

# Segmenting And Profiling South African Minibus Taxi Commuters: A Factor-Cluster-Tabulation Analysis Approach

Laetitia Radder, Nelson Mandela Metropolitan University, South Africa  
Xiliang Han, Nelson Mandela Metropolitan University, South Africa

## ABSTRACT

*Privately-owned minibus taxis provide public transportation to 65% of South African households. However, relatively little is known about the characteristics and expectations of these commuters. This research identified the underlying dimensions of minibus taxi commuters' expectations, documented market segments based on these dimensions and reports the differences between the segments with respect to their demographic and behavioral characteristics. Following a factor-cluster-tabulation analysis, three sets of expectations, namely, safety, suitability and substantiality and three segments, namely, anxious users, concerned users and apprehensive users were identified. This study showed that expectations, a less common segmentation base, is effective in dividing the market and provides knowledge of consumer identification that can serve as a source of better customer service.*

**Keywords:** Expectations; Minibus Taxi; Segmentation; South Africa; Transportation

## INTRODUCTION

An estimated 73% of households in South Africa do not own a motor vehicle, 76% have no access to train services, and 38% have no access to regular public bus services. Consequently, 65% of households rely on minibus taxis for convenient transportation at a reasonable cost (Department of Transport, 2003).

Minibus taxis are typically privately owned 16-seater buses operated by independent drivers and informal conductors. Conductors help spot potential passengers, call out the route and try to entice passengers to make use of the taxi service. Commuters' needs, rather than fixed arrangements, generally determine the routes and operating hours of the service.

While providing in commuters' basic needs, the minibus taxi service is unfortunately also characterized by overloaded, decrepit vehicles, excessive volumes of music, and hazardous driving habits. Minibus taxis are annually involved in an estimated 70,000 accidents – double the number of any other mode of passenger transportation - and sadly, three of the 36 lives lost daily on South African roads are related to minibus taxi accidents (ArriveAlive, 2011). It is therefore not surprising that 67% of users of minibus taxis regarded safety from accidents as the major problem of this form of transportation. A further 60% of respondents highlighted the lack of vehicle road-worthiness, while 64% were dissatisfied with the facilities at taxi ranks (Department of Transport, 2003). In another study, Behrens and Schalekamp (2010) found that respondents were most dissatisfied with driver behavior, in-vehicle overcrowding and vehicle reliability.

Past research into the minibus taxi service focused mainly on drivers' risk-taking behavior (e.g. Peltzer & Renner, 2003), transport functions (e.g. Groenewald, 2003), perceptions of road safety (e.g. Ferreira, 2010) and

commuter satisfaction (Behrens & Schalekamp, 2010). Relatively less is known about the expectations of minibus taxi passengers. This is surprising because services marketing literature proved the direct effect expectations have on customers' perceptions of service quality and the effect of the latter on satisfaction judgments (Rodríguez del Bosque, San Martín & Collado, 2006).

It goes without saying that expectations and perceptions differ among consumers and that service providers cannot meet the expectations of all consumers. Market segmentation is an effective method of reducing a heterogeneous market into smaller groups of consumers based on homogeneous characteristic variables (Díaz-Martín, Iglesias, Vázquez & Ruiz, 2000). Segmentation is not only useful in classifying consumers with similar characteristics into groups, but can also help identify those variables that differentiate these groups in the mass market (Juwaheer, 2006). Once these variables and segments have been identified, it becomes possible to make predictions about the groups' responses to various situations, allow more creative and focused strategies and policies to emerge, and help marketers better align marketing strategies (Teichert, Shehu & von Wartburg, 2008).

The use of market segmentation when investigating travel behavior and demand has become common practice, particularly as a means of increasing transit ridership. Passengers have been classified based on trip purposes, geographic locations, travel time and socio-economic characteristics (Shiftan, Outwater & Zhou, 2008). Although used less often, expectations may also provide insights into market segmentation strategies (Yelkur & Chakrabarty, 2006) and can therefore serve as a useful segmentation base (Juwaheer, 2006). Given that certain groups may have different expectations of service (Blasco & Saura, 2006), expectations-segmentation brings knowledge of consumer identification that can be a source of better customer service (Díaz-Martín et al., 2000).

The focus of the current research is not on increasing ridership, but rather on examining the expectations of minibus taxi users. Knowledge of these expectations could help identify those service features different groups of commuters deem most important. Paying attention to these features may result in improvements in the quality of the service rendered and ultimately in commuters' satisfaction with the service. To this effect three research objectives were set namely, to:

- (1) identify the underlying dimensions of minibus taxi commuters' expectations;
- (2) determine whether the market can be segmented based on the delineated expectation factors; and
- (3) explore the differences between segments with respect to demographic and behavioral characteristics.

## **LITERATURE REVIEW**

### **Should Expectations**

While expectations have been studied in a variety of contexts, the topic probably receives the most attention in the service quality and satisfaction literature (Díaz-Martín et al., 2000; Webb, 1998). When viewed from the normative perspective popular in the service quality literature, expectations describe what customers ideally want and believe a service provider should offer. *Should* expectations are what customers wish for, hope for, and expect from a good provider (Coye, 2004). The customer satisfaction literature in turn, regards expectations as "predictions made by customers about what is likely to happen during an impending transaction or exchange" (Zeithaml, Berry & Parasuraman, 1993:2). These *would* expectations represent customers' predictions about what will happen in their next service encounter with the provider (Boulding, Kalra, Staelin & Zeithaml, 1993) and are therefore pre-trial beliefs a customer has about the performance of a service.

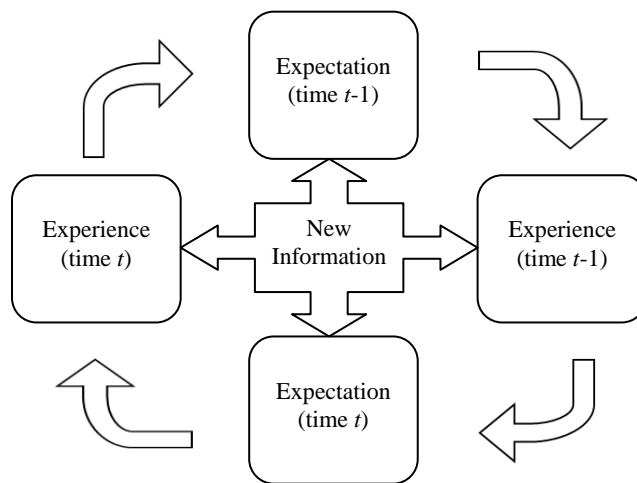
While some authors (e.g. Coye, 2004) observe that *should* and *would* expectations are used interchangeably in practice, others (e.g. Boulding et al., 1993) postulate that *should* and *would* expectations are two different classes of expectations with the same set of antecedents. Furthermore, *should* expectations exhibit much more stability over time than is the case with *would* expectations (Kalamas, Laroche & Cézard, 2002). The current research investigated minibus taxi commuters' *should* expectations, that is, their desires associated with the service.

While several researchers (e.g. Zeithaml et al., 1993) have proposed antecedents of service expectations, Kalamas et al.'s (2002) comprehensive summary of earlier research on the topic indicates the lack of consensus as to

which determinants influence which expectations. Boulding et al. (1993) suggest three major tenets with respect to *should* expectations: (1) customers' current *should* expectations are related to their prior *should* expectations; (2) expectations may differ between time  $t$  and  $t-1$  because of new information reaching the customer between contacts with the service; and (3) experiences with the service provider's delivery system can lead to increases (but never decreases) in the customer's *should* expectations between time  $t$  and  $t-1$ .

When these arguments are applied to the minibus taxi service, it can for example be expected that a passenger's current expectation (time  $t$ ) of the condition of the taxi's seating will be influenced by his/her prior expectations. If the seating was in good condition on the prior occasion (time  $t-1$ ), it is likely that the passenger will expect a similar condition when using the service again (time  $t$ ). New information can alter expectations, such as with the South African Government's taxi recapitalization program aimed at intervening in the taxi industry. This program endeavoured to systematically introduce safe and comfortable vehicles for taxi commuters by offering scrapping allowances to minibus taxi operators that either wished to trade-in their old vehicles for new, approved ones, or wished to exit the industry (Walters, 2008). It is reasonable to assume that passengers' *should* expectations regarding the condition of these vehicles' seating would be raised.

Boulding et al.'s (1993) third suggestion, namely, that experience with the provider's delivery system can only increase, but not decrease *should* expectations between two time periods, may also apply to expectations of the minibus taxi service. Passengers' expectations regarding safety are likely to increase in time  $t$  if they have been involved in an accident in time  $t-1$ . Thus *should* expectations seem to be subject to a continuous reinforcement loop as shown in Figure 1.



**Figure 1: Continuous Loop of Should Expectations**

Studies have shown that men and women differ significantly on service quality expectations. For example, Yelkur and Chakrabarty (2006) found that overall, service quality expectations are higher among women than men, and also that women ranked higher than men in both affective and cognitive components of service quality. Gender differences also exist with respect to satisfaction with services. For example, Behrens and Schalekamp (2010) found that female users of all forms of public transport in South Africa were consistently more disgruntled than male users. With respect to minibus taxis, males attached comparatively higher levels of importance to costs and were more dissatisfied with attributes relating to ranks, fares, transfers and reliability. Female taxi users were generally more dissatisfied or deemed all other attribute categories to be of greater importance than males did. With regard to age, Behrens and Schalekamp (2010) found that younger public transport users were more dissatisfied with the service quality than older users, but only marginally so. No significant differences were found with regard to race.

**Segmentation Methods and Bases**

About a half century ago, Smith (1956) first introduced the concept of market segmentation as a marketing strategy. He argued that market segmentation consists of viewing a heterogeneous market as a number of smaller homogeneous markets. Since then numerous marketing scholars (e.g. Dibb, 2001; Foedermayr & Diamantopoulos, 2008; Palmer & Millier, 2004) have devoted themselves to developing and applying different segmentation methods and bases.

In general, all existing segmentation methods can be described as either *a priori* or *posteriori* approaches. In the *a priori* procedure, researchers determine the number of segments in advance based on their prior knowledge of the intended market, while *posteriori* methods use an algorithm or model to gain insight into the market structure (Dillon & Mukherjee, 2006).

The current study had adopted a *posteriori* approach due to the research void about segments in the South African minibus taxi market. It followed the typical steps in the *posterior* segmentation process suggested by Dolnicar (2008), namely, to:

- (1) *select an appropriate segmentation base.* A segmentation base is a set of characteristics of consumers used by organizations to divide the total market into homogeneous subsets (McDaniel, Lamb & Hair, 2008). Table 1 summarizes the most popular segmentation bases and their classification as general (independent of offerings/circumstances) or specific (related to offerings/circumstances), and observable (measured directly) or unobservable (inferred). The expectations-segmentation base is unobservable and specific in nature.
- (2) *reduce original measurement items into fewer factors* through exploratory or confirmatory factor analysis.
- (3) *group subjects into segments based on the resulting factors* through hierarchical or non-hierarchical cluster analysis.
- (4) *profile these segments by means of personal characteristic variables* through tabulation, discriminant or regression analysis.
- (5) *assess the usefulness of the segments.* Effective segments have to be identifiable with a reasonable degree of accuracy; large enough in size to warrant separate attention; accessible through efforts of promotion or distribution, stable over an extended period of time, actionable when considering the goals and core competencies of the organization, and responsive to customized marketing activities. In general, the unobservable, specific bases result in the most effective segments, while the observable, general bases are least effective (Wedel & Kamakura, 2000).

**Table 1: Typical Segmentation Bases**

	<b>General</b>	<b>Specific</b>
<b>Observable</b>	<ul style="list-style-type: none"> <li>➤ Geographic: nationality, region, habitat...</li> <li>➤ Demographic: gender, age, marital status...</li> <li>➤ Socio-economic: income, occupation, education...</li> </ul>	<ul style="list-style-type: none"> <li>➤ Usage frequency and situation</li> <li>➤ Brand and store loyalty</li> <li>➤ Stage of adoption</li> <li>➤ Type and place of purchase</li> </ul>
<b>Unobservable</b>	<ul style="list-style-type: none"> <li>➤ Personality traits</li> <li>➤ Personal values</li> <li>➤ Lifestyle</li> </ul>	<ul style="list-style-type: none"> <li>➤ Benefits sought</li> <li>➤ Perceptions</li> <li>➤ Expectations</li> <li>➤ Preferences</li> <li>➤ Attitudes</li> </ul>

Source: Adapted from Frank, Massy and Wind (1972)

**METHODOLOGY**

**Sample and Questionnaire**

The population of the study comprised minibus taxi users commuting within Nelson Mandela Bay, situated on the coastline of the Eastern Cape Province of South Africa. A combination of judgment and convenience

sampling was used to identify 467 respondents using the minibus taxi service. A small group of trained fieldworkers administered the questionnaires to commuters waiting at minibus taxi ranks.

The questionnaire used in this study was divided into two sections. Section A contained 21 five-point Likert-scale questions that sought commuters' expectations of the minibus taxi service, with end points being *1=totally unimportant* and *5=extremely important*. These items resulted from the review of specialized literature (e.g. Beirão & Cabral, 2007; O'Fallon, Sullivan & Hensher, 2004; Mirza, Mirza, Chotani & Luby, 1999) and exploratory interviews with commuters. The researchers reviewed the items for face validity and deemed the questions of Section A to adequately reflect commuters' *should* expectations of both the tangible and intangible elements of the minibus taxi experience.

Section B used dichotomous and multiple-choice questions to gather information on the respondents' gender, age, home language, and frequency of using the minibus taxi service. Slightly more females (56.1%) than males (43.9%) completed the questionnaires. Age groups were fairly evenly spread, with the 19-34 year olds being the largest group. Nearly half (49.7%) of the respondents were native speakers of Xhosa (one of South Africa's indigenous languages), followed by English (27.6%) and Afrikaans (22.7%). It was expected that home language could serve as an indicator of ethnic group, but it was found that many black respondents had English as their home language. Lastly, almost 70% of the respondents used the minibus taxi service five or more days a week and were therefore regarded as experienced users whose views were warranted.

### **Analytical Methods**

The collected data were analyzed with SPSS 15 and AMOS 7 software packages. The four main analytical methods were:

- (1) *Exploratory Factor Analysis (EFA)*, used in the early stages of research to explore the interrelationships among a large set of variables, with the aim of reducing them into a more manageable number of coherent subscales (Pallant, 2007).
- (2) *Confirmatory Factor Analysis (CFA)*, used later in the research process to confirm the hypothesized structure formed by EFA, leading to a stricter and more objective testing of construct validity (Santouridis, Trivellas & Reklitis, 2009).
- (3) *Cluster analysis*, used to facilitate market segmentation by grouping individuals based on similarity among measured variables, to ensure great homogeneity within groups and great heterogeneity between groups (Zikmund & Babin, 2007).
- (4) *Cross-tabulation analysis*, used to examine the nature of the association between a pair of categorical variables by constructing two-way tables and exercising chi-square contingency tests (Parasuraman, Grewal & Krishnan, 2004).

## **RESULTS AND DISCUSSION**

### **Results of Factor Analyses of Expectations (Research Objective One)**

The treated data were subjected to EFA to identify the underlying dimensions that constitute the taxi service expectations. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (0.82) and the Bartlett's test of sphericity ( $p < 0.001$ ) indicated that the sample scores were suitable for EFA (Bartlett, 1954; Kaiser, 1974). Principal Components Analysis (PCA) revealed the presence of three factors using Kaiser's (1960) eigenvalue rule and Cattell's (1966) scree test. These three factors explained 62.2% of the total variance (38.4%, 12.8% and 11.0%, respectively), which was deemed adequate considering the rule of thumb in the social sciences that a factor solution accounting for 60% of the total variance is satisfactory and a single factor accounting for 5% of the total variance is meaningful (Hair, Black, Babin & Anderson, 2010).

Direct Oblimin, the most well-known oblique rotational technique (Sharma & Kumar, 2006), was employed to aid in interpreting the underlying solution. According to Hair et al. (2010), the factor-loading matrix and communalities could assess whether some variables should be removed from the scale. In this study three

criteria were taken into account in deciding to retain an item - high factor loading (>0.5), low cross-loading (<0.5) and high commonality (>0.5). Problematic items were removed one at a time until no more items were able to be deleted. This resulted in the retention of 11 items, comprising the three-factor solution. Cronbach’s alpha coefficients (Nunnally, 1978) were subsequently calculated and all factor scales demonstrated adequate internal consistency (ranging from 0.76 to 0.80). Based on the nature of the associated items, the three factors were tagged as *safety*, *suitability* and *substantiality* (see Table 2).

CFA, using the Maximum Likelihood Estimation (MLE) method, was followed to verify the aforementioned EFA outcome (the measurement model). Several indices, namely, normed chi-square (ratio of chi-square to degrees of freedom), Goodness-of-Fit Index (GFI), Comparative Fit Index (CFI), Normed Fit Index (NFI), Root Mean Square Residual (RMSR) and Root Mean Square Error of Approximation (RMSEA) were adopted to evaluate model fit. The cut-off value of  $\chi^2/df$  was set at 5:1 (Chen & Chen, 2010; Chen & Tsai, 2007). The cut-off values of GFI, CFI, NFI, RMSR and RMSEA were 0.90, 0.90, 0.90, 0.05 and 0.08, respectively (Byrne, 1998; Savalei & Bentler, 2006). Given the acceptable values of the indices ( $\chi^2/df=3.82$ , GFI=0.94, CFI=0.93, NFI=0.91, RMSR=0.04, RMSEA=0.07), it was clear that the measurement model fitted the empirical data well.

**Table 2: Results of Exploratory and Confirmatory Factor Analyses**

Factor structure	EFA stage		CFA stage		
	Factor loading	Alpha	Stand. loading	CR	AVE
<b>Factor one: Safety</b>		<b>0.80</b>		<b>0.83</b>	<b>0.50</b>
Driver obeys the traffic rules	0.85		0.80		
Minibus taxi is not over-loaded	0.76		0.68		
Driver drives within the speed limit	0.75		0.66		
Driver drives safely	0.74		0.75		
Minibus taxi is stationary when passengers disembark	0.65		0.64		
<b>Factor two: Suitability</b>		<b>0.76</b>		<b>0.78</b>	<b>0.54</b>
Hours of operation suit passengers	0.87		0.86		
Pick-up and drop-off points suit passengers	0.86		0.76		
Passengers’ personal needs are considered	0.63		0.56		
<b>Factor three: Substantiality</b>		<b>0.77</b>		<b>0.79</b>	<b>0.56</b>
Cleanliness of the minibus taxi both inside and outside	0.91		0.77		
Seating of the minibus taxi in decent repair	0.80		0.86		
Presentation of the driver and conductor	0.71		0.59		

Besides goodness-of-fit, the measurement model’s construct validity was also assessed to determine if the operational definition of the construct was appropriate (Churchill, 1979). Following the commonly used rule of thumb suggested by Hair et al. (2010), construct validity could be assessed under four quantitative criteria, namely, standardized loading scores to be 0.50 or higher, Construct Reliability (CR) values to be 0.70 or greater, Average Variance Extracted (AVE) estimates to be 0.50 or higher, and AVE estimates for any two constructs to be greater than the squared correlation estimate between these two constructs. As displayed in Tables 2 and 3, all four criteria were met and consequently the model’s construct validity could be established. In summary, the results of both goodness-of-fit and construct validity tests provided adequate evidence of the measurement model’s validity.

**Table 3: Descriptives and Intercorrelations of Latent Constructs**

	Mean (SD)	Safety	Suitability	Substantiality
<b>Safety</b>	4.61 (0.56)	1	0.26 <sup>b</sup>	0.35 <sup>b</sup>
<b>Suitability</b>	4.24 (0.75)	0.51 <sup>a</sup>	1	0.17 <sup>b</sup>
<b>Substantiality</b>	4.54 (0.67)	0.59 <sup>a</sup>	0.41 <sup>a</sup>	1

Note: <sup>a)</sup> correlation coefficient; <sup>b)</sup> squared correlation coefficient

The principal features of the three-factor solution that has been successfully validated in CFA are delineated here. *Safety* captured five items that served as an indication of how safe passengers expect to be while travelling on the minibus (e.g. driver to obey traffic rules, avoid over-loading and drive within the speed limit); *suitability* grouped three items exclusively examining the passenger's expectations of the convenience of the minibus service (e.g. hours of operation and pick-up and drop-off points); *Substantiality* captured three items focusing on the assessment of passenger expectations with regard to the tangible aspect of the service (e.g. seating condition and appearance of staff). As for the entire sample, mean and standard deviation scores of these three factors were computed to determine the levels of expectations. It was clear that passengers gave the highest rating to *safety* (M=4.61, SD=0.56) and the lowest to *suitability* (M=4.24, SD=0.75), while *substantiality* (M=4.54, SD=0.67) was in between.

### Identification of Clusters Based on Expectations (Research Objective Two)

Cluster analysis was then used to classify the entire sample into mutually exclusive groups based on their response to the three expectation dimensions. Taking into account the recommendation of several authors (Churchill & Iacobucci, 2007; Hair et al., 2010; Sharma & Kumar, 2006), the present study adopted a two-step clustering procedure. Initially Ward's hierarchical clustering method was used to determine the appropriate number of clusters. The resulting dendrogram and agglomeration coefficients suggested three clusters, the number used in a follow-up non-hierarchical (K-means) clustering process. The two-step cluster analysis produced a three-cluster solution (Table 4), which was deemed acceptable because it had significant ANOVA results ( $p < 0.001$ ) and powerful interpretation potential.

Table 4: Results of Cluster Analysis

	Cluster 1: Anxious users (n=251)	Cluster 2: Concerned users (n=181)	Cluster 3: Apprehensive users (n=35)	F-value
<b>Safety</b>	4.86	4.51	3.37	218.909***
<b>Suitability</b>	4.76	3.73	3.14	360.071***
<b>Substantiality</b>	4.84	4.41	3.06	219.566***

Note: \*\*\* $p < 0.001$

As shown in Table 4, Cluster 1 is the largest, comprising 53.7% (n=251) of the respondents. Since it had the highest mean scores for all expectation dimensions, its members were named *anxious users*. The second cluster (n=181, 38.8% of the sample) had modest mean scores across all three factors and consequently its members were termed *concerned users*. Finally, people in Cluster 3 (n=35, 7.5% of those interviewed) appeared to have the lowest expectations for the minibus service. All the mean scores were below four (but above the middle value of 2.5). They were labelled *apprehensive users*.

### Profiling the Segments (Research Objective Three)

To further investigate the profile of the three clusters, each cluster was cross-tabulated with external variables (i.e. respondents' demographic and behavioural characteristics). Cross-tabulation is viewed as "the most used multivariate data-analysis technique in applied marketing research" (Churchill & Brown, 2007:475). In addition, the chi-square contingency test, a widely used technique for determining whether there is a significant relationship between two categorical variables (Parasuraman et al., 2004), was performed in conjunction with the cross-tabulations.

Gender was the first demographic characteristic to be examined. The chi-square contingency test reported significant ( $p < 0.001$ ) differences across clusters. Table 5 shows three meaningful findings: (1) 61.4% of females were *anxious users*, higher than the average of 53.7%; (2) 44.9% of males were *concerned users*, while the average was 38.8%; and (3) 11.2% of males were *apprehensive users*, above the average of 7.5%.

Table 5: Cluster Differences: Gender

		Anxious users	Concerned users	Apprehensive users	Total
Gender	Female	161 (61.4%)	89 (34.0%)	12 (4.6%)	262 (100.0%)
	Male	90 (43.9%)	92 (44.9%)	23 (11.2%)	205 (100.0%)
Total sample		251 (53.7%)	181 (38.8%)	35 (7.5%)	467 (100.0%)

Note: Chi-square=16.885, P=0.000

The clusters were also examined for differences across three age groups (i.e.  $\leq 18$ , 19-34 and  $\geq 35$ ). The results of the chi-square test indicated significant ( $p < 0.05$ ) differences among the clusters. As summarized in Table 6, age group 18 or below had more *concerned users* than average (50.5% vs. 38.8%); age groups 19-34 and 35 or older had more *anxious users* than average (54.8% and 62.7% vs. 53.7%), and both had more *apprehensive users* than average (7.9% and 8.4% vs. 7.5%).

Table 6: Cluster Differences: Age

		Anxious users	Concerned users	Apprehensive users	Total
Age	$\leq 18$	46 (43.8%)	53 (50.5%)	6 (5.7%)	105 (100.0%)
	19-34	153 (54.8%)	104 (37.3%)	22 (7.9%)	279 (100.0%)
	$\geq 35$	52 (62.7%)	24 (28.9%)	7 (8.4%)	83 (100.0%)
Total sample		251 (53.7%)	181 (38.8%)	35 (7.5%)	467 (100.0%)

Note: Chi-square=9.767, P=0.045

Thirdly, cluster differences with respect to home languages (i.e. English, Afrikaans and Xhosa) were examined. The chi-square analysis revealed significant ( $p < 0.001$ ) differences across clusters (Table 7). Native English and Afrikaans speakers both had an above-average possibility to be *anxious users* (59.7% and 67.9% vs. 53.7%). In contrast, native Xhosa speakers had an above-average possibility to be either *concerned users* (42.7% vs. 38.8%) or *apprehensive users* (13.4% vs. 7.5%).

Table 7: Cluster Differences: Home Language

		Anxious users	Concerned users	Apprehensive users	Total
Home language	English	77 (59.7%)	50 (38.7%)	2 (1.6%)	129 (100.0%)
	Afrikaans	72 (67.9%)	32 (30.2%)	2 (1.9%)	106 (100.0%)
	Xhosa (or other African languages)	102 (43.9%)	99 (42.7%)	31 (13.4%)	232 (100.0%)
Total sample		251 (53.7%)	181 (38.8%)	35 (7.5%)	467 (100.0%)

Note: Chi-square=33.054, P=0.000

Finally, three clusters were classified by the number of days per week commuters use the minibus service, with three frequency categories available (i.e. 1-4 days, 5 days and 6-7 days). The results of the chi-square test showed significant ( $p < 0.01$ ) differences among the three clusters. Table 8 indicates that those who travelled by minibuses 1-4 days per week had an above-average likelihood to be *anxious users* (60.1% vs. 53.7%); those who used the service 6-7 days per week had an above-average likelihood to be *concerned users* (39.6% vs. 38.8%); and



those who used the service either 5 days or 6-7 days per week, had an above-average likelihood to be *apprehensive users* (9.2% and 11.9% vs. 7.5%).

**Table 8: Cluster Differences: Frequency of Service Use**

		Anxious users	Concerned users	Apprehensive users	Total
Frequency of using the service (per week)	1-4 days	89 (60.1%)	57 (38.5%)	2 (1.4%)	148 (100.0%)
	5 days	97 (52.4%)	71 (38.4%)	17 (9.2%)	185 (100.0%)
	6-7 days	65 (48.5%)	53 (39.6%)	16 (11.9%)	134 (100.0%)
<b>Total sample</b>		251 (53.7%)	181 (38.8%)	35 (7.5%)	467 (100.0%)

Note: Chi-square=13.594, P=0.009

The results from the cross-tabulations and chi-square contingency tests can be used to construct the following cluster profiles:

- (1) *Anxious users* (with high expectations) are likely to be female, above 18 years old, native English or Afrikaans speakers, and use the minibus service 1-4 days per week.
- (2) *Concerned users* (with modest expectations) are likely to be male, 18 years old or younger, native Xhosa speakers, and travel by minibuses 6-7 days per week.
- (3) *Apprehensive users* (with low expectations) are likely to be male, older than 18, native Xhosa speakers, and use the minibus service 5 or more days per week.

## CONCLUSIONS AND RECOMMENDATIONS

The understanding of consumers' expectations is fundamental to the analysis of their quality perceptions and satisfaction levels. Furthermore, by knowing customers' expectations, service providers will be better able to manage these expectations, use them for segmentation purposes, and enhance service delivery systems according to the desires of the different segments. Therefore, providers of the minibus taxi service should use this type of information to gain insight into the needs of commuters, identify areas for service improvement, and raise the levels of perceived quality and customer satisfaction. In addition, related regulatory authorities should also take commuters' expectations into account in the policy-making process.

This study identified what regular users of the South African minibus taxi service desire and expect should be provided. It indicated that commuters expect to feel safe when using the service. Safety is reflected by driver behavior such as obeying the traffic rules, staying within the speed limit, and ensuring that the vehicle is not overloaded. Commuters furthermore expect that the vehicle is clean and in a good state of repair and that the driver and conductor are presentable. They furthermore desire that the hours of operation and logistic arrangements are adaptable and that their personal needs are considered.

Because commuters' expectations may differ and may also be influenced by their demographic characteristics and use behavior, market segmentation should be used to identify homogenous sub-groups of taxi service users. Clustering and tabulations indicated identifiable segments with insightful in-segment similarities and between-segment differences. *Anxious users*, the first segment, are typically female, 35 and older, Afrikaans speaking and use the service less than 5 days a week. *Concerned users*, the second segment, are typically male, 18 and younger, Xhosa speaking and travel by taxi more than 5 days a week. Notably, the highest level of expectations for these two user types is associated with safety, followed by expectations of service substantiality and then of service suitability. Lastly, the third segment comprises *apprehensive users*, who are typically male, 35 and older, Xhosa speaking and use a minibus taxi more than 5 days a week. Like the first two segments, their highest level of expectations is also associated with safety. However, their expectations of service suitability are higher than that of service substantiality.

This research has important theoretical and managerial implications. First, it proved the effectiveness of customer expectations as a segmentation base in classifying consumers into homogeneous groups. It also proved that expectations-segmentation can be used to identify those characteristic variables (e.g. gender and age) that differentiate these groups. The findings of this study therefore provide support for the arguments of Díaz-Martín et al. (2000) and of Juwaheer (2006).

In addition, the current research brought minibus taxi service providers knowledge about their customers' expectations and identified the service variables (attributes and dimensions) to be targeted when attempting to meet customers' expectations. Paying attention to these features may result in improvements in the quality of the service rendered and ultimately in the satisfaction with the service. The profile of the commuter groups has led to a clearer representation of the minibus taxi customer base and their needs.

Having been rooted in the service quality literature, this research investigated the operationalization of *should* expectations within the minibus taxi context. This resulted in the development of a sound psychometric measurement tool capturing the taxi users' desired service. Future research is needed to review the notion of *would* expectations originating from the customer satisfaction literature, and develop valid measures to assess commuters' predicted service. Therefore, future research into comparing desired service with predicted service is also needed to gain insight into the "range of expectations" as suggested by Dasu and Rao (1999).

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#### **AUTHOR INFORMATION**

**Laetitia Radder** holds a D Com. Degree in Business Management and is a Professor in Marketing Management, School of Management Sciences, Nelson Mandela Metropolitan University, Port Elizabeth, South Africa. Her research focuses on marketing, consumer behavior, tourism and hospitality. She has a keen interest in nature-based, wildlife and adventure tourism, service quality, consumer value and experience marketing. Her work has appeared in a number of South African and international peer-reviewed journals and conference proceedings. E-mail: Laetitia.Radder@nmmu.ac.za.

**Xiliang Han** is a Research Associate in the Department of Marketing Management, School of Management Sciences, Nelson Mandela Metropolitan University, Port Elizabeth, South Africa. His current research interests include consumer behavior, service and experience marketing, and market segmentation, within the travel and tourism context. His work has appeared in a number of peer-reviewed journals and conference proceedings. E-mail: Xiliang.Han@nmmu.ac.za

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