000) defined satisfaction as: “a person’s feelings of pleasure or disappointment resulting from comparing a product’s perceived performance (or outcome) in relation to his or her expectations. Effects of customer satisfaction in a market monopoly where the customers have no alternative supplier choices, managers are unsure how much to invest in satisfying customers (Bhattacharya et al. 2020). Customer satisfaction is the outcome that customers received when the service they experienced exceed their expectation whereby the more positive customers’ perceived service quality, the better their satisfaction level with the service provider is likely to be (Dawi et al. 2018). A study carried out by Mokhlis et al. (2011) on customers’ satisfaction on the services provided by municipal service indicates that: i. the five dimensions of SERVQUAL represent a valid instrument to measure municipal service quality; and ii. Four service quality dimensions, namely tangibility, empathy, assurance, and responsiveness significantly predicted citizen satisfaction with an adjusted coefficient of determination of 0.5.

Service Quality Dimensions and customer satisfaction

A summary of emphatical studies carried out by management scholars to assess the impact of different service quality dimensions on customer satisfaction are shown in Table 1.

Author	Service quality dimensions	Findings
Pakurar et al., (2019)	Tangibility, Responsiveness, Empathy, Assurance, Reliability, Accessibility, Financial Aspect & Employee Competences	The service quality dimensions have a positive & significant effect on customer satisfaction
Tran (2016)	Tangibility, Reliability, Responsiveness, Assurance, Empathy, Transparency	Responsiveness mostly influences on customer satisfaction followed by empathy and reliability.
Bello, Martin & Kashim (2017)	Municipal Awareness, Citizen Awareness and Environmental Awareness	The findings indicate that city knowledge plays a critical role in satisfying the public in the delivery of municipal services.
Hague & Hauge (2016)	Reliability, Tangibility, Responsiveness Assurance and Empathy	The findings revealed that job satisfaction and transfer of training were positively and significantly related to consumer purchasing behaviors. Further, job satisfaction was found to be the strongest predictor of service quality of employees.
Wijsekara & Fernando (2017)	Responsiveness, Communication, Tangibility, Empathy, Assurance	The sample size was 100 and was only chosen through non-probability sampling techniques from the District of Gampaha with a judgmental sample process. The use of one of the probabilistic approaches would give the ability to generalize the findings more confidently.
Karunaratne, Gunwardhana & Edirisinghe (2015)	Reliability, tangibility, Responsiveness Assurance And Empathy	In view of all aspects of study, their services suggested a better sign without any noticeable difference from the level predicted. Boralesgamuwa UC, however, is the most unreliable local authority service providing a distance of 3.00. As shown

		from the gap, Dehiwala Mt. Lavenia provides local authority with slightly poor services.
Makumbe & Mukwena (2017)	Reliability, Tangibility, Responsiveness Assurance and Empathy	The findings showed a strong effect upon the satisfaction of customers through reliability, responsiveness, empathy and tangibility & assurance.

Gap between expected and perceived service quality

Zivkovic et al (2019) disclose through a study that quality of municipal service, from the customers' point of view, is not satisfactory, that is there are significant gaps between customers' expectations and their perception of each service quality determinant, especially reliability and responsibility of service. A study carried out by Noor and Nasirun (2013) on customers' satisfaction on the services provided by the natural monopoly company indicates that 76.2% of customer satisfaction can be explained by the dimensions indicating satisfaction of services received before the services are performed. A study carried out by Mokhlis et al. (2011) on customers' satisfaction on the services provided by municipal service indicates that: i. the five dimensions of SERVQUAL represent a valid instrument to measure municipal service quality;

Model variables

By reviewing literature, characteristics of six service quality dimensions related to the services rendered by Municipal Councils in Sri Lanka are summarized in Table 2.

Model dimensions of service quality	Characteristics of service quality dimensions related to Municipal Services
Reliability	Accuracy of the bills and other information issued to customers, uninterrupted and timely delivery of customer services, reliable and credible transactions, and employees' knowledge to answer queries raised by the customers
Assurance	Transparency of customer service delivery process, security of the valuable documents submitted by the citizens, treating every customer in an equitable and unbiased manner, and providing public utilities in a standard manner, and accuracy of the invoices and receipts issued by the MC
Tangibility	Modern technology used by the MC for receiving information from the citizen and responding to the citizens, physical facilities and logistics provided by the MC for make citizens comfortable, both internal and

	external arrangements of MC office, and maintenance of the environment
Empathy	Ability of the MC staff to pay personal attention on service seekers, understand the customer needs, clarify the MC procedures, and direct them to the right service units
Responsiveness	Prompt response given by the MC for both oral and written requests of the citizens and advance notifications delivered by the MC management related to public services, and other issues
Accessibility	Friendliness of the MC staff in service delivery process, and information provided through digital communication, mobile applications, and service counter.

The characteristics listed in Table 2 are used to establish the questions of the self-administrative questionnaire to represent six service quality dimensions.

Methodology

As explained in Table 2, input characteristics of service quality dimensions related to Municipal Service determine the degree of customer satisfaction on which the customer is self-encouraged for paying service-taxes. The data were collected by using a self-administrative structured questionnaire, which consists of three sections; (i) respondent's demographic information; (ii) 20 author constructed questions to measure respondents' perception towards the six service quality dimensions; and (iii) respondents' overall satisfaction with services provided by the municipal council and their perception on paying revenue by means of perceived satisfaction. The respondents rate their level of agreement with each statement using five-point Likert's scale ranging from 1-totally dissatisfied; 2- satisfaction is below average; 3-satisfaction is in average; 4- satisfaction is above average; and 5- totally satisfied. The questionnaire prepared in English was translated into local language of Sinhala prior to distribution.

Statistical analysis was carried out by using SPSS version 25. As fundamental requirements for parametric tests and linear regression analysis, normality of six service quality dimensions and customer satisfaction were statistically tested by the degree of skewness and kurtosis. Prior to perform a linear regression, residual analysis which complies with four assumptions (Levine et al, 2011) namely: (i) normality; (ii) homogeneity of variance (homoscedasticity); (iii) linearity; and (iv) independence (autocorrelation) was carried out to confirm the validity with said four assumptions.

Findings of pilot study

A pilot study was carried out by involving 65 respondents from one of the Municipality Wards to validate the feasibility of the questionnaire and 48 had responded successfully. Descriptive statistical analysis was used to describe respondents' demographic characteristics whereas inference statistical analysis was used to evaluate the impact of variables.

According to Kim (2013) small samples ($n < 50$), if absolute z-scores for either skewness or kurtosis are larger than +1.96 or less than -1.96, which corresponds with a alpha level 0.05, then reject the null hypothesis and conclude the distribution of the sample is non-normal. A z-score could be obtained by dividing the skew values or excess kurtosis by their standard errors. Z-score of six service quality dimensions (independent variables), customer satisfaction (mediator variable) and revenue collection (dependent variable) were found values between +1.96 and -1.96 for both skewness, and kurtosis revealing probability distribution of variables are substantially normal. Thus, data set is compatible for parametric analysis and thereby regression analysis is recommended.

Residual analysis of normality was firstly carried out for mediator variable Vs independent variables and secondly for dependent variable Vs mediator variable. Residual analysis for normality shows a bell-shaped and substantially symmetrical histogram of standardized residuals of linear regression. The scatter plot of expected cumulative plot Vs. observed cumulative probability was aligned close to the diagonal without major deviations. Both test results assured the normality.

The residual analysis of homoscedasticity was performed by taking the residual values of the regression of dependent variable vs. independent variables. A uniform distribution of the scatter plot of standardized residual values vs. standardized predicted values free from a cone or a fan shape distribution confirmed the homoscedasticity of the data set.

The residual analysis of linearity was performed by extending scatter plot of standardized residual values vs. standardized predicted values to establish the "Loess curve" of the distribution with the facility of SPSS 25. Loess curve which propagated close to zero line without showing major deviations confirmed the linearity of the residual values.

The residual analysis of independence or free from autocorrelation of the residual values determines whether there is a residual error associated with one observation which is not correlated with the residual errors of any other observations. When Durbin-Watson statistic is close to 2 (± 0.5 around 2), the residual series can be regarded as free of autocorrelation at a certain level (say, $\alpha = 0.05$) of significance (Chen, 2016). The Durbin Watson value (1.836) of this study falls between the ranges of free from autocorrelation confirms that the residuals are independent or not having auto correlation.

Residual tests have confirmed that the mediator variable Vs. six independent variables is suitable for multiple linear regression analysis.

Before assessing the mediator effect through Sobel's test, residual tests for linear regression of dependent variable Vs. mediator variable was carried out. Residual tests have confirmed that the dependent variable Vs. mediator variables is suitable for multiple linear regression analysis.

Linear regression of dependent variable Vs. mediator variable acquired a value of significance less than 0.065 ($\alpha > 0.05$) by determined the existence of null hypotheses. This reveals that the probabilities of respondents' rated observations are not statistically significant to reject the null hypotheses and thereby, impact of customer satisfaction on revenue collection is not significant.

As per Hulin et al. (2001 cited in Ursachi et al. 2015) Cronbach's Alpha of six scales used to establish revenue collection has taken a value of 0.628 which indicates a marginal level of reliability. The test further indicated that two scales have reduced the Cronbach's alfa. After removing two critical attributes, the significance value was increased to 0.012 ($\alpha < 0.05$). This reveals that there exists a significance impact on revenue collection from customer satisfaction allowing provisions for Sobel's test for mediating effect.

Conclusion

Pilot test has validated six service quality dimensions (independent variables), customer satisfaction (mediator variable) and revenue collection (dependent variable) for parametric analysis. By taking Z-scores between +1.96 and -1.96 for skewness and kurtosis of all said variables have confirmed the probability distribution of variables were substantially normal. The residual analysis of four assumptions of normality, homogeneity of variance, linearity, and independence confirmed the validity of all said variables were compatible for linear regression.

However, Cronbach's Alpha indicated that two scales established to constitute the dependent variable of revenue collection have declined the internal consistency. After removing two critical scales, impact on revenue collection from customer satisfaction reached to a statistically significant value by allowing provisions for Sobel's test for mediating effect.

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