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FACTORS INFLUENCING ENVIRONMENTAL BEHAVIOR OF THE URBAN POOR CONCERNING SOLID WASTE MANAGEMENT

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ABSTRACT

This study determines and analyzes the factors that are influencing environmental behavior of the urban poor householders concerning solid waste management among the squatters and low-cost flats in Kuala Lumpur city, Malaysia. Primary data collected from the level of living conditions of the urban poor was analyzed with a logistic regression model that was developed. The analysis showed that the urban poor communities behave in ways comporting with and conducive to environmentally sound solid waste management. This study suggests that such urban low-income communities generally play a very active role from a sound environmental management perspective, as they are the main recycles and source-reducers of solid waste. Policies then should be formulated that promote an integrated, environment-friendly solid waste management that at the same time empowers urban poor as a means of bettering their living conditions.

INTRODUCTION

Malaysia is becoming a more prosperous, industrialized, and urbanized nation due to its rapid economic growth over the past decades. One of the major

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consequences of Malaysia's rapid urbanization and social transformation is a greatly increased generation of municipal solid waste. In some urban areas, Malaysia's current estimated rate of municipal solid waste generation (0.93 kg per capita per day) has grown to be nearly as great as that on average in the European Community [1, 2]. In Kuala Lumpur alone, the solid waste generation was estimated to increase to 4,000 tons per day in the year 2000. The World Bank [3] has identified municipal solid waste management as one of Malaysia's three most important urban environmental problems. An overarching concern in urban areas, then, is the management and disposal of an increasing quantity of waste, which contributes to major environmental degradation. In Kuala Lumpur city, the problem of solid waste disposal is very often related to the squatter and low-cost-flat households. The waste generated from the squatters or informal settlements of Kuala Lumpur city is estimated to be about 200 tons per day [4]. As squatter areas are generally underserved, only half of this amount is collected each day from central collection points [5]. The same estimation shows that squatters dispose of their waste as follows (by weights): 49.7% in allocated waste sites, 31.9% by open burning, 6.5% into the rivers, and 5.2% by other means. That means inadequate and traditional waste management systems are the norms in the squatter areas. Open dumping of wastes has been practiced in Kuala Lumpur over the years and is still prevalent today. Since the dumpsites do not have proper measures to control rainfall and run-off, large quantities of discharge are formed which pass into and pollute the groundwater.

Moreover, household and municipal wastes and their disposal pose an enormous challenge to environmental managers in Kuala Lumpur. A day lost in collection leads to a piling up of these wastes; under the hot, humid conditions the wastes decompose very rapidly, producing obnoxious odor and attracting flies and vermin. The inadequate or traditional system of waste management does not only affect the local environment and health but also equally the neighboring environments and communities. The disposal of waste is also a major problem to the low-cost flat dwellers, because their improper methods of waste disposal making them a high-risk group for contracting and spreading infectious diseases. Many endemic diseases such as diarrhea, typhoid, food poisoning, and infant mortality are common among them.

However, the problem of solid waste management is still perceived as an unresolved problem experienced by the developing countries. In Malaysia, this problem has been considerably addressed by governmental actions and policies that engage both the public and private sectors. But the persistent environmental problems related to solid waste management systems among the squatters and low-cost flat dwellers in Kuala Lumpur city are more acute and so require more targeted and distinctive actions and policies. This study is an attempt to determine and analyze the factors that could affect environmental behavior of the urban poor householders concerning solid waste management.

RESEARCH METHODS

Sources of Data and Sample Design

The analysis in this study is based on primary data collected recently from three areas of squatters and low-cost flats in Kuala Lumpur city. Trained interviewers paid several visits in each study area. The interviewers conducted the interviews with the persons who were the heads of the households, the wives, or persons responsible for the economic decision for their families and older than 18 years.

The overall sampling design for the study can be described as "stratified quota random sampling" with the key stratification variable "characteristics of household." In the first stage, the household to be surveyed had been selected purposively through a preliminary "windshield survey" in which the general characteristics of squatters or low-cost flat houses are found and catalogued. For doing this, enumerators were assigned to particular household types in each area, with minimum interview-quotas for each household-type. Then, to interject randomness into the sampling plan, enumerators were advised to seek interviews with every second or third home on a particular street. A total of 300 household heads were interviewed from three parliamentary areas of Kuala Lumpur within which 100 households were selected from each area in the ratio of 60% and 40% for the squatters and low-cost flat dwellers respectively.

Selection of Study Areas

The parliamentary districts studied are Kepong, Segambut, and Titiwangsa and the respective squatter areas that were surveyed are known as Jinjang Utara Tambahan, Sentul Pasar, and Datuk Keramat. It has been observed that most of the low-cost flats are situated apart from squatter areas and most of these latter are also scattered. Although a substantial number of low-cost flats are located at Jinjang Utara Tambahan which fulfilled the sample size ratio requirement, their distribution was scattered in both Datuk Keramat and Sentul Pasar. However, two lost-cost flats areas were selected from Sentul Pasar, namely Flat Sri Terengganu and Flat Sri Kelantan. Sentul Pasar is considered to lie within the broader boundary of Sentul Utara. To satisfy the sample size ratio in the study, three low-cost flats were also selected from the Datuk Keramat area: Flat Pangsa Murni, Flat Seri Perlis 2, and Flat Keramat Jaya. All lie at the center of the Datuk Keramat area.

The choice of these three areas for the study was based on two criteria. First, the poverty groups that are observed to exist within the federal territory of Kuala Lumpur are predominantly concentrated in the squatter areas. But considerable numbers of urban poor also live in the low-cost flats. Second, the study focuses on populations that are ethnically multiracial: Malay, Chinese, and Indian.

To include all ethnic groups, three different areas of squatters and low-cost flats were selected where an individual ethnic group predominates. Chinese were found to be the most dominant group in Jinjang Utara Tambahan while Indians and Malays were found to be the most dominant groups in Sentul Pasar and Datuk Keramat respectively.

Questionnaire Preparation

To collect the primary data on living conditions of urban poor, a structured questionnaire was developed iteratively over time. Initial iterations incorporated suggestions based on discussions between the researchers involved in this research, especially with a view to requirements of statistical analysis. Final changes were made on the basis of comments and results of trials of the draft questionnaire. The original questionnaire was prepared in Bahasa Melayu. A relatively large proportion of respondents in Jinjang Utara and Sentul were more fluent in languages other than Bahasa Melayu. For this reason, multi-lingual enumerators had been engaged for these two areas and the interviews were conducted in languages most familiar to individual respondents. Since the second most common language is English, the original questionnaire was further translated into English to enable English-friendly respondents to answer. In cases of Mandarin, Cantonese, and Tamil, enumerators translated questions "on the spot" which were further verified by the researchers.

Technique of Analysis

All the data were coded directly on questionnaires and then entered into a personal computer. Descriptive statistics such as means, ranges, and frequency distributions were computed for all variables in the original questionnaire. The next step applies a logistic regression model that was designed with quantitative and qualitative variables. To minimize chance variation between sample data and actual total population characteristics, inferential statistics were employed in the logistic regression exercise, which also was employed to test the significance of the relationship between the dependent and independent variables. The *t*-statistic was used to assay the importance of a variable in the regression model. Conventional goodness of fit indicators such as R^2 and adjusted R^2 were also used. Since the logistic regression model or binary dependent variable model is not likely to yield an R^2 close to 1, the preferable alternatives to R^2 as a measure of goodness of fit, the likelihood ratio index and/or Cox and Snell R^2 and Nagelkerke R^2, were also used with the logistic regression model.

Estimated Logistic Regression Model

The logistic regression model considers the behavioral factors of all the survey householders of the present study in local squatters and low-cost flats. The

responses to the survey provide a list of attributes of householders' behavior concerning solid waste management. The object was to find a set of factors, which best allows one to explain their behavior classified as satisfactory or not satisfactory.

The Cox and Snell R^2 are 0.376 and most of the predictions are correct. As a modification of the Cox and Snell R^2, the Nagelkerke R^2 was also estimated, which was also found to be highly acceptable with the value of 0.521. The prediction success table is also nicely symmetrical, indicating that the model performs well at predicting both "yes" and "no" responses. Based on the model performance as judged by the success table (Classification Table, see Appendix), the model exhibits a high coefficient of predictive power of 82.7%. The Hosmer and Lemeshow statistic was also estimated, which provides useful information about the calibration of the model. In the Hosmer and Lemeshow Test, the observed significance level for chi-square value was found to be 0.067, which does not reject the null hypothesis of the model in the sense that there is no difference between the observed and predicted values. Thus, the model appears to fit the data reasonably well. In addition, the Chi-square also tests the null hypothesis that the coefficients for all the terms in the present model, except the constant, are 0, which is comparable to the overall F-Test for regression. In the present model, the Chi-square value of 141.428 at $p < 0.01$ significant level indicates that logistic regression is meaningful in the sense that the dependent variable is related to each specified explanatory variables. The correlation matrix of the variables was also studied to identify the occurrence of multicollinearity. The model confirms of involving no multicollinearity, that is, no two variables had a correlation in excess of 0.80.

The results of fitting the logistic regression model of householders' behavior for the whole sample are given in Table 1 (an SPSS output of the model is also given in Appendix 1). Since the observations are of individual householders and not grouped, the logistic regression model was estimated using a maximum-likelihood estimation procedure. The final logistic regression model that was estimated using the maximum-likelihood estimation for predicting householders' behavior takes the following form:

$$\underset{\substack{(-1.7641)\\(-2.2588)\\(-1.2909)\\(1.0000)\\(1.9783)\\(1.0221)\\(2.5921)}}{L_n \frac{P_i}{1-P_i} = -1.757 - 0.969X_1 - 0.071X_2 + 0.001X_3 + 1.096X_4 + 0.556X_5 + 1.449X_6}$$

$$\underset{\substack{(2.0000)\\(1.3097)\\(-3.1598)\\(2.2616)\\(0.3357)\\(0.6133)}}{+ 0.878X_7 + 0.960X_8 - 1.147X_9 + 1.167X_{10} + 0.236X_{11} + 9.592X_{12}}$$

Table 1 shows that all the independent variables are statistically significant, except for the years of schooling of householders (X_2); householders' or their family members' behavior concerning disposition of waste by selling to an "itinerant" buyer (X_5); householders' or their family members' consideration about the products' package that can be reused, while buying something (X_8);

Table 1. Summary of Logistic Regression Model: Factors Influencing Householders' Behavior Concerning Solid Waste Management ($P_i = 1$ if Satisfactory and $P_i = 0$ for Otherwise)

Independent variables	Estimated coefficient (β)	Standard error	Wald statistic
Constant (α)	–1.757 (–1.7641)^{NS}	0.996	3.112
Dummy variable considering gender status of the householders (X_1) (1 for Male, 0 for Otherwise)	–0.969 (–2.2588)**	0.429	5.105
Years of schooling of the householders (X_2)	–0.071 (–1.2909)^{NS}	0.055	1.662
Monthly income of the head of households (In RM) X_3)	0.001 (1.0000)***	0.001	6.745
Dummy variable considering whether or not householders or their family members dispose of waste in their own dust-bin (X_4) (1 if "yes," 0 for otherwise)	1.096 (1.9783)**	0.554	3.914
Dummy variable considering whether or not householders or their family members dispose of waste by selling to an "itinerant" buyer (X_5) (1 if "yes," 0 for otherwise)	0.556 (1.0221)^{NS}	0.544	1.045
Dummy variable considering whether or not householders or their family members dispose of waste in a public dust-bin received from local town authority or contractor (X_6) (1 if "yes," 0 for otherwise)	1.449 (2.5921)***	0.559	6.725
Dummy variable considering whether or not householders or their family members dispose of waste by burning (X_7) (1 if "yes," 0 for otherwise)	0.878 (2.0000)**	0.439	3.989
Dummy variable considering whether or not householders or their family members give consideration to the products' package that can be reused, while buy something (X_8) (1 if "yes," 0 for otherwise)	0.960 (1.3097)^{NS}	0.733	1.715

Table 1. (Cont'd.)

Independent variables	Estimated coefficient (β)	Standard error	Wald statistic
Dummy variable considering type of house of the householders (X_9) (1 for Squatter, 0 for Low-Cost Flat)	–1.147 (–3.1598)***	0.363	10.016
Dummy variable considering economic status of households (X_{10}) (1 if "poor," 0 for otherwise)	1.167 (2.2616)**	0.516	5.122
Dummy variable considering area of the householders (Area 1) (X_{11}) (1 for Jinjang Utara, 0 for otherwise)	0.236 (0.3357)^{NS}	0.703	0.113
Dummy variable considering area of the householders (Area 2)(X_{12}) (1 for Sentul, 0 for otherwise)	9.592 (0.6133)^{NS}	15.639	0.376

Chi-square Statistic = 141.428
df = 12
–2 Log Likelihood = 241.852
Cox and Snell R^2 = 0.376
Nagelkerke R^2 = 0.521
Hosmer and Lemeshow Chi-square = 14.624 at 0.067 level of significance

Note: Figures in parentheses are *t*-values of the logistic regression coefficients.
**Indicates significant at 0.05 level. ***Indicates significant at 0.01 level.
NS indicates not significant at 0.05 level.

and the categories of area of respondents' such as Area 1 (for X_{11}) and Area 2 (for X_{12}). The estimated equation shows that the demographic factors of respondents such as Area 1 (for X_{11}) and Area 2 (for X_{12}) and the socio-economic factors of respondents such as monthly income (X_3) and economic status (X_{10}) have a positive effect on their behavior concerning solid waste management. Similarly, the behavioral factors of householders' or their family members' such as disposition of waste in their own dust-bin (X_4); disposition of waste by selling to an "itinerant" buyer (X_5); disposition of waste in a public dust-bin received from local town authority or contractor (X_6); disposition of waste by burning (X_7); and consideration about the products' package that can be reused, while buying something (X_8) have the same positive effect on their behavior concerning solid waste management. These findings indicate that householders' or their family members' behavior concerning solid waste management tends to be satisfactory

with the increase in their income and improvements in disposition of waste in their own dust-bins, disposition of waste by selling to the "itinerant" buyers, disposition of waste in the public dust-bins provided by local town authority or contractor, disposition of waste by burning, and consideration about the products' package that can be reused, while buying something.

The variable of gender (X_1) was also included in the model to examine whether or not householders' behavior concerning solid waste management significantly differs between male and female. The coefficient of the variable has proven to be significant ($p < 0.05$) and negatively related to householders' behavior concerning solid waste management. This result implies that female heads of households have demonstrated a higher rate of satisfactory behavior concerning solid waste management than their male counterparts. The result is also quite compatible with the one on knowledge regarding solid waste management [6]. Analysis of knowledge regarding solid waste management has given evidence to the effect that female household heads are more knowledgeable in regard to solid waste management than their male counterparts. It is quite natural that, if women's knowledge in relation to solid waste management were higher relative to their men counterparts, then their behavior concerning solid waste management practices and attributes would tend to be more favorable. A positive relationship between knowledge and hence behavior expressed in terms of the management system of solid waste is logical and to be expected.

A dummy variable of type of house of householders' (X_9) was considered in this model to examine whether or not householders' behavior concerning solid waste management significantly differs for their type of houses, and hence squatters and low-cost flats. The variable was proven to be highly significant ($p < 0.01$) and negatively related to householders' behavior concerning solid waste management. The interpretation is direct and also consequential. Squatter households suffer from congested space, poor amenities, and a pronounced lack of necessary elements, which would not provide a healthy environment. As such, squatter households would be expected to behave in a negative way toward solid waste management. Such a negative way of behavior is expected from them as originating from their poor environment rather than being based on a behavioral norm.

The variable of households' economic status (X_{10}) was proven to be statistically significant and positively related to householders' behavior concerning solid waste management. The interpretation here is quite direct. The logistic regression analysis has provided evidence that the poor household heads have exhibited a higher satisfactory behavior concerning solid waste management in comparison to their relatively well-off counterparts. This finding is indeed crucial as it also runs against the widely voiced assertion in the literature that the poor contribute far more to degrading the environment in relation to those who are better off.

Such a finding, which sets itself apart from the general theme in the literature, is indeed significant to sound environment policy making and does not unnecessarily militate against the poor. Moreover, the satisfactory behavior pattern ascribed to poor households is explainable by reference to the tendency of the poor to explore and exploit avenues of income generation, saving activities, and ventures. It seems plausible to make the assertion that solid waste management is quite a potential arena for building up income generation and saving activities as a means of augmenting relatively poorer households' income.

Two dummy variables, which represent the study areas, were also considered in the logistic regression model to assess whether or not householders' behavior concerning solid waste management differs significantly for their respective areas, and hence Jinjang Utara, Sentul, and Datuk Keramat. The variables of study areas such as Area 1 (X_{11}) and Area 2 (X_{12}) have proven to be insignificant, but positively related to householders' behavior concerning solid waste management. The findings, however, imply that the householders at both Jinjang Utara and Sentul have demonstrated more satisfactory behavior concerning solid waste management. Unquestionably, obtaining non-significant coefficient values for both area variables is not interesting as it implies the respondents from Jinjang Utara and Sentul would not be expected to show a significant level of differences in their behavior as compared to the other subset of the sample.

The highly significant level of the model coefficients indicates that there is a strong relationship between dependent and independent variables. In this regard, the coefficient value of the variable of income of the head of households (and hence the householder) (X_3) has proven to be highly significant ($p < 0.01$) and positively related to householders' behavior concerning solid waste management. The empirical results of this logistic regression model imply that the satisfactory behavior of householders concerning solid waste management is positively and significantly related to their income level. This finding has provided evidence to the effect that the higher the level of income of the householders is, the more satisfactory will be their behavior concerning solid waste management, and thus lower environmental degradation.

The logistic regression coefficient value of the variable of years of schooling of householders (X_2) has proven to be insignificant here, but negatively related to their behavior concerning solid waste management. Based on the assumption that having education is a normal good, it is expected, assuming all other factors constant, that householders' satisfactory behavior and their years of schooling would be positively correlated. The negative coefficient of education variable, however, runs against this logic. The explanation could lie in the very small variation in the magnitude of the variable among householders making up the sample. For instance, out of 300 survey respondents in the present study, only three were found to have a university degree qualification and the mean of years of

schooling of all respondents is 7.9600 with a standard deviation of 3.5242. However, obtaining such a negative coefficient of education variable also provides evidence that the urban poor householders' low level of education does not have any significant adverse role on their behavior concerning solid waste management.

CONCLUSION AND POLICY RECOMMENDATIONS

The policy recommendations of this study might be useful for the appropriate authority of the three study areas, i.e., Kuala Lumpur City Council (KLCC). Depending on the degree to which current solid waste management programs and policies and the cultural and social features of respondents in the three parliamentary areas may differ in relation to otherwise similar parliamentary areas or municipalities, the policy recommendations might have a wider applicability. It is reasonably expected that the policy recommendations of this study would be useful to policy and decision-makers of the appropriate authority in efforts to improve environmental behavior of the urban poor and low-income communities.

With regard to solid waste generation, the study determined that the urban poor and low-income groups usually generate much lower waste per person than do middle- and upper-income groups. Therefore, the poor and low-income groups contribute much less to the environmental degradation than their middle and upper counterparts. This study also gives evidence that poor and low-income groups generally have a very proactive role from a sound environmental perspective, as they are the main re-users, recyclers, and source-reducers of solid wastes.

An integrated approach has to consider the roles of all stakeholders involved in the solid waste management system, and should do so in light of the economic, social, institutional, and environmental aspects of a sound solid waste management system. With this kind of approach, scavengers or informal waste pickers should be incorporated into the formal sector and be provided with appropriate sanitary working conditions. These informal waste pickers should also be promptly rewarded in the event that waste reduction and recycling activities are executed efficiently and in timely fashion. The waste reduction and recycling programs should also be prompted through consumer campaigns, which will encourage the citizens to cooperate in waste separation and source reduction and promote them to purchase the recycled products. Citizens also should be asked to pay a more realistic fee for waste management services in return for the guarantee that better services will be provided that ensure a more environmentally sound solid waste management. Since

no solid waste management can be effective without proper monitoring of its collection and disposal systems, its effectiveness should also be tested on a regular basis and the departure from its inherent objectives at any time should be corrected promptly.

The authors believe that reduction of poverty will not of itself improve environmental quality and that improvement of environmental quality will not by itself reduce poverty. Such being the case, policies should be formulated to focus on promoting education, knowledge, attitude, behavior, and skills of the urban poor together with empowering them as a means of promoting their living environment and lifestyles. For example, improving the level of education of the urban poor and low-income communities may increase their awareness and knowledge regarding environmental risks and hazards. In fact, the lack of awareness and school education in the process of sound solid waste management can also severely restrict the application of an integrated solid waste management approach, which the study suggested earlier. The lack of environmental awareness also appears to be a contributing factor that often influences the urban poor and low-income groups to degrade the environment. Therefore, both formal and informal methods of education should be adopted through means such as local media, seminars, workshops, tours, and other educational competitions. In this regard, television, newspapers, and people's associations can also play a most vital and important role for increasing environmental awareness and knowledge of the urban poor and low-income communities. In addition, policies for sustainable urban growth need to be adopted that could be realistically able to view each urban environmental problem as it relates to all other urban issues, thereby creating a habitat which makes city living attractive to all groups.

Finally, as stated by the United Nations Commissioner for Human Settlement (UNCHS) [7] and World Commission on Environment and Development (WCED) [8], poverty and environment are often seen as inextricably linked, with the need to eradicate poverty as an initial step to protecting environment. This study argues against the belief, and instead proposes that the problems of poverty and environment need to be seen differently as both the problems are experienced by different groups of communities in a different way. In fact, there is little evidence of urban poverty being a significant contributor to environmental degradation, but strong evidence that urban environmental risks are a major cause or contributor to urban poverty. The environmental problems and hazards that exist among the urban poor and low-income communities are primarily associated with inadequate provision for electricity, water, sanitation, drainage, waste collection, and health care. These environmental problems can be greatly reduced by undertaking better environmental management and provisions of infrastructures.

APPENDIX
SPSS Output of Logistic Regression Model

Case Processing Summary

Unweighted Cases	*N*	Percent
Selected cases		
Included in Analysis	300	100.0
Missing Cases	0	.0
Total	300	100.0
Unselected Cases	0	.0
Total	300	100.0

Dependent Variable Encoding

Original Value	Internal Value
Not Satisfactory	0
Satisfactory	1

Categorical Variables Codings

	Frequency	Parameter Coding (1)
Area 2		
Otherwise	200	.000
Sentul	100	1.000
Dispose in my own dust-bin		
No	125	.000
Yes	175	1.000
Sell it to an “itinerant” buyer		
No	161	.000
Yes	139	1.000
Dispose in a public dust-bin from local town authority (MP) or contractor		
No	36	.000
Yes	264	1.000
Burn the wastes		
No	209	.000
Yes	91	1.000
When buying something, consider whether its package can be reused		
No	286	.000
Yes	14	1.000
Area 1		
Otherwise	200	.000
Jinjang Utara	100	1.000
Household economic status (Considered based on the poverty level of RM 1200 per month per household)		
Non-poor	250	.000
Poor	50	1.000
Type of house		
Low-cost flat	120	.000
Squatter	180	1.000
Gender of respondent		
Female	68	.000
Male	232	1.000

Iteration History[a,b,c]

Iteration		−2 Log likelihood	Coefficients: Constant
Step 0	1	383.321	.653
	2	383.280	.678
	3	383.280	.678

[a]Constant is included in the model.
[b]Initial −2 Log Likelihood: 383.280.
[c]Estimation terminated at iteration number 3 because parameter estimates changed by less than .001.

Classification Table[a,b]

			Predicted		
			Respondents' behavior concerning solid waste management		
	Observed		Not satisfactory	Satisfactory	Percentage correct
Step 0	Respondents' behavior concerning solid waste management	Not satisfactory	0	101	.0
		Satisfactory	0	199	100.0
	Overall percentage				66.3

[a]Constant is included in the model.
[b]The cut value is .500.

Variables in the Equation

		B	S.E.	Wald	*df*	Sig.	Exp(B)
Step 0	Constant	.678	.122	30.814	1	.000	1.970

Variables Not in the Equation

			Score	*df*	Sig.
Step 0	Variables	VAR00004(1)	4.046	1	.044
		VAR00005	1.933	1	.164
		VAR00017	4.420	1	.039
		VAR00187(1)	38.126	1	.000
		VAR00190(1)	6.249	1	.012
		VAR00191(1)	8.777	1	.003
		VAR00194(1)	.491	1	.483
		VAR00310(1)	.985	1	.321
		VAR00372(1)	6.727	1	.009
		VAR00376(1)	2.511	1	.113
		VAR00377(1)	25.106	1	.000
		VAR00378(1)	76.131	1	.000
	Overall Statistics		102.682	12	.000

Iteration History[a,b,c,d]

Iteration		−2 Log likelihood	Coefficients												
			Constant	VAR 004(1)	VAR 005	VAR 017	VAR 187(1)	VAR 190(1)	VAR 191(1)	VAR 194(1)	VAR 310(1)	VAR 372(1)	VAR 376(1)	VAR 377(1)	VAR 378(1)
Step 1	1	274.875	−1.051	−.494	−.047	.001	.770	.145	.967	.591	.784	−.741	.565	.231	1.405
	2	252.059	−1.477	−.790	−.065	.001	.994	.366	1.278	.787	.964	−1.026	.945	.272	2.481
	3	245.274	−1.697	−.935	−.070	.001	1.078	.511	1.415	.861	.967	−1.127	1.125	.251	3.543
	4	243.073	−1.751	−.966	−.071	.001	1.094	.551	1.446	.876	.960	−1.145	1.163	.238	4.574
	5	242.293	−1.756	−.969	−.071	.001	1.095	.556	1.449	.878	.960	−1.147	1.166	.236	5.585
	6	242.009	−1.757	−.969	−.071	.001	1.096	.556	1.449	.878	.960	−1.147	1.167	.236	6.590
	7	241.904	−1.757	−.969	−.071	.001	1.096	.556	1.449	.878	.960	−1.147	1.167	.236	7.591
	8	241.866	−1.757	−.969	−.071	.001	1.096	.556	1.449	.878	.960	−1.147	1.167	.236	8.592
	9	241.852	−1.757	−.969	−.071	.001	1.096	.556	1.449	.878	.960	−1.147	1.167	.236	9.592

[a]Method: Enter
[b]Constant is included in the model.
[c]Initial −2 Log Likelihood: 383.280.
[d]Estimation terminated at iteration number 9 because log-likelihood decreased by less than .010%.

Omnibus Tests of Model Coefficients

		Chi-square	*df*	Sig.
Step 1	Step	141.428	12	.000
	Block	141.428	12	.000
	Model	141.428	12	.000

Model Summary

Step	−2 Log likelihood	Cox and Snell *R* Square	Nagelkerke *R* Square
1	241.852	.376	.521

Hosmer and Lemeshow Test

Step	Chi-square	*df*	Sig.
1	14.624	8	.067

Contingency Table for Hosmer and Lemeshow Test

		Respondents' behavior concerning solid waste management = Not Satisfactory		Respondents' behavior concerning solid waste management = Satisfactory		
		Observed	Expected	Observed	Expected	Total
Step 1	1	20	24.251	10	5.749	30
	2	19	20.893	11	9.107	30
	3	24	16.314	4	11.686	28
	4	17	14.876	13	15.124	30
	5	10	12.015	20	17.985	30
	6	7	8.332	22	20.668	29
	7	4	4.321	26	25.678	30
	8	0	.002	30	29.998	30
	9	0	.001	30	29.999	30
	10	0	.000	33	33.000	33

Classification Table[a]

			Predicted		
			Respondents' behavior concerning solid waste management		
	Observed		Not satisfactory	Satisfactory	Percentage correct
Step 1	Respondents' behavior concerning solid waste management	Not satisfactory	78	23	77.2
		Satisfactory	29	170	85.4
	Overall percentage				82.7

[a]The cut value is .500.

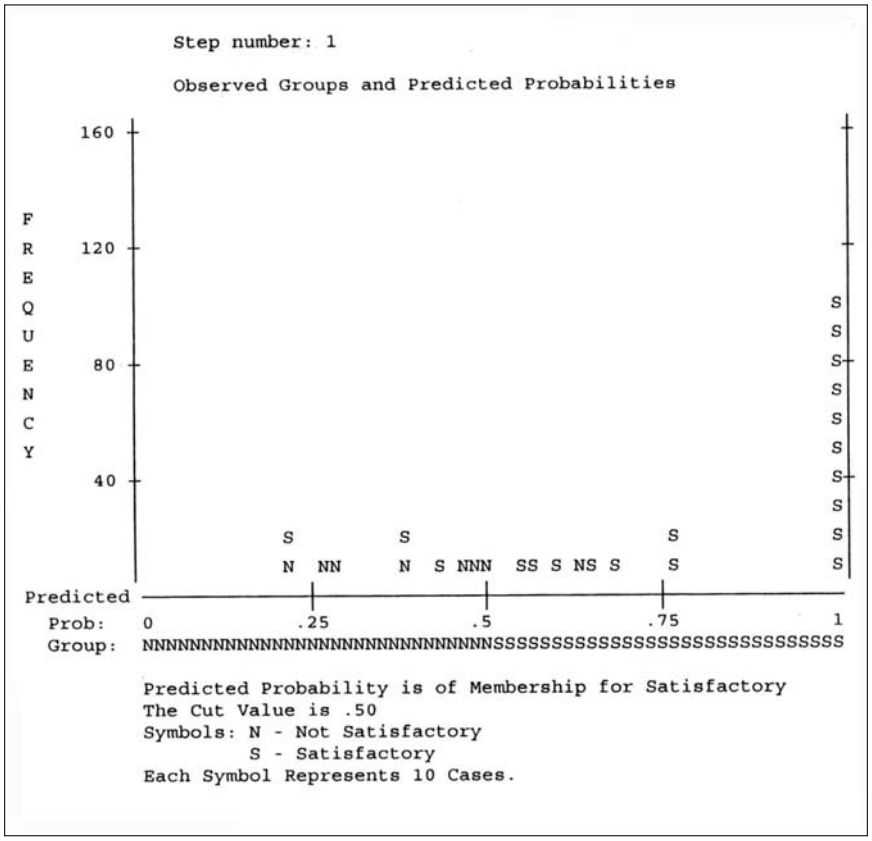
Variables in the Equation

								95.0% C.I. for EXP(B)	
		B	S.E.	Wald	*df*	Sig.	Exp(B)	Lower	Upper
Step 1[a]	VAR00004(1)	−.969	.429	5.105	1	.024	.379	.164	.879
	VAR00005	−.071	.055	1.662	1	.197	.931	.836	1.038
	VAR00017	.001	.001	6.745	1	.009	1.001	1.000	1.002
	VAR00187(1)	1.096	.554	3.914	1	.048	2.991	1.010	8.854
	VAR00190(1)	.556	.544	1.045	1	.307	1.743	.601	5.062
	VAR00191(1)	1.449	.559	6.725	1	.010	4.260	1.425	12.736
	VAR00194(1)	.878	.439	3.989	1	.046	2.405	1.017	5.692
	VAR00310(1)	.960	.733	1.715	1	.190	2.610	.621	10.974
	VAR00372(1)	−1.147	.363	10.016	1	.002	.318	.156	.646
	VAR00376(1)	1.167	.516	5.122	1	.024	3.211	1.169	8.821
	VAR00377(1)	.236	.703	.113	1	.737	1.266	.320	5.017
	VAR00378(1)	9.592	15.639	.376	1	.540	14647.12	.000	3.00E+17
	Constant	−1.757	.996	3.112	1	.078	.173		

[a]Variable(s) entered on step 1: VAR00004, VAR00005, VAR00017, VAR00187, VAR00190, VAR00191, VAR00194, VAR00310, VAR00372, VAR00376, VAR00377, VAR00378.

Correlation Matrix

		Constant	VAR004(1)	VAR005	VAR017	VAR187(1)	VAR190(1)	VAR191(1)	VAR194(1)	VAR310(1)	VAR372(1)	VAR376(1)	VAR377(1)	VAR378(1)
Step 1	Constant	1.000	–.076	–.328	–.364	–.443	–.146	–.656	–.335	.082	–.099	–.377	–.245	.001
	VAR004(1)	–.076	1.000	.060	–.224	–.091	–.147	–.166	–.134	–.014	.080	–.236	–.084	–.002
	VAR005	–.328	.060	1.000	–.403	–.088	–.037	.039	.125	.073	–.051	.003	.146	.007
	VAR017	–.364	–.224	–.403	1.000	.004	.121	.230	.053	–.087	.128	.206	–.154	–.002
	VAR187(1)	–.443	–.091	–.088	.004	1.000	.068	.217	.077	.037	–.190	.173	.549	–.009
	VAR190(1)	–.146	–.147	–.037	.121	.068	1.000	.108	.040	–.173	–.058	.117	–.570	–.003
	VAR191(1)	–.656	–.166	.039	.230	.217	.108	1.000	.389	–.174	–.039	.265	–.056	–.008
	VAR194(1)	–.335	–.134	.125	.053	.077	.040	.389	1.000	–.147	–.399	.110	.132	.001
	VAR310(1)	.082	–.014	.073	–.087	.037	–.173	–.174	–.147	1.000	–.072	–.038	.157	.004
	VAR372(1)	–.099	.080	–.051	.128	–.190	–.058	–.039	–.399	–.072	1.000	–.036	–.149	–.004
	VAR376(1)	–.377	–.236	.003	.206	.173	.117	.265	.110	–.038	–0.36	1.000	.222	.004
	VAR377(1)	–.245	–.084	.146	–.154	.549	–.570	–.056	.132	.157	–.149	.222	1.000	.005
	VAR378(1)	.001	–.002	.007	–.002	–.009	–.003	–.008	.001	.004	–.004	.004	.005	1.000



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