VOLUME-7, ISSUE-5, MAY-2018 • PRINT ISSN No 2277 - 8160

Original Research Paper

Statistics

LOGIT MODELLING AND ANALYSIS OF LEADERSHIP BEHAVIOUR IN URBAN GOVERNANCE

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ABSTRACT Leadership is a function of the input an individual can make into the system's capacity for concerted action. The intent of this paper is to present a logit model of leadership behavior in urban local governance and to identify factors associated with the leadership behaviour being ethical or not. The data was obtained on a three-stage random sample of 502 citizens in the state of West Bengal in India. A structured interview schedule taking into account the citizen's assessment of the leadership behavior towards service delivery in urban governance was used in the study. It is observed that six factors including Integrity and trustworthiness and Increased Transparency and Openness in the logistic regression model are found to be significant predictors of the Ethical Behaviour Status. Other factors were less contributory to having ethical behavior. From the analysis it is also inferred that the odds of having Ethical behavior is many times higher for a leader in power at the local government who did not show interest in political parties but in the citizens. The overall fit of the constructed model is assessed to be good.

KEYWORDS : Leadership Behaviour, Logistic Regression, Urban Governance

INTRODUCTION

There is an imperative need and urgency for the study of leadership Behaviour towards Service Delivery in the Urban Local Governance System in India from a holistic perspective and against the backdrop of contemporary political setting in our country. The objective is to engage citizens in a meaningful assessment and debate on the quality of services and ethical leadership and governance at the Urban local level. In particular, the assessment in this study aims to help answer the following question: What are the factors that contribute to the behaviour of those in leadership in Urban Local Governance? Against this backdrop, the present study aims at statistical modelling and analysing the leadership behaviour towards service delivery in Urban Local Governance in India.

The present study attempts to point the way towards some possible solutions by analysing leadership behaviour of the Municipal Councillors in the urban local governance system in India. The intent of this paper is to present a logit model of leadership behavior in urban local governance in the state of West Bengal in India and to identify significant factors associated with Municipal Councilor's leadership behaviour being ethical or not, especially the effect of the decisions of leaders in power at local government being based on the interests of political parties rather than the interests of the citizens as a determinant of the ethical behaviour by carrying out an analysis of citizens' perception of some aspects of Leadership Behaviour using the advanced statistical tool of Logistic Regression Modelling and Analysis and to assess the overall fit of the constructed model.

MATERIALS AND METHODS

In this study, the multistage sampling procedure is adopted in primary data collection and hence it moves through a series of stages until the population elements that constitute the desired sample are arrived at. The three stages of sampling in this study are carried out according to probability sampling principles.

For this study, respondents were selected from two Municipal Corporations, namely, Kolkata Municipal Corporation and Siliguri Municipal Corporation that were randomly selected out of the corporations in the state of West Bengal in India. In Kolkata Municipal Corporation, a total of 326 citizens were selected from 41 wards out of 144 wards with a sampling interval of 4. Eight households were selected from each of the selected ward except in one ward where only six households were selected. In Siliguri Municipal Corporation, a total of 176 citizens were selected from 16 wards out of 47 wards with a sampling interval of 3. Eleven households were selected from each of the selected ward. A sample total of 502 citizens from these wards were selected as respondents for the study. The units selected form a good representative sample. A structured interview schedule taking into account the citizen's assessment of the Municipal Councilor's leadership behavior towards service delivery in the Municipal Corporation was used in the study. The interview schedule was administered to the respondents through informal interviews to elicit information relating to the study.

To achieve the objective of the study, the multivariate technique of logistic regression was used to regress the dichotomous outcome variable on the predictors. *The local government Municipal Councilor's behaviour being ethical or not* is considered as the dichotomous Dependent Variable *ETHICAL*. The following are the predictor variables for the analysis: *Municipal Councilor's Gender(MC_GENDER), Municipal Councilor's Age(MC_AGE), Municipal Councilor's Education(MC_EDU), Integrity and trustworthiness of the Municipal Councilor(INTEGRITY_TRUSTWORTHY_MC), Municipal Councilor's leadership by example setting high standards of Behavior(LEAD_VISION_HIGHST), Municipal Councilor's leadership in Resource Management managing finance transparently to achieve maximum benefit(SRDL_RESMNG_FINANCE), Bribery reduced (BRIBERY), Transparency and Openness increased (TRANSPARENCY), Municipal Councilor being people (citizen) oriented(PPL_ORIENTED), Municipal Councilor engaging the community in the issues that affect them(ISSUES), Municipal Councilor serving the community well(SERVES_COMM), Decisions of leaders in power at local government being based on the interests of political parties rather than the interests of the citizens(POLITICPARTY_INTEREST)* and *No Nepotism or Kickbacks(KICKBACKS*).

RESULTS AND DISCUSSION

The results of the logistic regression analysis yield the following:
The Beginning Block of the analysis shows how well the dependent variable can be predicted with no predictors in the model. From the results of the Beginning Block, it can be said that without including any independent variable, the model makes a correct prediction of 87.6% and that the model works well even without including any independent variable since the p-value is 0.000.

The analysis moves on to the next Block (Block 1), which shows what the predictions are like when some predictor variables are included. In this case, the Forward Stepwise (Likelihood Ratio) method is used for the order of entry, which puts in all of the predictors as a group, on the first step. The following table (Table 1) presents the Model Summary which gives –2 log L statistic, Cox & Snell R Square and Nagelkerke R Square values at each step.

Table 1. Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	245.197	.228	.434
2	205.913	.286	.544
3	181.735	.320	.608
4	172.765	.332	.631
5	168.204	.338	.642
6	157.245	.352	.669
7	152.501	.358	.681
8	155.145	.355	.674

The -2 log likelihood values in Table 1 show that there is an improvement in the model due to the stepwise procedure with each iteration. Nagelkerke's R Square in Table 1 shows that 67.4% of the variation in the dichotomous dependent variable of the study is explained by the predictors.

The Hosmer Lemeshow goodness of fit index is useful for assessing overall model fit, particularly in the case when there are many predictor variables, or when some of the predictor variables are continuous. The expected frequencies for each of the cells are obtained from the model. As observed in the results (Step 8, Chi-square is 4.877 with p-value .771), the Hosmer and Lemeshow test indicates that the model predictions are not significantly different from observed values. In other words, the model is a good fit.

The classification table for Block 1 (Table 2) shows that the model makes a correct prediction of 93.8%. From 87.6% classification accuracy with no independent variables, the model has improved to 93.8% classification accuracy with independent variables.

	Observed		Predicted		
			Ethical		Percentage Correct
			no	yes	
Step 1	Ethical	no	39	23	62.9
		yes	15	425	96.6
	Overall Percentage			92.4	
Step 2	Ethical	no	32	30	51.6
		yes	2	438	99.5
	Overall Percentage			93.6	
Step 3	Ethical	no	37	25	59.7
		yes	7	433	98.4
	Overall Percentage			93.6	
Step 4	Ethical	no	40	22	64.5
		yes	8	432	98.2
	Overall Percentage			94.0	
Step 5	Ethical	no	38	24	61.3
		yes	11	429	97.5
	Overall Percentage			93.0	
Step 6	Ethical	no	38	24	61.3
		yes	8	432	98.2
	Overall Percentage			93.6	
Step 7	Ethical	no	39	23	62.9
		yes	9	431	98.0
	Overall Percentage			93.6	
Step 8	Ethical	no	39	23	62.9
		yes	8	432	98.2
	Overall Percentage			93.8	

The variables in the equation are found out together with the Wald statistic and associated probabilities which provide an index of the significance of each predictor in the equation. From the results of the logit analysis, it is observed that the following factors in the logistic regression model are found to be significant predictors to predict whether the Municipal Councilor's behaviour is ethical or not: Integrity and trustworthiness of the Municipal Councilor, Transparency and Openness increased, Municipal Councilor being people (citizen) oriented, Municipal Councilor engaging the community in the issues that affect them, Municipal Councilor serving the community well, and Decisions of leaders in power at local government being based on the interests of political parties rather than the interests of the citizens. Other factors were not significant predictors of Ethical Behaviour Status and were less contributory to having ethical behaviour.

The logit form of the model being fitted is given by
logit[P(Y=1)] = -0.487 + (0.480)Municipal Councilor's Integrity and Trustworthiness-(1.149)Transparency-(2.284)People-oriented -(2.198)Engaging the community in issues-(1.436)Serving community+(0.289)Political party interest completely+(2.144) Political party interest to a large extent +(1.270)Political party interest to a small extent+(18.128)No Political party interest.

The coefficient of 0.480 for the predictor Municipal Councilor's Integrity with Trustworthiness (with p-value 0.001) means that, on average, a one-unit change in this predictor variable adds 0.480 to the log odds in favour of having Ethical behavior by the Municipal Councilor; that is the odds in favour of having Ethical behavior are multiplied by e0.480 = 1.615. From the result it is also inferred that the odds of having Ethical behavior is many times higher for a leader in power at the local government who did not show interest in political parties. Another inference is that there is statistical evidence that predictors such as Transparency and Openness increased (p-value 0.013), Municipal Councilor being people (citizen) oriented (p-value 0.000), Municipal Councilor engaging the community in the issues that affect them (p-value 0.000) and Municipal Councilor serving the community well (p-value 0.005) significantly increase the probability of having Ethical behavior.

CONCLUSION

Six factors including Integrity and trustworthiness and Increased Transparency and Openness in the logistic regression model are found to be significant predictors of the Ethical Behaviour Status of Leadership in Urban Governance. Other factors were less contributory to having ethical behavior. It is also concluded that the odds of having Ethical behavior is many times higher for a leader in power at the local government who did not show interest in political parties but in the citizens.

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