



**ADDIS ABABA UNIVERSITY
COLLEGE OF HEALTH SCIENCE
SCHOOL OF PUBLIC HEALTH**

**ASSESSMENT OF WILLINGNESS TO PAY FOR IMPROVED
SANITATION IN SLUM AREA OF ADDIS ABABA**

By

HIGU KEFALE (BSC)

Advisor Mr. WORKU TEFERA (MPH)

A Research Thesis Submitted to Addis Ababa University, College of Health Science, and School of Public Health in Partial Fulfillment of the Requirements for the Degree of Masters in Public Health (MPH).

ADDIS ABABA, ETHIOPIA

June 2016

ASSURANCE OF PRINCIPAL INVESTIGATOR

I, Higu Kefale, hereby declare that the thesis work entitled “Assessment of willingness to pay for improved sanitation in slum area of Addis Ababa” submitted by me in partial fulfillment of the requirement for the award of the degree of Master of Science in public health, Addis Ababa University, through the school of public health, is original work carried out by myself. The matter embodied in this thesis work has not been submitted earlier for award of any degree or diploma to the best of my knowledge and belief.

Name of the student: _____

Date. _____ Signature _____

Approval of the primary Advisor

Name of the primary advisor: _____

Date. _____ Signature _____

Acronym

AOR	Adjusted Odd Ratio
ATP	Ability To Pay
CABs	Community Ablution Block
CLTS	Community Led Total Sanitation
CLTSH	Community Led Total Sanitation And Hygiene
CSA	Central Statistical Agency
CV	Contingent Valuation
DC-CVM	Dichotomous Choice Contingent Valuation
HAD	Health Development Army
JMP	Joint Monitoring Program For
NGO	Nongovernmental Organization
OR	Odd Ratio
PCA	Principal Component Analysis
SDC	Swiss Agency For Development And Cooperation
SPSS	Statistical Package For Social Science
TVET	Technical And Vocational Training
UN-HABITAT	United Nation Habitat Program
UNICEF	United Nation Children's Fund
VIP	Ventilated Improved
WASH	Water Sanitation And Hygiene
WHO	World Health Organization
WTP	Willingness To Pay

<i>Acronym</i>	<i>i</i>
<i>Abstract</i>	<i>vi</i>
1 <i>Introduction</i>	1
1.1 Background.....	1
2 <i>Statement of the Problem</i>	3
3 <i>Rationale and Significance of the study</i>	4
4 <i>Literature review</i>	5
4.1 Definition of sanitation	5
4.2 Improved and shared sanitation	5
4.3 Demand driven sanitation approach.....	6
4.4 Slum sanitation problems	7
4.5 Sanitation marketing	8
4.6 Willingness to pay	8
4.7 Contingent Valuation Method (CVM)	8
4.8 Factors affecting willingness to pay	9
4.9 Willingness to pay and sanitation marketing conceptual framework	10
Supply	10
Demand	11
5 <i>Objectives</i>	12
5.1 General Objective:.....	12
5.2 Specific objectives:	12
6 <i>Methods</i>	13
6.1 Study design	13
6.2 Study Area	13

6.2.1	Source population	15
6.2.2	Study Population	15
6.2.3	Study period	15
6.3	Sample Size determination	15
6.4	Sampling procedures.....	17
6.5	Data collection.....	19
6.6	Study Variables:.....	20
6.6.1	Dependent variables:.....	20
6.6.2	Independent variables:.....	20
6.7	Operational Definition.....	21
6.8	Data Quality Assurance	22
6.8.1	Data Management.....	22
6.8.2	Data Analysis.....	22
7	<i>Ethical consideration</i>	22
8	<i>Result</i>	23
8.1	Characteristics of the Study Subjects.....	23
8.2	Socio-economic characters of the household.....	24
8.3	Housing Characteristics	27
8.4	Existing Sanitation Condition	27
8.5	Scenario development part for WTP Question.....	28
8.6	Willingness to contribute for communal toilet method and perception	28
8.7	Willingness to pay based on scenario 1	28
8.8	Willingness to pay based on scenario 2	28
8.9	Willingness to pay based on scenario 3	29
8.10	Willingness to pay based on scenario 4	29

8.11	Willingness to pay based on scenario 5	29
8.12	Willingness to pay based on scenario 6	29
8.13	Knowledge Assessment Results	30
8.14	Attitude and satisfaction on existing sanitation	30
8.15	Result on Sanitation Practices	31
8.16	Factors affecting willingness to pay	31
8.17	The ordinal probit regression models construct and result	34
8.18	Total willingness to pay categories	35
9	<i>Discussion</i>	41
9.1	Factors affecting willingness to pay	42
10	<i>Conclusion</i>	44
11	<i>Recommendation:</i>	46
12	<i>References</i>	47
13	<i>Annexs</i>	49

List of tables and figures

Table 1 sample size determinations and used formula	17
Table 2 sample size allocation to proportional to the sanitation access	18
Table 3 summary of some basic descriptive statistics	23
Table 4 Summary descriptive statistic for some of the variables	26
Table 5 Odd ratio of different characters for willingness to pay for hand washing facility installation at 500.....	32
Table 6 Correlation of WTP for communal toilet renovation and hand washing facility installation	34
Table 7 Linear regression results of maximum willingness to pay for communal toilet and independent variables	37
Table 8 Maximum willingness to pay category for communal toilet renovation.....	38
Table 9 frequency table of WTP response for HWFI	38
Table 10 total maximum WTP categories based on share of sanitation from total income.....	39
Table 11 Oprobit regression result of WTP for CTR for model 1 regression	41
Table 12 Oprobit regression result of WTP for HWFI for model 2 regression	42
Table 13 Oprobit regression result of WTP for HWFI for model 3 regression	43

List of figures

Figure 3 Wealth index score of the household based on PCA.....	25
--	----

Abstract

Background: Understanding demand for improved sanitation in the local context is critical if sanitation facilities are to be continually used. The drivers of demand for sanitation are different for different slum areas, so context specific study is better to know the real factors and demand for program design and implementation. People's willingness to invest a part of their meager resource in maintaining the sanitation facility is taken as an indication that they value the service and are therefore committed to keep it in good working order.

Objective: To measure level of willingness to pay and identify factors affecting willingness to pay for improved sanitation in slum areas of Addis Ababa.

Methods: This willingness to pay assessment has been conducted based on cross sectional study quantitative design. The study has been conducted in slum area of Addis Ababa. Dichotomous Choice Contingent Valuation Method (DC-CVM) i.e. double bound have been used for the assessment of willingness to pay. The analyses have been done using logistic and ordinal logistic regression models.

Result: Totally 404 households were interviewed from March to April study period. Approximately 88% of respondents are willing to pay less than 1000 birr for hand washing facility installation and 7% are willing to pay in between range from 1000 birr to 1500 birr and only 5% are willing to pay more than 1500 birr. For communal toilet renovation, 94.6% are willing to pay less than 600 birr, 5.2% are willing to pay from 600 to 1132 birr and none of them are willing to pay more than 1132 birr in 1 year. The mean willingness to pay for communal toilet was 212 birr per year and the maximum mean willingness to pay for hand washing facility installation was 508.5 birr. Households who were unsatisfied on existing sanitation were more likely to pay for improved sanitation (AOR 2.85, CI 1.05-7.72).

Conclusion: The study has found the community was willing to pay 2.12% of their disposable income for improved sanitation. Among the factors that affect willingness to pay, past sanitation expenditure amount, knowledge on health effect of poor sanitation, knowledge on type of sanitation, attitude on sanitation, number of households sharing the toilet, monthly saving and number of years lived in the present house significantly correlates with amount of willingness to pay.

1 Introduction

Background

Understanding demand for improved sanitation in the local context is critical if facilities are to be continually used and maintained(1). The drivers of demand for sanitation are different for different slum areas, so context specific study is better to know the real factors and demand for program design and implementation(2). People's willingness to invest a part of their meager resource in maintaining the sanitation facility is taken as an indication that they value the service and are therefore committed to keep it in good working order(3).

From household's perspective, demand for an improved sanitation may consist of both use value and non-use value. Theoretically, these two components of demand influence household's decision to purchase an improved sanitation product or services. Thus, the amount the household is willingness to pay (WTP) for the product or services actually reflects total value of the product or service to the household(4).

Willingness to pay(WTP) is essentially the maximum amount of money the beneficiaries are willing to pay for certain hypothetical sanitation products or service(5). The concept of WTP is originated from economic theory (consumer theory)(5). In recent years WTP studies have widely been used to formulate policies, assess demand, and estimate project benefits in the water and sanitation sectors

In Ethiopia improved sanitation coverage is 47.9% nationally and 75% specific to urban(6). Ofcourse Ethiopia achieved the largest decrease in the proportion of the population practicing open defecation, from 92% in 1990 to 29% in 2015(7). But the problem in slum area of urban poor has not shown improvement. In the urban Ethiopia 33.3% of sanitation facilities are improved shared(8). In the capital city Addis Ababa only 11.4% of the population in slum area have access to improved sanitation and 8.2% practice open defecation(6).

The problem of urban sanitation would be getting worse and worse if not intervene based on demand driven and sustainable sanitation solution approach will not

implemented. The government of Ethiopia in his delivery of water and sanitation for urban, tried to provide sanitation facility with full subsidy for urban poors even though cost sharing by the needy people was to tried be implemented according to the Ministry of Water and Energy urban sanitation strategy(9). The construction and provision of sanitation facilities for those low income people and slum dwellers was designed to be subsidized 50% of the cost of construction and the rest up to 50% was designed to be covered by needy people in kind, labor or cash(9). Cost of desludging services also was designed to be covered from the public with monthly contribution of 2 up to 2.9 dollar per house hold(9). For this implementation, youths and small enterprise was encouraged to engage in sanitation marketing(9).

Ethiopia Federal Ministry of Health has design sanitation marketing approach to be implemented following the community led total sanitation /CLTS/ strategy adoption and implementation as a complement of sanitation access and improvement strive in the country(10-12). Through applying CLTSH, 64% open defecation free villages has been achieved.

Sanitation marketing is the application of the best social and commercial marketing practices to change behavior and to scale up the demand and supply for improved sanitation, particularly among the poor(13). Conceptually, sanitation marketing determined by enabling environment, demand and supply(14). This approach follows demand driven approach with interconnected market oriented sanitation products and services exchange will undertake(14).

2 Statement of the Problem

Demand-based approaches seeking to improve sanitation in slums first need to understand the sanitation situation in public health question, and then establish situation-specific drivers of demand(2). Sanitation projects which are not based on demand have less probability to be sustained(15).

In urban Ethiopia full sanitation facility subsidy are given for urban poor with attempt of needy people to contribute for the facility construction in kind, labour and cash up to 50% of the cost, even though the ministry of water and energy did not implement this extensively. The demand for shared sanitation block has been assessed with surface need assessment by district cabinets in public consultation.

Therefore, the budget constraint for the government to intervene on sanitation problems would be solved if the users' contributions in kind, labour or cash facilitated, encourage and extensively implement. To do so, the level of the people willingness to pay for improved sanitation and the factors drive for improved sanitation should have to be identified and appropriate intervention designed.

Understanding demand for improved sanitation in the local context is critical if facilities are to be continually used(1). The drivers of demand for sanitation are different for different slum areas, so context specific study is better to know the real factors and demand for program design and implementation(16). To promote user ownership of services and solve the maintenance problems of sanitation in slum area of Addis Ababa all the sanitation driving factors and demand for improved sanitation should be identified. People's willingness to invest a part of their meager resource in maintaining the sanitation facility is taken as an indication that they value the service and are therefore committed to keep it in good working order(3).

3 Rationale and Significance of the study

Willingness to pay is essentially the maximum amount of money the beneficiaries are willing to pay for certain hypothetical product or service i.e. supply(4). Measuring demand through willingness to pay is an important element to initiate sanitation marketing project as a solution for urban/rural sanitation improvement. Projects initiated based on demand and public participation will have high sustainability compared to the top down supply driven projects(15).

Study done in urban Ethiopia shown as there is high willingness to pay for sanitation service(17). But little is known on public participation, willingness of the people to pay for the share of construction cost and services, economical capability to pay for the cost sharing, driving factors for willingness to pay for all improved sanitation access and so should be assessed.

This study will expect to fill the gap on information about measure of willingness to pay for improved sanitation products and services, the driving factors for improved sanitation specific to slum area of Addis Ababa and will identify opportunities and frameworks for sanitation market enhancement.

4 Literature review

Definition of sanitation

UN-water defined sanitation as the collection, transport, treatment and disposal or reuse of human excreta, domestic wastewater and solid waste, and associated hygiene promotion. Sanitation considered as human right in the recent years after the UN general assembly have decide on the resolution number 64/292. Sanitation also defined as the promotion and prevention of disease by the maintenance of sanitary conditions and the safe management of human excreta. Improved sanitation facility defined as those facilities that can totally separate human and feces contact (18, 19).

Improved and shared sanitation

The UNICEF/WHO JMP defined adequate sanitation at home as use of an improved sanitation facility at home and shared between five households or less. But scholars argue that shared sanitation has negative health impacts as compared to private toilet. But the evidence regarding to this have limited and many confounding factors decrease the studies evidence for association between shared toilet and increased health problems (20-22).

A study by Nelson KB, Karver J, Kullman C and Graham JP in 2014 in Indonesia and Bangladesh showed that private improved sanitation is consistently preferred over any other sanitation option. An increased number of users appeared to negatively affect toilet cleanliness, and lower levels of cleanliness were associated with lower levels of satisfaction. However, when sanitation facilities were clean and shared by a limited number of households, users of shared facilities often reported feeling both satisfied and safe(23).

But some time the shared and communal sanitation technology be the only option on slum area of urban. A study from Kenya by M.A.C. Schoutena and R.W. Mathengeb showed after A series of interviews with government agencies, Non-Governmental Organizations and Community Building Organizations and a survey of 76 users of different sanitation facilities, the research culminates in a series of concerns on financial, technological, situational and participatory dimensions and conclude firmly

that communal sanitation are indeed the only viable alternative for slums, and therefore, the results of the research advocate a serious recognition of the use and appropriateness of communal sanitation for slum dwellers(24).

Demand driven sanitation approach

The new paradigm for development is a demand –oriented and community driven. Top down approaches, based on the conviction that poor people have “to be told” to practice hygiene and must “be given latrines” will not succeed. It is an unacceptable prejudice that poor people are unconcerned by their own hygiene. Most people know exactly what they want. They aspire to cleanliness, comfort and a better life, and this can be converted into a demand. It is a proven fact: even poor people are willing to pay for hygiene and for suitable services. All over the world, an increasing number of businesses– sometimes very small – are making a living from sanitation. As they do so, they are providing a good service to their customers, who are often poor people. Sanitation is an opportunity for both the user and the provider. A study by Swiss Agency for Development and Cooperation (SDC) said Sanitation marketing approach will give households a greater choice to meet their individual sanitation needs, motivate the accompanying behavior changes for improved health, and stimulate development of a local sanitation industry to sustain improvements over time. According to a study by Rothschild, the degree to which a target population is prone, resistant, or unable to adopt a new behavior derives from the presence or absence of three things: self-interest (motivation), opportunity, and ability to voluntarily adopt the new behavior (25, 26).

Case study from Durban, South Africa by Elisa Roma, Chris Buckley, Bruce Jefferson and Paul Jeffrey, in 2010 showed the poor success rate of water and sanitation interventions results from a predominance of supply-driven approaches which lack recipients’ inputs into planning and implementation to ensure that technologies are fully absorbed and adapted to users’ needs. Results suggest that non-technical aspects such as affordability or cleanliness of the facilities can affect acceptance among the investigated communities. User training is positively associated with higher levels of facility maintenance as well as satisfaction with its functionality. A comparison between users and potential recipients of community ablution blocks/CABs/ shows that perceived

health benefits, attitudes in case of problems, and trust are affected by use of the facilities(27).

Urban sanitation problems are multi faceted and the real drivers of urban sanitation is unknown. The drivers of urban sanitation improvements are very contextual and should be studied and intervene specific to the problem area. A literature review on socio-economic aspect of urban slum sanitation by J.B. Isunju, K. Schwartz, M.A. Schouten, W.P. Johnson and M.P. van Dijk showed, Demand-based approaches seeking to improve sanitation in slums first need to understand the sanitation situation in public health question, and then establish situation-specific drivers of demand. The drivers of demand for sanitation improvements outlined by previous researchers are not universal but are context specific. These drivers of demand are not necessarily the health benefits. A better understanding of the complexities of slum communities is needed in order to establish boundary conditions for realizing desired improvements(16).

Slum sanitation problems

Different studies show urban sanitation is the major problem in urban poor worldwide. UN-HABITAT working group define a slum household as „a group of individuals living under the same roof lacking one or more of the following conditions: access to improved water, access to improved sanitation facilities, sufficient living area – not overcrowded, structural quality/durability of dwellings, and security of tenure. One billion of world population lives in slums. One third of the developing world’s urban population is living in slums as compared to only 6% in developed countries, representing 15% of all the people living in those regions. In Africa, over half of the urban population (61.7%) lives in slums. Annually 10 million people move to urban each year and about 3 million move to formal urban settings and 7 million moves to informal slum settlements. More than one-quarter of the urban population worldwide has inadequate sanitation; the proportion is much higher for slum dwellers. The problem is very rampant in sub Sahara Africa mega cities including Addis Ababa where this research done. In sub Sahara Africa 60% of urban dwellers has no access to basic sanitation and 34% relies on shared sanitation (7, 28-31).

Sanitation marketing

Sanitation marketing is the application of the best social and commercial marketing practices to change behavior and to scale up the demand and supply for improved sanitation, particularly among the poor. Conceptually sanitation marketing determined by enabling environment, demand and supply. This approach follows demand driven approach with interconnected market oriented sanitation products and services exchange will undertake(13, 14)

Market forces will not resolve the problem of sanitation without external prompting. And private enterprise responding to the demands of poor people is not some new form of exploitation, as committed development advocates sometimes argue. Public sector action is often characterized by free or subsidized service provision of a uniformly poor standard. The private sector can provide better, more diverse services and results, where people can access the services they really want at prices they are willing and able to pay(25).

Willingness to pay

Willingness to pay (WTP) is essentially the maximum amount of money the beneficiaries are willing to pay for certain hypothetical service. However, from a practical perspective to design a tariff structure it is also essential to match household's WTP with its ability to pay (ATP). ATP is purely a financial phenomenon that is derived from income or expenditure information of households and helps in determining the optimal tariff structure of a service. In recent years WTP studies have widely been used to formulate policies, assess demand, and estimate project benefits in the water and sanitation sectors(4).

Contingent Valuation Method (CVM)

For the assessment of willingness to pay in most cases contingent valuation method used jointly. The Contingent Valuation Method is a technique that uses questionnaires to measure willingness to pay (WTP) for water and sanitation services, from which the value of environmental improvement is estimated. It measures how much in maximum people are willing to pay to conserve or improve environment. The concept of WTP is

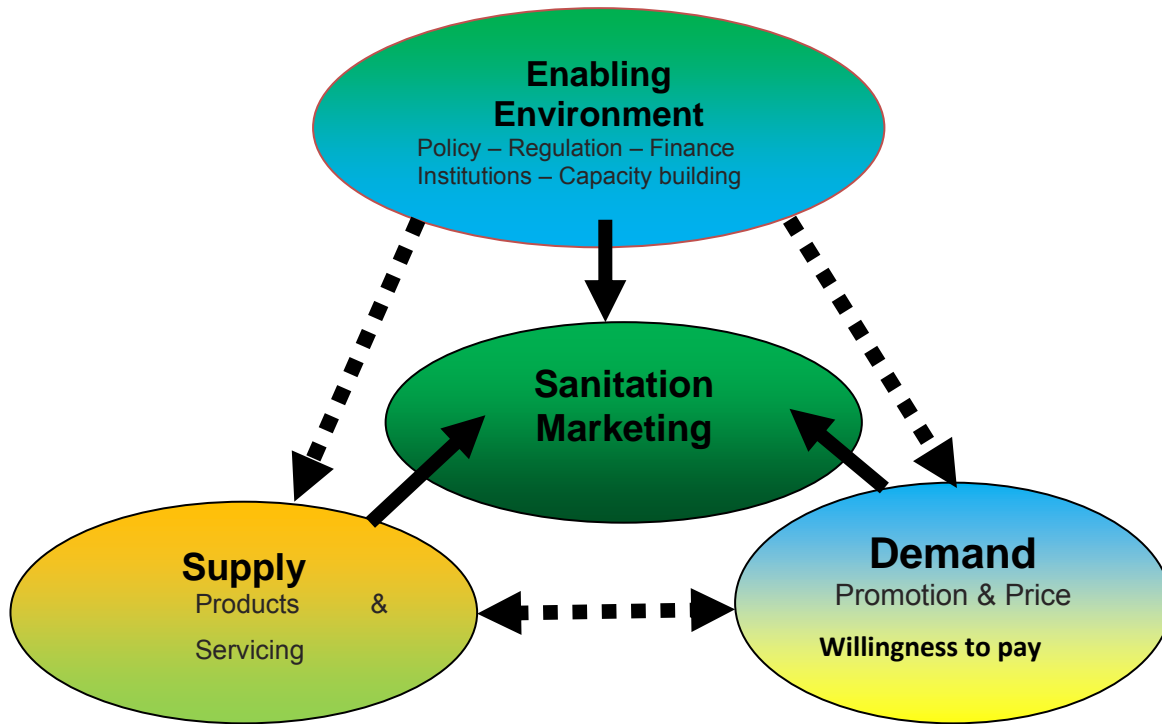
originated from economic theory (consumer theory). The main characteristics of CVM are it depends on person, it is decided from demand side only not from supply side i.e. demand oriented method, it is unique for the study area and it has some biases. The three most pronounced biases often associated with CV approach are: a) starting point bias, b) strategic bias, and c) hypothetical bias. Thus, to ensure the reliability of the CVM findings, following approaches are often cited by some of the subject matter experts: (a) a conservative survey design, (b) the use of WTP rather than willingness to accept (WTA) questions, (c) the use of the referendum form rather than open-ended questions, (d) an accurate description of programme and policies, (e) a reminder of substitute commodities, (f) the use of yes-or-no follow up questions and (g) checks on the respondent's understanding of the scenario(5).

Factors affecting willingness to pay

Amount of willingness to pay and factors affecting willingness to pay related with socio-economic factors. A study from Vietnam by Hoang Van Minh, Nguyen Hoang Thanh, Hung Nguyen-Viet , Jui-Chen Yang shows Significant correlates of the WTP rate were: gender of the head of household, age of the head of household, economic status of household, type of current toilet, satisfaction with existing toilet, and knowledge of health effects of poor sanitation. The significant determinants of WTP amount were geographic location and economic status of household(32).

The main focus of this study is to measure willingness to pay for improved sanitation products and services that could be shared with neighbor or owned privately. The main demand driving factors also tried to be addressed. As we have seen above the driving factors and barriers to willingness to pay and demand are different for different contexts. A condition which is barrier in one context may be a catalyst in another context. So this study will give city specific driving factors and barriers for improved sanitation demand in slum area of Addis Ababa. This might be important for program designers to intervene based on real evidences for sanitation marketing interventions.

Willingness to pay and sanitation marketing conceptual framework



Sanitation marketing conceptual framework adapted from (UN-HABITAT social marketing of

Even though this frame work depicts the three main pillars of sanitation marketing i.e. enabling environment, supply and demand, the main concern of this research is measuring demand for sanitation through willingness to pay cross-sectional assessment.

Supply

In the supply side there are Products and Services. Products and services with what quality, where and by who delivered to the customer determines the sanitation marketing. The quality of sanitation products and services encompasses many things like demand of the demand of the customer, acceptability by the local users; reliability and winning customer confidence are the supply side of sanitation marketing determining factors. The people should have the option to select the technology from the given menu according to their affordability and paying capacity. Technology options in Sanitation Programmes should play due emphasis to all the components of

Sanitation. A technology with higher quality with higher cost may not be affordable even though it is appropriate from other side of choice. So the supply side should be designed based on the need, appropriate operation and maintenance skill, utilization and acceptability.

Demand

Different marketing strategies are required for different consumer categories. This requires understanding of the decision process of the consumer/customer, which means understanding their preferences, intentions and choices. Further, the marketing strategies vary for different geographical settings. Sanitation projects promote local entrepreneurs successfully through promotion and the training of local masons develops new skills to build different sanitary options like septic tanks and toilets.

This requires for an in-depth research in Marketing of Sanitation in the areas of:

- Demand assessment, drivers and segments
- Scoping of supply-side resources and capacities
- Policy review and assessment of the enabling environment
- Developing strategy and action plans, implementation and monitoring and evaluation.

So in this research what are the real drivers for improved sanitation demand, how much are the willingness to pay for improved sanitation in slum area of Addis Ababa dwellers, what this opportunities and demand is mean to small and micro enterprise institutions to engage in sanitation marketing and create sustainable sanitation solution have been studied.

5 Objectives

General Objective:

To measure level of willingness to pay and identify factors affecting willingness to pay for improved sanitation in slum areas of Addis Ababa.

Specific objectives:

- 5.2.1. To measure level of willingness to pay for improved sanitation using contingent valuation method.
- 5.2.2. To identify factors affecting willingness to pay for improved sanitation by collecting and analyzing related factors.

6 Methods

Study design

The study design for this study is based on cross sectional study of the people's willingness to pay quantitatively. The levels of willingness to pay and factors affecting willingness to pay have been assessed quantitatively using contingent valuation method.

Study Area

Addis Ababa is a capital city of Ethiopia. It has 10 sub city administrations and 116 districts. There are 2,739,551 numbers of people in Addis Ababa (CSA, 2007). Even though the city's annual natural increase is less than the national average the net city population growth is 6%(33). Most of them are from rural to urban migrants. Seventy percent of the migrants are absorbed in slum areas and informal settlements(33).



Figure 2 Satellite image of the sampling area modified from Google Earth

Even though many improvements have been made and the data is a little bit outdated the study by UN-HABITAT shows 80% of the city considered as slum houses(34). But the recent report of ministry of urban development and housing construction said

nationwide urban slum distribution level is 60%. Shared sanitation facility is 33% and 53% nationally and in Addis Ababa respectively (national WASH inventory 2014) (8). Only 11.4% of the toilets are improved in slum area of Addis Ababa. From slum dwellers of Addis Ababa, 88.6% uses unimproved sanitation and 8.2% practice open defecation. Because of the high prevalence of open defecations are practiced both on slum areas and peri-urban informal settlement areas(6) the study will be conducted on these areas.



Figure 3. Satellite image of sampling area modified from Google earth

6.1.1 Source population

All slum households without improved sanitation found in Addis Ababa were considered as the source population for this research. The study sub cities have been selected based on their level of relative poor sanitation coverage among the sub cities.

6.1.2 Study Population

All the randomly selected slum households without improved sanitation in the selected districts were the study population for this research. The study units were households found in slum area of Addis Ababa without improved sanitation. The respondent for this research were the house hold head specially the husbands who have the power to decide on household economic expenditures have been considered.

6.1.3 Study period

This study was done from December 2015 to May 2016 with in 6 months period including proposal development and main research but the data collection was from end of murch to end of April.

Sample Size determination

The sample size for this study have bben determined after calculating for each specific objective and the sample which could give high sample size have been selected.

Sample size for specific objective one: Level of willingness to pay for improved sanitation.

Since the level of willingness to pay measured among households without improved sanitation, talking 88.6% of unimproved sanitation distribution in slum area of addis ababa as bench mark from a recent study done a single population proportion formula calculation have been done to determine the sample size (6). So, with 95% confidence level, 5% desired precision and taking design effect of 1.5 multistage sampling correction factor with 10% addition for none response rate the total calculated sample size was **433**.

$$n_1 = \frac{[(Z_{\alpha/2})^2 \times P \times (1-P)] \times D}{d^2}$$

Where: n= the required sample size

Z= the standard score corresponding to 95% CI, and was equal to 1.96

P= the proportion of unimproved sanitation which was assumed to be 88.6%

d= level of precision (margin of error) which was taken 5%

D= Design effect i.e. 1.5

Specific objective two: Factors associated with willingness to pay for improved sanitation.

Using two population proportion formulas:

$$n \text{ (each group)} = \frac{(p_0q_0 + p_1q_1) (z_{1-\alpha/2} + z_{1-\beta})^2}{(P_1-p_0)^2}$$

Where:

- p_0 = proportion for (male headed household, poor household, households dissatisfied with existing sanitation, poor knowledge of sanitation)
- p_1 = proportion for the second group (female headed household, non poor household, households with satisfied existing sanitation, poor knowledge of sanitation)
- $q_0 = (1-p_0)$
- $q_1 = (1-p_1)$
- $Z_{(1-\alpha/2)} = 1.96$ = value of the standard normal distribution corresponding to a significance level of α (1.96 for a 2-sided test at the 0.05 level)
- $Z_{(1-\beta)} = 0.84$ = value of the standard normal distribution corresponding to the desired level of power (0.84 for a power of 80%)
- Assume equal sample sizes ($n_1=n_2$)

Considering Gender of the head of household, dissatisfaction with current sanitation, economic status of household and Knowledge of health impacts of poor sanitation as major determinant of willingness to pay for improved sanitation taken from study done in Addis Ababa by Biruk Gezahegn (unpublished Thesis paper 2003) the sample for each

population calculated and compared with single population proportion calculation formula the maximum sample output calculation result taken.

Table 1 sample size determinations and used formula

Determinant factor	Z $\alpha/2$ of 1- β (power)	Z $\alpha/2$ of 95% confidence level	Ratio (unexposed :exposed)	P ₀	P ₁	Q ₀	Q ₁	n
Gender of the head of household	0.84	1.96	1	68.8%	57.1%	31.2%	42.9%	263
Dissatisfaction with Current Sanitation	0.84	1.96	1	66.7%	43%	33.3%	57.0%	65
Economic Status	0.84	1.96	1	35.7%	65.6%	64.3%	34.4%	40
Knowledge of health impacts of poor sanitation	0.84	1.96	1	59.4%	85%	40.6%	15.0%	44

So based on the calculation the maximum sample size determined to be **433** with 10% non response rate addition.

Sampling procedures

The sampling procedure has been based on multi stage sampling procedure. The study have been conducted in slum areas of Addis Ababa by taking samples from sub cities: Addis Ketema, Lideta, Kirkos, Arada and Akaki Kality sub cities based on their high proportion of slum houses and low sanitation coverage. From each sub city, 2 districts have been selected based on their relative high proportion of slum houses. In doing so, a total of 10 districts have been selected. For each district sampling households will be allocated proportional to the number of estimates of slum households in each district. The samples have been also allocated to each sub district, sefer up to block proportional to slum houses found.

Using the data from CSA 2007 the samples allocated proportionally to the prevalence of unimproved sanitation in each sub city as shown in the table below.

Table 2 sample size allocation to proportional to the sanitation access

sub city	all housing unit	unimproved latrine	% of unimproved latrine	sample proportionally allocated
Akaki Kality	45751	34827	76.1	100
Ledeta	44351	28570	64.4	82
Kirkos	52584	30195	57.4	86
Arada	47364	25550	53.9	73
Addis Ketema	49041	32043	65.3	92
total	239091	151185	63.2	433

Diagrammatic Representation of Sampling Procedure

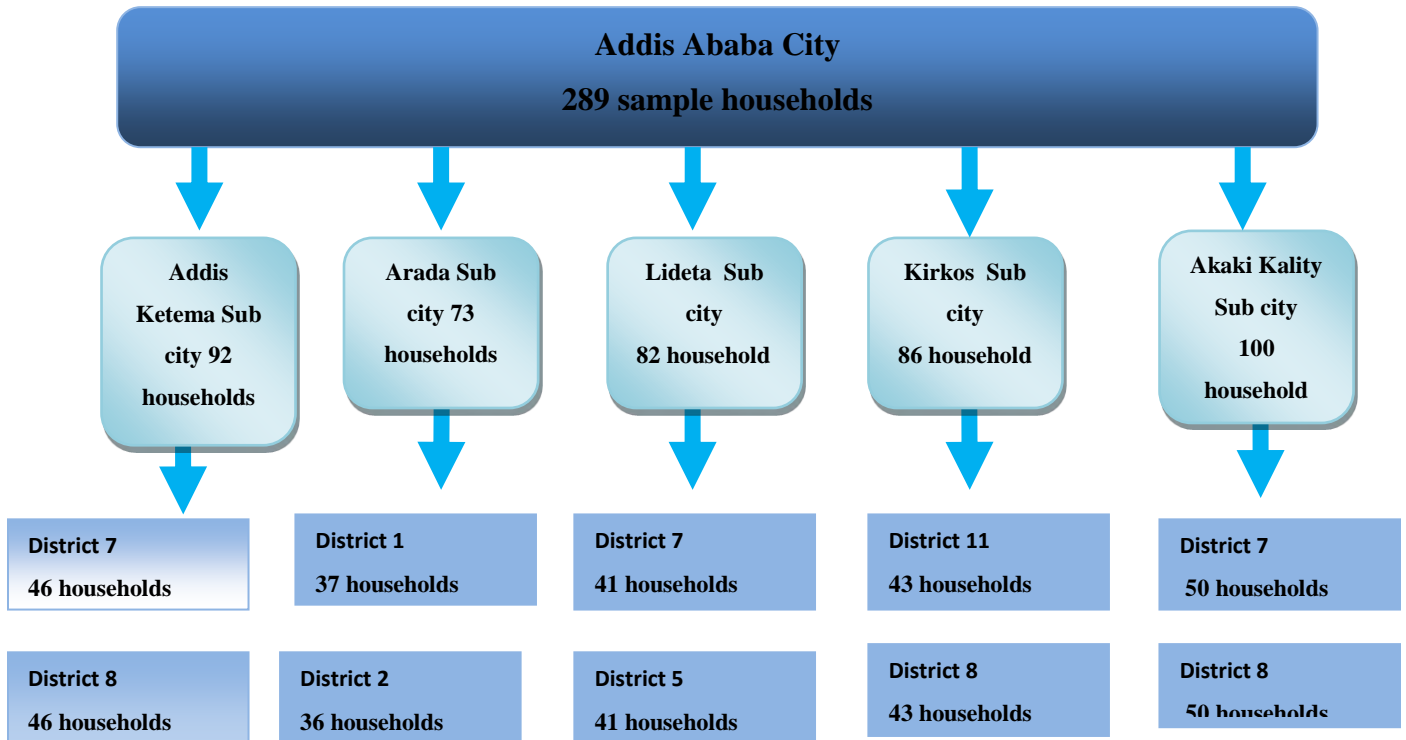


Fig. 4 sampling procedure diagrammatic representation

Cartography of the enumeration areas have been defined using map of each district from Google map using Google earth map manager for the sampling purpose. The sampling route have been created using Google earth map manager and briefed for data collectors to be followed. A rough estimated number of the slum households found in each block have been used to calculate the sampling frame interval. The the n^{th} household have been based on the allocated samples in each block. The starting point and direction of movement were determined by random method.

Data collection

Structured questionnaires: have been used to collect data on household head willingness to pay and related data. With the willingness to pay scenario photograph of the improved sanitation have been presented to respondents to make clear. The questionnaires have been pre-tested in one district out of study area. After pre test minor corrections on the bid level of the willingness to pay question part was edited. The questioner had 6 parts i.e. (1) **respondent information**, (2) **socio-economic aspect of the household**, (3) **current sanitation condition**, (4) **knowledge, attitude and level of satisfaction on existing sanitation system**, (5) **communication on sanitation information** and (6) **willingness to pay scenario question** have been followed.

Scenario development part for WTP Question

The willingness to pay part were assessed in two scenarios i.e. (1) Willingness to pay 30,000 birr for private toilet as maximum, (2) willingness to pay 6000 birr as maximum for private toilet renovation, (3) willingness to pay 1500 for hand washing as maximum point, (4) willingness to pay 3737 for new communal toilet as maximum point in 2 years based, (5) willingness to pay 747 for birr for new communal toilet at a time as the maximum point and (6) willingness to pay for 1132 birr for communal toilet renovation as maximum point.

The data collection questioner have been prepared in English and translated to Amharic and then retranslated back to English and check for its consistency and the final edited Amharic questioner have been utilized as a tool for data extraction.

Data collectors: urban health extension professionals have been employed as data collectors after one day training have given. Two supervisors with the principal investigator assigned to coach and give assistance.

Study Variables:

6.1.4 Dependent variables:

- Level of Willingness to pay for existing communal toilet renovation(CTR)
- Level of willingness to pay for hand washing facility installation(HWFI)
- Level Total willingness to pay

6.1.5 Independent variables:

Socio-demographic factors: gender of head of household, age of head household, size of house hold, educational level of head of household, household health package graduation status, existing toilet quality, number of households sharing the toilet

Economic factors: annual disposable income of household, space availability, land tenure status, price of material, availability of loan for sanitation improvement

Knowledge and attitude factors: knowledge of health effect of poor sanitation, exposure to sanitation information

Existing sanitation facilities and level of satisfaction factors: type of current toilet, level of satisfaction with existing toilet.

Operational Definition

Block: This study defined block as the smallest unit of urban community in Addis Ababa.

Communal toilet: This study defined communal toilet as toilet that could be shared and managed by the users mostly in slum area those who unable to have private toilet.

Demand: This study defined as the need and ability to pay with their willingness to pay for improved sanitation commodities.

District: This study defined district as the administrative level below sub city. There are 116 districts in Addis Ababa.

Government rent houses: This study defined government owned houses as houses that administered by the government and residents do not have or limited right for sanitation improvement inside.

Improved sanitation: This study defined as those facilities that can totally separate human and feces contact including shared sanitation among 5 and less households.

Latrine: This study defined latrine as any facility used for defecation and less qualified than toilet.

Public toilet: This study defined public toilet as toilet used for public use and owned and administered by the public authority or private for profit organization such as micro enterprises.

Slum: This study defined slum household as „a group of individuals living under the same roof lacking one or more of the following conditions: access to improved water, access to improved sanitation facilities, sufficient living area, structural quality/durability of dwellings, and security of tenure.

Sub city: This study defined sub city as the administrative level organized for government service delivery and administrative structure which comprises 10 and more up to 15 districts in Addis Ababa.

Sub district: This study defined sub district as the forth level from top to bottom administrative level. In Addis Ababa 842 sub districts found.

Village/sefer: This study defined sefer/village as the second smallest level of urban administration unit in Addis Ababa 3003 sefers found in Addis Ababa.

Willingness to pay: This study defined willingness to pay as the maximum amount of money the sanitation customer can pay to have the product or services.

Data Quality Assurance

The data quality of this research has been assured by giving training for data collector's i.e. Urban health extension workers and a close follow up and supervision have been done assigning urban health extension supervisors and the investigator.

6.1.6 Data Management

The data captured using questioners have been transferred to computer using EPI data 3.1 and exported to SPSS version 20 for further analysis. Before the data analysis started data clearances have been done. Presence of outliers was checked using normality test like skewness, kurtosis, and Kdensity tests.

6.1.7 Data Analysis

All the descriptive statistics were summarized and presented using tables, graphs and charts. Then binary regressions have been done to see any correlation and association between dependent and independent variables. Those variables significant in the binary analysis have been transferred to multivariate ordinal logistic regression and analyzed using ordinal logistic regression models.

7 Ethical consideration

The ethical clearance has been taken from Addis Ababa University ethical approving board prior to the study and permission letters from each level of administration have been taken from study area administrative offices. Consent from each respondent has taken either written or verbal appropriately. The privacy of the respondent has been kept by interviewing separately not in a condition to be heard by others about their private matters. Assurance of the information got in the research would not be given to anyone else without the prior permission from the respondent if required has been ensured. The rights of the respondent not to participate in the research have been respected and full consent has been taken to take information, to take picture of their toilet etc. As of this research participation respondents may not benefit directly, but the information gathered is helpful to improve the sanitation provision by encouraging private enterprises to engage in sanitation marketing to provide sanitation products and services in affordable price have been explained.

8 Result

Characteristics of the Study Subjects

A total of 404 households were interviewed and the response rate was 93%. Of these Majority of the respondents (53%) were head of households themselves as planned to be because of the financial determination for household expense is in the hand of head of households mostly, 35.8% were wife, 9% were sons and 2.2% were other family members. The mean age of respondents was 43 years. The marital status of respondents 234(58.1%) married, 87(21.6%) widowed, 62(15.4) single and 20(5%) were divorced.

When we see the sex of head of households 207(53/1%) were male headed and 183(46.9%) were female headed. Majority of the respondents were Christian i.e. 328(82%), Muslim 69(17.2%) and 3(0.8%) others.

Concerning educational status of household heads secondary 114(28.6%), TVET 91(22.9%), Illiterate 77(19.3%), higher 50(12.6%), primary 43(10.3%) and read and write 23(5.8) from high to low.

Table 3 summary of some basic descriptive statistics

Variables	Characteristics	Option	N	%
WTP for communal toilet renovation	1132 birr	yes	8	2
		no	396	98
	600 birr	yes	28	6.9
		no	376	93.1
WTP for hand washing facility installation	1500 birr	yes	28	6.9
		no	376	93.1
	1000 birr	yes	32	7.9
		no	372	92.1
Gender of head of household	Male		207	51.2
	Female		183	45.3
Household head education	Illiterate		77	19.1
	Read and write		23	5.7

	Primary	43	10.6
	Secondary	114	28.2
	TVET and higher	141	34.9
	Professional	52	12.9
	Factory worker	22	5.4
	Daily laborer	72	17.8
Household head occupation	Civil servant	58	14.4
	Merchant	98	24.3
	NGO employed	6	1.5
	Other	88	21.8
Having children aged <5 years	Yes	96	23.8
	No	308	76.2
	Private	135	33.4
	Communal	242	59.9
Current toilet possession	Public	17	4.2
	Neighbor	4	1
	Other	3	0.7
	Open Field	2	0.5
Satisfaction with the current toilet	Satisfied	152	37.6
	Unsatisfied	224	55.4
Economic status of household	Poor	342	84.7
	Non-poor	62	15.3
Knowledge of health impacts of poor sanitation	Poor	144	35.6
	good	256	63.4

Socio-economic characters of the household

The households head employment status have found self employed 136(43.3%), employed 127(32%), unemployed 79(19.9) and not in work force 55(13.9%). The mean reported household income were 1828 birr per month with minimum 50 birr and maximum 6000 birr per month. The mean reported per capita incomes of the households were 15 birr per day with minimum 50 cents and maximum 83 birr. The land

Table 4 Summary descriptive statistic for some of the variables

Characteristics	N	Range	Minimum	Maximum	Mean	Std. Deviation
Age of household head	404	61	19	80	43.38	6.883
Income level of household	333	6800	200	7000	1871	1356.11
Number of years in the house	356	67	1	68	22.44	14.779
Amount of monthly saving	186	3000	0	3000	222.99	404.71
Age of toilet	259	64	1	65	20.06	14.721
Maximum WTP for hand washing facility	170	2000	0	2000	508.51	564.295
Total Sanitation expenditure	220	22000	0	22000	962.33	2826.18
Number of HH shared the toilet	225	24	1	25	6.43	4.318
Number of people per toilet	190	63	2	65	17.69	10.971
Maximum WTP for communal toilet renovation	138	1132	0	1132	212.22	223.089
Wealth index score	404	0.43	-1.83	-1.39	1.5369	0.11582
Share of WTP from disposable income					2.21%	
Household size	401	10	1	11	4.5	

Housing Characteristics

Two hundred forty five (61.5%) of the households live in kebele rented houses, 113(28.4%) private house and 40(9.9%) rented from private house owners. The 243(60.8%) of the house floor were cemented, 90(22.5%) mud and 67(16.7%) were other type of floor. The roofs were 378(96.2%) corrugated iron, 15(3.8%) were other type like plastic, and other used materials. The 172(43%) shared compound fence, 147(36.8%) private compound and 81(20.2%) were have no compound. The water provision were 276(78.4%) piped into compound, 70(19.9%) use public bono and the rest 6(1.7%) use from other sources. The mean family sizes were 4.5 with maximum 11, minimum 1 and 1 9 1 standard devotion. The mean year of lived in the current house were 22.4 years with minimum 1 year and maximum 68 years and with 14.7 standard deviation.

Existing Sanitation Condition

The sanitation facility type found, communal 242(60%), private 135(33.5%), public 17(4.2%), neighbor toilet and open field 4(1%), 5(1.2%). Reported reasons for not having private toilet were 115(49.1%) absence of land, 87(37.2%) lack of money, 8(3.4%) poor self capacity, 8(3.4%) being development relocation, 3(1.3%) least priority, 14(5.5%) other reasons have been mentioned. One handed thirty two (60.6%) did not have demand for new toilet for the above reasons and 86(39.4%) need new toilet. One hundred ninety six (57.5%) of the toilets renovated at least once in their life time and 145(42.5%) did not. Observation report for renovation requirement show 213(60.7%) required and 138(39.3%) not required renovation. The plan for toilet renovation were 150(53.6%) do not have plan to renovate within the next 1 year time and 130(46.4%). The mean ages of toilet were 20.06 years with 1 and 65 years maximum and minimum and 14.7 standard deviation. Only 47(16.5%) of households have hand washing facility and 237(83.5%) did not have hand washing facility.

Scenario development part for WTP Question

The willingness to pay part were assessed in two scenarios i.e. (1) Willingness to pay 30,000 birr for private toilet as maximum, (2) willingness to pay 6000 birr as maximum for private toilet renovation, (3) willingness to pay 1500 for hand washing as maximum point, (4) willingness to pay 3737 for new communal toilet as maximum point in 2 years based, (5) willingness to pay 747 for birr for new communal toilet at a time as the maximum point and (6) willingness to pay for 1132 birr for communal toilet renovation as maximum point.

Willingness to contribute for communal toilet method and perception

From all interviewed 246(60.9%) were willing to contribute 144(35.6%) in cash, 11(2.7%) in kind, 91(22.5%) in labour and 158(39.1%) were not willing to contribute for communal toilet. Among these 54(34%) perceived as government responsibility to construct toilet for the community, 20(12%) considered it as NGO responsibility, 64(40%) considered it as their responsibility but do not afford any cost, and 209(12%) do not know. When we see the reported mean sanitation expenditure/ investment cost/ were 962 birr annually per household. The range extends from 0 to 2,000 birr & with 534 standard deviation.

Willingness to pay based on scenario 1

Only 1(0.2%) household was willing to pay 30,000 birr for new toilet, 403(99.8%) were not willing to pay. For 20,000 birr maximum cost no none was willing to pay i.e. except the one included in the 30,000 birr scenario.

Willingness to pay based on scenario 2

For private toilet renovation 15(3.7%) were willing to pay 6000 birr, 389(96.3%) were not willing to pay 6000 birr to renovate their toilet. 24(5.9%) were willing to pay 380(94.1%) were not willing to pay 4000 birr for their private toilet. The mean willingness to pay was 2671.46 birr and the maximum and minimum ranges from 0 birr to 8000 birr with standard deviation 2501.07.

Willingness to pay based on scenario 3

Twenty eight (6.9%) of the respondents are willing to pay 1500 birr for hand washing facility and 376(93.1%) are not willing. Thirty two (7.9%) are willing to pay 1000 birr and 372 (92.1%) are not willing to pay 1000 birr as maximum point of cost.

The mean willingness to pay was 508.51 birr and the range expands from 0 to 2000 minimum and maximum with standard deviation 564.29.

Willingness to pay based on scenario 4

Based on the scenario if sanitation loan were installed free of bank interest to be pay back in 2 years long term set up, 4(1%) are willing to pay 3737 birr and 400(99%) are not willing. 8(2%) are willing to pay if the cost reduced to 1868 birr and 396(98%) were not willing to pay. The mean willingness to pay was found 418.2 birr with standard deviation 846.7 and range from 0 to 3737.

Willingness to pay based on scenario 5

In this scenario if the cost reduced to 747 birr and if the payment have been paid at a time, 5(1.2%) were willing to pay and 399(98.8%) were not willing. If the cost reduced to 373 birr, 10(2.4%) were willing to pay and 394(97.6%) were not willing to pay. The mean maximum willingness to pay was found 229.9 birr with standard deviation 255.5 and range from 10 birr to 800 birr minimum to maximum.

Willingness to pay based on scenario 6

In this scenario if the cost communal toilet be renovated and the maximum dividend for a household be 1132 birr, 8(2%) were willing to pay and 396(98%) were not willing. If the cost reduced to 600 birr, 36(9%) were willing to pay and 368(91%) were not willing to pay. The mean maximum willingness to pay was found 212.2 birr with standard deviation 223 and range from 0 birr to 1132 birr minimum to maximum.

In addition to this the average number of households per shared toilet found 6 and the average people per toilet was found 18. The range expands from 1 to 25 and 2 to 65 respectively.

Knowledge on Sanitation

Knowledge on disease causation of poor sanitation found 256(63.4%) have good knowledge and 144(35.6%) poor knowledge. Two hundred fifteen (53.2%) have poor knowledge on importance of good toilet and 189(46.8%) have good knowledge. Seventy eight (19.3) did not know good toilet can prevent from diarrhea and 326(80.7%) know as toilet can prevent from diarrhea. Fifty two (12.9%) did not know open defecation spread germs while 352(87.1%) know.

On experience of having got training on hygiene and sanitation 168(41.6%) have got training and 236(58.4%) never have got training. On family health package graduation status 125(30.9%) have been graduated and 279(69.1%) didn't have graduated. If they want construct new toilet or renovate their toilet 274(67.8) didn't know who can built for them and 130(32.2%) know.

Knowledge on the type of sanitation facility was assessed and toilet with slab 277(68.6%), water carriage 275(68.1%), ventilated improved (VIP) 175(42.8%) and composting 38(9.4%) and other type 21(5.2%) known by order from common known to least known. In composition who know the four type were 27(6.7%), knows three type were 80(19.8%), know at least 2 type were 135(33.4%) and know at least 1 type were 145(35.9%) and who now other than these were 17(4.2%).

Attitude and satisfaction on existing sanitation

Attitude to prioritizing sanitation over other household items like TV, mobile phone, school fee, importance of investing on sanitation for health, attitude on open defecation, perceived responsibility of toilet provision for the community, self efficacy for toilet construction, attitude on using toilet cause disease, attitude on illegality of open defecation by the community was assessed and computed and those who have given positive response more than 75% considered as positive attitude for sanitation and those who give below 75% considered as negative attitude. Based on this 289(71.5%) have positive attitude for improved sanitation and 94(23.3) have negative attitude the rest 21(5.2) were not respond on this. Two hundred sixty seven (66.1%) rate their self

efficacy as poor to construct their own toilet by themselves and 106(26.2) as capable to construct their own toilet, 31(7.7%) were not respond on this.

The level of satisfaction on the existing sanitation facility indicated as 224(55.4%) unsatisfied and 152(37. %) were satisfied. One hundred thirteen (28%) respondents are satisfied on the nearby sanitation shops and 253(62.65) not satisfied. On open defecation practice questions 134(33.2%) were reported this as a common practice in their community and 270(66.6%) reported as not a common practice.

Sanitation Practices

Two hundred eighty nine (71.5%) of households do not have hand washing facility and one hundred fifteen (28.5%) have hand washing facility. The common place of hand washing were near water tab 126 (31.2%), inside kitchen 76(18.8), inside toilet 32(7.9%), some other place 52(12.9%) and the rest 118(29.2) any where they found.

The reported compliance on queuing to defecate were 27(6.7%) always, 167(41.3%) sometimes, 177(43.8) never have encountered the problem. To have access to defecation at any time they need, 128(31.7%) do not have the access and 276(68.3%) have the access when the need the toilet.

Factors affecting willingness to pay

The bivariate analysis was done for two outcomes/ dependent variable/ i.e. (1) willingness to pay for communal toilet renovation cost with two different bid level and (2) willingness to pay for hand washing facility installation cost. Using binary logistic regression odd ratio has been calculated. Based on these only presences of fixed place hand washing place, Knowledge on health effect of poor sanitation, Knowledge on importance of toilet, Knowledge on type of toilet and Attitude composite score on sanitation have found significantly correlated. The odds of willingness to pay for hand washing basin were 71% lower for those who have fixed hand washing place washers than that of fixed place washers. The odds of WTP for hand washing between unsatisfied group on existing sanitation system were 2.14 time that odds of WTP among groups who satisfied. The odds of WTP for hand washing among who have good knowledge on health effect of poor sanitation were 40% higher than that odds of WTP among that do have poor knowledge on health effect of poor sanitation.

The odds of WTP for hand washing among who have good knowledge on type of sanitation facility were 2.54 time that odds of WTP among who do have poor knowledge. The odds of WTP for hand washing among who have positive attitude composite score for sanitation were 4.9 time that odds of WTP among who do have negative attitude composite score poor sanitation.

8.1.1 Table 5 Odd ratio of different characters for willingness to pay for hand washing facility installation at 1500

		COR	AOR	P-value	95% CI	
WTP 1500 birr					LOWER	UPPER
SEX OF HEAD OF HOUSEHOLD	MALE		1.01	0.984	(0.3693841	2.761627)
	FEMALE	1.357	REFERENCE			
HAD presence	YES		0.4495105	0.242	(0.117718	1.716472)
	NO	0.311	REFERENCE			
PRESENCE OF UNDER 5 YEARS CHILD	YES		2.851731	0.039	(1.052673	7.72545)*
	NO	2.718	REFERENCE			
TRAINING ON H&S	YES		2.646201	0.134	(0.7406187	9.45477)
	NO	0.932	REFERENCE			
LEVEL OF SATISFACTION	UNSATISFIED	2.725	3.118733	0.065	(0.9297155	10.4618)
	SATISFIED					
POVERTY LEVEL	POOR		1.84235	0.277	(0.6123512	5.542983)
	NON POOR	1.588				
Attitude	positive		6.951388	0.069	(0.8574893	56.35265)
	negatile	8.422				

* Significant at 0.05 level

The odds of willingness to pay for improved sanitation households unsatisfied on existing sanitation were 2.725 times more likely to pay than those satisfied even though the confidence interval were not achieved and those having under 5 years child were

2.718 times more likely willing to pay than that of household didn't have child under 5 Years. This is consistent with the study done on vietnam(32).

Table 6 Correlation of WTP for communal toilet renovation and hand washing facility installation

Characteristics	Willingness to pay for communal toilet				Willingness to pay for Hand washing			
	Correlation coefficient		P-value	sign	Correlation coefficient		P-value	sign
	type	Magnitude			type	Magnitude		
Number of Households shared toilet	Pearson	-.222*	0.013	-	Pearson	-0.129	0.21	-
Past experience on sanitation Investment	Pearson	.491**	0	+	Pearson	.305**	0.001	+
Age of toilet	Pearson	-0.118	0.247	-	Pearson	-0.158	0.066	-
Monthly saving	Pearson	.276*	0.021	+	Pearson	.407**	0	+
Income	Pearson	0.116	0.222	+	Pearson	.252**	0.002	+
Years lived in the house	Pearson	-.193*	0.016	-	Pearson	-.193*	0.016	-

*= The correlation is significant at 0.05 levels, **= The correlation is significant at 0.01 levels

The correlation between WTP for communal toilet and independent variable calculated. Here numbers of households sharing the toilet & past experience of sanitation investment have positive correlation with a correlation coefficient 0.22 and 0.49 respectively. On WTP For the hand washing; past experience of sanitation investment, monthly saving and income correlate positively with a correlation coefficient 0.305, 0.407 and 0.252 significantly. Years lived in the house correlates negatively with a correlation coefficient -0.193 significantly.

After the corelations done linear regression have been done and those significant variables hold to be regressed at higher level.

Table 7 Liniear regression results of maximum willingness to pay for communal toilet and independent variables

WTPCTR	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
saving	.3731241	.1175205	3.17	(0.002)*	.1377022	.6085461
Years Lived	-2.01331	2.070462	-0.97	0.335	-6.160945	2.134325
Number of Households per toilet	-14.05507	6.242167	-2.25	(0.028)*	-26.55963	-1.550505

*=variables significant at 0.05 level of significance

The linear regression result between maximum willingness to pay for CTR and independent variables as shown above reveals number of households sharing the toilet and amout of saving that associates significant at 0.05 level of significancy.

Table 8 Liniear regression results of maximum willingness to pay for hane washing facility and independent variables.

W510HMAX	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
Years Lived	-10.01289	4.429835	-2.26	(0.028)*	(-18.87697	-1.148807)
Saving	.4947757	.1236425	4.00	(0.000)*	(.2473677	.7421838)
Past sanitation expenditure	.0349688	.0146089	2.39	(0.020)*	(.0057364	.0642012)

*= variables significant at 0.05 level of significancy

This shows years lived, saving, previous sanitation expenditure have significant relation with willingness to pay for hand washing.

The ordinal probit regression models construct and result

The responses on willingness to pay for hand washing facility and communal toilet renovation were collected based on the double bound dicutoms questioners followed by open ended maximum willingness to pay statement, since the categories have orderd

nature the data have been summarized as follows for each dependent variable i.e WTP for communal toilet renovation and WTP for hand washing facility installation.

The categories of maximum willingness to pay for communal toilet renovation

- Category 0= $WTP < 600$
- Category 1= $600 \leq WTP < 1132$
- Category 2= $WTP \geq 1132$

The categories of maximum willingness to pay for communal toilet renovation

- Category 0= $WTP < 1000$
- Category 1= $1000 \leq WTP < 1500$
- Category 2= $WTP \geq 1500$

Total willingness to pay categories

After the correlation and binary logistic regression and linear regression did to select variables that have established significant association and correlation, those significantly associated variables transferred to the next multivariate analysis. The multivariate analysis was done based on categorizing willingness to pay as high, medium and low based on the 1% of income investment on sanitation as the minimum after seen studies(35).

So the maximum willingness to pay for communal toilet renovation and hand washing facility installation were taken after computing with total reported income and the percentage willingness to pay taken as reference and the minimum WTP set 210 birr, the medium range set from 211 birr to 449 birr and above that higher WTP category have established. Then the ordinal logistic and probit regression model were undertaken and see any significant association between the willingness to pay outcome variable and other independent variables as shown in the table below.

- Category 0(low)= $WTP < 210$ (i.e. below 1% of their income WTP)
- Category 1(medium)= $210 \leq WTP < 449$ (i.e. 1-2% of their income WTP)
- Category 2(high)= $WTP \geq 449$ (i.e. above 2% of their income WTP)

The analysis was the done based on the following models:

Let $U ()$ be an individuals utility function, (Q_0) existing sanitation condition in this case the existing communal toilet and the existing hand washing system, (Q) the improved sanitation i.e. improved communal toilet and hand washing facility, (Y_0) income of the household, (P) price of the sanitation facilities and services, (SE) socio economic condition of the households, then the households willingness to pay will be in between this indifferences in utility function (Whittington 1992).

$$U(Y_0 - WTP, P, Q_1, SE) = U(Q_0, Q, Y_0, P, SE) + \varepsilon \text{ -----(Whittington Model)}$$

Where ε = error term i.e. the other variables not included in the model

$$\text{So } WTP = f(Q_0, Q, Y_0, P, SE)$$

The willingness to pay would be the commulative distribution function between the two lower and upper bid levels.

$$\text{So } WTP^{lower} < f(Q_0, Q, Y_0, P, SE) + \varepsilon_0 < WTP^{upper}$$

Where WTP^{lowe} = the lower bound willingness to pay

WTP^{upper} = the upper bound willingness to pay

Scince the willingness to pay at higher bid level is higher than the willingness to pay at medium level and hghest to lower level, there is some orderd system, so the data can be analysed using ordinal probit regression model.

Based on this three models have been developed

$$WTP 600 < f(Q_0, Q, Y_0, P, SE) + \varepsilon < WTP 1132, \text{ ----- (Model 1)}$$

$$WTP 1000 < f(Q_0, Q, Y_0, P, SE) + \varepsilon < WTP 1500, \text{ ----- (Model 2)}$$

$$WTP 210 < f(Q_0, Q, Y_0, P, SE) + \varepsilon < WTP 449, \text{ ----- (Model 3)}$$

Where

- Model 1 = ordinal probit regression model for communal toilet renovation
- Model 2 = ordinal probit regression model for hand washing facility renovation
- Model 3 = ordinal logistic regression model for total WTP for improved sanitation

The attributes change in sanitation improvement (from Q_0 to Q), income (Y_0), price of improved sanitation i.e. given on the bids (P), and wealth, socio economic attributes i.e knowledge on sanitation, existing sanitation condition, attitude to sanitation system, satisfaction on existing sanitation, saving status of households, number of years lived in the house, past experience investing on sanitation (SE) have been regressed using ordinal probit model. The result is shown in the table.

Table 11 Oprobit regression result of WTP for CTR for model 1 regression

Ordered probit regression		Number of obs =60		
			LR chi2(8) = 10.63	
			Prob > chi2 = 0.2234	
			Pseudo R2 =0.3089	
CTR	Coef.	P- value	[95% Conf.	Interval]
Number of households sharing the toilet	-0.16207	0.17800	(-0.3981227	0.0740)
Sanitation expenditure	0.00002	0.93200	(-0.0005124	0.0006)
Households' saving	0.00018	0.94400	(-0.0049374	0.0053)
Years lived in the house	0.03597	0.26100	(-0.0267318	0.0987)
Knowldege on importance of sanitation	-0.52767	0.40300	(-1.76406	0.7087)
Composite score of attitude	6.33973	0.99200	(-1169.921	1182.60)
Satisfaction on existing toilet	0.88193	0.16100	(-0.35081	2.1147)
Knowledge on effect of poor sanitation	-0.71593	0.25600	(-1.950563	0.5187)

No variable found significant at 0.05 level of significancy. This might be due to low response rate of the dependent variable.

Table 12 Oprobit regression result of WTP for HWFI for model 2 regression

Ordered probit regression		Number of obs =	88
		LR chi2(8) =	27.45
		Prob > chi2 =	0.0006
Log likelihood = -43.223187		Pseudo R2 =	0.2410
HWFR	Coef.	P> z	[95% Conf. Interval]
Knowledge on poor sanitation effect	-.1679464	0.734	(-1.135416 .799523)
Knowledge on importance of toilet other than health	.1830675	0.690	(-.7176983 1.083833)
Knowldege of Sanitation options	.2420496	0.202	(-.1294856 .6135848)
Attitude	.5631703	0.282	(-.462693 1.589034)
Satisfaction on existing system	1.009354	0.016	(.1910081 1.8277)*
Years lived in the house	-.0225053	0.110	(-.0500682 .0050577)
House hold saving status	.0008008	0.039	(.0000395 .0015621)*
Sanitation expenditure	.0000508	0.167	(-.0000213 .000123)

*= significant at 0.05 level of signifncy

The marginal effects have been produced for each prediction possibility and the marginal effect of the dependent variables on the dependent variable have seen for the two significantly associated variables i.e. satesfaction on existing sanitation system and households saving status.

When the satisfaction probability change a unit i.e. from unsatisfied to satisfied the probability of willingness to pay to be in the low willingness category will be decreased

by 22.7% and the probability to be found in the medium and high WTP category will be increased by 14.8% and 7.9% respectively. This means those of who are unsatisfied by their existing sanitation system are more willing to pay. This is consistent with a study done in Vietnam, Ghana, and Addis Ababa (4, 32, 36).

The marginal effect of saving did't show relation with WTP for improved sanitation at 0.05 level of significance. But if the p value increased to 0.1 level, a unit increase in saving amount woud have an effect on the probability of WTP to be found at low willingness to pay decrease by 0.018% and the probability of WTP to be found in medium category increase by 0.012%. This means the probability of willingness to pay for improved sanitation will increase with an increase in saving.

This is consistent with a case study done in Peru that saving and WTP for improved sanitation have strong association(5). Other variables that have association on other studies like knowledge on sanitation; years lived in the house, attitude couldn't establish association significantly. This might be the diference in place with studies done out side of the study area and because of time difference the sudy done in addis ababa by biruk gezahegn in 2003, 15 years back to this study keeping other possible reasons found.

Table 13 Oprobit regression result of WTP for mWTPCT for model 3 regression

Ordered logistic regression	Number of obs = 60			
	LR chi2(10) =21.85			
	Prob > chi2 =0.0159			
Log likelihood =-44.397867	Pseudo R2 =0.1975			
mWTPCT	Coef.	P- value	[95% Conf.	Interval]
presence of under 5 years children	-0.4701	0.492	(-1.8099	0.8696)
years lived in the house	-0.0078	0.757	(-0.0570	0.0415)
household saving	0.0001	0.955	(-0.0034	0.0036)
Previus satitation expediture	0.0003	0.233	(-0.0002	0.0008)
satisfaction with existion sanitation system	2.3005	0.001	(1.9532	3.6478)

knowledge on effect of poor sanitation	0.1076	0.884	(-1.3386	1.5538)
knowledge on importance of sanitation other than health	-0.8866	0.183	(-2.1910	0.4177)
knowledge on type of sanitation options	0.3385	0.24	(-0.2260	0.9030)
coposite score of attitude on sanitation	0.7951	0.268	(-0.6113	2.2015)
number of households sharing the toilet	-0.1031	0.187	(-0.2565	0.0502)

The marginal effect of the independent variables have been produced for each category out come i.e 1,2 and 3 based on the categories. This shows only satisfaction associates weakly with p-value 0.001 and CI (1.9532, 3.6478).

9 Discussion

The main objective of this study was assessing willingness to pay for improved sanitation in slum area of Addis Ababa. Since the community should participate financially, in labor and in kind to insure sustainability of sanitation facilities, assessing the real demand and making the program based on felt need of the community for sanitation should have to be ensured. The Ethiopian ministry of water and energy in its deliverable of sanitation facility for urbans put public participation up to 50% of the cost of construction demanded for communal toilet construction from beneficiaries. And also 2 up to 2.9 dollar per month for desludging survies also proposed to be collected per household(9).

This research reveals that the mean maximum willingness to pay for communal toilet found 212.2 birr per year and the mean maximum willingness to pay for hand washing facility found 508.5 birr for a single time installation. The mean willingness to pay for total improved sanitation found 2.12% of their disposable income. This is comparable evidence with a study done by Witthington et.al (1993) at Ghana that indicates 1-2% of the household income were willing to be paid for sanitation. But from the proposed policy of the government of Ethiopia on urban sanitation it is to low and the total 2.12% of disposable income collected couldn't cover 50% of the cost of sanitation facility construction. Therefore it is advisable the government revise its policy on sanitation provision for urban poors(9).

According to a similar study done by Biruk Gezahegn in 2003 in Addis Ababa shown, the people attitude on perceived responsibility of providing sanitation services were found 72% government, 14.5% the community and 13.8% the NGOs and private sector. But according to this study the perceived responsibility reported found 39.1% the government, 14.5% the NGOs responsibility and 46.4% reported it as the responsibility of the community themselves. This change in concept considering government responsible for sanitation construction for household from 72% to 39.1% might be after the government policy have been formulated and tried to implemented by the Ministry of water and energy promotion share of the cost of sanitation sustainability assurance by the user themselves and others.

The analyses for willingness to pay amount and factors that affect have been analyzed for two selected scenarios. (1) For communal toilet renovation and (2) For hand washing facility installation have been analyzed and discussed. The over all willingness to pay for communal toilet contribution and the preferred method was assessed. From all interviewed 60.9% were willing to contribute and 39.1% were not willing to contribute by any means. Among these, 35.6% preferred in cash, 2.7% in kind, 22.5% in labour to contribute. From those who were not willing, their reason were, 34% perceived as government responsibility to construct toilet for the community, 12% considered it as NGO responsibility, 40% considered it as their responsibility but do not afford any cost.

The categories for maximum willingness to pay were 1% of the disposable income and below considered as low willingness to pay, from 1-2% medium and above 2% of disposable income expenditure on sanitation as high willingness to pay category. Based on this, 23% were found in the low willingness to pay range, 70.5% in the medium and 6.5% in the high range. The mean percentage of willingness to pay was 2.12% of their disposable income. People also preferred the monthly collection of their share of contribution rather than single time annual payment.

Factors affecting willingness to pay

The correlation and odd ratio of the willingness to pay and different factors like past sanitation expenditure, knowledge on health effect of poor sanitation, knowledge on type of sanitation, attitude on sanitation have significant association and correlation with willingness to pay for hand washing facility. The correlation between willingness to pay and number of households sharing the toilet, amount of sanitation expenditure previously, monthly saving and number of years lived in the present house significantly correlates with amount of willingness to pay. Even though studies done on willingness to pay for improved sanitation show as there significant association between age of household head, income and sex of head of household, this variables couldn't be shown correlated with the willingness to pay for improved sanitation(36-38). The reason might be the small rate of response from the data or research setting difference.

After the binary analysis, significant factors were transfer to ordinal logistic regression to see any association. The model ordinal probit and logistic regression was selected because of the ordering of willingness to pay from higher to lower order. So to see any

association between higher level of willingness to pay and independent variables ordinal logistic regression was conducted.

The marginal effects have been produced for each prediction possibility and the marginal effect of the dependent variables on the dependent variable have seen for the two significantly associated variables i.e. satisfaction on existing sanitation system and households saving status.

When the satisfaction probability change a unit i.e. from unsatisfied to satisfied the probability of willingness to pay to be in the low willingness category will be decreased by 22.7% and the probability to be found in the medium and high WTP category will be increased by 14.8% and 7.9% respectively. This means those of who are unsatisfied by their existing sanitation system are more willing to pay. This is consistent with a study done in Vietnam, Ghana, and Addis Ababa (4, 32, 36).

The marginal effect of saving status on WTP for improved sanitation at 0.05 level of significancy, didn't show effect. But if the p value increased to 0.1 level, a unit increase in saving amount would have an effect the probability of WTP to be found at low willingness to pay decrease by 0.018% and increase by 0.012% the probability of WTP to be found in medium category. This means the probability of willingness to pay for hand washing facility installation will increase with an increase in saving.

This is consistent with a case study done in Peru that saving and WTP for improved sanitation have strong association(5). Other variables that have association on other studies like knowledge on sanitation; years lived in the house, attitude couldn't establish association significantly. This might be the difference in place with studies done outside of the study area and because of time difference the study done in Addis Ababa by Biruk Gezahegn in 2003, 15 years back to this study keeping other possible reasons found.

10 .Conclusion

From this study we can conclude that the mean willingness to pay for improved sanitation of the community is high and comparable with the proposed standard that total sanitation cost to be below 5% of the disposable income UN human right approach of water sanitation. The study has found the community was willing to pay 2.12% of their disposable income for improved sanitation. But according to Ministry of Water and Energy policy document on urban sanitation, it is low. Among the factors that affect willingness to pay, satisfaction on existing sanitation, past sanitation expenditure, knowledge on health effect of poor sanitation, knowledge on type of sanitation, attitude on sanitation, number of households sharing the toilet, monthly saving and number of years lived in the present house significantly correlates and associates with willingness to pay. The ordinal probit regression show if satisfaction changed from unsatisfied to satisfied, his willingness to pay will decrease by 22.7% i.e. the more one is unsatisfied on existing sanitation he will be more willing to pay. Saving have also highly associate with willingness to pay. A unit increase in saving amount would have a 0.018% probability increase on willingness to pay to some higher rate.

11 Limitation and strength of the study

Strength of the study

- The data was extracted from the real slum areas of Addis Ababa by the health extension workers who know the problem in depth.
- The study was done based on a contingent valuation method which was double bound enable to assess the WTP well.
- The finding of the study was very important to initiate sanitation marketing as a solution poor sanitation in slum area of Addis Ababa.

Limitation of the study

- The study was assessing the quantitative dimension of the WTP and the factors affecting, it didn't include the qualitative nature of sanitation problem and WTP.
- The full cost of sanitation project i.e. running cost was not assessed and the WTP was assessed for one time renovation and installation cost.
- The community willingness to contribute in labour and in kind have not been calculated and included in this study.
- The data was collected from interview of the hosewife, elder sons and hosehold heads eventhough the plan was only to interview household heads.

12 .Recommendation:

To the Ministry of water and energy

- The level cost share of sanitation facility construction 50% by the beneficiaries in urban poor area couldn't be realistic and better to be revised considering the ability of the community to pay.
- To apply willingness to pay assessment finding for designing sanitation marketing system a further very careful study should have to be conducted.
- The community willingness to pay for improved sanitation showed has to be utilized wisely for joint investment on sanitation with the government program.
- Long term payment installation is better than stat payment for the poor to afford the cost of sharing.

To Addis Ababa Micro Finance Institution:

- There is association between saving and willingness to pay, so saving should have to be promoted for sanitation and system of loan for sanitation and saving is recommended to be initiated by small and micro finance institutions.

To Small and micro enterprise development agency:

- The opportunity of optimum relatively high willingness to pay for improved sanitation should have to be utilized as opportunity for job creation on the sanitation marketing system and organizing enterprises on sanitation marketing.
- Provision of starting seed money provision and initiation os saving for improved sanitation should hav to be arranged in collaboration with addis micro finance institute.

To Ministry of health:

- The sanitation access found poor in the study slum areas, so the government should do interventions using the community willingness to pay as opportunity.

To Addis Ababa University and other research institutes:

- Further study on the factors affecting willingness to pay is very recommendable

12 References:

1. K O, RN K, J C, K C. Assessing demand for improved sustainable sanitation in low-income informal settlements of urban areas: a critical review. *International Journal of Environmental Health Research* 2015;25(1):81-95.
2. Isunju JB, Schwartz K, Schouten MA, Johnson WP, van Dijk MP. Socio-economic aspects of improved sanitation in slums: A review. *Public Health*. 2011;125(6):368-76.
3. Srinivasan L. Tools for community participation a manual for training of trainees in participatory technique PROW WESS/UNDP World Bank Water and Sanitation Prpgram. 1990.
4. Seraj KFB. Willingness to Pay for Improved Sanitation Services and its Implication on Demand Responsive Approach of BRAC Water, Sanitation and Hygiene Programme. Research and Evaluation Division, BRAC, 75 Mohakhali, Dhaka 1212, Bangladesh. 2008;WORKING PAPER NUMBER 1.(No. 1).
5. Fujita Y, Fujii A, Furukawa S, Ogawa T. Estimation of Willingness-to-Pay (WTP) for Water and Sanitation Services through Contingent Valuation Method (CVM) A Case Study in Iquitos City, The Republic of Peru. *Japan Bank for International Cooperation*. 2005(10): 59~87.
6. Beyene A, Hailu T, Faris K, Kloos aH. Current state and trends of access to sanitation in Ethiopia and the need to revise indicators to monitor progress in the Post-2015 era. *BMC Public Health*. 2015; 15(451).
7. WHO/UNICEF, Joint, Monitoring, Program, (JMP). Progress on Sanitation and Drinking Water – 2015 update and MDG assessment. 2015.
8. DHS. Ethiopia Mini Demographic and Health Survey 2014. 2014.
9. FMOWE. PART IV URBAN SANITATION UNIVERSAL ACCESS PLAN (USANUAP). 2011.
10. FMOH. National Sanitation Marketing Guideline. 2013.
11. ETHIOPIA FDRO, HEALTH MO. National Sanitation Marketing Workshop Report. National Sanitation Marketing Workshop Report. 2014;Dire International Hotel , Adama.
12. FMOH. Implementation Guideline for CLTSH Programming. January 2012.
13. Devine J, Kullmann C. Introductory Guide to Sanitation Marketing. WATER AND SANITATION PROGRAM: TOOLKIT. 2011.
14. UN-HABITAT. Social Marketing of Sanitation. United Nations Human Settlements Programme (UN-HABITAT), Nairobi, Kenya in cooperation with Sulabh International Academy of Environmental Sanitation (SIAES), New Delhi, India. 2006.
15. Murray A, Ray I. Commentary: Back-End Users:The Unrecognized Stakeholders in Demand-Driven Sanitation. *Journal of Planning Education and Research*, University of California, Berkeley, CA, USA. 2010;30(1).
16. JB I, K S, MA S, WP J, MP vD. Socio-economic aspects of improved sanitation in slums: a review. *Public Health*. 2011 125(6):368-76.
17. Kumie A, Wubshet M, Tadesse T, Worku W, Taye S, Tewahido D. Situational Analysis of Urban Sanitation and Waste Management. REPORT. 2015.
18. Water U. Tackling a global crisis: International Year of Sanitation UN Water, NewYork. 2008.
19. Organization UaWH. Progress on Drinking Water and Sanitation: 2012 Update. JMP. 2012.
20. Fuller JA, Clasen T, Heijnen M, Eisenberg JNS. Shared Sanitation and the Prevalence of Diarrhea in Young Children: Evidence from 51 Countries, 2001–2011. *The American Society of Tropical Medicine and Hygiene*. 2014 91(1):173-80.
21. WHO/UNICEF. SANITATION AND DRINKING-WATER PROGRESS ON 2013 UPDATE. JMP. 2013.
22. Heijnen M, Cumming O, Peletz R, Chan GKS, Brown J, Baker K, et al. Shared Sanitation versus Individual Household Latrines: A Systematic Review of Health Outcomes: *PLoS One*. 2014;9(4):e93300. doi:10.1371/journal.pone.0093300.

23. Nelson KB, Karver J, Kullman C, Graham JP. User Perceptions of Shared Sanitation among Rural Households in Indonesia and Bangladesh: PLoS One. 2014;9(8):e103886. doi:10.1371/journal.pone.0103886.
24. Schoutena MAC, Mathengeb RW. Communal sanitation alternatives for slums: A case study of Kibera, Kenya. *Physics and Chemistry of the Earth, Parts A/B/C*. 2010 35(13-14):815-22.
25. (SDC) SAfDaC. Sanitation is a Business: Approaches for demand oriented policies. Water and Sanitation Program, The World Bank and Swiss Agency for Development and Cooperation, Bern, Switzerland. 2004.
26. Rothschild ML, 63, 24–37. Carrots, sticks, and promises: A conceptual framework for the management of public health and social issue behaviors. *Journal of Marketing*. 1999;63:24-37.
27. Roma E, Buckley C, Jefferson B, Jeffrey P. Assessing users' experience of shared sanitation facilities: A case study of community ablution blocks in Durban, South Africa. Available on website <http://www.wrc.org.za>. 2010.
28. Buttenheim AM. The sanitation environment in urban slums: implications for child health: *Popul Environ*. 2008 Nov 1;30(1-2):26-47. Epub 2009 Feb 12 doi:10.1007/s11111-008-0074-9.; 2015.
29. WHO, UN-HABITAT. Hidden cities: unmasking and overcoming health inequities in urban settings. Report. 2010.
30. UN-HABITAT. STATE OF THE WORLD'S CITIES 2012/2013 Prosperity and Urban Trends. 2012.
31. UN-HABITAT. Annual Report. United Nations Human Settlements Programme. 2010.
32. Van Minh H, Nguyen-Viet H, Thanh NH, Yang J-C. Assessing willingness to pay for improved sanitation in rural Vietnam. *Environmental health and preventive medicine*. 2013;18(4):275-84.
33. Kassa F. Conurbation and Urban Sprawl in Africa: The case of the City of Addis Ababa. *Ghana Journal of Geography* 2013;5:73 – 89.
34. UN-HABITAT. The Integrated Housing Development Programme. 2011.
35. Okurut K, Charles KJ. Household demand for sanitation improvements in low-income informal settlements: A case of East African cities. *Habitat International* 2014;44:332-8.
36. Dauda SA, Yacob MR, Radam A. Household's willingness to pay for heterogenous attributes of drinking water quality and services improvement: an application of choice experiment. *Appl Water Sci*. (2015) 5:253-9.
37. Komatsu S, Matsuoka S, Tanaka K. Estimating Willingness to Pay (WTP) for Rural Water Supply Improvements for Pastureland Conservation in Mongolia Discussion Paper Series 2007;2006-9.
38. Mezgebo GK, Ewnetu Z. Households willingness to pay for improved water services in urban areas: A case of study from Nebelete town, Ethiopia *Journal of development and agricultural economics*. 2015;7(1):12-9.

13 .Annexs

Questioners

Addis Ababa University School of Public Health

Addis Ababa, Ethiopia

Assessment Questioner for Household Willingness to pay for Improved Sanitation in Slum area of Addis Ababa

A. Consent form

Information to study participants

Greetings

Good morning/afternoon and thank you for giving your time for this interview.

My name is _____ and I am working with Addis Ababa University School of Public Health master's thesis. I am gathering information about people's willingness to pay for improved sanitation in slum area of Addis Ababa. I do not plan to build any toilets or showers but I want people that build and sell latrines and shower products to provide better and less expensive products in your area.

You will understand more about our work during our discussion. You can ask me to explain anything you don't understand at any time during our conversation, and you are free to end the conversation at any time. All information you provide will be kept confidential, that is, your name or other identification will not be reported along with your answers to the questions.

Are you able to answer a few questions for me? It will take about 1 hour

Would you be willing to participate? Yes No

Signature of the respondent:

Date: dd __ __, mm __ __, 2015

Interviewer name: _____

Signature: _____

Date: dd __ __, mm __ __, 2015

A. Interview Identification			
No	Question	Coding	Skip
Q101	Questioner number		
Q102	District name		
Q103	Commune name		
Q104	Village name		
Q105	Date of Interview	dd __ __, mm __ __, 2009 Start time: End time:	
Q106	Interviewer name		
Q107	Supervisor		
Q108	Checked by		
B. Respondent Information			
No	Question	Coding	Skip
Q201	What is your name?	
Q202	What is your relationship to the head of the household?	1. Self <input type="checkbox"/> 2. Spouse <input type="checkbox"/> 3. Son/daughter <input type="checkbox"/> 4. Other <input type="checkbox"/> specify	
Q203	What is the respondent's sex? <i>[answer this question by observation only]</i>	1. Male <input type="checkbox"/> 2. Female <input type="checkbox"/>	
Q204	What is the sex of the household head? <i>[Enter sex even if the respondent is the head of household]</i>	1. Male <input type="checkbox"/> 2. Female <input type="checkbox"/>	
Q205	<i>Marital status</i> <i>(circle only one)</i>	1. Single 2. Married 3. Widowed 4. Divorced	
Q206	<i>religion of head of Household</i>	1. chrstian 2. muslim 3. other	
Q207	What is the occupation of the head of the household? <i>[Check all that apply]</i>	1. Professional/Technical <input type="checkbox"/> 2. Factory worker <input type="checkbox"/> 3. Day laborer <input type="checkbox"/> 4. Civil service <input type="checkbox"/> 5. Service/Sales/Commercial <input type="checkbox"/> 6. NGO employed <input type="checkbox"/> 7. Student <input type="checkbox"/> 8. Other <input type="checkbox"/> specify	
Q208	How many people usually live in this house?	1. Male _____ people	

		2. Female _____ people 3. Total _____ people	
Q209	Is there children <5 years in this house?	1. Yes <input type="checkbox"/> 2. No <input type="checkbox"/>	
Q210	How many family members usually live and work with your family?	1. Male _____ people 2. Female _____ people 3. Total _____ people	
Q211	What level of schooling did the head of household achieve?	1. Can't read or write 2. Read only 3. Read and write 4. Primary (1-8 grade) 5. Secondary (9-12 grade) 6. Technical or vocational 7. Higher education	
Q212	What is the employment status of respondent?	1. Employed <input type="checkbox"/> 2. Unemployed <input type="checkbox"/> 3. Not in labour force <input type="checkbox"/>	
C. Socio-economic			
No	Question	Coding	Skip
Q301	Does your household own land?	1. Yes <input type="checkbox"/> 2. No <input type="checkbox"/>	If No →Q19
Q302	If yes, how much?	_____ care meter	
Q303	How much is your monthly household income?	_____	
Q304	How much was the household's total income for the last 12 months?	_____ birr 99. Don't know <input type="checkbox"/>	
Q305	Housing ownership (circle one)	1. owned <input type="checkbox"/> 2. kebele house <input type="checkbox"/> 3. private rented <input type="checkbox"/>	
Q306	What kind of <u>shelter walls</u> does your house have on the main living floor? <i>[Determine by direct observation if possible]</i> <i>[Check one. If more than one wall material is used, choose the material that covers the largest area]</i>	1. Concrete/brick <input type="checkbox"/> 2. Fibrous cement <input type="checkbox"/> 3. Galvanized steel <input type="checkbox"/> 4. Wood <input type="checkbox"/> 5. wood with mud <input type="checkbox"/> 6. Stone with mud/cement <input type="checkbox"/> 7. Salvaged material <input type="checkbox"/> 8. No walls <input type="checkbox"/> 9. Other <input type="checkbox"/> specify _____	
Q307	What kind of <u>roof</u> does your house have? <i>[Determine by direct observation if possible]</i> <i>[Check one. If more than one wall material is</i>	1. Concrete <input type="checkbox"/> 2. Fibrous cement <input type="checkbox"/> 3. Galvanized steel <input type="checkbox"/> 4. Wood <input type="checkbox"/>	

	<i>used, choose material that covers the largest area]</i>	5. Plastic sheet <input type="checkbox"/> 6. Salvaged material <input type="checkbox"/> 7. No roof <input type="checkbox"/> 8. Other <input type="checkbox"/> specify _____	
Q308	What the compound of the house looks like? [Observe and ask the head]	1. It has its own compound and fence <input type="checkbox"/> 2. It shared compound with others <input type="checkbox"/> 3. It has no fence <input type="checkbox"/>	
Q309	Which of the following does your household own? <i>[Read all options Check all that apply]</i>	1. Watch/clock <input type="checkbox"/> 2. Radio <input type="checkbox"/> 3. Television <input type="checkbox"/> 4. Mobile telephone <input type="checkbox"/> 5. No mobile telephone (landline) <input type="checkbox"/> 6. Refrigerator <input type="checkbox"/> 7. Table <input type="checkbox"/> 8. Chair <input type="checkbox"/> 9. A bed with cotton/sponge/ spring mattress <input type="checkbox"/> 10. Electric mitad <input type="checkbox"/> 11. Kerosene lamp/pressure lamp <input type="checkbox"/> 12. Wall construed with concrete block/brick <input type="checkbox"/> 13. Roof constructed with corrugated iron sheet <input type="checkbox"/>	
Q310	What were the main sources of your cash income of all your family members in the last 12 months? <i>[Read all options Check only]</i>	1. Business/trading <input type="checkbox"/> 2. Salary <input type="checkbox"/> 3. Gift from others <input type="checkbox"/> 4. Selling animal product <input type="checkbox"/> 5. Fishing <input type="checkbox"/> 6. Farm labor <input type="checkbox"/> 7. Other <input type="checkbox"/> specify _____	
Q311	In the household, how often is money put aside for savings?	1. Each week <input type="checkbox"/> 2. Each month <input type="checkbox"/> 3. 2-3 times per year <input type="checkbox"/> 4. Once per year <input type="checkbox"/> 5. Rarely <input type="checkbox"/> 6. Never <input type="checkbox"/>	
Q312	how much you saved	_____	
Q313	Have you ever had a microfinance loan?	1. Yes <input type="checkbox"/> 2. No <input type="checkbox"/>	If No
Q314	If Yes, when was your most recent loan?	1. Less than 6 months ago <input type="checkbox"/> 2. 6 month – 1 year ago <input type="checkbox"/>	

		3. More than 1 year ago <input type="checkbox"/>	
Q315	What is/was the loan used for?	(Specify)	
Q316	How much is/was the loan?	_____ birr	
Q317	Have you paying back your last time loan?	1. Yes I have paid back 2. No I will not 3. Yes on progress	
D. Current Latrine condition, knowledge, perceptions and satisfaction			
SANITATION KNOWLEDGE LEVEL ASSESSMENT QUESTION			
NO	QUESTION	CODE	SKIP
QK401	What major diseases transmitted due to using unimproved latrines (DO NOT read options, circle all that appl	1. None 2. Skin diseases 3. Eye problems 4. Diarrhea 5. Typhoid 6. Scabies 7. Cholera 8. Intestinal parasites 9. Other (specify)-----)	
QK402	What can you do to prevent diseases due to unimproved latrines? (DO NOT read options, circle all that apply)	1. Keeping the latrine clean 2. Utilize the latrine properly 3. Construct the latrine with appropriate material 4. Prevent flies from breeding 5. Other (specify)-----	
QK403	What are the major diseases transmitted due open defecation? (DO NOT read options, circle all that apply)	1. None 2. Skin diseases 3. Eye problems 4. Diarrhea 5. Typhoid 6. Scabies 7. Cholera 8. Intestinal parasites 9. Other (specify)-----	
QK404	What can you do to prevent diseases due to open defecation? (DO NOT read options, circle all that apply)	1. Defecate in a latrine/use a latrine 2. Avoid open defecation 3. Wash hands with soap after defecation 4. Use communal latrine 5. Use public latrine 6. Use private latrine 7. Other (specify)-----	
QK405	What types of latrines do you know about?	1. Flush/pour-flush <input type="checkbox"/> 2. Ventilated Improved Pit (VIP) latrine	

	<i>[DO NOT read options, check all that apply]</i>	<input type="checkbox"/> 3. Pit latrine with slab <input type="checkbox"/> 4. Composting toilet <input type="checkbox"/> 5. Other <input type="checkbox"/> specify _____	
QK406	Where/how do you learn about latrines? <i>[Read all options, check all that apply]</i>	1. Community meeting <input type="checkbox"/> 2. School <input type="checkbox"/> 3. Neighbor <input type="checkbox"/> 4. Relative <input type="checkbox"/> 5. Mason <input type="checkbox"/> 6. Radio <input type="checkbox"/> 7. Poster/Picture <input type="checkbox"/> 8. Billboard advertisement <input type="checkbox"/> 9. Television advertisement <input type="checkbox"/> 10. NGO/agency worker <input type="checkbox"/> 11. Government representative <input type="checkbox"/> 12. Other <input type="checkbox"/> specify _____	
QK407	What kind of latrine would you most prefer for your household? <i>[Read all options, check only one]</i>	1. Flush/pour-flush <input type="checkbox"/> 2. Dry pit latrine <input type="checkbox"/> 3. Other <input type="checkbox"/> specify _____	
QK408	What particular features do you like the most about your preferred latrine? <i>[DO NOT read options, check all that apply]</i>	1. Looks good/Comfortable <input type="checkbox"/> 2. No smell <input type="checkbox"/> 3. No flies <input type="checkbox"/> 4. Don't see feces <input type="checkbox"/> 5. Easy to clean <input type="checkbox"/> 6. Don't need water to flush <input type="checkbox"/> 7. Less expensive <input type="checkbox"/> 8. Other <input type="checkbox"/> specify _____	
QK409	What are the <u>advantages</u> of owning a latrine? <i>[DO NOT read options; check all that apply]</i>	1. Improved hygiene/ health/cleanliness <input type="checkbox"/> 2. more privacy <input type="checkbox"/> 3. more comfortable <input type="checkbox"/> 4. convenience/save time <input type="checkbox"/> 5. Improved safety <input type="checkbox"/> 6. Improved status/prestige <input type="checkbox"/> 7. guests can use it <input type="checkbox"/> 8. no advantages <input type="checkbox"/> 9. don't know <input type="checkbox"/> 10. other (specify) _____	
QK410	Do you know anyone who can build this type of latrine?	1. Yes <input type="checkbox"/> 2. No <input type="checkbox"/> 3. Don't know <input type="checkbox"/>	

QK411	What are the <u>disadvantages</u> of owning a latrine? <i>[DO NOT read options; check all that apply]</i>	1. bad smell <input type="checkbox"/> 2. attracts flies <input type="checkbox"/> 3. cost to maintain it <input type="checkbox"/> 4. work to maintain it <input type="checkbox"/> 5. other people come to use it <input type="checkbox"/> 6. affects groundwater quality <input type="checkbox"/> 7. overflows <input type="checkbox"/> 8. no disadvantages <input type="checkbox"/> 9. don't know <input type="checkbox"/> 10. other (specify) _____	
QK412	Have you ever trained on hygiene and sanitation in the past 12 months.	1. Yes <input type="checkbox"/> 2. No <input type="checkbox"/>	
QK413	Do you know Human faces contain germs:	1. Yes <input type="checkbox"/> 2. No <input type="checkbox"/> 3. Don't know <input type="checkbox"/>	
QK414	Do you think proper latrine usage prevent from diarrhea?	1. Yes <input type="checkbox"/> 2. No <input type="checkbox"/> 3. Uncertain <input type="checkbox"/>	
QK415	Do you think Open defecation may cause germs to spread?	1. Yes <input type="checkbox"/> 2. No <input type="checkbox"/> 3. Uncertain <input type="checkbox"/>	

Practice question

No	Question	Coding	Skip
QP501	Where do adults in your household <u>usually</u> go to defecate?	1. Household latrine <input type="checkbox"/> 2. Shared latrine <input type="checkbox"/> 3. Public latrine <input type="checkbox"/> 4. Other latrine <input type="checkbox"/> 5. Open defecation - near house <input type="checkbox"/> 6. Other <input type="checkbox"/> specify _____	
QP502	If your latrine type on Q-31 is shared with how much households you shared with?	1. With 5 and less families <input type="checkbox"/> 2. With above 5 families <input type="checkbox"/> 3. Specify the exact number _____	
QP503	How many were the number of rooms?	_____people room	
QP504	How many were the number of people per room?	_____people/room	
QP505	How many are the numbers of people sharing the toilet?	_____people	
QP506	How many meters is this place from your house?	_____m	
QP507	Where do children in your household usually go to defecate?	1. Household latrine <input type="checkbox"/> 2. Shared latrine <input type="checkbox"/> 3. Public latrine <input type="checkbox"/>	

		4. Other latrine <input type="checkbox"/> 5. Open defecation - near house <input type="checkbox"/> 6. Open defecation - field/forest <input type="checkbox"/> 7. No children <input type="checkbox"/> 8. Other <input type="checkbox"/> specify	
QP508	In your household, how are babies' feces usually disposed of?	1. Put into latrine <input type="checkbox"/> 2. Put into drain/ditch <input type="checkbox"/> 3. Thrown in garbage <input type="checkbox"/> 4. Buried <input type="checkbox"/> 5. Left in open <input type="checkbox"/> 6. No baby <input type="checkbox"/> 7. Other <input type="checkbox"/> specify	
QP509	Are the toilets clean? N.B: Clean means no smell, no fecal material around pit on floor	1. Always <input type="checkbox"/> 2. Sometimes <input type="checkbox"/> 3. Never <input type="checkbox"/>	
QP510	Is there Queuing for the latrine during you want to use toilet?	1. Always <input type="checkbox"/> 2. Sometimes <input type="checkbox"/> 3. Never <input type="checkbox"/>	
QP511	Where do you defecate last time?	1. Public toilet <input type="checkbox"/> 2. Shared toilet <input type="checkbox"/> 3. My own toilet <input type="checkbox"/> 4. Open field <input type="checkbox"/> 5. Other <input type="checkbox"/>	
QP5012	do you have difficulty to use latrine when you need?	1. Yes <input type="checkbox"/> 2. No <input type="checkbox"/> 3. Uncertain <input type="checkbox"/>	
QP5013	Which quality of the toilet you have seen?	1. No smell <input type="checkbox"/> 2. Not field <input type="checkbox"/> 3. The door is in good repair <input type="checkbox"/> 4. The sitting stance is appropriate <input type="checkbox"/> 5. The pane is clean and washable <input type="checkbox"/> 6. The floor is clean and washable <input type="checkbox"/> 7. The wall is clean and washable <input type="checkbox"/> 8. The roof is integrated and protect from rain <input type="checkbox"/> 9. Have full of day and night light <input type="checkbox"/> 10. Have enough water for flush or wash <input type="checkbox"/> 11. Have hand washing facility with soap <input type="checkbox"/>	
QP514	How do you rate the quality of toilet?	1. Poor if answer to Q-122 is below 5 <input type="checkbox"/> 2. Good if answer to Q-122 is above 5 <input type="checkbox"/>	

Attitude question			
No	Question	Coding	Skip
QA601	How satisfied are you with your current defecation place?	1. Satisfied <input type="checkbox"/> 2. Unsatisfied <input type="checkbox"/>	
QA602	Do you believe it is important is spending money for a good latrine to your family's health? <i>[Read options; select one]</i>	1. Yes <input type="checkbox"/> 2. No <input type="checkbox"/>	
QA603	People who defecate in the open put their children at risk of disease	1. Disagree <input type="checkbox"/> 2. Agree <input type="checkbox"/>	
QA604	People who defecate in the open put the whole community at risk of disease	1. Disagree <input type="checkbox"/> 2. Agree <input type="checkbox"/>	
QA605	In this community people would rather buy a mobile phone than build a latrine	1. Disagree <input type="checkbox"/> 2. Agree <input type="checkbox"/>	
QA606	School fees are more important than improving a Latrine	1. Disagree <input type="checkbox"/> 2. Agree <input type="checkbox"/>	
QA607	A household needs a television more than a latrine	1. Disagree <input type="checkbox"/> 2. Agree <input type="checkbox"/>	
QA608	How satisfied are you with the availability of sanitation hardware stores in your community?	1. Satisfied <input type="checkbox"/> 2. Unsatisfied <input type="checkbox"/>	
QA609	How happy are you with access to sanitation information?	1. Satisfied <input type="checkbox"/> 2. Unsatisfied <input type="checkbox"/>	
QA610	Is it common for people in your community to defecate in the open?	1. yes <input type="checkbox"/> 2. no <input type="checkbox"/>	
QA611	How would you rate your own ability to build a latrine?	1. poor <input type="checkbox"/> 2. good <input type="checkbox"/>	
QA612	Do you believe latrines are safe to use? [believe in using toilet may cause disease by itself]	1. Yes <input type="checkbox"/> 2. No <input type="checkbox"/>	
QA613	Do you think that open defecation is prohibited by social or legal sanctions?	1. Yes <input type="checkbox"/> 2. No <input type="checkbox"/>	
QA614	Which attribute you deserve most from your toilet construction materials do have? <i>[more than one answer possible]</i>	1. Easy to keep clean <input type="checkbox"/> 2. Durable <input type="checkbox"/> 3. Modern <input type="checkbox"/> 4. Easy to construct <input type="checkbox"/> 5. Affordable <input type="checkbox"/>	
QA615	What is the importance of toilet to you? [do not list, apply all that mentioned]	1. Health value <input type="checkbox"/> 2. Embarrassment when gusts come <input type="checkbox"/> 3. Privacy and safety <input type="checkbox"/> 4. Give status in the community <input type="checkbox"/> 5. Convenience <input type="checkbox"/>	

		6. Feels honor <input type="checkbox"/>	
		7. Pride <input type="checkbox"/>	
QA616	Do you believe it is important is spending money for a good latrine to your family's health? <i>[Read options; select one]</i>	1. Yes <input type="checkbox"/> 2. No <input type="checkbox"/>	

H. Communication

No	Question	Coding	Skip
Q701	How many people in the household are member of a community group?	1. 0 <input type="checkbox"/> 2. 1 <input type="checkbox"/> 3. 2 <input type="checkbox"/> 4. 3 <input type="checkbox"/> 5. Other (specify) _____	
	In your opinion, which of the following would be able to give trustworthy information about building or purchasing sanitation and water products?		
Q702	Mason	1. Yes <input type="checkbox"/> 2. no <input type="checkbox"/>	
Q703	Concrete sanitation slab producer	1. Yes <input type="checkbox"/> 2. no <input type="checkbox"/>	
Q704	Shop/seller	1. Yes <input type="checkbox"/> 2. no <input type="checkbox"/>	
Q705	Government officer	1. Yes <input type="checkbox"/> 2. no <input type="checkbox"/>	
Q706	NGO worker	1. Yes <input type="checkbox"/> 2. no <input type="checkbox"/>	

Scenario 1: you have land to construct your toilet but you don't have toilet privately so you have defecate shared or open endangering your family and environment and community health. To solve this problem you need to have your own toilet.

Q801	1. The cost of toilet with hand washing and shower estimated to be 20,000 birr, would you be willing to pay the price?	A. Yes <input type="checkbox"/> B. no <input type="checkbox"/> C. don't know <input type="checkbox"/>	
Q802	2. What if the cost be 15,000 birr, would you be willing to pay the price?	a. yes <input type="checkbox"/> b. no <input type="checkbox"/> c. don't know <input type="checkbox"/>	
Q803	3. What is the largest amount of money, you would be willing to pay to construct your own toilet and shower with full hand washing facility?	_____	

Scenario 2: (this scenario should extend from a poor quality private toilet) and if they have future plan of renovation their toilet? If they do not have future plan of renovation even though their toilet is poor quality, if they have satisfied with existing toilet or not satisfied but do not have money the question will be passed?

Q804	1. The cost of renovation estimated that to be 5560 birr based on the expert cost estimation of average toilets with one room with shower and hand washing. Would you be willing to pay that cost?	a. yes <input type="checkbox"/> if yes move to Q-173 b. no <input type="checkbox"/> If no move to 172 c. don't know <input type="checkbox"/> if don't know move to Q-172	
Q805	2. What if the cost be 4000 birr would you be willing to pay the cost and renovate your toilet with your shower and hand washing?	a. yes <input type="checkbox"/> if yes move to Q-173 b. no <input type="checkbox"/> if no move to Q-173 c. don't know <input type="checkbox"/> if yes move to Q-173	
Q806	3. What is the largest amount of money, you would be willing to pay to construct your own toilet and shower with full hand washing facility?	_____	

Scenario 3: This scenario is for hand washing facility provision for private house toilet users and extends if the private or shared toilet do not have hand washing facility. A hand washing facility would be constructed to wash hands after toilet. The hand washing facility would be connected with the toilet septic tank to collect the waste water.

Q807	1. The cost of renovation estimated that to be 1000 birr based on the expert cost estimation of average toilets with one room with shower and hand washing. Would you pay that cost?	a. yes <input type="checkbox"/> if yes move to Q-176 b. no <input type="checkbox"/> if no move to Q-175 c. don't know <input type="checkbox"/> if yes move to Q-175	
Q808	2. What if the cost be 500 birr would you be willing to pay the cost and renovate you toilet with your shower and hand washing?	a. yes <input type="checkbox"/> if yes move to Q-176 b. no <input type="checkbox"/> if no move to Q-176 c. don't know <input type="checkbox"/> if yes move to Q-176	
Q809	3. What s the largest amount of money, you would be willing to pay to construct your own toilet and shower with full hand washing facility?	_____	

Scenario 4: this scenario will be for shared toilet users and for those who do not have land to construct but should contribute to the toilet construction in cash? If they want to contribute their willingness to pay in kind or labour, it should be estimated and to change to cash.

Q810	1. Do you believe you should contribute to toilet construction that you will share with some household in your resident?	a. yes <input type="checkbox"/> if yes move to Q-179 b. no <input type="checkbox"/> if no move to Q-178	
Q811	In what way you want to contribute to the toilet construction?	a. in cash b. in kind if in kind change to cash based on the guide to cash c. in labour if in labour change to cash based on the guide to cash	
Q812	2. If no, whose duty you think to construct a toilet for you?	a. Government <input type="checkbox"/> b. NGO <input type="checkbox"/> c. I don't know <input type="checkbox"/> d. Other, <input type="checkbox"/> specify _____	

Extension of scenario 4: If yes please listen this scenario and give me your willingness. Now you don't have your own toilet even to be shared with others. To improve this and you will have your own shared toilet with shower and hand washing facility, the government needs participation from the beneficiaries. Unless the government will give the chance for others who would participate for toilet construction. So well participation of the participants encourage the government and NGOs to construct toilet. The construction cost of the toilet you will share with 20 households which do have 4 rooms, from which you will own a room and share with 5 households estimated to be 149,488 birr. From this a single room which you will share with 5 households would be 37372 birr. When divided the cost for 5, you will have to pay 7474 birr. But if the government will share 50% of the cost and you would be required 3737 birr pay to construct the toilet. "But remind that the cost you will paid will be arranged to be paid within 2 years from Addis Ababa small and micro finance lend and paid back without interest"?

Q813	1. based on this if cost of construction of your shared toilet with hand washing and shower estimated that to be 3737 birr based on the expert cost estimation would you be willing to pay	a. yes <input type="checkbox"/> if yes move to Q-181 b. no <input type="checkbox"/> if no move to Q-180 c. don't know <input type="checkbox"/> if yes move to Q-180
Q814	2. What if the cost be 1868 would you be willing to pay the cost and construct you toilet with your shower and hand washing?	a. yes <input type="checkbox"/> if yes move to Q-181 b. no <input type="checkbox"/> if no move to Q-181 c. don't know <input type="checkbox"/> if yes move to Q-181
Q815	3. What is the largest amount of money, you would be willing to pay to construct your own toilet and shower with full hand washing facility based on the above scenario?	_____

Scenario 5: The cost of construction would be similar to the above explanation. But in this scenario you required to pay the cost at once at the beginning of the construction. In this calculation you are required to pay 747 birr.

Q816	1. So based on this if cost of construction of your shared toilet with hand washing and shower estimated that to be 747 birr based on the expert cost estimation would you be willing to pay.	a. yes <input type="checkbox"/> if yes move to Q-184 b. no <input type="checkbox"/> if no move to Q-183 c. don't know <input type="checkbox"/> if yes move to Q-183
Q817	2. What if the cost be 373 would you be willing to pay the cost and construct your toilet with your shower and hand washing?	a. yes <input type="checkbox"/> if yes move to Q-185 b. no <input type="checkbox"/> if no move to Q-184 c. don't know <input type="checkbox"/> if yes move to Q-184
Q8118	3. What if the cost be 186 and the number of users would be 10, would you be willing to pay the cost and construct your toilet with your shower and hand washing?	a. yes <input type="checkbox"/> if yes move to Q-185 b. no <input type="checkbox"/> if no move to Q-185 c. don't know <input type="checkbox"/> if yes move to Q-185
Q819	4. What is the largest amount of money, you would be willing to pay to construct your own toilet and shower with full hand washing facility based on the above scenario at once?	_____

Scenario 6: As you know the cost of renovating and maintenance is the duty of users to cost all the maintenance cost. The toilet will be renovate to have cleanable floor and wall up to 1.5 meter with ceramic, the hand washing facility and water with shower facility will be installed and renovate. For this renovation the total cost estimated to be 5560 birr.

Q820	1. But if your dividend with 5 shared household would be 1132 birr, would you be willing to pay the cost?	a. yes <input type="checkbox"/> if yes move to Q-188 b. no <input type="checkbox"/> if no move to Q-187 c. don't know <input type="checkbox"/> if yes move to Q-187
Q821	2. What if the cost be 600 birr would	a. yes <input type="checkbox"/> if yes move to Q-188

	<p>you be willing to pay the cost and renovate you toilet with your shower and hand washing?</p>	<p>b. no <input type="checkbox"/> if no move to Q-188 c. don't know <input type="checkbox"/> if yes move to Q-188</p>	
<p>Q822</p>	<p>3. What is the largest amount of money, you would be willing to pay to renovate your shared toilet and shower with full hand washing facility based on the above scenario at once?</p>	<p>_____</p> <p>_____</p>	

አዲስ አበባ ዩኒቨርሲቲ

ህብረተሰብ ጤና አጠባበቅ ት/ት ቤት

በአዲስ አበባ ዝቅተኛ የሳኒቴሽን አገልግሎት ባለባቸው አካባቢዎች የህብረተሰቡን ለተሻሻለ ሳኒቴሽን አገልግሎት የመክፈል ፍላጎት ለመዳሰስ የተዘጋጀ መጠይቅ

የጥናቱ ተሳታፊዎች መረጃ መስጫና ፈቃድ መጠየቂያ ቅፅ

ስሜ _____ እባላለሁ። አቶ ህጉ ከፋለ በአዲስ አበባ ዩኒቨርሲቲ የህብረተሰብ ጤና አጠባበቅ ትምህርት ቤት የማስትሬት ዲግሪ ለሚሰራው የመመሪያ ጥናት መረጃ እያሰጡበኩ ነው። በአዲስ አበባ የመጠይቅ ቤት አገልግሎት ባልተዳረሰባቸው አካባቢዎች የህብረተሰቡን ለተሻሻለ የመጠይቅ ቤት አገልግሎት በፈቃደኝነት ለመክፈልና ለመጠቀም ያለውን ፈቃደኝነት ለማጥናት መረጃ እየሰጡበኩ ነው። የዚህ ጥናት ዋና ዓላማ የህብረተሰቡን ለተሻሻለ መጠይቅ ቤት የመክፈልና የመጠቀም ፍላጎቱን በማጥናት በዘርፉ ጥቃቅንና አነስተኛ ድርጅቶች በስፋት የሚሳተፉበትን እድል ለማመልከትና በዚህም የህብረተሰቡን የመጠይቅ ቤት ችግር እንዲፈታ ለማድረግ ነው።

በርግጥ እኔ መጠይቅ ቤት የመገንባትም ሆነ አገልግሎት የመስጠት ዓላማ የለኝም። ሆኖም ከላይ እንደገለጥኩት በዘርፉ አነስተኛና ጥቃቅን ተቋማት በተመጣጣኝ ዋጋ ለህብረተሰቡ የመጠይቅ ቤት ግንባታ፣ ፍላጎት የመምጠጥና የመጠይቅ ቤት ግንባታ ቁሳቁስ በተመጣጣኝ ዋጋ የሚያቀርቡበትን ሁኔታ ለማመቻቸት የጥናቱ ውጤት ጥቅም ላይ እንዲውል ይደረጋል።

ከዚህ በበለጠ ደግሞ ጥያቄዎችን እየጠየቁዎት ስሄድ የበለጠ ግልፅ ይሆንለዎታል። በውይይታችን ወቅት ማንኛውንም ግልፅ ያልሆነ ነገር ካለዎትና ግልፅ እንዲሆንልዎት የፈለጉትን ነገር መጠየቅ ይችላሉ፤ እንዲሁም መጠይቁን ማቋረጥ ከፈለጉ ምክንያት ማቅረብ ሳያስፈልገዎት ማቋረጥ ይችላሉ። ማንኛውም የሰጡት መረጃ ማለትም ስምዎ እና ሌሎች መረጃዎች በሚሰጥ የሚያዙ ሲሆን ከሰጡት መረጃ ጋር ለሌላ ሰው እንዳይተላለፉ ይደረጋል፤ በተጨማሪም በዚህ ጥናት በመሳተፊዎ ምንም ዓይነት ችግር የማይደርስብዎ መሆኑን አረጋግጥልዎታለሁ። ስለጥናቱ ተጨማሪ መረጃ ከፈለጉ አዲስ አበባ ዩኒቨርሲቲ ህብረተሰብ ጤና ትምህርት ቤት የጥናት ስነምግባር አረጋጋጭ ቦርዱ ስልክ-----ወይም ይህንን ጥናት እየሰራው ያለው አቶ ህጉ ከፋለ በ0918314818 አግኝተው ማነጋገር ይችላሉ።

መጠይቁ ሰዓት የሚጨርስ ሲሆን መጠይቁን ለመመለስ ፈቃደኛ ከሆኑ እቀጥላለሁ።

በጥናቱ ለመሳተፍ ፈቃደኛ ነዎት?

- 1. አዎ መጠይቁን ቀጥል
- 2. አይ አልችልም (መጠይቁን አቁመህ ወደ ሌላ ቤት ቀጥል)

መጠይቁን የሞላው መረጃ ስብሰባ ስም-----ፊርማ-----ቀን-----
 ያረጋገጠው ሱፐርቫይዘር ስም-----ፊርማ-----ቀን-----

ሀ. የተጠያቂዎች መረጃ			
ተ.ቁ	ጥያቄ	ኮድ	ይለፍ
Q101	የመጠይቁ ተራቁጥር		
Q102	የወረዳ ስም		
Q103	የማህበረሰቡ ስም		
Q104	የሰፈሩ ስም		
Q105	መጠይቁ የተደረገበት ቀን	ቀን ____ ____, ወር ____ ____, 2008 ዓ.ም የተጀመረበት ሰዓት: ያለቀበት ሰዓት:	
Q106	የጠያቂው ስም		
Q107	የሱፐርቫይዘር ስም		
Q108	ያረጋገጠው		
ለ. ስለተጠያቂው ተጨማሪ መረጃዎች			
ተ.ቁ	ጥያቄ	ኮድ	ይለፍ
Q201	ስም	
Q202	ከአባወራው/አማኝ ጋር ያለው ዝምድና	1. ራሱ/ዋ ነው <input type="checkbox"/> 2. ሚስት <input type="checkbox"/> 3. ልጅ <input type="checkbox"/> 4. ሌላ <input type="checkbox"/> ይገለፅ _____	
Q203	ጾታ	1. ወንድ <input type="checkbox"/> 2. ሴት <input type="checkbox"/>	
Q204	የቤቱ አስተዳዳሪ ጾታ?	1. ወንድ <input type="checkbox"/> 2. ሴት <input type="checkbox"/>	
Q205	የጋብቻ ሁኔታ (አንዱ ብቻ ይጠቀስ)	1. ያላገባ 2. ያገባ 3. ከጋብቻ በኋላ የተለየ/በሞት/ 4. የፈታ	
Q206	የአባወራ/አማኝ ህይወት	1. ክርስቲያን 2. ሙስሊም 3. ሌላ	
Q207	የአባወራ/አማኝ ስራ? (ከአንድ በላይ መልስ ሊኖር ይችላል)	1. ባለሙያ <input type="checkbox"/> 2. የፋብሪካ ሰራተኛ <input type="checkbox"/> 3. የቀን ስራ <input type="checkbox"/> 4. የመንግስት ሰራተኛ <input type="checkbox"/> 5. የንግድ/አገልግሎት ስራ <input type="checkbox"/> 6. መያድ ሰራተኛ <input type="checkbox"/> 7. ተማሪ <input type="checkbox"/> 8. ሌላ <input type="checkbox"/> ይገለፅ _____	
Q208	የቤተሰቡ አባላት ስንት ናችሁ	1. ወንድ የቤተሰብ አባል ብዛት _____ 2. ሴት የቤተሰብ አባል ብዛት _____ 3. ድምር የቤተሰብ አባል ብዛት _____	
Q209	በቤት ውስጥ ከ5 ዓመት በታች የሆነ ህፃን አለ	1. አዎ <input type="checkbox"/>	

		2. አይ የለም <input type="checkbox"/>	
Q211	የቤተሰቡ አስተዳዳሪ አባወራ/አማራጭ የትምህርት ደረጃ እስከ ምን ነው?	1. ማንበብና መጻፍ የማይችል <input type="checkbox"/> 2. ማንበብ ብቻ የሚችል <input type="checkbox"/> 3. ማንበብና መጻፍ የሚችል <input type="checkbox"/> 4. አንደኛ ደረጃ (1-8 grade) <input type="checkbox"/> 5. ሁለተኛ ደረጃ (9-12 grade) <input type="checkbox"/> 6. ቴክኒክና ሙያ <input type="checkbox"/> 7. ከፍተኛ ደረጃ <input type="checkbox"/>	
Q212	የተጠያቂው የስራ ሁኔታ	1. ስራ ያለው <input type="checkbox"/> 2. ስራ አጥ <input type="checkbox"/> 3. ከስራ ውጭ ሆኑ <input type="checkbox"/>	
ሐ. ማህበራዊና ኢኮኖሚያዊ ዳራ			
ተ.ቁ	ጥያቄ	ከድ	ይለፍ
Q301	የራስዎ መሬት አለዎት?	1. አዎ <input type="checkbox"/> 2. አይ የለኝም <input type="checkbox"/>	If No → Q19
Q303	ቤተሰቡ በድምር የወር ገቢው ምን ያህል ነው?	_____ ብር	
Q304	ባለፈው አንድ ወር ቤተሰቡ ያገኘው ገቢ ምን ያህል ነው?	_____ ብር 99. አላቅም <input type="checkbox"/>	
Q305	የቤቱ ይዘታ ሁኔታ (አንዱን ምረጥ)	1. የግል <input type="checkbox"/> 2. የቀበሌ ቤት ኪራ <input type="checkbox"/> 3. የግለሰብ ቤት ኪራይ <input type="checkbox"/> 4. ሌላ <input type="checkbox"/> ይገለፁ _____	
Q306	የመኖሪ ቤቱ ወለል በዋናነት የተሰራው ከምን ነው? [በማየት ይሞላ] [አንድ ብቻ ይመረጥ ከአንድ በላይ የሆነ ቁሳቁስ ጥቅም ላይ ከዋለ አብዛኛውን የሸፈነውን ይምረጡ]	1. ሲሚንቶ <input type="checkbox"/> 2. ከብረትና ሲሚንቶ <input type="checkbox"/> 3. ከቆርቆር <input type="checkbox"/> 4. ከእንጨት <input type="checkbox"/> 5. ከእንጨትና ከጭቃ <input type="checkbox"/> 6. ከድንጋይና ከጭቃ <input type="checkbox"/> 7. ካገለገሉ ቁሳቁስ <input type="checkbox"/> 8. ግድግዳ የለውም 9. ሌላ <input type="checkbox"/> ይገለፁ _____	
Q307	የመኖሪ ቤቱ ጣራ በዋናነት የተሰራው ከምን ነው? [በማየት ይሞላ] [አንድ ብቻ ይመረጥ ከአንድ በላይ የሆነ ቁሳቁስ ጥቅም ላይ ከዋለ አብዛኛውን የሸፈነውን ይምረጡ]	1. ሲሚንቶ <input type="checkbox"/> 2. ከብረትና ሲሚንቶ <input type="checkbox"/> 3. ከቆርቆር <input type="checkbox"/> 4. ከእንጨት <input type="checkbox"/> 5. ከጥላስቲክ <input type="checkbox"/> 7. ካገለገሉ ቁሳቁስ <input type="checkbox"/> 7. ጣራ የለውም <input type="checkbox"/> 8. ሌላ <input type="checkbox"/> ይገለፁ _____	
Q308	የቤቱ ግቢ ሁኔታ? [በመመልከት ይሞላ]	1. የራሱ ግቢና አጥር ያለው <input type="checkbox"/> 2. ከሌላ ቤት ጋር በአንድ ግቢ <input type="checkbox"/> 3. ምንም ግቢ/አጥር የሌለው <input type="checkbox"/>	

Q309	<p>በቤት ውስጥ ከሚከተሉት የትኛው ንብረት አለ?</p> <p>[አማራጮችን ያንቡ፣ ካለ ምልክት ይደረግ ምልክት ይደረግበት]</p>	<ol style="list-style-type: none"> 1. ሰዓት <input type="checkbox"/> 2. ራዲዮ <input type="checkbox"/> 3. ቴሌቪዥን <input type="checkbox"/> 4. ተንቀሳቃሽ ስልክ/ሞባይል <input type="checkbox"/> 5. የመስመር ስልክ <input type="checkbox"/> 6. ሪፍሪጅሬተር <input type="checkbox"/> 7. ጠረጴዛ <input type="checkbox"/> 8. ወንበር <input type="checkbox"/> 9. አልጋ ክፍራሽ ጋር <input type="checkbox"/> 10. ኤሌክትሪክ ምጣድ <input type="checkbox"/> 11. በኬሮሲን የሚሰራ ሙብራት <input type="checkbox"/> 12. የቤቱ ግድግዳ ከብሎኬት ወይም ጡብና የተሰራ <input type="checkbox"/> 13 ጣራው ከቆርቆሮ የተሰራ ቤት <input type="checkbox"/> 	
Q310	<p>ባለፈው 12 ወር ዋነኛ የገንዘብ ምንጭ ምን ነበር?</p> <p>[አማራጮችን ያንቡ፣ የተጠቀሰው ሁሉ ምልክት ይደረግበት]</p>	<ol style="list-style-type: none"> 1. የንግድ ሽያጭ <input type="checkbox"/> 2. ደመወዝ <input type="checkbox"/> 3. ከሌላ ሰው ስጦታ <input type="checkbox"/> 4. የአንስሳት ተዋፅኦ ሽያጭ <input type="checkbox"/> 5. ከአሳ ማስገር <input type="checkbox"/> 6. የቀን ስራ <input type="checkbox"/> 7. ሌላ <input type="checkbox"/> ይገለፅ _____ 	
Q311	<p>ቤተሰቡ በየምን ያህል ጊዜው ቁጠባ ይቆጥባል?</p>	<ol style="list-style-type: none"> 1. በየሳምንቱ <input type="checkbox"/> 2. በየወሩ <input type="checkbox"/> 3. በዓመት ከ2-3 ጊዜ <input type="checkbox"/> 4. በዓመት አንድ ጊዜ <input type="checkbox"/> 5. በጣም ውስን <input type="checkbox"/> 6. ምንም <input type="checkbox"/> 	
Q312	<p>በወር ምን ያህል ይቆጥባሉ?</p>	<p>_____</p>	
Q313	<p>ከብድር ተቋም ገንዘብ ተበድረው ያውቃሉ?</p>	<ol style="list-style-type: none"> 1. አዎ <input type="checkbox"/> 2. አይ የለም <input type="checkbox"/> 	If No
Q314	<p>አዎ ካሉ ቅርብ ጊዜ የተበደሩት መቸ ነው?</p>	<ol style="list-style-type: none"> 1. ከስድስት ወር ወዲህ <input type="checkbox"/> 2. ከለፈው 1ዓመት እስከ 6 ወር ባለው <input type="checkbox"/> 3. ከ1 ዓመት በፊት <input type="checkbox"/> 	
Q315	<p>ብድሩን ለምን ተግባር አዋሉት?</p>	<p>ይገለፅ</p>	
Q316	<p>የተበደሩት ምን ያህል ነበር?</p>	<p>_____ ብር</p>	
Q317	<p>ባለፈው የተበደሩት ብድር ከፍለዋል?</p>	<ol style="list-style-type: none"> 1. አዎ ከፍየ ጨርሻለሁ 2. አይ የለም 3. አዎ እየከፈልኩ ነው 	

መ. የሳኒቴሽን እውቀት፣አመለካከትና ልማዳዊ ድርጊት

ስለ ሳኒቴሽን ያለው ግንዛቤ/እውቀት/

ተ.ቁ	ጥያቄ	ከድ	ይለፍ
QK401	<p>ያልተሸሻለ መፀዳጃ ቤት በመጠቀም የሚመጣ የጤና ችግር ምንድን ነው?</p> <p>[አማራጮችን አያንቡ፣ የተጠቀሰው ሁሉ ምልክት ይደረግበት]</p>	<ol style="list-style-type: none"> 1. ምንም ችግር አይመጣም <input type="checkbox"/> 2. የቆዳ በሽታ <input type="checkbox"/> 3. የአይን ህመም <input type="checkbox"/> 4. ተቅማጥ <input type="checkbox"/> 5. ታይፎይድ <input type="checkbox"/> 6. እከክ <input type="checkbox"/> 7. ኮሌራ <input type="checkbox"/> 8. የሆድ ትላትል <input type="checkbox"/> 9. ሌላ (ይጠቀስ)-----) 	
QK402	<p>ባልተሸሻለ መፀዳጃ ቤት አጠቃቀም ምክንያት ከሚመጣ የጤና ችግር እራሳችሁን ለመከላከል ምን ታደርጋላችሁ?</p> <p>[አማራጮችን አያንቡ፣ የተጠቀሰው ሁሉ ምልክት ይደረግበት]</p>	<ol style="list-style-type: none"> 1. የመፀዳጃ ቤቱን ንፅህና መጠበቅ <input type="checkbox"/> 2. መፀዳጃ ቤቱን በአገባቡ መጠቀም <input type="checkbox"/> 3. መፀዳጃ ቤቱን ለማጽዳት አመች ከሆነ እቃ መስራት <input type="checkbox"/> 4. ዝንብ እንዳይረባ ማድረግ <input type="checkbox"/> 5. ሌላ(ይጠቀስ)----- 	
QK405	<p>ምን ምን ዓይነት መፀዳጃ ቤት ያውቃሉ?</p> <p>(አማራጮችን አያንቡ፣ የተጠቀሰው ሁሉ ምልክት ይደረግበት)</p>	<ol style="list-style-type: none"> 1. በውሃ ገፊት የሚሰራ <input type="checkbox"/> 2. ማስተንፈሻያለው ደረቅ መፀዳጃ ቤት <input type="checkbox"/> 3. ደረቅ መፀዳጃ ቤት ሲሚንቶ ወለል ያለው <input type="checkbox"/> 4. ኮምፖስት/ቀልዝ/ መፀዳጃ ቤት <input type="checkbox"/> 5. ሌላ <input type="checkbox"/> ይጠቀስ _____ 	
QK406	<p>ስለመጻዳጃ ቤት ትምህርት ያገኙት ከየት ነው?</p> <p>[አማራጮችን አያንቡ፣ የተጠቀሰው ሁሉ ምልክት ይደረግበት]</p>	<ol style="list-style-type: none"> 1. ከማህበረሰብ ስብሰባ <input type="checkbox"/> 2. ከትምህርት ቤት <input type="checkbox"/> 3. ከጎረቤት <input type="checkbox"/> 4. ከዘመድ <input type="checkbox"/> 5. ከግንባታ ባለሙያ <input type="checkbox"/> 6. ከሬዲዮ <input type="checkbox"/> 7. ከተለጠፈ ፖስተር <input type="checkbox"/> 8. ከቢልቦርድ ማስታወቂያ <input type="checkbox"/> 9. ከቴሌቪዥን ማስታወቂያ <input type="checkbox"/> 10. ከመያድ ሰራተኛ <input type="checkbox"/> 11. ከመንግስት ተወካይ <input type="checkbox"/> 12. ሌላ <input type="checkbox"/> ይጠቀስ _____ 	
QK407	<p>ለቤትዎ የሚመርጡት መጻዳጃ ቤት አይነት የትኛውን ነው?</p> <p>[አማራጮችን አያንቡ፣ አንዱ ላይ ብቻ ምልክት ይደረግበት]</p>	<ol style="list-style-type: none"> 1. በውሃ ግፊት የሚሰራ <input type="checkbox"/> 2. ደረቅ መፀዳጃ ቤት <input type="checkbox"/> 3. ሌላ ይጠቀስ _____ 	
QK408	<p>የመረጡትን መፀዳጃ ቤት አይነት የመረጡበት</p>	<ol style="list-style-type: none"> 1. ምቹት ስላለው/ደስ ስለሚል <input type="checkbox"/> 	

	<p>ምክንያት ምንድን ነው? [አማራጮችን አያንቡ፣ የተጠቀሰው ሁሉ ምልክት ይደረግበት]</p>	<p>2. ሽታ ስለሌለው <input type="checkbox"/></p> <p>3. ዝንብ ስለሌለው <input type="checkbox"/></p> <p>4. ፅዳጅ እንዳናይ ስለሚረዳን <input type="checkbox"/></p> <p>5. ለማጽዳት ምቹ ስለሆነ <input type="checkbox"/></p> <p>6. ፅዳጁን ለመግፋት ውሃ ስለማያስፈልገው <input type="checkbox"/></p> <p>7. ከገንዘብ አንጻር ዝቅተኛ ስለሆነ <input type="checkbox"/></p> <p>8. ሌላ <input type="checkbox"/> ይገለጽ _____</p>	
<p>QK409</p>	<p>መፀዳጃ ቤት መስራት ያለው ጠቀሜታ ለእርስዎ ምንድን ነው? [አማራጮችን አያንቡ፣ የተጠቀሰው ሁሉ ምልክት ይደረግበት]</p>	<p>1. ንፅህናን፣ ጤናን ያሻሽላል</p> <p>2. የበለጠ ግላዊነትን ይጠብቃል/ከመሳቀቅ ይጠብቃል/</p> <p>3. የበለጠ ምቹነት ይሰጣል</p> <p>4. የመለጠ ለመጠቀም አመች ሁኔታን ይፈጥራል/ጊዜን ይቆጥባል/</p> <p>5. ከአደጋ እንድንጠበቅ ይረዳናል</p> <p>6. ማህበራዊ ደረጃን ከፍ ያደርጋል</p> <p>7. እንግዳ ሲመጣ ያለኃፈርት ለማስተናገድ</p> <p>8. ምንም ጥቅም የለውም</p> <p>10. አላውቅም</p> <p>9. ሌላ (ይጠቀስ)-----</p>	
<p>QK410</p>	<p>ይህንን ዓክት መፀዳጃ ቤት መገንባት የሚችል ሰው ያውቃሉ? /የግንባታ ባለሙያ/</p>	<p>1. አዎ <input type="checkbox"/></p> <p>2. አይ አላውቅም <input type="checkbox"/></p> <p>3. እርግጠኛ አይደለሁም <input type="checkbox"/></p>	
<p>QK411</p>	<p>መጻፍጃ ቤት እንዲኖር ማድረግ ጉዳዩ ምንድን ነው? [አማራጮችን አያንቡ፣ የተጠቀሰው ሁሉ ምልክት ይደረግበት]</p>	<p>1. መጥፎ ሽታ <input type="checkbox"/></p> <p>2. ዝንብ ይሰጣል <input type="checkbox"/></p> <p>3. የጥገና ወጭው <input type="checkbox"/></p> <p>4. ለመጠግን ስራ ማስፈለግ <input type="checkbox"/></p> <p>5. ሌሎች ሰዎች በጋራ ለመጠቀም እንዲመጡ ያደርጋል <input type="checkbox"/></p> <p>6. የክርስ ምድርን ውሃ መበከሉ <input type="checkbox"/></p> <p>7. ሞልቶ በጎርፍ መጥለቅለቁ <input type="checkbox"/></p> <p>8. ጉዳት የለውም <input type="checkbox"/></p> <p>9. አላውቅም <input type="checkbox"/></p> <p>10. ሌላ ካለ (ይገለፅ) _____</p>	
<p>QK412</p>	<p>በሀይጅንና ሳኔቴሽን /በስነ ጤናና ስነ ንፅህና / ላይ ስልጠና ወስደው ያውቃሉ?</p>	<p>1. አዎ <input type="checkbox"/></p> <p>2. አይ አላውቅም <input type="checkbox"/></p>	
<p>QK413</p>	<p>የሰው ፅዳጅ ጀርም ይኖረዋል ብለው ያስባሉ?</p>	<p>1. አዎ <input type="checkbox"/></p> <p>2. አይ አላውቅም <input type="checkbox"/></p> <p>3. እርግጠኛ አይደለሁም <input type="checkbox"/></p>	
<p>QK414</p>	<p>መፀዳጃ ቤት በአገባቡ መጠቀም ተቅማጥን ይከላከላል ብለው ያስባሉ?</p>	<p>1. አዎ <input type="checkbox"/></p> <p>2. አይ አላውቅም <input type="checkbox"/></p> <p>3. እርግጠኛ አይደለሁም <input type="checkbox"/></p>	
<p>QK415</p>	<p>ሜዳ ላይ መፀዳጃ ስለሽታ አምጭ ተህዋስ እንዲሰራጭ ያደርጋል ብለው ያስባሉ?</p>	<p>1. አዎ <input type="checkbox"/></p> <p>2. አይ አላውቅም <input type="checkbox"/></p>	

3. እርግጠኛ አይደለሁም

የሳኒቴሽን ትግበራ ጥያቄዎች

ተ.ቁ	ጥያቄ	ከድ	ይለፍ
QP501	የቤተሰቡ አባላት በዋናነት የሚጸዱት የት ነው?	1. በቤተሰቡ መጸዳኛ ቤት <input type="checkbox"/> 2. በጋራ መጸዳኛ ቤት <input type="checkbox"/> 3. በህዝብ መጸዳኛ ቤት <input type="checkbox"/> 4. በጎረቤት መጸዳኛ ቤት <input type="checkbox"/> 5. እቤት አካባቢ ሜዳ ላይ <input type="checkbox"/> 6. ሌላ <input type="checkbox"/> ይገለጹ _____	
QP502	ለተራ ቁጥር 34 መልስዎ በጋራ መጸዳኛ ቤት ከሆነ ከስንት ቤተሰብ ጋር መጸዳኛ ቤቱን ይጋሩታል?	1. ከ5 ቤተሰብ በታች <input type="checkbox"/> 2. ከ5 ቤተሰብ በላይ <input type="checkbox"/> 3. ትክክለኛ ቁትሩን ይገለጹ _____	
QP503	መጸዳኛ ቤቱ ስንት ክፍል አለው?	_____ ክፍል	
QP504	በአንድ ክፍል ስንት ቤተሰብ ይጠቀምበታል?	_____ ሰው በአንድ ክፍል	
QP505	በአንድ ክፍል የምትጠቀሙት ጠቅላላ ሰዎች ብዛት ስንት ነው?	_____ ሰው	
QP506	መጸዳኛ ቤቱ ከቤት ያለው እርቀት ስንት ሜትር ይሆናል?	_____ ሜትር	
QP507	ልጆች ለመጸዳት የት ነው የሚጠቀሙት?	1. በቤተሰቡ መጸዳኛ ቤት <input type="checkbox"/> 2. በጋራ መጸዳኛ ቤት <input type="checkbox"/> 3. በህዝብ መጸዳኛ ቤት <input type="checkbox"/> 4. በጎረቤት መጸዳኛ ቤት <input type="checkbox"/> 5. እቤት አካባቢ ሜዳ ላይ <input type="checkbox"/> 6. ሌላ <input type="checkbox"/> ይገለጹ _____ 7. ህፃን የለም <input type="checkbox"/> 8. ሌላ <input type="checkbox"/> ይጠቀስ _____	
QP508	የህፃናትን ፅዳት/ሰገራ እንዴት ነው ምታስወግዱት?	1. በመጸዳኛ ቤት <input type="checkbox"/> 2. በጎርፍ ቱቦ መጣል <input type="checkbox"/> 3. ከቆሻሻ ጋር ማስወገድ <input type="checkbox"/> 4. መቅበር <input type="checkbox"/> 5. ሜዳ ላይ መጣል <input type="checkbox"/> 6. ህፃን የለም <input type="checkbox"/> 7. ሌላ <input type="checkbox"/> ይገለጹ _____	
QP509	መጸዳኛ ቤቱ ንፁህ ነው? N.B: ንፁህ ማለት ሽታ፣ዝንብ፣ቆሻሻ የሌለው ማለት ነው (በማየት ይሞላ)	1. አዎ <input type="checkbox"/> 2. አይ አይደለም <input type="checkbox"/>	
QP510	መጸዳኛ ቤት ለመጠቀም ሰልፍ ያስቸግረዎታል?	1. አዎ ሁልጊዜ 2. አዎ አንዳንዴ <input type="checkbox"/> 3. አይ የለም <input type="checkbox"/>	
QP511	ዛሬ ጥዋት የት ነው የተጸዳው?	1. በህዝብ መጸዳኛ ቤት <input type="checkbox"/> 2. በጋራ መጸዳኛ ቤት <input type="checkbox"/> 3. በራሴ መጸዳኛ ቤት <input type="checkbox"/>	

		4. ሜዳ ላይ <input type="checkbox"/>	
		5. ሌላ <input type="checkbox"/>	
QP5012	በፈለጉበት ጊዜ መጻፍጃ ቤት ለመጠቀም ይችላሉ?	1. አዎ <input type="checkbox"/> 2. አይ አልችልም <input type="checkbox"/> 3. እርግጠኛ አይደለም <input type="checkbox"/>	
QP5013	የመጻፍጃ ቤቱ ጥራት ምን ይመስላል? (የተመለከቱትን ብቻ ምልክት ያድርጉ)	1. ሽታ የሌለው <input type="checkbox"/> 2. ከግማሽ ሜትር በላይ ያልሞላ <input type="checkbox"/> 3. በሩ ምንም ያልተሰባበረ <input type="checkbox"/> 4. መቀመጫው አመች የሆነ <input type="checkbox"/> 5. የመጻፍጃ ቤቱ መቀመጫ በቀላሉ የሚታጠብ <input type="checkbox"/> 6. የመጻፍጃ ቤቱ ወለል በቀላሉ የሚታጠብ <input type="checkbox"/> 7. ግድግዳው በቀላሉ የሚጣጠብ <input type="checkbox"/> 8. ጣራው የማያፈስና ጥሩ የሆነ <input type="checkbox"/> 9. በቀንም ሆነ በማታ በቂ ብርሃን ያለው <input type="checkbox"/> 10. ለመታጠቢያና ለሚደፉ በቂ ውሃ ያለው <input type="checkbox"/> 11. የእጅ መታጠቢ ከሳሙና ጋር ያለው <input type="checkbox"/>	
QP514	በተራ ቁጥር QP5013 መሰረት የመጻፍጃ ቤቱ ጥራት ምን ይመስላል?	1. ዝቅተኛ QP5013ከ7 በታች ከሆነ <input type="checkbox"/> 1. ከፍተኛ QP5013ከ7 በላይ ከሆነ <input type="checkbox"/>	

የሳንቲሽን አመለካከት ጥያቄዎች

ተ.ቁ	ጥያቄ	ከድ	ይለፍ
QA601	ባለዎት መጻፍጃ ቤት ደስተኛ ነዎት/አረክተዋል?	1. አዎ አረክቻለሁ <input type="checkbox"/> 2. አይ አልረክሁም <input type="checkbox"/>	
QA602	ለአንድ ቤተሰብ ጤንነት ገንዘብ አውጥቶ መጻፍጃ ቤት መስራት ጠቃሚ ነው ብለው ያምናሉ?	1. አዎ <input type="checkbox"/> 2. አይ አላምንም <input type="checkbox"/>	
QA603	ሜዳ ላይ የሚጸዳዱ ሰዎች ልጆቻቸውን የጤና ችግር ላይ ይጥላሉ?	1. እስማማለሁ <input type="checkbox"/> 2. አልስማማም <input type="checkbox"/>	
QA604	ሜዳ ላይ የሚጸዳዱ ሰዎች የአካባቢያቸውን ማህበረሰብ የጤና ችግር ላይ ይጥላሉ?	1. እስማማለሁ <input type="checkbox"/> 2. አልስማማም <input type="checkbox"/>	
QA605	መጻፍጃ ቤት ከመገንባት ይልቅ ሞባል መግዛት ጠቃሚ ነው	1. እስማማለሁ <input type="checkbox"/> 2. አልስማማም <input type="checkbox"/>	
QA606	ከመጻፍጃ ቤት ይልቁን የትምህርት ቤት ክፍያ ያሳስባል	1. እስማማለሁ <input type="checkbox"/> 2. አልስማማም <input type="checkbox"/>	
QA607	ለአንድ ቤተሰብ ከመጻፍጃ ቤት ይበልጥ ቴሌቪዥን አስፈላጊ ነው	1. እስማማለሁ <input type="checkbox"/> 2. አልስማማም <input type="checkbox"/>	
QA608	በአካባቢዎ ባሉት የመጻፍጃ ቤት ግንባታ ቁሳቁስ ሰቆች ምን ያህል ደስተኛ ነዎት?	1. ደስተኛ ነኝ <input type="checkbox"/> 2. ደስተኛ አይደለም <input type="checkbox"/>	
QA609	በሚደርስዎት የመጻፍጃ ቤት መረጃ ምን ህል ደስተኛ ነዎት?	1. ደስተኛ ነኝ <input type="checkbox"/> 2. ደስተኛ አይደለም <input type="checkbox"/>	
QA610	በአካባቢዎ ሜዳ ላይ መጻፍጃት የተለመደ ነው?	1. አዎ <input type="checkbox"/> 2. አይ አይደለም <input type="checkbox"/>	
QA611	በራሱም መጻፍጃ ቤት የመስራት አቅምዎን	1. እችላለሁ <input type="checkbox"/>	

	እንዴት ይገመግሙታል?	2. ድሃ ነኝ አልችልም <input type="checkbox"/>	
QA612	መጻፍን ቤት መጠቀም ችግር ያመጣል ብለው ያስባሉ? [መጻፍን ቤት መጠቀም በራሱ ችግር ያመጣል ብለው ስቡ ከሆነ]	1. አይ አላስብም <input type="checkbox"/> 2. አዎ <input type="checkbox"/>	
QA613	ሜዳ ላይ መጻፍዎት በህግም ሆነ በማህበረሰቡ የተከለከለ ነው ብለው ያስባሉ?	1. አዎ <input type="checkbox"/> 2. አይ አላስብም <input type="checkbox"/>	
QA614	ከመጻፍን ቤት ግንባታ ቁሳቁሶች የሚፈልጉት ጥራት የቱን ነው? [ከአንድ በላይ መልስ ይቻላል]	1. በቀላሉ የሚጸዳ <input type="checkbox"/> 2. ብዙ ጊዜ የሚያገለግል <input type="checkbox"/> 3. ዘመናዊ የሆነ <input type="checkbox"/> 4. በቀላሉ የሚገነባ/የሚሰራ <input type="checkbox"/> 5. ዋጋው ተመጣጣኝ የሆነ <input type="checkbox"/>	
QA615	መጻፍን ቤት ለአርስቃ ያለው ጠቀሜታ ምንድን ነው? [አማራጮችን አያገቡ፣ የተጠቀሰው ሁሉ ምልክት ይደረግበት]	1. ለጤና ጠቀሜታ አለው <input type="checkbox"/> 2. እንግዳ ሲመጣ ላለማፈር <input type="checkbox"/> 3. ግላዊነትንና ደህንነትን ይጠብቃል <input type="checkbox"/> 4. በማህበረሰቡ ዘንድ ክብርን ያጎናፀፋል <input type="checkbox"/> 5. ምቹነት ሰጣል <input type="checkbox"/> 6. ክብር ይሰጣል <input type="checkbox"/> 7. ኩራት እንዲሰማን ያደርገናል <input type="checkbox"/>	

ቀ. ስለ መጻፍን ቤት መረጃ ልውውጥ

ተ.ቁ	ጥያቄ	ኮድ	ይለፍ
Q701	ከቤተሰቡ ስንት ሰው የልዩ ልዩ የማህበረሰብ ማህበር አባላት ናቸው ?	1. 0 <input type="checkbox"/> 2. 1 <input type="checkbox"/> 3. 2 <input type="checkbox"/> 4. 3 <input type="checkbox"/> 5. ሌላ (ይጠቀስ) _____	
	ከሚከተሉት ስለመጻፍን ቤት ግንባታ እና ስለቁሳቁሶች ጥራት የተሟላ መረጃ በመስጠት የተሸለ የሚሉት የትኛው ነው?		
Q702	ግንብኛ	1. አዎ <input type="checkbox"/> 2. አይ አይደለም <input type="checkbox"/>	
Q703	የመጻፍን ቤት ግንባታ ቁሳቁስ የሚያመርቱት	1. አዎ <input type="checkbox"/> 2. አይ አይደለም <input type="checkbox"/>	
Q704	የመጻፍን ቤት ቁሳቁስ አቅራቢ ሰቆች	1. አዎ <input type="checkbox"/> 2. አይ አይደለም <input type="checkbox"/>	
Q705	የመንግስት አካል	1. አዎ <input type="checkbox"/> 2. አይ አይደለም <input type="checkbox"/>	
Q706	መንገደኛ ባለሙያ ደርጅት ሰራተኞች	1. አዎ <input type="checkbox"/> 2. አይ አይደለም <input type="checkbox"/>	

አፅመታሪክ 1: /ይህ ጥያቄ መሬት ኖሯቸው ነገር ግን መጻፍን ቤት ለሌላቸውና ለማሰራት ፈቃደኛ ለሆኑ ብቻ ይጠየቃል/ አርስቃ ለመጻፍን ቤት መስሪያ ቦታ አለዎት። ስለዚህ መስራት ይችላሉና የአንድ መጻፍን ቤት ግንባታ ግምት 30,000 ብር ይገመታል። ይህም መጻፍን ቤት የእጅ መታጠቢያና ሻወር ያለው እንዲሁም ውስጡ ሴራሚክ የተነጠፈበትና ግድግዳው እስከ 1.5 ሜትር ከፍታ ሴራሚክ ይሰብሳል። በመሆኑም

የዚህ መጻፍን ቤት ዋጋ ግምት 30,000 ብር	1. አዎ <input type="checkbox"/> አዎ ካሉ ወደ ጥያቄ ቁ-2003 ይሂዱ	
------------------------------	--	--

Q801	በባለሙያ ግምት ይገመታል፣ ይህንን ክፍያ ከፍለው መጠን ቤቱን በተገለጸው ጥራት ለማሰራት ፈቃደኛ ነዎት?	2. አይ አይደለሁም <input type="checkbox"/> አይ ካሉ ወደ ጥያቄ ቁ-2002 ይሂዱ 3. አላውቅም/አርግጠኛ አይደለሁም <input type="checkbox"/> ካሉ ወደ ጥያቄ ቁ-2002 ይሂዱ
Q802	ዋጋው 20,000 ብር የሚገመት ቢሆንስ፣ የተጠቀሰውን ዋጋ ከፍሎ ከላይ የተጠቀሰውን ዓይነት መጠን ቤት ለማሰራት ፈቃደኛ ነዎት?	1. አዎ <input type="checkbox"/> አዎ ካሉ ወደ ጥያቄ ቁ-2003 ይሂዱ 2. አይ አይደለሁም <input type="checkbox"/> አይ ካሉ ወደ ጥያቄ ቁ-2002 ይሂዱ 3. አላውቅም/አርግጠኛ አይደለሁም <input type="checkbox"/> ካሉ ወደ ጥያቄ ቁ-2003 ይሂዱ
Q803	ከላይ የተጠቀሰውን ዓይነት መጠን ቤት ለማሰራት ሊከፍሉት የሚችሉት ክፍተኛ ገንዘብ መጠን ስንት ነው?	_____
አፅመታሪክ 2:/ (ከQ725 የቀጠለ) ይህ ጥያቄ የሚከተለው የግል መጠን ቤት ኑሯቸው መታደስ ለሚያስፈልገው ዓይነት መጠን ቤት እና ለማሰራት እቅድ ላላቸው ቤቶች ነው/ የመጠን ቤቱን ለማሻሻል እድሳት ማድረግ ያስፈልገዋል። እርስዎም ይህንን እንደሚደርጉና እቅድ እንዳለዎት ገልጸዋል። በዚህ መሰረት መጠን ቤቱን ወለሉን ሴራሚክ ለማልበስና ግድግዳውን 1.5 ሜትር ድረስ ሴራሚክ ለማልበስና መታጠብ የሚችል ለማድረግ፣ መቀመጫውን በቀላሉ ሊጸዳ የሚችልና በውሀ ግፊት የሚሰራ ለማድረግ እና የእጅ መታጠቢያና ሻዎር እንዲኖረው ለማድረግ እንዲሁም ውሃ እንዲገባለት ለማድረግ በጥቅል 5560 ብር በባለሙያ ግምት ይገመታል።		
Q804	እድሳቱን ለማድረግ 5560 ብር በባለሙያ የሚገመት ወጭ ቢጠይቅ፣ ይህንን ክፍያ ከፍለው ከላይ በተገለጸው ሁኔታ መጠን ቤትዎን ለማሰራት ፈቃደኛ ነዎት?	1. አዎ <input type="checkbox"/> አዎ ካሉ ወደ Q806 ይሂዱ 2. አይ አይደለሁም <input type="checkbox"/> አይ ካሉ ወደ Q805 ይሂዱ 3. አላውቅም/አርግጠኛ አይደለሁም <input type="checkbox"/> አይ ካሉ ወደ ጥያቄ Q805 ይሂዱ
Q805	የግንባታው ወጭ 4000 ብር ቢሆንስ ከፍለው ከላይ በተገለጸው መጠን መጠን ቤትዎን ለማሰራት ፈቃደኛ ነዎት?	1. አዎ <input type="checkbox"/> አዎ ካሉ ወደ ጥያቄ Q806 ይሂዱ 2. አይ አይደለሁም <input type="checkbox"/> አይ ካሉ ወደ Q806 ይሂዱ 3. አላውቅም/አርግጠኛ አይደለሁም <input type="checkbox"/> ካሉ ወደ Q806 ይሂዱ
Q806	መጠን ቤትዎን ከላይ በተጠቀሰው ሁኔታ ለማሰራት ሊከፍሉት ፈቃደኛ የሚሆኑት ክፍተኛ ገንዘብ ስንት ነው?	_____
አፅመታሪክ 3: የእጅ መታጠቢያ ከመጠን ቤት አጠገብ እንዲኖር ማድረግ ቢያስፈልገዎት እና ይህንንም ፍላጎት ውስጥ ለውስጥ ቀጥታ ከቆሻሻ ማጠራቀሚያ ሴፕቲክ ታንክ ወይም ከመጠን ቤቱ ጉድጓድ ጋር እንዲገናኝ ይደረጋል። የእጅ መታጠቢያው የቀጥታ መስመር ውሃ እንዲኖረው የሚደረግ ሲሆን የሚገጠምለት ሴራሚክ የእጅ መታጠቢያ ይሆናል። ይህም በባለሙያ ግምት እስከባለሙያው ጉልበት 1000 ብር ይገመታል፤ ስለዚህ		
Q808	የተጠቀሰውን 1000 ብር ከፍለው የእጅ መታጠቢያ ለማስገባት ፈቃደኛ ነዎት?	1. አዎ <input type="checkbox"/> አዎ ካሉ ወደ ጥያቄ ቁ-2009 ይሂዱ 2. አይ አይደለሁም <input type="checkbox"/> አይ ካሉ ወደ ጥያቄ ቁ-2008 ይሂዱ 3. አላውቅም/አርግጠኛ አይደለሁም <input type="checkbox"/> አይ ካሉ ወደ ጥያቄ ቁ-2008 ይሂዱ
Q809	ዋጋው ወደ 500 ብር ዝቅ እንዲል ቢደረግስ ከፍሎ የእጅ መታጠቢያውን ለማስገባት ፈቃደኛ ነዎት?	1. አዎ <input type="checkbox"/> አዎ ካሉ ወደ ጥያቄ ቁ-2009 ይሂዱ 2. አይ አይደለሁም <input type="checkbox"/> አይ ካሉ ወደ ጥያቄ ቁ-2009 ይሂዱ 3. አላውቅም/አርግጠኛ አይደለሁም <input type="checkbox"/> አይ ካሉ ወደ ጥያቄ ቁ-2009 ይሂዱ
Q810	የእጅ መታጠቢያ ከላ በተጠቀሰው ጥራትና ሁኔታ ለማሰራት ሊከፍሉት ፈቃደኛ ሆነው ሊከፍሉት የሚችሉት ክፍተኛ የገንዘብ መጠን ምን ህል ነው?	_____
አፅመታሪክ 4:/ ይህ መጠይቅ የሚሞላው የግል መጠን ቤት ለመሰራት የአቅም ችግር፣ የቦታ ችግር ላላባቸው እና የጋራ መጠን ቤት ለሚጠቀሙ በግል ወይም በቀበሌ ቤት ለሚኖሩ ሰዎች ነው/ ስለሆነም የጋራ መጠን ቤት ተጠቃሚዎች መጠን ቤታቸውን ሙሉ ለሙሉ ባይገነቡም የተወሰነ የገንዘብ፣ የጉልበት ወይም የቁሳቁስ አስተዋፅኦ በማድረግ የሚገነቡበትና የሚጠቀሙበት ሁኔታ መኖር አለበት። በመሆኑም ይህ መጠይቅ ለጋራ መጠን ቤት በገንዘብ፣ በጉልበት ወይም በዓነት አስተዋፅኦ ለማድረግ የሚጠይቅ መጠይቅ ነው። በመጀመሪያ ተጠቃሚዎች ለመጠን ቤት አስተዋፅኦ በማድረግና ባለማድረግ ላይ ያላቸውን እምነት የሚጠይቅ ሲሆን በመቀጠል ደግሞ በፈቃደኝነት ሊያዋጡት የሚፈልጉት የገንዘብ መጠን ይጠይቃል።		
Q811	በጋራ ለምትጠቀሙበት መጠን ቤት የገንዘብ፣ የጉልበት ወይም የቁሳቁስ አስተዋፅኦ ማድረግ ኖርብናል ብለው ያምናሉ?	1. አዎ <input type="checkbox"/> አዎ ካሉ ወደ ጥያቄ 2011 ይሂዱ 2. አይ አላምንም <input type="checkbox"/> አይ ካሉ ወደ ጥያቄ 2012 ይሂዱ
	ለጋራ መጠን ቤትዎ አስተዋፅኦ ለማድረግ የሚፈልጉት በምን መልኩ ነው?	1. በገንዘብ <input type="checkbox"/> 2. በዓይነት <input type="checkbox"/>

Q812		3. በጉልበት <input type="checkbox"/>	
	በጥያቄ ቁጥር 2010 መሰረት መልስዎ አይከሰትም፣ መጠን ሲሆን ለመሰረት የሚገባውን ሀላፊነት ነውብለው ያምናሉ?	1. የመንግስት <input type="checkbox"/> 2. የረጅም ድርግት/መያዪ <input type="checkbox"/> 3. አላውቅም <input type="checkbox"/> 4. <input type="checkbox"/> ይገለፅ _____	ሌላ

የአፅመታሪክ 4 ክፍል: ይህ ጥያቄ በተራ ቁጥር 2010 መሰረት ለጋራ መጠን ሲሆን አስተዋጽኦ ማድረግ አለብኝ ብለው የሚሞኑ ሰዎች ብቻ የሚጠየቁት ጥያቄ ነው። አስተዋጽኦ ለማድረግ የሚፈልጉት በዐይነት ዌም በጉልበት ከሆነ ወደ ገንዘብ ተለውጦ መሞላት ኖርበታል/ ለዚህም የሰው ጉልበት ክህሎት ላለው 80 ብር በቀን ክህሎት ለሌለው ጉልበት ሰራተኛ 50 ብር ሂሳብ ሲተመን ለቆይታ እንደ አይነቱ እና ብዛቱ ይተመንና ቀመጣል፤ በተጨማሪም የዓይነት አስተዋጽኦው ዝርዝር በማስታወሻ ሰበሰባል/፡፡ በዚህም መሰረት የጋራ መጠን ሲሆን 4 ክፍል ያለው የጋራ መጠን ሲሆን፣ ከውስጥ ለሻወር አገልግሎት ቦታ፣ የአጅ መታጠቢ ለውጥ ሙሉ-ለሙሉ ወለሉ ሲሆን ግድግዳው እስከ 1.5 ሜትር ሲሆን፣ መቀመጫው በውሃ ግፊት የሚሰራ ሆኖ የሚሰራ ሲሆን በተጨማሪም የቀጥታ ውሃ መስመርና መጠቀሚያ ታንክ አንዲኖረው ደረጋል። ይህንን ስርዓት ለማጠናቀቅ 149 488 ብር የሚጨርስ ሲሆን ከዚህ ውስጥ ግማሹን መንግስት የሚሸፍነው ሲሆን ቀሪውን ተጠቃሚዎች መሸፈን ይኖርባቸዋል። ይህ ካልሆነ ግን መንግስት ይህንን ማድረግ ለሚችሉ ሌሎች ነዋሪዎች እድሉን የሚሰጥ ይሆናል። መጠን ሲሆን በዓጠቃላይ ለ20 ቤቶች የሚከፋፈል ሲሆን አንድ ክፍል መጠን ሲሆን ለ5 ቤቶች እንዲጠቀሙበት የሚሰጣቸው ይሆናል። ወጭውንም በዚህ መልኩ ሲከፈሉት ለአንድ ሰው 3737 ብር እንዲያወጣ ይጠበቅበታል። ይህንና ይህንን ገንዘብ የሚከፍሉት በ2 አመት ክፍያ ከብድርና ቁጠባ ብድር ወስደው ነው።

Q814	ከላይ በተገለጸው መሰረት በተገለጸው ሁኔታ ጥራት ለው መጠን ሲሆን ለ5 ቤቶች የምትገኙት መጠን ሲሆን ለማሰራት የሚጠበቅብዎትን 3737 ብር ለመክፈል ፈቃደኛ ነዎት?	1. አዎ <input type="checkbox"/> አዎ ካሉ ወደ ጥያቄ ቁ-2015 ይሂዱ 2. አይ አይደለሁም <input type="checkbox"/> አይ ካሉ ወደ ጥያቄ ቁ-2014 ይሂዱ 3. አላውቅም/አርግጠኛ አይደለሁም <input type="checkbox"/> አይ ካሉ ወደ ጥያቄ ቁ-2014 ይሂዱ	
------	---	---	--

Q815	ወጋው ወደ 1868 ብር ዝቅ እንዲል ቢደረግ ትራት ለውን መጠን ሲሆን ክፍሉ ለማሰራት ፈቃደኛ ነዎት?	1. አዎ <input type="checkbox"/> አዎ ካሉ ወደ ጥያቄ ቁ-2015 ይሂዱ 2. አይ አይደለሁም <input type="checkbox"/> አይ ካሉ ወደ ጥያቄ ቁ-2015 ይሂዱ 3. አላውቅም/አርግጠኛ አይደለሁም <input type="checkbox"/> አይ ካሉ ወደ ጥያቄ ቁ-2015 ይሂዱ	
------	---	---	--

Q815	ከላይ የተገለጸውን መጠን ሲሆን ከላ በተገለጸው ጥራት ስርዓት ለመጠቀም በፈቃደኝነት ሊከፍሉት የሚችሉት ክፍተት ገንዘብ መጠን ምን ያህል ነው?	_____	
------	---	-------	--

የአፅመታሪክ 5: በዚህ የአከፋፈል ስሌት ክፍያውን የሚከፍሉት በአንድ ጊዜ ክፍያ ሆኖ ግን ክፍው ዝቅ እንዲል ደረጋል። በዚህም መሰረት እንዲከፍሉት የሚጠበቀው ክፍያ 747 ብር ሲሆን ህንጻ አንድ ጊዜ መክፈል ኖርበታል።

Q816	ስለዚህ ከላይ በተገለጸው መሰረት ይህንን ለ5 ቤቶች የሚገኙትን ሻወርና የአጅ መታጠቢ የሚላለት መጠን ሲሆን ለማሰራት 747 ብር ለመክፈል ፈቃደኛ ነዎት።	1. አዎ <input type="checkbox"/> አዎ ካሉ ወደ ጥያቄ ቁ-2018 ይሂዱ 2. አይ አይደለሁም <input type="checkbox"/> አይ ካሉ ወደ ጥያቄ ቁ-2017 ይሂዱ 3. አላውቅም/አርግጠኛ አይደለሁም <input type="checkbox"/> አይ ካሉ ወደ ጥያቄ ቁ-2017 ይሂዱ	
------	--	---	--

Q817	ዋጋው ወደ 373 ብር ዝቅ እንዲል ቢደረግስ ለመክፈል ፈቃደኛ ነዎት።	1. አዎ <input type="checkbox"/> አዎ ካሉ ወደ ጥያቄ ቁ-2018 ይሂዱ 2. አይ አይደለሁም <input type="checkbox"/> አይ ካሉ ወደ ጥያቄ ቁ-2018 ይሂዱ 3. አላውቅም/አርግጠኛ አይደለሁም <input type="checkbox"/> አይ ካሉ ወደ ጥያቄ ቁ-2018 ይሂዱ	
------	---	---	--

Q818	መጠን ሲሆን ከ5 ወደ 10 ቤቶች ከፍ ብናደርገው የሚደርሱበት የገንዘብ መጠን ወደ 186 ብር ዝቅ ይላል። ስለሆነም የሰው ቁጥር ተጨምሮ ክፍያ 186 ብር ቢሆን ለመክፈል ፈቃደኛ ነዎት።	1. አዎ <input type="checkbox"/> አዎ ካሉ ወደ ጥያቄ ቁ-2019 ይሂዱ 2. አይ አይደለሁም <input type="checkbox"/> አይ ካሉ ወደ ጥያቄ ቁ-2019 ይሂዱ 3. አላውቅም/አርግጠኛ አይደለሁም <input type="checkbox"/> አይ ካሉ ወደ ጥያቄ ቁ-2019 ይሂዱ	
------	--	---	--

Q819	ከላይ በተገለጸው ዓይነት መጠን ሲሆን ለማሰራትና ለመጠቀም ሊከፍሉት የሚችሉት ክፍተት የገንዘብ መጠን ምን ያህል ነው።	_____	
------	--	-------	--

የአፅመታሪክ 6: መፀዳጃ ቤትን መገንባትና ማሻሻል የተጠቃሚዎች ዋነኛ ኃላፊነት ሲሆን ማደስና ማሻሻል በብዙ ለተጠቃሚዎች ጤንነትና ደህንነት አስፈላጊ ነው። ስለሆነም የጋራ መፀዳጃ ቤቶችን ለማደስ የአንድ ክፍል ሂሳብ 5560 ብር አካባቢ በባለሙግ ግምት ይገመታል። እድሳቱ ወለሉን ሙሉ ለሙሉ ሲራሚክ ማድረግ፣ ግድግዳውን 1.5 ሜትር ድረስ ማደስ፣ በሩን ማደስ፣ መቀመጫውን ግድጓድ በውሃ ግፊት የሚሰራ ማድረግ እንዲሁም የእጅ መታጠቢያ፣ ቀጥታ ውሃ መስመር ማስገባትና መጠባበቂያ ታንክር ውሃ ማስቀመጥን የሚጨምር ይሆናል። ስለሆነም ለዚህ እያንዳንዱ 1132 ብር ወጭ ማድረግ ጠበቅቦታል።

Q820	ከላይ የተጠቀሰውን 1132 ብር ክፍሎ የጋራ መፀዳጃ ቤትን ለማሳደስ ፈቃደኛ ነዎት?	<ol style="list-style-type: none"> 1. አዎ <input type="checkbox"/> አዎ ካሉ ወደ ጥያቄ ቁ-2022 ይሂዱ 2. አይ አይደለሁም <input type="checkbox"/> አይ ካሉ ወደ ጥያቄ ቁ-2021 ይሂዱ 3. አላውቅም/እርግጠኛ አይደለሁም <input type="checkbox"/> አይ ካሉ ወደ ጥያቄ ቁ-2021 ይሂዱ 	
Q821	ክፍያው ወደ 600 ብር ዝቅ እንዲል ቢደረግስ ከፍለው የጋራ መፀዳጃ ቤትን ለማሳደስ ፈቃደኛ ነዎት?	<ol style="list-style-type: none"> 1. አዎ <input type="checkbox"/> አዎ ካሉ ወደ ጥያቄ ቁ-2022 ይሂዱ 2. አይ አይደለሁም <input type="checkbox"/> አይ ካሉ ወደ ጥያቄ ቁ-2022 ይሂዱ 3. አላውቅም/እርግጠኛ አይደለሁም <input type="checkbox"/> አይ ካሉ ወደ ጥያቄ ቁ-2022 ይሂዱ 	
Q822	የጋራ መፀዳጃ ቤትን ከላይ በተጠቀሰው ሁኔታ ማሳደስ በፈቃደኝነት ሊከፍሉት የሚችሉት ክፍተኛ መጠን ምን ያህል ብር ነው ?	_____	

```
. oprobit W510C SE306YRL SE313DEP W513SANE Knowldeg1 Knowldeg4 typeTTk Attitude_1 A701SATE
```

```
Iteration 0: log likelihood = -56.949589
Iteration 1: log likelihood = -43.648473
Iteration 2: log likelihood = -43.22466
Iteration 3: log likelihood = -43.223187
Iteration 4: log likelihood = -43.223187
```

```
Ordered probit regression                Number of obs   =         88
                                         LR chi2(8)      =         27.45
                                         Prob > chi2     =         0.0006
Log likelihood = -43.223187             Pseudo R2      =         0.2410
```

W510C	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
SE306YRL	-.0225053	.014063	-1.60	0.110	-.0500682	.0050577
SE313DEP	.0008008	.0003884	2.06	0.039	.0000395	.0015621
W513SANE	.0000508	.0000368	1.38	0.167	-.0000213	.000123
Knowldeg1	-.1679464	.4936159	-0.34	0.734	-1.135416	.799523
Knowldeg4	.1830675	.4595828	0.40	0.690	-.7176983	1.083833
typeTTk	.2420496	.1895623	1.28	0.202	-.1294856	.6135848
Attitude_1	.5631703	.5234093	1.08	0.282	-.462693	1.589034
A701SATE	1.009354	.4175311	2.42	0.016	.1910081	1.8277
/cut1	3.310922	1.037956			1.276566	5.345279
/cut2	4.044727	1.068544			1.950419	6.139035

```
. mfx, predict(outcome(0))
```

```
Marginal effects after oprobit
y = Pr(W510C==0) (predict, outcome(0))
= .85732349
```

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]		X
SE306YRL	.0050739	.00306	1.66	0.098	-.000932	.01108	19.2727
SE313DEP	-.0001805	.0001	-1.82	0.068	-.000375	.000014	214.841
W513SANE	-.0000115	.00001	-1.38	0.167	-.000028	4.8e-06	1547.9
Knowld~1*	.0390275	.11781	0.33	0.740	-.191871	.269926	.670455
Knowld~4*	-.0409153	.10137	-0.40	0.686	-.239595	.157765	.545455
typeTTk	-.0545706	.04201	-1.30	0.194	-.13691	.027769	1.98864
Attitu~1*	-.1047231	.07737	-1.35	0.176	-.256371	.046925	.806818
A701SATE	-.2275611	.0865	-2.63	0.009	-.397107	-.058015	1.48864

(*) dy/dx is for discrete change of dummy variable from 0 to 1

```
. margins, W510C
option W510C not allowed
r(198);
```

```
. mfx, predict(outcome(1))
```

```
Marginal effects after oprobit
y = Pr(W510C==1) (predict, outcome(1))
= .10691766
```

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]		X
SE306YRL	-.003304	.00218	-1.52	0.129	-.007575	.000967	19.2727
SE313DEP	.0001176	.00007	1.71	0.088	-.000017	.000252	214.841
W513SANE	7.46e-06	.00001	1.31	0.191	-3.7e-06	.000019	1547.9
Knowld~1*	-.0250914	.07518	-0.33	0.739	-.172445	.122263	.670455
Knowld~4*	.0266883	.06655	0.40	0.688	-.103749	.157125	.545455
typeTTk	.0355355	.02888	1.23	0.219	.021069	.09214	1.98864
Attitu~1*	.0715497	.05729	1.25	0.212	-.040736	.183835	.806818
A701SATE	.1481841	.06821	2.17	0.030	.014497	.281871	1.48864

(*) dy/dx is for discrete change of dummy variable from 0 to 1

```
. oprobit mWTPCT Q210U5 SE306YRL SE313DEP P527NOHH A701SATE Knowldeg1 Knowldeg4 typeTtk Attitude_
> 1
```

```
Iteration 0: log likelihood = -77.460062
Iteration 1: log likelihood = -68.980391
Iteration 2: log likelihood = -68.922698
Iteration 3: log likelihood = -68.92268
Iteration 4: log likelihood = -68.92268
```

```
Ordered probit regression                               Number of obs   =           84
                                                       LR chi2(9)      =          17.07
                                                       Prob > chi2     =          0.0476
Log likelihood = -68.92268                             Pseudo R2      =          0.1102
```

mWTPCT	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
Q210U5	.1476696	.3351596	0.44	0.660	-.5092312	.8045705
SE306YRL	-.0074552	.0112145	-0.66	0.506	-.0294352	.0145249
SE313DEP	9.29e-06	.0006441	0.01	0.988	-.0012531	.0012717
P527NOHH	-.0564553	.0326	-1.73	0.083	-.1203502	.0074396
A701SATE	.8715352	.2824461	3.09	0.002	.3179511	1.425119
Knowldeg1	-.2088673	.3420711	-0.61	0.541	-.8793144	.4615797
Knowldeg4	-.3938708	.293109	-1.34	0.179	-.9683538	.1806123
typeTtk	.1248218	.1369511	0.91	0.362	-.1435975	.3932411
Attitude_1	.1821036	.3344235	0.54	0.586	-.4733545	.8375616
/cut1	.6960712	.7135723			-.7025048	2.094647
/cut2	2.443383	.7573335			.9590367	3.927729

```
. mfx, predict (outcome(0))
outcome 0 not found
outcome() must either be a value of mWTPCT,
or #1, #2, ...
r(111);
```

```
. mfx, predict (outcome(1))
```

```
Marginal effects after oprobit
y = Pr(mWTPCT==1) (predict, outcome(1))
= .4412178
```

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]		X
Q210U5*	-.0578256	.12999	-0.44	0.656	-.312602	.19695	.22619
SE306YRL	.0029418	.00443	0.66	0.506	-.005735	.011619	19.0595
SE313DEP	-3.66e-06	.00025	-0.01	0.988	-.000502	.000494	128.762
P527NOHH	.0222775	.01286	1.73	0.083	-.002936	.047491	6.44048
A701SATE	-.3439111	.11138	-3.09	0.002	-.562213	-.125609	1.47619
Knowld~1*	.0815321	.13161	0.62	0.536	-.17641	.339475	.75
Knowld~4*	.1539967	.11286	1.36	0.172	-.0672	.375193	.547619
typeTtk	-.0492552	.05402	-0.91	0.362	-.155132	.056622	2.04762
Attitu~1*	-.0722318	.13294	-0.54	0.587	-.332799	.188336	.797619

(*) dy/dx is for discrete change of dummy variable from 0 to 1

```
. mfx, predict (outcome(2))
```

```
Marginal effects after oprobit
y = Pr(mWTPCT==2) (predict, outcome(2))
= .50391959
```

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]		X
Q210U5*	.0403273	.08813	0.46	0.647	-.132412	.213066	.22619
SE306YRL	-.0021141	.00321	-0.66	0.510	-.008407	.004179	19.0595
SE313DEP	2.63e-06	.00018	0.01	0.988	-.000355	.000361	128.762
P527NOHH	-.0160097	.00987	-1.62	0.105	-.035354	.003335	6.44048
A701SATE	.2471514	.0952	2.60	0.009	.060571	.433732	1.47619
Knowld~1*	-.0562941	.0878	-0.64	0.521	-.228388	.1158	.75
Knowld~4*	-.1085115	.08055	-1.35	0.178	-.266388	.049365	.547619