ASSESSMENT OF THE QUALITY OF MUNICIPAL SERVICES IN THE CITY OF TSHWANE, SOUTH AFRICA

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Abstract

The purpose of the study was to identify and quantify differential factors that undermine the quality of municipal services that are provided to residents of the City of Tshwane. Data was collected from a stratified random sample of size 1,012 residents of the City of Tshwane. Stratification was done by geographical zone. Data was collected from respondents by using a structured, pre-tested and validated questionnaire of study consisting of 22 indicators of service quality. The questionnaire of study consisted of 5 dimensions of expectation and perception (reliability, assurance, tangibles, empathy and responsiveness). Each of the 1,012 respondents in the study had to provide answers to 22 questions related to expectations plus 22 questions related to perceptions. As such, each of the 1,012 respondents had to provide answers to 44 questions (22 questions on expectation + 22 questions on perception). Measurements of expectations and perceptions were done by using a 5-point ordinal scale. Face validity was used for ensuring validity. The Cronbach Alpha test was used for ensuring reliability and internal consistency. The expected and perceived quality of emergency services provided to the general public by employees of the City of Tshwane was analyzed by using SERVQUAL analysis. This was done by estimating gap scores (the average difference between expected and perceived scores).

The study found that 84.37% of respondents who took part in the study were satisfied with the overall quality of municipal services that were provided to them by the City of Tshwane. Only 15.63% of respondents were not satisfied with the overall quality of services provided to them. The study showed that most of the respondents had a positive perception about the degree of commitment shown to them by employees of the City of Tshwane. The study found that as many as 87.13% of respondents had a positive perception about the degree of commitment shown to them by employees of the City of Tshwane. Based on results obtained from SERVQUAL analysis, 20 of the 22 gap scores were found to be significant at the 5% level of significance. There were only 2 items (out of a total of 22 items) that did not produce significant gap scores. These 2 items were items 2 and 3 of the dimension on responsiveness. Item 2 of the dimension on responsiveness was an assessment on the degree of suitability of the equipment used by municipal employees for carrying out routine services. Item 3 of the dimension on responsiveness was an assessment on the degree of physical fitness of employees of the City of Tshwane for carrying out routine municipal services effectively. With the expectation of the 2 gap scores corresponding to these 2 items, all other gap scores (20 out of 22) were statistically significant at the 5% level of significance. Based on results obtained from factor analysis, the perception and expectation of respondents on the quality of municipal services that were provided to them were significantly influenced by 4 key predictors of perception. These 4 predictor variables were the degree of motivation of employees of the City of Tshwane at work, the ability of employees of the City of Tshwane to treat all customers with respect, the ability of employees of the City of Tshwane to provide adequate answers promptly to queries raised by customers, and the degree to which employees of the City of Tshwane were skilled on technical issues, in a decreasing order of strength. Similar results were obtained from logit analysis. The results showed that the perception and expectation of respondents were influenced by similar variables of study.

Key words: City of Tshwane, Optimal Service Delivery, SERVQUAL Analysis, Factor Analysis, Logit Analysis

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1 Introduction

In the City of Tshwane, routine municipal services refer to basic services that residents of Tshwane expect in order to get on with their daily activities. Such services mostly refer to water, light, emergency and waste removal services as well as routine maintenance of roads and buildings. They also refer to billing and accounting services that are provided to all ratepayers and registered businesses in the City of Tshwane. The City of Tshwane provides health related, policing, transportation and educational
services to inhabitants of the city at an affordable rate. This shows that ordinary residents and businesses rely on the City of Tshwane for their routine operations and survival on a daily basis. With regards to businesses operating in the city, the City of Tshwane provides sanitation and health inspection services to businesses such as restaurants, hotels, cafeterias, food processing and packing businesses and supermarkets. A wide range of routine services are provided to inhabitants of the City of Tshwane. Residents and businesses must pay for such municipal services. There are municipal bylaws that explain the terms of services and responsibilities of residents of the City of Tshwane. Services such as sanitation (both sewer and refuse), water, the maintenance of streets, schools, food inspection, fire and emergency services, policing, ambulance, other health-related services as well as transportation services are provided to inhabitants at affordable rates. In some cases, some services are provided by private contractors at the request of the City of Tshwane. Such contractors are accountable to the City of Tshwane, and must comply with service level agreements (City of Tshwane, 2015).

The City of Tshwane has received qualified audit reports from the South African Auditor-General (2015) in the past several financial years. In some parts of the City of Tshwane, residents have protested against poor municipal service delivery. The protests have been mostly about poor service delivery in areas such as water services, power services and sanitation services. The most prominent complaints were made by people staying in informal settlements. They demanded access to water services and sanitation. Although the City of Tshwane does its best to address the demands by residents for improved services, the protests keep occurring from time to time. A number of authors have examined the quality of municipal service delivery in the City of Tshwane in areas related to water, sanitation and electrical services as well as financial services. Residents and businesses have complained about inaccurate bills and statements for municipal services rendered by the City of Tshwane. The South African Constitution guarantees all people the right to good municipal service delivery.

3 Literature review

The ability to answer financial and account-related queries from customers is critically important at municipal level. According to Guner, Malmendier & Tate (2008: 323-354) and Gompers, Ishill & Metrick (2003: 107-155), municipal employees whose job is to assist residents and ratepayers on financial matters must have adequate skills on auditing, accounting and resolving account-related queries from customers speedily. Grant (2013: 114-135) has also made a similar assessment on desirable skills municipal employees must have. According to Frei and Harper (2002: 253-267), it is beneficial to train municipal employees on the use of electronic methods of resolving financial queries from customers. The authors argue that municipalities must keep updating their methods of service delivery in order to catch up with global advancements in the field of municipal service delivery. The study conducted by Fernandez & Rainey (2006: 168-176) shows that the ability to provide adequate municipal services to customers is a key requirement for attracting new business enterprises. The authors have shown that there is a significant relationship between the ability to deliver satisfactory municipal services and the ability to attract small, micro and medium-sized business enterprises (SMMEs) in cities such as the City of Tshwane. Fox (2006: 353-370) argues that SMMEs are the principal creators of employment opportunities in all economies of the world. The study conducted by Dasanayaka and Sardana (2010: 50-70) has shown that SMMEs can be used for the alleviation of abject poverty and unemployment in municipalities such as the City of Tshwane, and that the ability to attract a large number of SMMEs depends upon the capacity of municipalities to provide efficient and affordable municipal services. Studies conducted by Elder & Serletis (2010: 1137-1159) and Fenn, Gray, Rickman, Vencappa, Rivero & Lotti (2010: 225-242) and Dunn & Riley (2004: 437-438) have pointed out that large municipalities must be willing to invest heavily on infrastructure and the acquisition of modern methods of service delivery as a means of ensuring adequate municipal service delivery to all residents, businesses, ratepayers and stakeholders.

Guidelines and procedures that could be used by the City of Tshwane for the assessment of service quality standards are stated by Parasuraman, Zeithaml & Berry (1985: 10-12; 1988: 16-23) and Parasuraman (1998: 310-321). The guidelines proposed by the authors have been followed by the South African National Department of Public Service and Administration (2012) and the South African Government Communication and Information System (2004) as Act number 32 of 2000. The Municipal
Finance Management Act (Act number 56 of 2003) was published by the South African Government Communications and Information System (2004) with a view to enable local municipalities to utilize performance monitoring and evaluation indicators published by the World Bank (2014) and the United Nations Development Programme (2014, 2015). Residents of the City of Tshwane and consumers and stakeholders receiving municipal services from the City of Tshwane have expectations on the quality of service delivery they are provided with. A scientific study must be made in order to assess how well such expectations are met adequately by employees of the City of Tshwane. The guidelines and procedures outlined by Parasuraman, Zeithaml & Berry (1985: 10-12; 1988: 16-23), Parasuraman (1998: 310-321) are reflected in Act number 32 of 2000 and Act number 56 of 2003. This fact makes the arduous task of assessing and evaluating the performance of employees of the City of Tshwane objective and scientific.

4 Objectives of study

The overall objective of study was to assess the degree to which residents of the City of Tshwane are satisfied with the quality of routine municipal services such as the delivery of water, power, sanitation services, policing, billing and account-related services, the repair and maintenance of municipal roads and buildings, health-related, educational services, and emergency services that are provided to them by the City of Tshwane.

The study was conducted in order to address the following three specific objectives of study:

- To determine the percentage of residents of the City of Tshwane who are satisfied with the quality of municipal services that are provided to them by employees of the City of Tshwane;
- To identify and quantify key indicators of service delivery in respect of municipal services that are provided to residents and ratepayers in the City of Tshwane; and
- To propose feasible remedial actions that could be taken by the City of Tshwane as a means of motivating employees who are responsible for providing municipal services to residents and ratepayers who live in the various parts of the City of Tshwane.

5 Research questions

The study hopes to answer the following three research questions:

- What is the percentage of residents of the City of Tshwane who are satisfied with the current quality of municipal services provided to residents?
- What are the key factors that are responsible for poor service delivery in the City of Tshwane?
- What remedial actions could be taken in order to improve the quality of routine municipal services delivered by employees of the City of Tshwane?

6 Statistical methods of data analyses

A random sample of size n=1, 012 respondents was selected for the study from the various parts of the City of Tshwane. Eligible respondents were selected from the various parts of the Tshwane Municipality by using stratified random sampling by region (North, West, South, East, and Central parts of Tshwane Municipality). Data was collected from each one of the 1, 012 respondents of study who were selected for the study on 22 indicators that are commonly used for the assessment of service quality by the City of Tshwane and other municipalities. Data was collected from respondents by using a structured, pre-tested and validated questionnaire of study consisting of 22 indicators of service quality. The questionnaire of study consisted of 5 dimensions of expectation and perception (reliability, assurance, tangibles, empathy and responsiveness). Each of the respondents in the study had to provide answers to 22 questions related to expectations plus 22 questions related to perceptions. As such, each of the respondents had to provide answers to 44 questions (22 questions on expectation + 22 questions on perception). Measurements of expectations and perceptions were done by using a 5-point ordinal scale. Face validity was used for ensuring validity. The Cronbach Alpha test was used for ensuring reliability and internal consistency. The expected and perceived quality of municipal services provided to the general public by employees of the City of Tshwane was analyzed by using SERVQUAL analysis. This was done by estimating gap scores (the average difference between expected and perceived scores).

The questionnaire of study had 2 parts. In Part 1, there were 7 questions about the personal characteristics of the respondents who were chosen for the study. In Part 2, there were 22 questions that were used for gathering information on expectations and perceptions with regards to 22 key indicators of service quality in the provision of municipal services. The 22 questions constituted the 5 dimensions of expectation and perception on the quality of municipal services that were provided to the general public by employees of the City of Tshwane.

- Reliability was assessed by using 4 indicators.
- Assurance was assessed by using 5 indicators.
- Tangibles were assessed by using 4 indicators.
- Empathy was assessed by using 5 indicators.
- Responsiveness was assessed by using 4 indicators.
7 Dependent variable of study (Y)

A composite index was generated based on indicators of service quality. This was done by following the method introduced by (Bel, Fageda & Warner, 2010: 553-577). Accordingly, the dependent variable of study was defined as a dichotomous variable (a variable that can have 2 possible values only). Thus, each of the 394 respondents in the study was allocated a score for service quality. The dependent variable of study (Y) had two possible values. These were satisfaction or dissatisfaction with the quality of skills development activities that were conducted by Tshwane Municipality. In symbols, the variable Y had two possible values:

\[ Y = \begin{cases} 
1 & \text{if service quality is inadequate} \\
0 & \text{otherwise} 
\end{cases} \]

\[ X_1, X_2, \ldots, X_k \] are independent or explanatory variables that affect service quality (Y).

Six statistical procedures of data analyses were used in the study. These were frequency tables, cross-tab analyses (Pearson’s chi-square tests of association), the two-sample paired t-test, factor analysis, SERVQUAL analysis and binary logistic regression analysis. The statistical package STATA Version 13 (STATA Corporation, 2012) was for data entry and analysis.

- Frequency tables were obtained for each of the variables Y and \( X_1, X_2, \ldots, X_k \)
- Pearson’s chi-square tests of association (Dawson & Trapp, 2004: 159-162) were performed between the dependent variable of study, Y, and each of the other independent variables of study.
- The two-sample paired t-test (Dawson & Trapp, 2004) was used for comparing pairs of related samples (expected and perceived values).
- Factor analysis (Field, 2013: 131-139) was used for reducing the number of variables that had to be analysed. This procedure is commonly referred to as data reduction. Eigen values obtained from factor analysis were used for the screening of variables. The principal component analysis method was used for extracting valuable factors.
- SERVQUAL analysis (Parasuraman, Zeithaml and Berry, 1988: 12-37) was performed in order to measure gap scores between expected and perceived scores of service quality with regards to 22 indicators of quality in the delivery of municipal services carried out by municipalities. In this study, SERVQUAL analysis was performed by using a 5-point ordinal scale in which the following possible answers were used for measurement.

1. Strongly disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly agree

The questionnaire of study is an adaptation of the questionnaire of study developed by Badri, Abdulla and Al-Madani (2005: 819-848) for a similar study. To each of the 22 questions in this section of the questionnaire, respondents were asked to provide an answer that best described their personal experience and view by circling the number corresponding to their choice of answer (1, 2, 3, 4 or 5).

- Binary logistic regression analysis

The measure of effect in logistic regression analysis is the odds ratio (OR).

The outcome variable Y is dichotomous, and has only 2 categories. That is,

\[ Y = \begin{cases} 
1 & \text{if event occurs} \\
0 & \text{otherwise} 
\end{cases} \]

\[ X_1, X_2, \ldots, X_k \] are a combination of k discrete and continuous explanatory variables that affect the outcome variable Y.

An estimated regression coefficient is denoted by \( \hat{\beta} \). In logistic regression analysis, a regression coefficient is estimated for each explanatory variable included in the model. In general, the binary logistic regression of a dichotomous outcome variable Y on a combination of k discrete and continuous independent variables \( X_1, \ldots, X_k \) is defined by the following logit function:

\[
\log \left( \frac{p}{1 - p} \right) = \log \left( \frac{\text{probability of event}}{\text{probability of non-event}} \right) = \hat{\beta}_0 + \hat{\beta}_1 X_1 + \ldots + \hat{\beta}_k X_k
\]
8 Results of study

Table 1 shows frequency proportions that indicate the general characteristics of the participants of study. It can be seen from the table that 854 of the 1,012 respondents who were selected for the study (84.37%) had a positive overall perception on the quality of services provided to them by employees of the City of Tshwane. Only 158 of the 1,012 respondents (15.63%) had an overall negative perception. The table shows that 56.62% of the participants of the study were male, whereas the remaining 43.38% were female. The table also shows that 49.01% of the 1,012 respondents who took part in the study had lived in the City of Tshwane between 11 and 20 years.

Table 1. General characteristics of respondents (n=1,012)

<table>
<thead>
<tr>
<th>Variable of study</th>
<th>Percentage</th>
</tr>
</thead>
</table>
| Overall perception of residents on the quality of municipal services | Positive: 854 (84.37%)  
   Negative: 158 (15.63%) |
| Gender of respondents                                  | Male: 56.62%  
   Female: 43.38% |
| Age category of respondents                            | 20 or younger: 16.90%  
   21 to 30: 31.42%  
   31 to 50: 33.20%  
   51 or older: 18.48% |
| Duration of stay in neighbourhood in years             | 5 or less: 36.17%  
   6 to 10: 6.62%  
   11 to 20: 49.01%  
   21 or more: 8.20% |
| Highest level of education                             | Matric level or less: 5.53%  
   Certificate: 27.57%  
   Diploma: 39.23%  
   Bachelor’s degree: 15.22%  
   Master’s degree or above: 12.45% |
| Have you ever complained about poor quality municipal services that you received from the City of Tshwane? | Yes: 4.94%  
   No: 95.06% |
| Marital status                                         | Single: 28.16%  
   Married: 37.85%  
   Divorced: 30.43%  
   Widowed: 1.48%  
   Others: 2.08% |
| Job category of respondents                             | Business owner: 41.11%  
   Government employee: 11.26%  
   Private sector employee: 7.61%  
   Self-employed consultant: 22.73%  
   Unemployed: 8.30%  
   Others: 8.99% |

Table 2 shows 10 significant two-by-two associations obtained from Pearson’s chi-square tests of associations. At the 5% level of significance, significant associations have large observed chi-square values and P-values that are smaller than 0.05. Significant results obtained from Pearson’s chi-square tests of associations (P < 0.05) showed that overall satisfaction with the quality of municipal services that were provided by the City of Tshwane was significantly associated with the perception of customers on the following 10 variables of study:

1. Employees respond adequately to all queries promptly and with vigour
2. Employees are adequately equipped and skilled enough to do their job well
3. Employees do not discriminate based on the personal characteristics of people
4. Employees are prepared to provide assistance to all members of the community under all possible circumstances
5. Employees are willing to assist all members of the community at all times
6. Employees are aware of the needs of all people who require their services
7. Employees are highly punctual and effective at what they do for the community
8. Employees provide individualized assistance and care to each person who needs their assistance
9. Employees are aware of the needs of all people who require their services
10. Employees are proactive in identifying the needs of their customers.
10. Equipment used by employees are appropriate enough for routine operations

Table 2. Results obtained from Pearson’s chi-square tests of associations

<table>
<thead>
<tr>
<th>Overall satisfaction with the quality of municipal services</th>
<th>Observed Pearson chi-square value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees respond adequately to all queries promptly and with vigour</td>
<td>54.1154</td>
<td>0.0000***</td>
</tr>
<tr>
<td>Employees are adequately equipped and skilled enough to do their job well</td>
<td>51.0236</td>
<td>0.0000***</td>
</tr>
<tr>
<td>Employees do not discriminate based on the personal characteristics of people</td>
<td>48.2358</td>
<td>0.0000***</td>
</tr>
<tr>
<td>Employees are prepared to provide assistance to all members of the community under all possible circumstances</td>
<td>46.2105</td>
<td>0.0000***</td>
</tr>
<tr>
<td>Employees are willing to assist all members of the community at all times</td>
<td>41.2233</td>
<td>0.0000***</td>
</tr>
<tr>
<td>Employees are aware of the needs of all people who require their services</td>
<td>39.3619</td>
<td>0.0000***</td>
</tr>
<tr>
<td>Employees are highly punctual and effective at what they do for the community</td>
<td>36.2546</td>
<td>0.0000***</td>
</tr>
<tr>
<td>Employees provide individualized assistance and care to each person who needs their assistance</td>
<td>32.2258</td>
<td>0.0000***</td>
</tr>
<tr>
<td>Employees are aware of the needs of all people who require their services</td>
<td>31.2359</td>
<td>0.0000***</td>
</tr>
<tr>
<td>Equipment used by employees are appropriate enough for routine operations</td>
<td>30.0123</td>
<td>0.0000***</td>
</tr>
</tbody>
</table>

Legend: Significance levels at * P<0.05; ** P<0.01; *** P<0.001

As part of SERVQUAL analysis, comparison was made among paired samples by using the two-sample paired t-test. The comparison made was between the perceptions and expectations of respondents on the quality of municipal services that were provided to them by employees of the City of Tshwane. All paired t-tests were performed at the 5% level of significance. At the 5% level, true average differences between the two groups being compared with each other were said to be significant if the P-value was less than 0.05. True average differences between the two groups being compared with each other were said to be insignificant if the P-value was greater than or equal to 0.05.

9 Results from the Cronbach Alpha test of reliability and internal consistency

The Cronbach Alpha test (Dawson & Trapp, 2004) was used for ensuring reliability and internal consistency in the measurement tools used for the assessment of expected and perceived values from respondents. Table 3 shows estimated Cronbach Alpha coefficients for expected and perceived values. It can be seen from the table that all estimated coefficients for expected and perceived values by respondents have magnitudes of 75% or above. It can also be seen from the table that estimated coefficients for expected and perceived values were fairly well similar with each other. This shows that the tools used for the assessment of expected and perceived values of the 5 dimensions in the study (reliability, assurance, tangibles, empathy and responsiveness) were fairly highly reliable and suitable for the purpose of the study (Parasuraman, Zeithaml & Berry, 1988: 12-37).

Table 3. Estimated Cronbach Alpha coefficients for expected and perceived values

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Number of items</th>
<th>Coefficients for expected values</th>
<th>Coefficients for perceived values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliability</td>
<td>4</td>
<td>0.8011</td>
<td>0.8109</td>
</tr>
<tr>
<td>Assurance</td>
<td>5</td>
<td>0.7845</td>
<td>0.7902</td>
</tr>
<tr>
<td>Tangibles</td>
<td>4</td>
<td>0.7759</td>
<td>0.7784</td>
</tr>
<tr>
<td>Empathy</td>
<td>5</td>
<td>0.7616</td>
<td>0.7688</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>4</td>
<td>0.7584</td>
<td>0.7596</td>
</tr>
</tbody>
</table>
Table 3 shows estimated gap scores for expected and perceived values. A gap score is defined as the difference between the mean of perceived and expected values (Parasuraman, Zeithaml & Berry, 1988: 12-37).

\[
\text{Gap score} = \text{Perception mean score} - \text{Expectation mean score} \\
\sum_{i} (P_i - E_i) = \frac{\ddot{g}}{k} 
\]

where \( k \) denotes the number of items used for assessment of dimensions.

In this study, the statistical significance of gap scores was assessed by using P-values obtained from the two-sample paired t-test (Dawson & Trapp, 2004). At the 5% level of significance, a gap score is said to be statistically significant if the P-value is less than 0.05. If the P-value is greater than equal to 0.05, a gap score is said to be statistically insignificant. Table 4 shows gap scores estimated from analyses. It can be seen from the table that 20 of the 22 gap scores were significant at the 5% level of significance. There were only 2 items (out of a total of 22 items) that did not produce significant gap scores. These 2 items were items 2 and 3 of the dimension on tangibles. Item 2 of the dimension on tangibles was an assessment on the degree of suitability of the equipment used by employees of the City of Tshwane. Item 3 of the dimension on tangibles was an assessment on the degree of physical fitness of employees of the City of Tshwane for carrying out municipal services effectively. With the expectation of the 2 gap scores corresponding to these 2 items, all other gap scores (20 out of 22) were statistically significant at the 5% level of significance. According to Parasuraman, Zeithaml and Berry (1988: 12-37), the results show a significant disparity between expected and perceived values. As such, the City of Tshwane must make the initiative to let stakeholders know more about the municipal services that are routinely provided to the community as a means of increasing awareness and appreciation about the quality of services provided, and to enable members of the community to utilize the services optimally.

Table 5 compares male and female respondents with regards to the 5 dimensions (reliability, assurance, tangibles, empathy, and responsiveness) based on group mean scores and P-values obtained from two-sample t-tests.

It can be seen from the table that male and female respondents differed significantly at the 1% level of significance with regards to assurance values. Table 6 compares 4 age categories of respondents with regards to the 5 dimensions (reliability, assurance, tangibles, empathy, and responsiveness) based on group mean scores and P-values obtained from the one-way Analysis of Variance (ANOVA) test. The one-way ANOVA test is appropriate for comparison as the number of age categories is more than 2, and the variables of comparison are continuous (Dawson & Trapp, 2004).

It can be seen from the gap scores of reliability and responsiveness differed significantly by age category at the 1% level of significance. The difference with regards to reliability gap scores is attributed to differences between age categories (21 to 30) and (31 to 40) based on a P-value of 0.028 < 0.05 obtained from Bonferroni’s test (Dawson & Trapp, 2004). The difference with regards to responsiveness gap scores is attributed to differences between age categories (20 or less) and (21 to 30) based on a P-value of 0.000 < 0.05 as well as age categories (21 to 30) and (51 or above) based on a P-value of 0.003 < 0.05 obtained from Bonferroni’s test.

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was used in order to test the adequacy of the sample used for factor analysis, and the test gave an estimated KMO value of 0.849 = 84.9%, a figure that is greater than 75%. This large figure indicates that results estimated from factor analysis for perception are fairly well reliable. Bartlett’s test of Sphericity was used for testing the adequacy of the correlation matrix, and gave an observed chi-squared value of 1046.777 (very large value) with 229 degrees of freedom (very large degrees of freedom) and a P-value of 0.000 (a P-value that is much smaller than 0.05). These estimated figures show that the use of factor analysis for identifying key predictors of perception is fairly well justified and appropriate.
Table 4. Estimated gap scores for expected and perceived values

<table>
<thead>
<tr>
<th>DIMENSION</th>
<th>Item</th>
<th>EXPECTATION MEAN SCORE</th>
<th>PERCEPTION MEAN SCORE</th>
<th>GAP SCORE (P – E)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliability</td>
<td>1</td>
<td>1.378446</td>
<td>1.486729</td>
<td>-0.108</td>
<td>0.0000</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1.302558</td>
<td>1.504429</td>
<td>-0.202</td>
<td>0.0000</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>1.296529</td>
<td>1.423322</td>
<td>-0.127</td>
<td>0.0000</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>1.281149</td>
<td>1.412654</td>
<td>-0.132</td>
<td>0.0000</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>5.258682</td>
<td>5.827134</td>
<td>-0.568</td>
<td></td>
</tr>
</tbody>
</table>

Average gap score [Total of (P – E) / 4] 0.14211

| Assurance | 1 | 1.227654 | 1.325523 | -0.098 | 0.0000 |
| | 2 | 1.201155 | 1.341121 | -0.140 | 0.0000 |
| | 3 | 1.192245 | 1.323426 | -0.131 | 0.0000 |
| | 4 | 1.230524 | 1.314987 | -0.084 | 0.0000 |
| | 5 | 1.202646 | 1.392145 | -0.189 | 0.0000 |
| Total | | 6.054224 | 6.697202 | -0.642 | |

Average gap score [Total of (P – E) / 5] -0.1284

| Tangibles | 1 | 1.240012 | 1.400567 | -0.161 | 0.0000 |
| | 2 | 1.271359 | 1.365221 | -0.092 | 0.0000 |
| | 3 | 1.281456 | 1.308090 | -0.027 | 0.0001 |
| | 4 | 1.285677 | 1.387540 | -0.102 | 0.0001 |
| Total | | 5.078504 | 5.459718 | -0.382 | |

Average gap score [Total of (P – E) / 4] 0.09550

| Empathy | 1 | 1.284417 | 1.420608 | -0.136 | 0.0001 |
| | 2 | 1.215674 | 1.352642 | -0.137 | 0.0000 |
| | 3 | 1.194687 | 1.431257 | -0.237 | 0.0000 |
| | 4 | 1.220048 | 1.419080 | -0.199 | 0.0000 |
| | 5 | 1.192671 | 1.362358 | -0.170 | 0.0000 |
| Total | | 6.106945 | 6.985945 | -0.879 | |

Average gap score [Total of (P – E) / 5] -0.1758

| Responsiveness | 1 | 1.281456 | 1.482564 | -0.201 | 0.0001 |
| | 2 | 1.262328 | 1.362546 | -0.100 | 0.0001 |
| | 3 | 1.251169 | 1.435687 | -0.185 | 0.0000 |
| | 4 | 1.291567 | 1.552648 | -0.261 | 0.0001 |
| Total | | 5.086445 | 5.833445 | -0.747 | |

Average gap score [Total of (P – E) / 4] -0.1868
Table 5. Comparison of dimensions with regards to gender based on t-tests

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Mean score for male respondents</th>
<th>Mean score for female respondents</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliability</td>
<td>0.229</td>
<td>0.212</td>
<td>0.4609</td>
</tr>
<tr>
<td>Assurance</td>
<td>0.163</td>
<td>0.287</td>
<td>0.0083**</td>
</tr>
<tr>
<td>Tangibles</td>
<td>0.104</td>
<td>0.096</td>
<td>0.8541</td>
</tr>
<tr>
<td>Empathy</td>
<td>0.229</td>
<td>0.212</td>
<td>0.6779</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>0.196</td>
<td>0.218</td>
<td>0.5510</td>
</tr>
</tbody>
</table>

Legend: Significance levels at * P<0.05; ** P<0.01; *** P<0.001

Table 6. Comparison of dimensions with regards to age category

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Mean score for respondents 20 years old or younger</th>
<th>Mean score for respondents 21 to 30 years of age</th>
<th>Mean score for respondents 31 to 50 years of age</th>
<th>Mean score for respondents 51 years of age or older</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliability</td>
<td>0.112</td>
<td>0.124</td>
<td>0.279</td>
<td>0.212</td>
<td>0.0149*</td>
</tr>
<tr>
<td>Assurance</td>
<td>0.107</td>
<td>0.180</td>
<td>0.281</td>
<td>0.260</td>
<td>0.0566</td>
</tr>
<tr>
<td>Tangibles</td>
<td>0.004</td>
<td>0.078</td>
<td>0.164</td>
<td>0.120</td>
<td>0.0517</td>
</tr>
<tr>
<td>Empathy</td>
<td>0.150</td>
<td>0.228</td>
<td>0.235</td>
<td>0.250</td>
<td>0.4435</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>0.088</td>
<td>0.306</td>
<td>0.211</td>
<td>0.127</td>
<td>0.0001***</td>
</tr>
</tbody>
</table>

Legend: Significance levels at * P<0.05; ** P<0.01; *** P<0.001

Table 7. Estimates obtained from the KMO and Bartlett's test for perception

<table>
<thead>
<tr>
<th>Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy</th>
<th>Observed value of chi-square statistic for KMO test</th>
<th>Bartlett's Test of sphericity Degrees of freedom</th>
<th>P-value for Bartlett's Test of sphericity Degrees of freedom</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.849</td>
<td>1046.777</td>
<td>229</td>
<td>0.000</td>
</tr>
</tbody>
</table>

The principal axis factoring method was used for estimating communalities for 4 influential predictors of perception. Table 8 shows the communalities estimated for the 4 influential predictor variables of perception.

Table 8. Communalities extracted for 4 influential predictors of perception

<table>
<thead>
<tr>
<th>Variable of study</th>
<th>Extraction based on principal component analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees do not discriminate based on the personal characteristics of customers</td>
<td>0.701</td>
</tr>
<tr>
<td>Employees are aware of the needs of all people who require their services</td>
<td>0.684</td>
</tr>
<tr>
<td>Employees are highly punctual and effective at what they do for the community</td>
<td>0.574</td>
</tr>
<tr>
<td>Employees provide individualized assistance and care to each person who needs their assistance</td>
<td>0.536</td>
</tr>
</tbody>
</table>

Table 9 shows estimated Eigen values and percentages of explained variation for the 4 key predictors of perception. Based on results obtained from factor analysis for expectations, the expectation of respondents on the quality of municipal services that were provided to them was significantly influenced by 4 key predictors of perception. These 4 predictor variables were the ability of employees not to discriminate among customers based on personal characteristics, the ability of employees to be aware of the needs of all people who require their services, the ability of employees to be punctual and effective, and the ability of employees to provide individualized assistance and care to each person who needs their assistance, in a decreasing order of strength. It can be seen from the table that the cumulative variation explained by the 4 influential variables is equal to 77.448%, a figure which is larger than 75%. This indicates that the 4 extracted factors account for variability in perception adequately enough.
Table 9. Eigen values estimated from factor analysis for perception

<table>
<thead>
<tr>
<th>Variable</th>
<th>Eigen value</th>
<th>Percentage of explained variance</th>
<th>Cumulative percentage of explained variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees do not discriminate based on the personal characteristics of customers</td>
<td>2.889</td>
<td>30.119</td>
<td>30.119</td>
</tr>
<tr>
<td>Employees are aware of the needs of all people who require their services</td>
<td>2.809</td>
<td>15.884</td>
<td>46.003</td>
</tr>
<tr>
<td>Employees are highly punctual and effective at what they do for the community</td>
<td>2.771</td>
<td>15.449</td>
<td>61.452</td>
</tr>
<tr>
<td>Employees provide individualized assistance and care to each person who needs their assistance</td>
<td>2.003</td>
<td>15.996</td>
<td>77.448</td>
</tr>
</tbody>
</table>

Logit regression analysis (Hosmer and Lemeshow, 2004) was used in order to identify key predictors of satisfaction with the quality of municipal service delivery. This procedure showed that satisfaction in the quality of service delivery was influenced significantly by 4 factors. In logistic regression analysis, the measure of effect is the odds ratio. At the 5% level of significance, significant predictor variables are characterised by odds ratios that differ from 1 significantly, P-values that are smaller than 0.05, and 95% confidence intervals that do not contain 1.

Table 10. Eigen values estimated from factor analysis for expectation

<table>
<thead>
<tr>
<th>Variable</th>
<th>Eigen value</th>
<th>Percentage of explained variance</th>
<th>Cumulative percentage of explained variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees do not discriminate based on the personal characteristics of victims</td>
<td>2.484</td>
<td>33.008</td>
<td>33.008</td>
</tr>
<tr>
<td>Employees are aware of the needs of all people who require their services</td>
<td>2.339</td>
<td>22.356</td>
<td>53.364</td>
</tr>
<tr>
<td>Employees are highly punctual and effective at what they do for the community</td>
<td>2.226</td>
<td>21.989</td>
<td>77.353</td>
</tr>
<tr>
<td>Employees provide individualized assistance and care to each person who needs their assistance</td>
<td>1.859</td>
<td>7.648</td>
<td>85.001</td>
</tr>
</tbody>
</table>

Table 11. Results estimated from logit regression analysis

<table>
<thead>
<tr>
<th>Factors that affect the degree of satisfaction of residents with the quality of municipal services</th>
<th>Odds Ratio</th>
<th>P-value</th>
<th>95% C. I. for OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation of employees at work</td>
<td>3.69</td>
<td>0.000</td>
<td>(2.17, 6.65)</td>
</tr>
<tr>
<td>Respect for customers</td>
<td>3.27</td>
<td>0.000</td>
<td>(2.05, 5.96)</td>
</tr>
<tr>
<td>Adequate and prompt assistance</td>
<td>2.48</td>
<td>0.000</td>
<td>(1.88, 4.89)</td>
</tr>
<tr>
<td>Skills on technical aspects of job</td>
<td>2.39</td>
<td>0.000</td>
<td>(1.86, 4.84)</td>
</tr>
</tbody>
</table>

Results obtained from logit analysis showed that the degree of satisfaction of customers with the quality of municipal services provided to them was significantly influenced by 4 predictor variables. These predictor variables were the degree of motivation of employees of the City of Tshwane at work, the ability of employees of the City of Tshwane to treat all customers with respect, the ability of employees of the City of Tshwane to provide adequate answers promptly to queries raised by customers, and the degree to which employees of the City of Tshwane were skilled on technical aspects of their job. The percentage of overall correct classification for this procedure was equal to 86.33%. This shows that the fitted logistic regression model is fairly well reliable (Hosmer & Lemeshow, 2004: 129-132).

Personal interviews were conducted with five of the respondents (one from each of the five geographical zones of the City of Tshwane). Based on the interviews conducted with the five respondents, the following factors were identified as common causes of dissatisfaction with the quality of municipal services provided to residents and ratepayers:

- Shortage of employees who are assigned to help customers on service counters;
- Lack of understanding of the business needs and
priorities of business operators;
- Inability to resolve queries over the phone;
- Lack of respect for the Batho-Pele Principle by some employees;
- Lack of skills on auditing, bookkeeping and accounting procedures that are necessary for resolving financial queries in the municipality;
- Lack of workplace training opportunities for employees of the City of Tshwane;
- Failure to use outside or independent bodies for monitoring and evaluating the quality of municipal services that are provided to customers by employees of the City of Tshwane;
- Failure to resolve complaints made by residents immediately; and
- Poor communications skills among employees who are responsible for resolving queries from residents, ratepayers and stakeholders of the City of Tshwane.

10 Discussion of results

The study found that 84.37% of the 1,012 respondents who took part in the study were satisfied with the overall quality of municipal services that were provided to them by the City of Tshwane. Only 15.63% of respondents were not satisfied with the overall quality of services provided to them. The study showed that most of the respondents had a positive perception on the quality of routine municipal services such as water and lights and waste removal by employees of the City of Tshwane. The study found that as many as 87.13% of respondents had a positive perception about the degree of commitment shown to them by employees of the City of Tshwane. Based on results obtained from SERVQUAL analysis, 20 of the 22 gap scores were found to be significant at the 5% level of significance. There were only 2 items (out of a total of 22 items) that did not produce significant gap scores. These 2 items were items 2 and 3 of the dimension on responsiveness. Item 2 of the dimension on responsiveness was an assessment on the degree of suitability of the equipment used by municipal employees for carrying out routine services. Item 3 of the dimension on responsiveness was an assessment on the degree of physical fitness of employees of the City of Tshwane for carrying out routine municipal services effectively. With the expectation of the 2 gap scores corresponding to these 2 items, all other gap scores (20 out of 22) were statistically significant at the 5% level of significance.

Based on results obtained from factor analysis, the perception and expectation of respondents on the quality of municipal services that were provided to them were significantly influenced by 4 key predictors of perception. These 4 predictor variables were the degree of motivation of employees of the City of Tshwane at work, the ability of employees of the City of Tshwane to treat all customers with respect, the ability of employees of the City of Tshwane to provide adequate answers to them by employees of the City of Tshwane were skilled on the quality of municipal services that were provided to customers by employees of the City of Tshwane.

The key finding of the study is that 854 of the 1,012 respondents who were selected for the study (84.37%) had a positive overall perception on the quality of services provided to them by employees of the City of Tshwane. Only 158 of the 1,012 respondents (15.63%) had an overall negative perception. The table shows that 56.62% of the participants of the study were male, whereas the remaining 43.38% were female. The table also shows that 49.01% of the 1,012 respondents who took part in the study had lived in the City of Tshwane between 11 and 20 years. The results show that 33.20% of respondents had ages of 31 to 50 years. The percentage of respondents who had ages of 21 to 30 years was 31.42%. The percentage of respondents who were 20 years old or younger was equal to 16.90%. The percentage of respondents who were 51 years old or older was equal to 18.48%. In terms of duration of stay in the City of Tshwane, the results showed that 49.01% of respondents had lived at the site of study for 11 to 20 years at the time the study was conducted. The percentage of respondents who had lived at the site of study for 21 years or more was equal to 8.20%. The percentage of respondents who had lived at the site of study for 5 years or less at the time of study was equal to 36.17%. With regards to highest level of education, the results showed that 39.03% of respondents had diploma level education. The percentage of respondents who had certificate level education was 27.57%.

Results obtained from factor analysis for perceptions showed that the perceptions of respondents on the quality of municipal services that were provided to them were significantly influenced by 4 key predictors of perception. These 4 predictor variables were the ability of employees not to discriminate among residents based on the personal characteristics of customers, the ability of employees to be aware of the needs of all people who require their services, the ability of employees to be punctual and effective at what they do for the community, and the ability of employees to provide individualized assistance and care to each person who needs their assistance, in a decreasing order of strength.

Results obtained from logit analysis showed that the degree of satisfaction of customers with the quality of municipal services provided to them was significantly influenced by 4 predictor variables. These predictor variables were the degree of motivation of employees of the City of Tshwane at work, the ability of employees of the City of Tshwane to treat all customers with respect, the ability of employees of the City of Tshwane to provide adequate answers
promptly to queries raised by customers, and the degree to which employees of the City of Tshwane were skilled on technical aspects of their job.

11 Recommendations of study

Based on findings obtained from the study, the following recommendations are made to the City of Tshwane with a view to maintain and improve the current quality of municipal services that are provided to residents, ratepayers and businesses that operate in the various parts of the City of Tshwane:

- It would be helpful for the City of Tshwane to conduct awareness programmes about municipal services that are offered in the various parts of the City of Tshwane in order to enable the local community to have a better understanding about routine services that are provided by municipal service providers and officials of the City of Tshwane.
- It would be beneficial for the City of Tshwane to maintain the current quality of municipal services in the next decade. To this end, senior employees of the City of Tshwane should be encouraged to mentor young and newly recruited employees with a view to transfer their valuable skills and operational expertise in the management of municipal services.
- It would be valuable to provide incentives to current employees in the form of tailor-made professional development training programmes so that they maintain and improve their current degree of commitment to their daily duties and responsibilities. Relevant incentives would be the provision of tailor-made training and skills development opportunities on a regular basis.
- Staff exchange programmes to other municipalities locally and internationally would enable employees of the City of Tshwane to share valuable skills and expertise with fellow professionals, thereby allowing them to make valuable contribution to their field of expertise. Assessment of competence should be conducted by the City of Tshwane on a regular basis as a means of encouraging employees to keep improving their suitability for the job that they are performing at the moment. Operational guidelines should be brought up to better level and quality by local and international standards.
- Exceptional leadership qualities and outstanding achievement by ordinary employees of the City of Tshwane should be acknowledged and rewarded by the City of Tshwane as a means of up keeping morale and commitment by employees and team leaders. This recommendation is consistent with global best practice in the field of duty. For example, this practice has been promoted in the City of New York following the September 2001 disaster in the City of New York. The same can be done by the City of Tshwane.

- Emphasis should be placed on Batho-Pele Principles so that service providers and employees show due respect and consideration to each resident, ratepayer and customer who seeks assistance from the City of Tshwane. Rewards must be given to best performers in this regard.

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