WILLINGNESS TO PAY FOR PRIVATE SOLID WASTE MANAGEMENT: INSIGHTS FROM PESHAWAR

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Abstract

Solid waste generation has become an important environmental problem, particularly in developing nations. Solid waste management (SWM) in Peshawar city has always been examined from supply side, while the demand side i.e. willingness to pay (WTP) by residents has been ignored. This paper aims to estimate the households' willingness to pay for private SWM in Peshawar district. A multistage sampling technique was applied for a sample size of 400 households from 5 different locations of Peshawar. Logistic regression estimation reveals that 75 percent of the respondents are willing to pay, while multiple regressions reveal a mean WTP of PKR 163 per month and a median WTP of PKR 100 over and above their existing payments. However, this broadly depends on the income level and severity of SWM in those areas. The findings of the study will help policy makers in designing a sustainable SWM strategy in Peshawar district.

Keywords: Solid waste management, willingness to pay, non-market valuation, Peshawar district

JEL Classification: Z000

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Introduction

Due to a lack of appropriate planning, solid waste is becoming a main source of concern in many rapidly growing cities in developing nations. According to UNEP (2004), solid waste production has become an immense environmental and public health problem everywhere in the world, primarily in developing nations. The altering economic drifts and brisk urbanization have complicated solid waste management (referred to as SWM hereafter) in developing nations. Therefore, solid waste is not only rising in mass but also varying in composition from less unrefined to more paper, plastics, glass, packing and metal wastes (Bartone & Bernstein, 1993).

Due to its crucial role for communal health and shielding the environment, SWM should be the main concern for emerging metropolis. In the past, most attempts to improve SWM in metropolitans have focused on the technical features of the unusual means of disposal and assortment (World Bank, 1992). Nevertheless, in recent times, more attention has been paid to enhancing the institutional planning for service deliverance, with an exceptional focus on privatization.

The participation of the service recipients, i.e. households who are the primary producers of solid waste, should be permissible to resolve their problems and to contribute in the development of sound strategy decisions regarding SWM. This would help the service providers, i.e., the municipality, to understand households’ willingness to participate and pay. The main question here is that how much the households of Peshawar are willing to pay for the improved SWM services.

Urbanization in Peshawar has been rising as of recent. SWM in the city has always been evaluated based on the role and performance of the service provider, the supply side, while the demand side, i.e. households has been ignored. The coverage of solid waste
collection is very low in the city (below 50%) and it is disposed in open spaces. Due to the improper disposal, synthetic plastic bags blown by wind from the waste dumping sites are polluting and contributing to the related environmental problem of landfill. The harms are expected to become even more prominent as the level of solid waste generation along with the pace of urbanization keeps rising.

The present study is focused on valuing the private solid waste management using contingent valuation method in Peshawar. It will give benefits to the residents of Peshawar by having safer and cleaner services of improved solid waste management and lesser risks of waste associated diseases.

**Study Profile**

Peshawar, the provincial capital of Khyber Pakhtunkhwa comprises an area of 1,257 km square with the immense population of 2026851 persons (Census, 1998). According to the estimates, population living in urban areas constitutes to 98, 2816 individuals (48.49 %) and population living in rural areas are 1044035 individuals (51.51 %). Consequently, nearly half of the population is residing in urban regions of Peshawar.

In Peshawar, about 0.489 kg per capita/day solid waste is generated, and per day generation of solid waste is 564 tons. On the other hand, about 205,860 tons of waste is generated per year (EPA, 2005). However, municipal authorities are liable for the collection and disposal of solid waste but their services are not efficient and reliable.

The selected area for the study is Peshawar due to its rapid increase in population. The study focuses on the urban areas of Peshawar, i.e. Town I and Town III of Peshawar have been selected based on the severity of the problem of solid waste in these areas of Peshawar. Figure 1 shows study area and monitoring areas. The selected urban union councils (UCs) under the Town I and Town III
are: Gulbahar, Wazir Bagh, Nauthia, Shaheen town and Hayatabad II. Reasons for selecting UCs are: increasing population trends, severity of the problem of solid waste generation, lack of awareness and urbanization (Rahman et.al, 2011).

Data and household survey

This study relies mainly on primary data collected from household survey. The socio-economic characteristics of households and individuals characteristics of family members were collected from the household survey.

The structure and designing of questionnaire was developed on the basis of references of Carson, (2001) and Levine, (2001). In this study, the questionnaire consisted of IV parts (See Annex B). The survey was conducted during November, 2013 using pre-tested questionnaire. The first part of the questionnaire, asked questions from household head regarding household information and demographics. The second part of the questionnaire asked questions about the current situation of SWM in their area. In the third part, questions regarding environmental issue and suggested scenario (scenario of Privatization of SWM) were asked and the fourth part asked the questions of their willingness to pay the proposed solution of the problem. Four trained enumerators collected the data with a recall period of one week from five different areas through a pre-tested questionnaire.

Total 400 household heads were interviewed for the present study and information regarding their socio-economic profile and current scenario of SWM was collected from households. The sample size is based on Rahman et.al, (2011). The average size of surveyed household was 6.44. Out of 400 households head, majority were male due to the culture of Peshawar, mostly male are bread earners and female are restricted to give interview, for this reason gender was
emitted from the equation. The age of household head ranged from 13 to 80 with an average age of 32 years. Descriptive statistics are presented in Table 1.

**Table 1:**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Description of Variables</th>
<th>Obs</th>
<th>Std.Dev</th>
<th>Mean</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>WTP</td>
<td>Willingness to Pay (1 if yes)</td>
<td>400</td>
<td>0.78</td>
<td>0.41</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Gender</td>
<td>Gender Dummy (1 if male)</td>
<td>400</td>
<td>0.98</td>
<td>0.11</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Age</td>
<td>Age of Respondent (in years)</td>
<td>400</td>
<td>31.8</td>
<td>14.9</td>
<td>13</td>
<td>80</td>
</tr>
<tr>
<td>Sq.Age</td>
<td>Square of Age</td>
<td>400</td>
<td>1240</td>
<td>1186</td>
<td>169</td>
<td>6400</td>
</tr>
<tr>
<td>Marital Status</td>
<td>(1 if married)</td>
<td>400</td>
<td>0.52</td>
<td>0.49</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Education</td>
<td>Education (in years)</td>
<td>400</td>
<td>10.45</td>
<td>4.74</td>
<td>0</td>
<td>18</td>
</tr>
<tr>
<td>Household Size</td>
<td>Size of Household</td>
<td>400</td>
<td>6.44</td>
<td>2.48</td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td>Income</td>
<td>Income of Household Head</td>
<td>400</td>
<td>35834.08</td>
<td>37333.42</td>
<td>3000</td>
<td>400000</td>
</tr>
<tr>
<td>Log.Income</td>
<td>Logarithm of Income</td>
<td>400</td>
<td>4.41</td>
<td>0.33</td>
<td>3.4</td>
<td>5.6</td>
</tr>
<tr>
<td>MX.WTP</td>
<td>Amount of Income the respondent is willing to pay (PKR)</td>
<td>400</td>
<td>1.7</td>
<td>0.92</td>
<td>0</td>
<td>3.3</td>
</tr>
<tr>
<td>Log.MX</td>
<td>Logarithm of Maximum willingness to pay</td>
<td>400</td>
<td>0.30</td>
<td>0.46</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Services</td>
<td>Satisfied from the current SWM Services (1 if yes)</td>
<td>400</td>
<td>0.66</td>
<td>0.47</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Awareness</td>
<td>Awareness about the environmental quality (1 if yes)</td>
<td>400</td>
<td>0.87</td>
<td>0.33</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Occupation</td>
<td>Occupation of Household Head (1 if earning monthly wages)</td>
<td>400</td>
<td>0.87</td>
<td>0.33</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Following the PSLM,( 2009), multistage sample technique (Cochran, 1997) was employed in the present study in order to select different urban areas of Peshawar. The reason for adopting multistage sampling was to capture the respondent’s exposure towards the solid waste problems and their ability to invert such exposure.

In stage one, district Peshawar was divided into two parts i.e. Town I and Town III due to the reason of high expansion of urban population. In stage two, 2 UCs were selected from Town I and 3 UCs were selected from Town III with accordance to the proportion population of the chosen areas of Peshawar. In total, 5 UCs were selected for the present study namely: Gul Bahar, Wazir Bagh, Nauthia, Shaheen town and Hayatabad II respectively.

In the next step, 100 households from each of the 3 UC’s were selected and from remaining 2 UC’s 50 households were selected.
Details of distribution of households in sample are given in Table 2. The reasons for giving more weightage to first three union councils is the lack of management systems in those regions and secondly due to the severity of solid waste problem in those regions.

**Table 2:**

**Distribution of Sample in the Study Area**

<table>
<thead>
<tr>
<th>Towns (Urban)</th>
<th>Urban Zones (UCS)</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Town 1</td>
<td>Gulbahar</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Wazir Bagh</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Nouthia</td>
<td>100</td>
</tr>
<tr>
<td>Town 3</td>
<td>Hayatabad 2</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Shahmm Town</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td><strong>Total Sample</strong></td>
<td><strong>400</strong></td>
</tr>
</tbody>
</table>
The household were randomly selected for the interviews. The enumerators were asked to select the focal point of the area and take 20 steps towards right or left, as it was left to the enumerator. Onwards for randomness, a dice was used to select the household for interview. This was a repeated process.

**Methodology**

*Theoretical Framework:*

After analysis of WTP from the survey findings by computing the simple mean along with median, logistic regression (LR) is used to study the probability of approving to pay for improved services by choice.

Logistic regression is basically foundation of a linear model for the natural logarithm of the odds in favor of $Y=1$:

$$
\log\left[\frac{P(Y = 1|x_1, \ldots, x_p)}{1 - P(Y = 1|x_1, \ldots, x_p)}\right] = \log\left[\frac{\pi}{1 - \pi}\right] = -\alpha + \beta_1 x_1 + \cdots + \beta_n x_p = -\alpha + \sum_{j=1}^{n} \beta_j x_j \quad \ldots \quad (1)
$$

$\Pi$ is a mainly conditional probability of the type $P(Y=1|X_1... X_n)$. This is assumed that “success” is less or more likely depending on combinations of values of the predictor variables. The log-odd, as defined above, is also known as the logit analysis.

The logistic function takes the form of logit transformation of $\pi$ and the analytical approach described here is sometimes known as logit analysis.

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4: As an example, if 5 had appeared on the dice, 5th house from the position of the enumerator was selected for an interview.
Willingness to Pay For Private Solid Waste Management:

\[ P(Y = 1|x_1, \ldots, x_p) = \frac{e^{\alpha + \sum_{j=1}^{p} \beta_j x_j}}{1 + e^{\alpha + \sum_{j=1}^{p} \beta_j x_j}} \]  \hspace{1cm} (2)

Which can also be transformed into

\[ P(Y = 1|x_1, \ldots, x_p) = \frac{1}{1 + e^{-\alpha - \sum_{j=1}^{p} \beta_j x_j}} \]  \hspace{1cm} (3)

On the other hand, non-response probability is given by

\[ P(Y = 1|x_1, \ldots, x_p) = 1 - P(Y = 1|x_1, \ldots, x_p) = \frac{1}{1 + e^{\alpha + \sum_{j=1}^{p} \beta_j x_j}} \]  \hspace{1cm} (4)

The dependent variable is the response towards the WTP such like ‘Yes’ (=1) if the respondents state a positive WTP and ‘No’ (=0) when they are not WTP of any amount. The independent variables employed to predict the probability of WTP are the concern of where the rubbish is disposed, age, ownership of house, household income, format of the CV question and an interaction term between age and household income.

Using the set of independent variables, the logistic regression for the odds in aim of WTP is predicted to be:

\[ \log\left(\frac{P_i}{1 - P_i}\right) = \beta_0 + \beta_1 x_1 + \ldots + \beta_p x_p \]  \hspace{1cm} (5)

With having the partial coefficients, \( \beta_i \), alteration of odds of approving to pay for better SWM services.

**Econometric specification of the model:**

As, in the case of recent studies based in European Union (NEEDS, 2006) and (Ojok et. al, 2012), this study too used the same procedure of estimating WTP responses using logistic regression model.

Stated WTP was regressed on income and other variables to construct validity of the survey through the initial model. Logistic
regression was used to test the validity of estimates of WTP. In such a way to explain the respondent’s characteristics that will explain the WTP. The model used in the survey was:

\[ WTP = \alpha + \beta x_i + \epsilon_i \]  

(6)

variables from validity test. In this model, WTP amount is included in the model and the amount is regressed over other variables, the model is as follows:

\[ \log(WTP) = \alpha + \beta \log(\text{income}) + x_i\delta + \epsilon_i \]  

(7)

Here, \( \beta \) shows the income elasticity of individuals reported WTP, where \( x_i \) is set of other variables affecting WTP of respondents and \( \epsilon_i \) is stochastic error term.

Following (Ezebilo, 2011) and (Niringiye & Douglason, 2010), this study also used same set of variables. Dependent variable in equation (6) is WTP (yes=1, No=0) and independent variables include gender, age, marital status, education, occupation, household size, services, income, amount of WTP and awareness. But in equation (7) dependent variable is Log of amount of WTP. Description of variables in equation (6) in presented as follows:

**WTP:**

It is the dependent variable of the study. It refers to the dummy variables if households are willing to pay (Yes =1) otherwise (No=0).

**Income:**

Log of income was taken as a primary variable which refers to the monthly income of household head from all sources in terms of PKR.
Gender:
It refers to the gender of the household head. It is expected that females will be paying more than men because females are more conscious about the cleanliness of surroundings.

Age:
Square of age of household head is taken in the survey. It is expected that age of respondent is negatively related to the WTP.

Marital Status:
The marital status of the respondent also affects the value that individual puts on the SWM.

Education:
It refers to the number of education years of household head. A positive relation exists between education and WTP. More the individual is educated; more will be his/her WTP.

Services:
It refers to the current services of SWM provided to the households regarding collection and disposal of wastes. (Satisfied = 1, not-satisfied = 0)

Household Size:
It is expected that a negative relationship occurs between household size and WTP. More the household size less will be the WTP towards SWM.

MX.WTP:
It is the value that is extracted from the percentage of income that the respondents were willing to pay for better services of SWM.
Willingness to Pay For Private Solid Waste Management:

**Awareness:**

It refers to the awareness of diseases and other problems rose from the uncollected solid wastes.

**Occupation:**

It refers to the occupation of the household head.

**Findings and Discussion:**

**Regression Analysis:**

The results of regression analysis are reported in table 3. OLS and Logistic regression equations were estimated for analyzing WTP responses (Table 3) while in addition multiple regression equation was estimated in order to find the maximum amount of WTP (Table 1) that the respondents were willing to pay for privatization of SWM. Results from Table 1 and Table 2 were used to compute the value of mean WTP and total WTP for the representative urban resident and for whole entire Peshawar district for having better services of SWM.

Results of logistic regression are presented in Table 1 which reveals that the odds for the people who are single have 0.41 times lower chances for paying than those who are married. Those who are married prefer more cleanliness and environmental quality and are willing to have such improved SWM, as compared to those who are single. The odds for the age reveal that as respondent's age increases, there is 0.14 time higher chance of paying but which has insignificant relationship with WTP. There exists a negative relation between age and WTP. It shows that at old age, respondents are not conscious about the environmental issues. The odds for the square of age show that as respondents' age increases, there are 0.01 times high chances of paying more for SWM.
The odds for occupation show that respondents on monthly wages have 0.46 times less chances for paying than those who are on daily wages. Its P value also indicates that it is insignificant. For all the household size, the paying of WTP is same. The odds for services suggests that respondents satisfied from their current SWM services have 0.99 times less chances of paying than those who are not satisfied from services. The odds for log income show that as income increases 2 times chances are more for paying than those having less income. The odds for awareness show that respondents having awareness regarding the diseases decreases by 0.7 times the WTP than respondents having no awareness.

The odds for Nauthia suggest that 10.5 times there are more chances for paying when Gulbahar is taken as control group. About 4.17 times more chances of paying if respondents are from Hayatabad.
when Gulbahar is taken as control group. Odds of Shaheen town suggest that 25.14 times more chances of paying if respondents are from Shaheen town if Gulbahar is taken as control group. Odds for Wazir Bagh are lower suggesting that 0.3 times less chances for paying WTP if respondents are from Wazir bagh while taking Gulbahar as control group.

**Income Elasticity**

The estimated income elasticity for privatization of SWM is 0.5. This implies that improvement in environmental quality is a necessity good. One percent increase in income brings same variation of change in income of individuals (Table 4).

**Table 4:**

**Income Elasticity**

<table>
<thead>
<tr>
<th>variable</th>
<th>Coeff</th>
<th>Robust std.error</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>marital</td>
<td>-0.10</td>
<td>0.11</td>
<td>0.35</td>
</tr>
<tr>
<td>Age</td>
<td>0.02</td>
<td>0.15</td>
<td>0.1</td>
</tr>
<tr>
<td>Sq.age</td>
<td>-0.00</td>
<td>0.00</td>
<td>0.1</td>
</tr>
<tr>
<td>Edu</td>
<td>0.00</td>
<td>0.00</td>
<td>0.3</td>
</tr>
<tr>
<td>occup</td>
<td>0.01</td>
<td>0.09</td>
<td>0.8</td>
</tr>
<tr>
<td>h.size</td>
<td>-0.00</td>
<td>0.14</td>
<td>0.9</td>
</tr>
<tr>
<td>service</td>
<td>-1.1</td>
<td>0.1</td>
<td>0.00</td>
</tr>
<tr>
<td>log income</td>
<td>0.5</td>
<td>0.14</td>
<td>0.00</td>
</tr>
<tr>
<td>aware</td>
<td>-0.05</td>
<td>0.09</td>
<td>0.5</td>
</tr>
<tr>
<td>Nauthia</td>
<td>0.17</td>
<td>0.10</td>
<td>0.09</td>
</tr>
<tr>
<td>Hayatbad</td>
<td>0.47</td>
<td>0.16</td>
<td>0.00</td>
</tr>
<tr>
<td>Shaheen</td>
<td>0.26</td>
<td>0.13</td>
<td>0.05</td>
</tr>
<tr>
<td>Wazir bagh</td>
<td>-0.18</td>
<td>0.11</td>
<td>0.10</td>
</tr>
<tr>
<td>constant</td>
<td>-0.68</td>
<td>0.62</td>
<td>0.27</td>
</tr>
</tbody>
</table>
Research

Willingness to Pay For Private Solid Waste Management:

Estimation of WTP Values:

The model estimated of variable MXWTP (portion of income individuals want to pay) is PKR: 163 per household per month (Table 1). It is the amount that every household will be charged for having improved and better services by privatizing the solid waste sector. As, the mean WTP turns out to be PKR: 163 (US $ 1.54) and median WTP comes out to be PKR: 100 (US $ 0.94).

According to KPK Bureau of Statistics (census, 2008), the urban households in Peshawar were 3,69,000 with average family size of 7. By multiplying the mean WTP with the urban households, the value comes out to be PKR 60,147,000 (US $ 56898.15) which is the total WTP value for the entire households of Peshawar district to be charged for having better and environment friendly services by privatizing the solid waste sector. The privatized organization will generate an amount of 6,014,000 per month from households in return for the improved services of SWM.

Although the municipal authorities are charging a fee which is less than the mean WTP value which is calculated here, but the privatized entity will charge higher price for giving good services. The estimated income elasticity for privatization of SWM is 0.5. This implies that improvement in environmental quality is a necessity good.

Conclusion and Recommendations:

Rapid growth in the sectors of education, media and information has made people aware about the problems regarding the solid waste collection and disposal. Currently, municipal authorities are managing the services of waste collection but unfortunately, there are many weaknesses in the current system of solid waste collection. For the purpose of this study, a survey, based on contingent valuation approach was carried out in Peshawar in order to figure out the WTP of individuals for the privatization of SWM. The findings of the study reveal that 78 percent individuals are willing to pay for the improved
system of solid waste collection. The mean WTP value comes out to be PKR 163 per month per household. The privatized SWM entity will generate an amount of 6,014,000 per month from households in return for the improved services of SWM. Income elasticity suggested that the value of WTP will increase with the increase in income.

Based on the findings of the study, it is recommended that SWM services should be privatized in order to improve the solid waste collection and disposal as 78 percent individuals in our dataset are willing to pay for the improved services. The regression estimated MAXWTP gave a mean WTP value of PKR 163 per month per household. If such charges are properly collected, the government would be able to improve the existing situation and thus, additional revenue will be generated for the government. By announcing the privatization of the sector and contracting for a specific period, competition will be created in the market and efficiency will be improved. Furthermore, we also recommend the charging of polluter pay tax on the waste generators, especially on businesses in urban areas to discourage environmental degradation.
References


Willingness to Pay For Private Solid Waste Management:  

Questionnaire

Filled by: ________________, Phone: _____________________
Gender: ________________, Area: _____________________
Age: __________________, Marital status: _________________
What is your profession? Or if you are not employed, what does your spouse do?
_______________________________________

Problems regarding solid waste management
1- Is inadequate solid waste collection the serious problem in your area?
   • Yes
   • No

2- How serious is the problem of solid waste collection and disposal in this area?
   • Very serious
   • Somewhat serious
   • Not serious
   • Don’t know

Impact of solid waste on household and health
3- How does the uncollected waste in your neighborhood affects you?
   • Makes me sad to live here in dirty environment
   • People have declined coming to our home
   • Sometimes problematic when you go out and see
   • Odors, flies or fires
   • Others

4- Are you concerned with the effects of poor solid waste management on your health?
   • Very much
   • Somewhat
   • Not so much
   • Not at all

5- Are you aware that an uncollected waste contributes to many diseases?
   • Yes
   • No
Existing situation of solid waste system:

6- Does your household have a durable metal or plastic container for storing solid waste?
   • Yes, we have metal or plastic container
   • No, we do not have a container

7- Does your household receive a collection service of any type?
   • Yes
   • No
   • Don’t know

8- By which means are the solid waste being collected from your houses?
   • Door to door collection
   • Collection points
   • Don’t know

9- Although the local authorities collect the solid waste but still do you find the piles of uncollected wastes on sides of roads?
   • Yes
   • No

10- Have you ever been witnessed of burning of solid waste on the sides of roads or inside the containers or on the empty lands?
    • Yes
    • No

11- If your container is emptied onto an open pile of waste in the neighborhood, how often is that pile removed?
    • Twice a week
    • Once a week
    • Less than once in 2 weeks

12- Who collects the waste from the houses, communal container, or pile?
    • Local government authorities
    • Neighborhood group
    • Private company
    • Don’t know
    • Others

13- Has there been a change in who has been collecting your waste?
    • No
    • Yes
Willingness to Pay For Private Solid Waste Management:

- If yes, please give more details

14- What is your opinion of the service that you are receiving for collection of solid waste from your Household?
  - Satisfied
  - Not satisfied

15- If you are not satisfied with service, would you state your primary reason? *(Move to section 3)*
  - The service is not reliable
  - The location of the communal container or pick-up point is unsatisfactory
  - Lack of clean appearance, odors, flies or fires at the communal container.
  - The collection workers are rude or impolite.
  - Other problem Please explain……………………………………………………

Cost for society

If a policy for privatization of solid waste is being implemented, it will assure you that you will get improved and better services of solid waste regarding cleaner collection and disposal of wastes. Households and establishments in your neighborhood will be expected to pay a fee for this improved service.

16- Do you think that privatizing solid waste sector will improve the services?
  - Yes
  - No

17- Are willing to pay for the privatization of solid waste sector, which will give you better and quality services?
  - Yes
  - No

18- Are you willing to pay funds to get better and cleaner services?
  - Yes
  - No

19- If yes, whom would you prefer to give funds to?
  - Utility bills
  - To a fee collector working for a private company
  - To a neighborhood leader
Willingness to Pay For Private Solid Waste Management:

- They are all equally suitable
- Don’t know

20- If not, why?
- Can’t afford to pay
- Don’t believe that the service will be reliable
- Don’t consider the service important enough to pay for
- Other

21–Do you think making payment will give you better services?
- Yes
- No

22- What is the most affordable length of time during which you want to pay?
- Per month
- After two month

23- What percentage of your income, you are willingness to pay?
- 0%
- 1%
- 2%
- 3%

24- Are you confident of the stated percentage of income which you are willing to pay for better services?
- Yes
- No

25-In case of two incomes household, while stating the amount, you think of
- your own revenue
- household revenue

### Household member information:

<table>
<thead>
<tr>
<th>Persons</th>
<th>Gender</th>
<th>Marital status</th>
<th>Age</th>
<th>Relation to H.H</th>
<th>Occupation</th>
<th>Income per month</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
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<td>4.</td>
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</tbody>
</table>

Total household income =