A Factor analysis of variables used in property taxation assessment relating to Bengaluru district

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Abstract

Property taxation is collected across all the municipal corporation in India. However, whenever a new system of collection is introduced there is always a confusion in the minds of the public relating to its efficiency and proper administration. The same was found when self-assessment scheme was introduced in 2008 by Bruhat Bengaluru Mahanagarapalike which is the Bengaluru city's municipal corporation. To understand if the factors used in analysing the awareness, perception, acceptance, Impact and service quality, analysis was performed using the latent variables of the study using factor analysis. The paper brings out the results of such analysis in the present study using the data collected during 2018-2019.

Keywords: Property taxation, awareness, impact, perception, service quality,factor analysis, varimax rotation, latent variables

Introduction

There are limited research done in property taxation and its revenue generation across the globe. Study explored that not all countries are efficient in revenue generation through the policies provided by them. Tax arrears as a proportion of expected revenues are to a large extent higher in developing and transitional countries with examples of 50% in parts of Kenya and Philippines and nearly 70 percent for land tax in Russia (Bird & Slack, 2002). Nevertheless there are exceptions for countries like Chile which recorded a collection ratio of 96% in 1991 from 70% in 1990 and Indonesia had the collection ratio improved to about 75% following the adoption of new collection based strategies (Bird & Slack, 2002) Documented evidence indicate the problem of property tax collection in Eastern and Southern African countries as most critical, manifested by extremely low collection rates and failure by many cities to enforce legal penalties for nonpayment (Franzsen&Olima 2003; Kelly 1999; Max 1996). Even though there are standard principles essential for any property tax system, McCluskey, et al (1998) view public acceptability of the tax structure as an important element that should be taken into account but it is often omitted from consideration. The research done is based on the revenue generation and tax policies in force but whether the success of the tax scheme is accepted by the tax payers or not is not discussed or explored , thus the researcher has taken up the study to explore the perception ,awareness and acceptability of new self-assessment scheme introduced by Bruhat Bengaluru mahanagara palike by the population.

Review of Literature

Dr ChanchalChawla(2013) et al in their study New technologies are emerging day by day with improved and fast speed in all the fields. Internet has changed the present scenario of working by reducing the work load from manual to sitting on chair. In previous year's tax filing was a load full task for any individual as he/she has to go through a long process such as depositing the tax amount in the bank and then again queuing in for tax filing but by emerging technologies it has reduced to almost no effect. But with emerging technologies in new era one thing that is lacking.**Khan(2012)** in his report in Economic times on Bangalore property market surpasses Mumbai, Delhi and Chennai with 8% growth, mentions the strength of property market in Bangalore also can be observed through Bangalore high share of home loans. In 2011-12 the southern states which include Bangalore accounted for approximately 40% of the total home loans disbursed in India.**Singh and Sharma (2007)** made an attempt to study the perception of tax professionals with regard to Indian Income Tax System by collecting primary data from 100 tax consultants operating in Punjab and Haryana. They tried to investigate the role of tax consultants played in the revenue collection process by helping their clients in understanding the complex tax system and meeting their legal obligations. Factor Analysis of data showed that seven factors –reduction in tax evasion, extension of relief to taxpayers, incentives for dependents and honest taxpayers, broadening the tax base, e-filing of returns, adequacy of deductions and impact of exempt-exempt tax system played an important role in determining the effectiveness of Indian tax system. It was observed that most of the tax consultants were satisfied with tax rates. However, majority showed dissatisfaction with regard to price level adjustment. It was also observed that most of the taxpayers consulted tax experts because they found it cheap. While 92 concluding the authors suggested for adjustment of income tax rates according to price level changes, broadening of tax base, strict measures against tax evaders, extensive use of TDS, consideration to number of dependents for tax rate purpose and establishment of good relationship with taxpayers.**Rao, Govinda(2000).**There have been major changes in tax systems in several countries overthe last two decades for a variety of reasons. The objective of this paper istoanalyze the evolution of the tax system in India since the early 1990s.The paper describes and assesses the introduction of new forms of directand indirect taxes, their revenue and equity implications and the successesachieved in their implementation. The paper concludes that after eightyears of reform improving the tax system remains a major challenge inIndia.

Research Design

Type of Survey

In this study, sample survey methodology was used to obtain information about a large aggregate population by selecting and measuring a sample from that population. Sample survey was done as the census method was not feasible owing to the huge population of Bangalore city.

Study area

The present study concentrates only on the taxpayers paying property tax under new self-assessment scheme in different zones in the city of Bengaluru who are classified based on the Bandwidth viz., Zone A,B,C,D,E& F

Types of Data Source

For present research work, primary as well as secondary data were used.

Tools of collecting Secondary Data: -Various statistical tools used to analyze the secondary data were actual forms, and operating documents used by the office, previous reports on SAS and Internet and published papers.

Tools of Collecting Primary data

The information was collected directly from the respondents across all the six zones in Bengaluru city. A Structured questionnaire was administered to property owners who constitute property tax payers so as to inform the study how they perceived property taxation.

Sampling Technique

This study is exploratory in nature which is conducted to study the perception of property owners towards the Self-Assessment Scheme. The sampling method used to conduct the study was multi-stage random sampling as the data has to be collected from different wards under the same zone.

Sample size

The sample size comprises of 401 property owners. 67 property owners from 6 zones were considered as the study shall be more comprehensive and accuracy level shall be moderate.

Technique used

Factor Analysis with varimax rotation was used for dimension reduction of the latent variables under study.

Factor Analysis:

Exploratory factor analysis with Varimax rotation was performed for various latent variables in the research, namely, Awareness, Perception, Acceptance, Impact and Service quality. The analysis was performed using different components of these latent variables. The results of the factor analysis is given below:

Sampling adequacy and sphericity:

Kaiser- Meyer-Olkin (KMO) test was performed to check for the sampling adequacy of the factor analysis. The value of KMO greater than or equal to 0.7 is considered as good to carry out the factor analysis. Bartlett's test of sphericity assumes the correlation among all the indicator variables or items under the latent variable is zero. To perform the factor analysis the items should be correlated. This demands the rejection of the assumption that the items or indicator variables are independent i.e. uncorrelated. The results of KMO test and Bartlett's test are tabulated for all the latent variables.

Table 1

Results of KMO test of sampling adequacy and Bartlett's test of sphericity

Latent Variable	KMO test value	Chi square value for Bartlett's test	P value
Awareness	0.706	752.985	0.000

Perception	0.769	794.956	0.000
Acceptance	0.841	1131.075	0.000
Impact	0.797	1063.077	0.000
Service Quality	0.787	1042.634	0.000

[Source: SPSS]

Since all the KMO test values are greater than 0.7, we can conclude that the criterion sampling adequacy is satisfied. Also, the bartlett's test for sphericity results into a highly significant p value , hence concluding that the items under each of the five latent variables are correlated. These values support the use of factor analysis in the research.

Exploratory factor analysis with varimax rotation for Awareness resulted into five factors that explain 56.30% of total variance. The items belonging to each factor of Awareness is displayed in Table 2

Table 2

Results of Factor Analysis for Awareness

Factor	Items	Factor Loadings
Factor 1	Is Appeal for property tax easy?	0.722
	Property Owners are taxed different rates	0.672
	Often you disagree with your assessment	0.585
	Income /Expense information are kept confidential	0.465
Factor 2	Assessment change every time	0.726
	Assessment relate to municipal tax to know the fair value of property	0.723
	Properties are assessed every year	0.701
Factor 3	Property gets re-assessed in case of damages	0.762
	Assessment services request you to furnish Income/Expense information about property	0.676
Factor 4	BBMP officials address your disagreement	-0.701
	Do you think non-compliance of tax attracts penalty other than fine?	0.555
	Do you think non-compliance of tax attracts penalty from the corporation?	0.468
	Do you calculate the property tax on your own before you reach the BBMP office?	0.397
Factor 5	Do you feel continuous defaulters are penalised?	0.726
	Assessment of property value is based on location, size and age	0.419
Factor 6	Are you able to pay the tax by showing them your PID no	0.866

[Source: SPSS]

Exploratory Factor analysis with varimax rotation for Perception resulted into two factors, explaining 43.832% of variation. The items under each factor of the latent variable Perception is given in table 3.

Table 3
Results of Factor Analysis for Perception

Factor	Items	Factor Loadings
Factor 1	Do you question the authorities regarding the difference in the estimated tax and actual tax?	.802
	Do you feel the tax charged for the property by the corporation is reasonable?	.790
	Do you think tax charged is any time more than actual tax due for payment?	-.358
Factor 2	Do you think the penalty clause should be cancelled?	.673
	Do you feel the penalty imposed by the corporation is reasonable?	.579
	Do you think there should be changes made in the tax rate and other expenses?	-.554

[Source: SPSS]

The latent variable Acceptance has got 8 indicator variables and the factor analysis with varimax rotation has resulted into two factors. 60.77 Percent of variation is explained by these two factors. The items under each factor of the latent variable Acceptance is given in table 4.

Table 4
Results of Factor Analysis for Acceptance

Factor	Items	Factor Loadings
Factor 1	Timely reminders (New Scheme)	.861
	Frequent follow-ups (New Scheme)	.821
	Tax calculation and clarity (New Scheme)	.787
	Transparency in the process. Payment & Closure (New Scheme)	.627
Factor 2	The rules and procedures under the new scheme are clear and simple without ambiguity.	.777
	Under the new scheme, the assessment of property values has been made easier.	.723
	The payment terms of the property tax under the new scheme has been simplified.	.708
	The staffs at the BBMP centres are well trained.	.575

[Source: SPSS]

Fourteen indicator variables of Impact had been grouped into four factors through exploratory factor analysis, thus explaining   57.95 percent of variation. The detailed description of factor analysis is displayed in Table 5.

Table 5

Results of factor analysis for Impact

Factor	Items	Factor Loadings
Factor 1	Extent of transparency.	0.814
	Convenient location	0.798
	Convenient access to service.	0.772
	Registration procedure of property.	0.743
	Responsibility of officers.	0.712
	Availability of forms and handbook on property tax	0.660
Factor 2	Do you think the payment of tax under the new scheme is a Burden?	0.714
	Property shift to a higher zone under the new scheme	0.569
Factor 3	Do you think the increase in the property tax payable under new scheme is mainly due to the change in the zonal classification?	0.603
	There is an increase in the property tax payable under the new scheme	-0.562
	Do you think the tax rate prevailing does not motivate you to pay the tax?	0.522
Factor 4	Do you think any time you were not able to pay the tax on time?	-0.775
	Change in the depreciation rate will have a negative impact on the total tax payable	0.577
Factor 5	Did you pay your property tax early to avail the rebate of 5 percent	0.844

[Source: SPSS]

Table 6

Results of Factor Analysis for Service Quality

Factor	Items	Factor Loadings
Factor 1	Do you think the officers are negligent while generating the receipt for the payment?	-.731
	Are you happy with the self-assessment scheme in operation?	.494
Factor 2	Are you satisfied with the time/period provided to you for the payment of tax?	.772
	Do you feel the payment location is accessible to you?	-.626
Factor 3	Are you satisfied with the services provided by the BBMP office?	-.484
	Do you feel there is sufficient flexibility provided to you while making the payment?	.763
	Do you ever feel tired/painful because of long wait in the BBMP office?	.502
Factor	Are you satisfied with the payment option provided to you?	.786

| 4 | Do you feel the amount of time spent in BBMP office is appropriate? | -.715 |
| Factor 5 | Do you feel you receive the receipt for tax paid immediately | 0.917 |

Conclusion

Factor scores of these components were used for further statistical analysis.

Shapiro-Wilk test was carried out to test for the normality of different components' factor scores of the latent variables namely, Awareness, Perception, Acceptance, Impact and Service quality was used in the further analysis.However, as the factor analysis of studying the variables used in assessment of property taxation was only the scope of this paper, the same has been analysed and interpreted. The same will be discussed in the future papers written by the author.

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