Cost Calculation and Tariff Settings

Study for Mechanical Emptying Services in Southern Bangladesh

December, 2018

SNV

The 'Cost calculations and tariff settings study for mechanical emptying services in Southern Bangladesh' aims to evaluate and determine affordable tariff structure of existing mechanical emptying services considering the level of affordability and willingness to pay of the communities in southern part of Bangladesh. The study was conducted in Jhenaidah, Kushtia, Jashore and Benapole Paurashavas and Khulna City Corporation.

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Research Advisor
Rajeev Munankami
Senior Advisor/ Team Leader
Urban Sanitation Programme
SNV Netherlands Development Organisation

Research Coordinator
Md. Tanvir Ahamed Chowdhury
Sanitation Business Advisor
Urban Sanitation Programme
SNV Netherlands Development Organisation

Contact Information
Marc Pérez Casas
WASH Sector Leader, Bangladesh
SNV Netherlands Development Organisation
mcasas@snv.org

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SNV Bangladesh
House-11, Road-72, Gulshan-2
Dhaka-1212, Bangladesh
Tel: +88 029 888 708
Email: bangladesh@snv.org
For further information: www.snv.org

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EXECUTIVE SUMMARY

The main objective of the study was to evaluate and determine affordable tariff structure of existing mechanical emptying services considering the level of affordability and willingness to pay of the communities in southern part of Bangladesh. In addition, specific objective was to assessment of different options for separate tariff systems, pricing and tariff options and innovative incentive mechanism to ensure the affordability of services.

Both qualitative and quantitative research approaches adopted in the study. Structured questionnaire for Face-to-Face Interview (F2F) used as the main option for data collection about current tariff from relevant stakeholders from five cities; Khulna, Kushtia, Jhenaidah, Jashore and Benapole. In addition, semi-structured questionnaire used for Key informants Interviews (KIIs) and Focus Group Discussion (FGD) conducted with relevant stakeholders.

In three cities (Khulna, Kushtia and Jhenaidah) mechanical emptying service is available. In Jashore this service has been introduced but now it is non-functional. But in Benapole this service has not been introduced.

During the household survey we divided sample HH into two groups "User" and Non-User", in the three cities where mechanical services are available. Households (HH) who use the mechanical emptying service (Vacutag) for emptying pit or septic tanks were defined as "User" group, and households that employ manual sweepers for instead of using Vacutag were defined as "Non-user" group. Total 1,165 HHs were interviewed including 176 from User group and 889 from non-user group.

Purposive sampling method used to select the user HH from the list of service receiver provided by SNV and conservancy department of relevant areas. Random sampling technique used to select non-user HH from different location of every ward of respective city.

Khulna City Corporation

Irrespective of economic status, all the HH have access to toilet facilities. Toilets with septic tank are predominant in Khulna (73%).

It is seen that, generally HHs don't take any initiative to empty their pits or septic tanks until facing the problems for overflow. User HH prefers daytime while non-user prefers night time for emptying.

Irrespective of mechanical or manual emptying, most of the HHs (60% of total) has no choice of season for emptying. A major portion of non-user cannot deploy this service due to narrow roads in front of their house.

In Khulna three types of emptying services being practiced. First, Khulna City Corporation (KCC) provides service through 2 vacutug. Second, Community Development Committee (CDC) provides service through 3 vacutug. And third, manual emptiers, belongs to harijan community, provides emptying service through generation.

KCC-operated service entails formal application process and submission of payment through a bank draft. On the contrary, CDC-operated emptying service is easily accessible for the residents without much paperwork rather calling directly to the CDC cluster leaders or vacutug truck drivers or helpers for the service. From the field it was found that, there is a greater demand for CDC operated service than for KCC operated service. Customer can hire informal emptiers through contact in-person or calling them if phone number is available.

The time lag between application and service receipt of mechanical emptying is on an average 2- 3 days or sometimes even more. On the contrary, manual emptiers provide this service within the next day (mostly) or on the same day.

User HHs spends between BDT 3,000-5,000 for the mechanical emptying service. On the other hand, non-user HH spends between BDT 2,000-3,000 for the manual emptying service. For the Non-HH sample, the expenditure is in between BDT 5,000-10,000 and up to BDT 5,000 for User and Non-User respectively.

Irrespective of the user and non-user group, almost half of the respondents mentioned the present tariff is a bit high for them. Willingness to pay of respondents for their expected service as follows:

Types of technology	User Group	Non-User Group
Septic Tank User (HH)	2,924	2,020
Pit User (HH)	1,500	1,090
Non-HH (Institute/Office/Market etc.)	4,133	3,295

A tariff model has been developed and to be found in the report considering the affordability of respondents and their willingness to pay for expected service.

Jhenaidah Paurashava

Irrespective of economic status, all the HH have access to toilet facilities. Toilets with septic tank are predominant in user group (86%).

It is seen that, generally HHs don't take any initiative to empty their pits or septic tanks until facing the problems for overflow. Both User and non-user HH prefers daytime for emptying.

Irrespective of mechanical or manual emptying, most of the HHs (75% of total) has no choice of season for emptying. A major portion of non-user is unaware of the process of getting the service. They thought the process of getting the service is not easy and it is not available at emergency situation.

In Jhenaidah two types of emptying services are being practiced. First, AID foundation (local NGO) has been providing emptying, and transportation through 2 vacutugs. Second, manual emptiers, belongs to harijan community, provides emptying service through generation.

AID-operated service entails formal application process and submission of payment through a bank draft. Customer can hire informal emptiers through contact in-person or calling them if phone number is available.

The time lag between application and service receipt of mechanical emptying is on an average 2-3 days or sometimes even more. On the contrary, manual emptiers provide this service on the same day or within the next day (mostly).

Major user HHs spends between BDT 2,000- 5,000 for the mechanical emptying service. On the other hand, non-user HH spends at most BDT 2,000 for the manual emptying service. For the Non-HH sample, the expenditure is up to BDT 5,000 for both User and Non-User.

Irrespective of the user and non-user group, a major portion of the respondents mentioned the present tariff is ok for them. Willingness to pay of respondents for their expected service as follows:

Types of technology	User Group	Non-User Group
Septic Tank User (HH)	3,230	1,275
Pit User (HH)	1,540	830
Non-HH (Institute/Office/Market ect.)	4,166	2,965

A tariff model has been developed and to be found in the report considering the affordability of respondents and their willingness to pay for expected service.

Kushtia Paurashava

Irrespective of economic status, all of the HH have access to toilet facilities. Toilets with Pit are predominant in the Kushtia.

It is seen that, generally HHs don't take any initiative to empty their pits or septic tanks until facing the problems for overflow. Due to lack of awareness HHs does not keep the emptying service in their list of priorities. Both User and non-user HH prefers daytime for emptying. The most important attribute for users with regards to vacutug is clean and safe removal of sludge followed by lack of smell and disgust during emptying.

Irrespective of mechanical or manual emptying, most of the HHs (78% of total) has no choice of season for emptying. A major portion of non-user (41%) is unaware of the service. Among the non-user who knows about it thought the process of getting the service is not easy and it is not available at emergency situation.

In Kushtia two types of emptying services are being practiced. First, Paurashava has been providing mechanical emptying and service through 3 vacutugs. Second, manual emptiers, belongs to harijan community, provides emptying service through generation. Treatment plant has been operated by an NGO ERAS.

Application process for the service is similar to Khulna but customer can pay the fee on cash. Customer can hire informal emptiers through contact in-person or calling them if phone number is available.

The time lag between application and service receipt of mechanical emptying is on an average 1-2 days or sometimes even more. On the contrary, manual emptiers provide this service on the same day or within the next day (mostly).

Major user HHs spends at most BDT 2,000 for the mechanical emptying service. On the other hand, non-user HH spends less than BDT 1,000 for the manual emptying service. For the Non-HH sample, the expenditure is up to BDT 5,000 for both User and Non-User.

Irrespective of the user and non-user group, a major portion of the respondents mentioned the present tariff is ok for them. Willingness to pay of respondents for their expected service as follows:

Types of technology	User Group	Non-User Group
Septic Tank User (HH)	1,776	1,300
Pit User (HH)	685	772
Non-HH (Institute/Office/Market etc.)	2,376	2,688

A tariff model has been developed and to be found in the report considering the affordability of respondents and their willingness to pay for expected service.

Jashore Paurashava

Irrespective of economic status, all of the HH have access to toilet facilities.

It is seen that, generally HHs don't take any initiative to empty their pits or septic tanks until facing the problems for overflow. Due to lack of awareness HHs does not keep the emptying service in their list of priorities.

HH prefers night time for emptying to avoid smell and disgust during emptying. Most of the HHs (93%) has no choice of season for emptying as they employ the emptiers when facing the overflow.

In Jashore two types of emptying services are being practiced. First, Paurashava has been providing mechanical emptying and service through 1 vacutug. Second, manual emptiers, belongs to harijan community, provides emptying service through generation.

The mechanical emptying service is in non-functional stage. Customers are hiring informal emptiers through contact in-person or calling them if phone number is available.

The time lag between calling and service receipt of manual emptying is on an average 1-2 days or sometimes even more.

Major HH spends at most BDT 2,000 for the manual emptying service. For the Non-HH sample, the expenditure is up to BDT 5,000.

50% of the respondents mentioned the present tariff is ok for them. Willingness to pay of respondents for their expected service as follows:

Types of technology	BDT
Septic Tank User (HH)	1,487
Pit User (HH)	886
Non-HH (Institute/Office/Market etc.)	2,116

A tariff model has been developed and to be found in the report considering the affordability of respondents and their willingness to pay for expected service.

Benapole Paurashava

Irrespective of economic status, all of the HH have access to toilet facilities. Toilets with Pit are predominant in the Benapole.

It is seen that, generally HHs don't take any initiative to empty their pits or septic tanks until facing the problems for overflow. Due to lack of awareness HHs does not keep the emptying service in their list of priorities.

Half of the HH prefers day time for emptying as sweepers prefer to work at day time and house owner also want to ensure the dumping of sludge at far from house.

Most of the HHs (96%) has no choice of season for emptying as they employ the emptiers when facing the overflow.

In Benapole all emptying service are being provided by the manual emptiers as there is lack of mechanical emptying service. Manual emptiers, belongs to harijan community, and has been providing the emptying service through generation.

Customers are hiring informal emptiers through contact in-person or calling them if phone number is available.

Half of the respondents get the service within next day after calling to sweepers while 38% get it on the same day.

Major HH spends at most BDT 2,000 for the manual emptying service. For the Non-HH sample, the expenditure is up to BDT 5,000.

62% of the respondents mentioned the present tariff is ok for them. Willingness to pay of respondents for their expected service as follows:

Types of technology	BDT
Septic Tank User (HH)	810
Pit User (HH)	480
Non-HH (Institute/Office/Market etc.)	1,742

A tariff model has been developed and to be found in the report considering the affordability of respondents and their willingness to pay for expected service.

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CHAPTER: ONE

Introduction

1.1 Background of the Study

Bangladesh with 160 million people, one of most densely populated countries, has predominantly been a rural economy (77% people in Rural) with high population growth. One of the directly related consequences of high population growth is the increase in all types of waste generation. Although Bangladesh has achieved remarkable improvement in sanitation during the 15-year "Millennium Development Goals (MDGs)" period, but fecal sludge management (FSM) has become a major concern for the cities and towns with the high rate of population growth. With the conventional system of collection, transportation and crude dumping of fecal sludge (FS), municipal areas of Bangladesh are generally faced with rapid deterioration of environmental and sanitation condition with a high level of health risk. Municipal services in most cities and towns are already over-burdened, and simply cannot meet the growing demand for municipal services, resulting in unhygienic and filthy living condition in the neighborhoods.

In Bangladesh, improved sanitation in small and emerging towns consists largely of latrine and septic tank which is known as On-Site Sanitation (OSS) facilities. With the improvement in sanitation using OSS facilities, it is expected that fecal sludge volume will increase considerably within a few years. But management of fecal sludge resulting from OSS facilities has been grossly neglected. If collection, disposal and reuse systems are not developed, serious environmental degradation and associated health risk will increase. Without proper FSM improved sanitation and hygiene is unattainable.

To demonstrate a city-wide, pro-poor, accountable, safe and sustainable fecal sludge management services for the urban context in Bangladesh, showing improvement in the living environment and contributing to the health and well-being of the urban population, SNV Netherlands Development Organization has been implementing a program "City Wide Inclusive Sanitation Engagement (CWISE)" in 5 southern cities (Khulna, Jhenaidah, Kushtia, Jashore and Benapole) in Khulna division under the leadership of Municipalities/City Corporation. Over the past 4 years, the program has successfully developed a multi stakeholder coordination mechanism at the local level under the leadership of Local Government Institutions, bringing together local authorities, utility, national agencies, universities, private sector and civil society around urban sanitation.

Now the project wishes to review the existing emptying services with analyzing current cost and tariff structure to determine an affordable tariff structures for mechanical emptying services.

1.2 Study Area Context

Khulna, the third largest city in Bangladesh with an estimated population of 1.5 million hosts traditional industries (e.g. jute processing). The city's population is growing while Khulna remains the regional administrative center and is adjacent to the second sea-port in Bangladesh, Mongla. The city has no existing sewerage network and the population depends overwhelmingly on manual emptying services for sludge management which is inadequate, unhealthy and also damaging to the environment. Khulna City Corporation (KCC) and Community Development Committee (CDC) are providing mechanical emptying services to the city dwellers with different tariff. There is no fixed rate for manual emptying as it depends on the negotiation with the emptiers and customers.

Jhenaidah is a small and comparatively new town with a population of 0.16 million that does not have any sewerage network. In Jhenaidah, household sanitation is predominantly on-site technologies, 45% septic tanks and 48% pits, which require regular emptying. Although mechanical emptying is increasing, still most of them are mainly emptied manually by sweepers who often do not have capacity to transport emptied sludge to a safe or designated place for disposal. Since last December 2017, Jhenaidah Paurashava outsourced their emptying, transportation and treatment of fecal sludge (FS) to a local NGO (AID Foundation). AID Foundation is following the same tariff structure which Paurashava fixed earlier. Revision of tariff is required to make it more scientific so that the service is accessible to all. Recently Paurashava also introduced a Sanitation tax to their city dwellers and is charging both tax and tariff for FSM services.

Kushtia is one of the oldest municipalities in Bangladesh that served as a trading and manufacturing hub. The city has a current estimated population of 0.38 million. This is also known to have the most vacutug-based FSM services prevalent in any city, exclusively managed by the Paurashava. Though mechanized emptying services are provided by the Paurashava, still illegal dumping exists in the Paurashava due to improper management system. Last year, Kushtia Paurashava revised their emptying tariff without following any guideline or mechanism. Paurashava is in the process of introducing sanitation tax.

Jashore is one the oldest Paurashava in the then Bengal Province which was established in 1864. Jashore Paurashava is located at the headquarters of Jashore District. Paurashava use to provide mechanical emptying services through the vacutugs provided by development partners which is also non-functional in recent days hence all the emptying is done by informal manual emptiers. There is no fixed rate but the fee depends upon the negotiation between the emptiers and the house owners which is between BDT 3,000-5,000 depending upon the size of the containment. There are couple of settlements where emptiers are living and these emptiers are providing emptying services to the entire city dwellers.

Benapole with population 36,524 is one the newest Paurashava which was established in 2006. Benapole Paurashava is located in Sharsha Upzilla in Jashore District. Even though Paurashava is responsible for provision of sanitation services including emptying but due to lack of awareness and resources they haven't provided any services till now hence all the emptying are done by informal emptiers who come from adjoining areas as there is no known settlements for emptiers. The cost they are charging is solely dependent upon the negotiation with the house owners.

1.3 Objective of the Study

The major objective of the study is to evaluate and determine affordable tariff structure of existing mechanical emptying services considering the level of affordability and willingness to pay of the communities. Therefore, the study will present analysis the cost of available emptying services, assessment of service charge options including fees and taxes to be collected, assessment of different options for separate tariff systems, pricing and tariff options and innovative incentive mechanism to ensure the affordability of services.

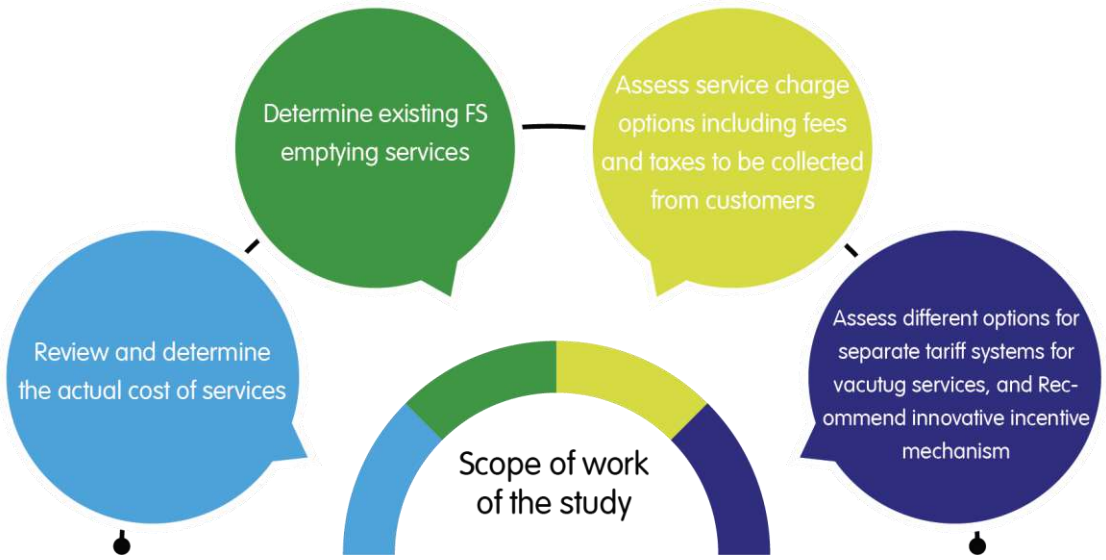
1.4 Specific Objectives of the Study

Specific objectives of the study are as follows:

1. To review pros and cons of existing emptying services primarily the level of quality, affordability and access to services for the safe emptying.
2. To identify the actual cost of services to service providers.
3. To identify and analyze current cost/tariff structure of existing emptying services.
4. To develop alternative options for tariff structures for the safe emptying services on each city.
5. To evaluate and determine affordable tariff structure for different levels of the community.
6. To clarify the roles/responsibilities of service providers in sustaining, operating and maintaining the emptying services.

1.5 Scope of Work of the Study

NewVision Solutions Ltd. (NVSL) has been appointed to conduct the study. The team has provided efforts for in-depth understanding of the study and identified key aspects that would be needed to consider under the study and reflecting the outcomes on the study report.



1.6 Structure of the Report

The report contains an executive summary that describes the entire process of the study and its key findings.

The main body of the report includes an introductory section (1), Methodology of the study (2) Sanitation status in project areas (3) Financial analysis (4) Proposed tariff model (5) Conclusion and way forward (6).

CHAPTER: TWO

Methodology of the Study

Approaches of the Study

The study has been designed to determine the tariff structure through evaluating willingness to pay (WTP) of the consumers for safe mechanical emptying services. This WTP values provide crucial information for assessing economic viability, setting affordable tariff, evaluating policy alternatives, and assessing financial sustainability of the project of SNV. Since mechanized emptying service exists in 3 cities of the project area, we have asked the respondents to directly report their willingness to pay (WTP) to obtain the service, or willingness to accept (WTA) to give up the service. Since in Benapole and Jashore this mechanical emptying service is not available we asked respondents the willingness to accept (WTA) for this service.

To evaluate WTP we used "Stated Preference (SP)" method in particular Contingent Valuation Method (CVM). We elicited the preference of consumers in monetary terms, more specifically the maximum WTP or minimum Willingness to Accept (WTA) for the existing emptying services. Existing tariff for the emptying services and the actual cost of the services calculated to suggest options for alternative tariff structure for the emptying services more inclusive of board income groups.

Stakeholders
Service Providers (both mechanized and manual)
Service Receiver (Household, Institutions, market, etc.
Govt. Institutions (Paurashava)
Project Stuff (SNV)

Both qualitative and quantitative research approach has been adopted in the study. Structured questionnaire for Face-to-Face Interview (F2F) used as the main option for data collection about current tariff from relevant stakeholders.

In addition, semi-structured questionnaire used for Key informants Interviews (KIIs) and Focus Group Discussion (FGD) conducted with relevant stakeholders. Systematic review will be undertaken of existing research findings, documents, dataset and reports of the project.

After completion the field survey we have compiled, analyzed the data and prepared the report. The data entered and analyzed using statistical techniques appropriate for the type of questions. From the analysis, we estimated the average value for a household in the sample and extrapolate this to the relevant population in order to calculate the total value for the area.

2.1 Survey Design and Sampling

Following points was taken into consideration while selecting sample for the study:

- Sample should be taken from all wards of 5 cities.
- Representative should be taken from both households and non-households categories.
- Samples should be taken from owner in case of households and head/relevant person for non-household category.
- Samples should be taken from all categories of households (Kacha, Semi Pucca, Pucca).

Applying 95% confidence interval and 3% margin of error we have calculated sample size for household considering total households of 5 areas. Sample size distributed proportionately in 5 areas considering the proportion of households of respective area in total household.

2.1.1 Sampling Distribution for the Study

The field survey covered 1,165 respondents from households in the 5 cities. Multistage cluster sampling with PPS (probability-proportional-to-size) used to develop the sampling frame for the face to face (F2F) interviews.

HH selected purposively from the selected area. Sample selected from both mechanical emptying service receiver (User), and manual emptying service receiver (Non-User).

Table 1: Sample Distribution of HH

Name of City	User	Non-User	Total
Khulna	70	429	499
Jhenaidah	35	142	177
Kushtia	67	85	152
Jashore	4	234	238
Benapole	NA	99	99
Total	**176**	**889**	**1,165**

Apart from the household surveys, we have conducted interviews with representative from non-households such as institutions, markets, Govt. and Non- Govt. offices and Hospitals & Clinics during the study.

Table 2: Sample Distribution of Non-HH

	Kushtia		Khulna		Jhenaidah		Jashore		Benapole
	User	**Non-User**	**User**	**Non-User**	**User**	**Non-User**	**User**	**Non-User**	**Non-User**
Education Ins.	6	6	1	13	1	9		11	7
Govt./Non-Govt. Ins	2	0	1	6	1	5	1	5	13
Market	4	0	2	2	3	2		6	3
Hospital/clinic	4	2	2	2	1	4		5	3
Other	1	0	1	1		0		0	0
Total	**17**	**8**	**7**	**24**	**6**	**20**	**1**	**27**	**26**

Table 3: Respondent for Qualitative Study

Key informants /Experts	• **Representatives of Local authorities in**
	  ○ Khulna City Corporation
	  ○ Kushtia Pourashava
	  ○ Jhenaidah Pourashava
	  ○ Jashore Pourashava
	  ○ Benapole Pourashava
	• **Representative of Educational Institutions**
	  ○ Schools/Madrasa
	  ○ College/University
	• **Representative from Hotels and Shopping Mall/Shops/Bazar committee**
	  ○ Business Community
	  ○ Personnel from Govt. office/Bank/NGOs
	  ○ Representative of Civil Society/Religious Leader

Focus Group Discussions (FGD)	• Household • Payroll Sweeper • Private Sweeper • Market (shop owner/management committee)

2.2 Data Collection Tools Development and Finalization

Tools were developed for both qualitative and quantitative data collection. Structured questionnaire for Face-to-Face interviews was prepared. The research tool included demographic information, socio-economic characteristics, and details of the practices related to fecal sludge management. After preparing the tools it was used to prepare the online data collection form.

Apart from quantitative data collection tool, other tools were prepared for collection qualitative data through KII, and FGDs. Different pre-structured checklists were prepared for each of the approaches.

2.2.1 Team Selection for the Study

Team members were selected by a meticulous process considering proper blend of related experience, dynamism, predilection for conducting this type of assignment. Enumerators with previous work experience of data collection through devices were deployed with a view to data collection and management along with evading any unpleasant situation if arise in the field.

2.2.2 Training for Field Team

All the selected enumerators and other team members were attended on two (2) days training session to get better understanding on the questionnaires and learn how to use the device. They went through both in-house and field session (pre-testing) so that they were exposed of features and issues needed to address in light of survey parameters and indicators.

Both in house and field training were conducted for the Field Investigators/Enumerators. The Field Investigators were properly briefed on study objectives and the nature of the survey. Overall techniques of the data/information collection processes were explained to the team members.

2.2.3 Pre-testing Research Tools and Devices

After completing the training, the Investigators were taken to the field to be acquainted with the outcomes from using the research tools. The process helped the enumerators to understand whether the research tools were effective for collecting desired data and information from segments of respondents or not. Technically, it is the pilot testing of research tools and devices.

A pre-test was done for testing the research tools. Different types of questionnaires were finalized by incorporating experiences that were gathered during pre-testing. Modification and adjustment were done wherever needed.

2.2.4 Data Collection from Field

After successful completion of the training sessions, two teams were formed with nine members each: one field coordinator (FC), one field supervisor (FS), one quality controller (QC), and Six field investigators (FI). A total of two (2) field teams were deployed simultaneously to survey at several areas within the target territory. Detail schedule was previously prepared and followed strictly to meet the deadline of the study. The Field Supervisors and the Quality Controllers were continuously supporting to the field investigators in fields and applied their monitoring techniques to ensure quality data collection from fields.

2.2.5 Quality Control and Monitoring Plan

One of the major aspects of quality control of the field survey is to ensure collection of accurate data from the fields. Inaccurate data or information may come for various reasons like couldn't generate a clear conception upon all various types of research tools, lack of presentation of various questions towards the respondents, insufficient socialization of the respondents, negligence or irresponsibility of the investigators and so on. Therefore, quality control mechanism needs to be pragmatic by nature. For ensuring effective quality control of the filed survey, one supervisor and one quality controller were attached with each team. The quality controller accompanied the investigators for judging the quality of collected data and information along with investigator's approach. The Quality Controller also was responsible for the back-check of the questionnaire. Supervisor not only guided the investigators in the fields but also helped to improve their techniques to communicate with the respondents. However, realizing high level of importance to collect accurate data and information, we had taken following measures to ensure reliability of data and information.

2.2.6 Online Form Checking by Field Supervisors

After successful completion of the questionnaires by the field investigator, the Field Supervisors/Quality Controllers randomly rechecked around 30% of the completed questionnaire for respective fields. If any major mistake or anomaly were identified, that questionnaire was rejected and the Investigators were asked for rectifying the identified issue. For ensuring quality control in the fields, a total of four (2) Quality Controllers were engaged during the survey period. If any member of the field team found inefficient or identified dishonest on his/her works, the person was replaced by an alternative one from the standby trained pool.

2.2.7 Focus Group Discussions (FGDs)

Although a good number of secondary research reports were available from the partners' organizations, in order to document primary data from the beneficiaries, Focus Group Discussions (FGD) approach was also conducted by inviting representatives from different types of stakeholders. Each of the focus group was comprised of 6-8 persons. A total of four (10) FGDs were conducted in the survey areas.

2.2.8 Data Analysis

Data has been cleaned, checked and edited properly before analysis. Frequency distribution and proportion of important variables has calculated.

2.2.9 Report Writing

Dummy tables were prepared in advance to make output generation systematic. A framework of profiles and analytical tools were also prepared to come up with a quality report. Mostly descriptive statistics were used. Where necessary more advanced statistical tools have been employed entailing graphics, charts or any other figures.

2.2.10 Limitation of the Study

Every research study faces certain problems or limitations as the present study also has gone through some of the difficult situation as mentioned below:

- Lack of sufficient of information on expenditure and revenue collection;
- Limited information from KIIs due to lack of involvement of informants with tariff structure;
- Lack of awareness among the respondents;

In spite of the above limitations, best attempts were made to make the study findings meaningful and representative.

CHAPTER: THREE

Results and Findings

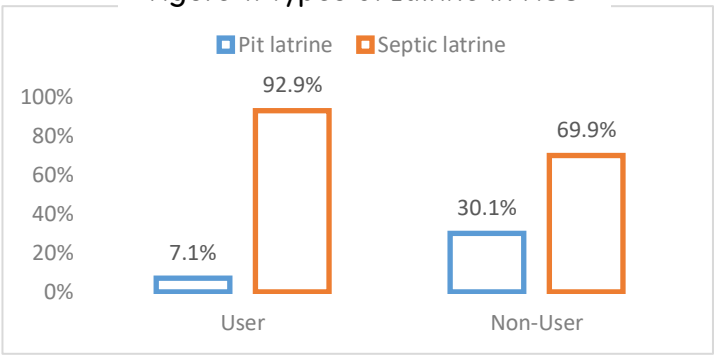
3.1 Results and Findings on Sanitation Status of Khulna City Corporation (KCC)

During the household survey, the study groups were divided into two groups, "User" and Non-User". Households (HH) who use the mechanical emptying service (Vacutag) for emptying pit or septic tanks were defined as "User" group, and households that employ manual sweepers for instead of using Vacutag were defined as "Non-user" group. Total 499 HH were surveyed in this study, among which 70 HH surveyed were from user group and 429 from non-user group. In this chapter, current sanitation status in Khulna City Corporation (KCC), emptying practice and cost related information are being discussed briefly.

3.1.1 Types of Latrines, Ownership and O&M Status

Irrespective of economic status, all of the HH have access to toilet facilities. Toilets with septic tank are predominant in Khulna. 73% of total HH have toilets with septic tank but very few of them have the provision for soak well. In user group, around 93% of HH have the toilets with septic tank which indicates major customers of vacutug emptying service are HH having septic tank.

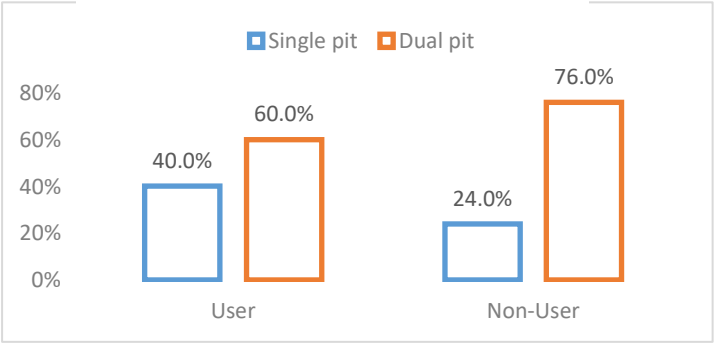
Figure 1: Types of Latrine in KCC



A well-designed septic tank makes the emptying easier. The less availability of septic tank in the non-user HH could be a reason for not using vacutug.
Dual pit latrines are found in 75% of total HH. Pit latrines with 6-12 ring slabs are predominant in both user (60%) and non-user (78%) group.

Septic tank with 3 chambers is predominant in user group (45%) where 2 chambers in non-user group (54%).

Figure 2: Type of Pit Latrine in KCC

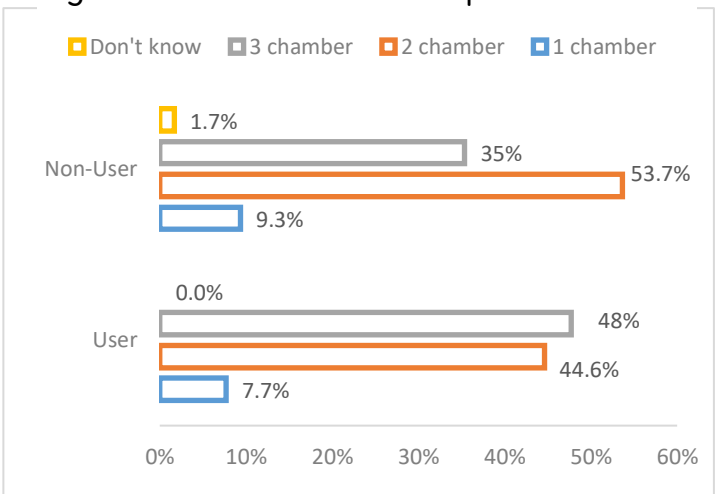


More than 60% of total HH had installed their toilet within 20 years. 39% and 40% had built their toilet less than 10 years ago in user and non-user group respectively. 10% and 9% of HH are found with shared toilet in user and non-user group respectively.

Family members are cleaning their toilet in more than 90% of total HH in both groups.

On an average 51% (user) and 46% (non-user) HH spends up to BDT 300 per month to clean toilet.

Figure 3: No. of Chamber of Septic Tank in KCC



3.1.2 Existing Emptying Practices

It is seen that, generally HHs don't take any initiative to empty their pits or septic tanks until facing the problems for overflow. HHs does not keep the emptying service in their list of priorities.

Among the users, 44% of HHs emptied their pit/septic tank in less than 8 months ago. Meanwhile, 43% emptied within 9 months to 24 months.

Figure 4: Monthly Cost of O&M in KCC

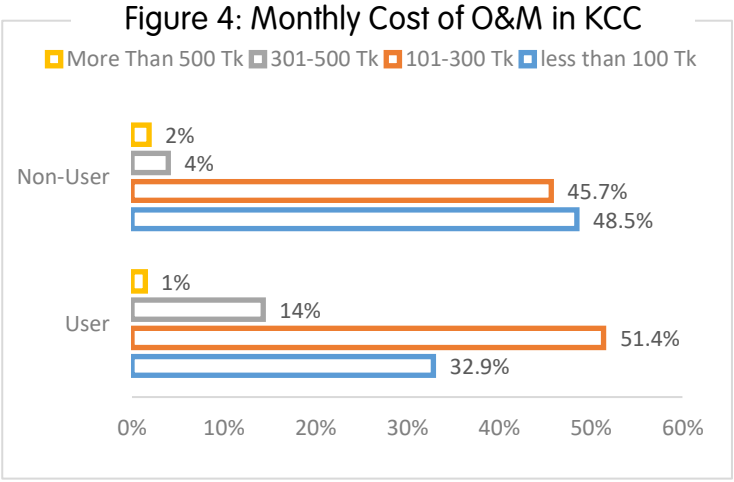
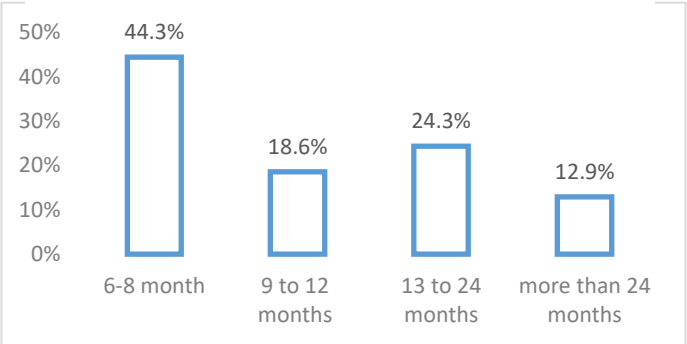
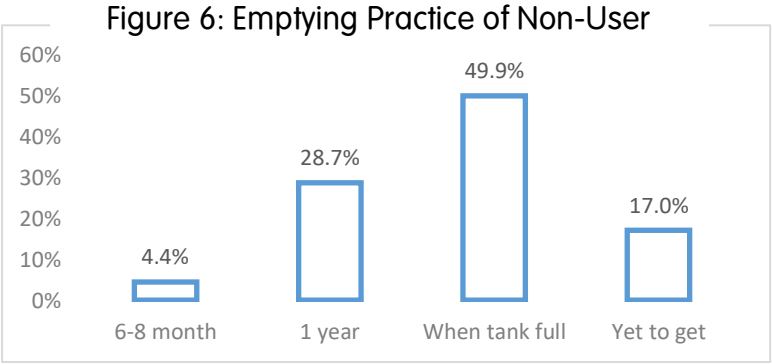


Figure 5: Emptying Practice of User



On the other hand, half of HHs (50%) in non-user group desires to get the emptying service when the tank is full. Around 33% of HHs emptied their storage in one year. This is mainly the single pit latrines which became full and overflowed within short time. 17% of HHs has not taken any emptying services yet. This is because; their pit/septic tank may be connected to an open drain/canal or the storage yet to full.

Figure 6: Emptying Practice of Non-User

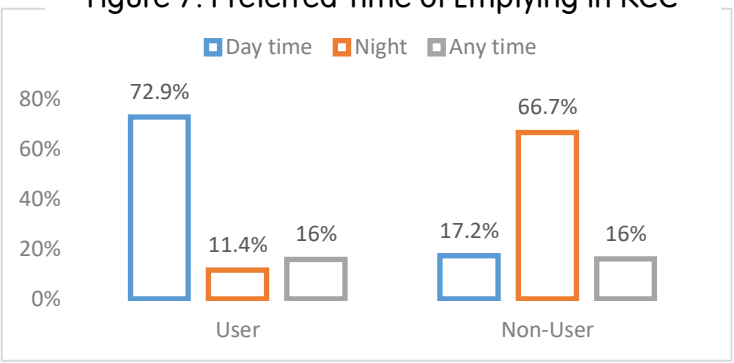


3.1.3 Preference of Time and Season

Among the non-users, 67% prefers night time for this work mainly to avoid bad smell while emptying. On the contrary, 73% of users prefer day time as there is chance for bad smell while using vacutug.

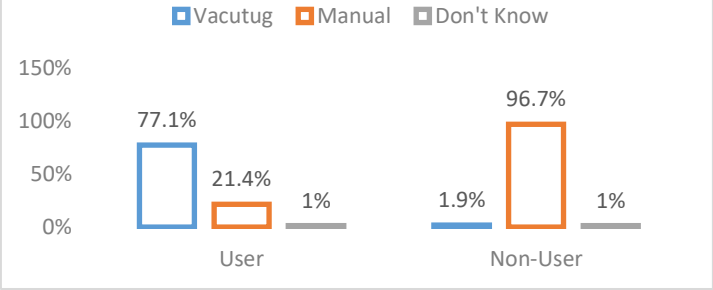
Irrespective of mechanical or manual emptying, most of the HHs (60% of total) has no choice of season for emptying. Having overflowed pit/septic tank they don't have any option to choose season. However, among the users 11% and 10% prefer summer and winter season respectively. Meanwhile, 16% and 10% prefer rainy and winter season respectively.

Figure 7: Preferred Time of Emptying in KCC



3.1.4 Practice of Neighbors

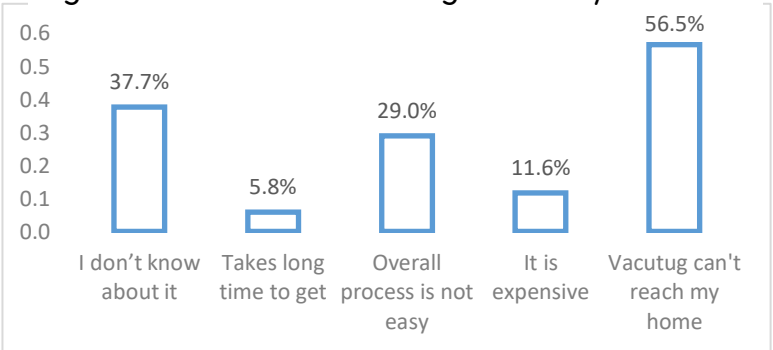
Figure 8: Emptying Practice of Neighbor



The figure shows that, surrounding HHs of Users are also taking the mechanical service while HH around non-users taking manual emptying service. This indicates, mechanical emptying service has not reached in every area of the city.

56% of non-users stated they cannot take the service due to narrow and faraway lanes. 38% of non-users do not know about the service followed by 29% consider the overall procedure of getting service unfriendly.

Figure 9: Reason of Not Taking Service by Non-User



3.1.5 Accessibility & Availability of Emptying Services

Available Emptying Services in Khulna

In Khulna three types of emptying services being practiced. First, Khulna City Corporation (KCC) provides service through 2 vacutug. Second, Community Development Committee (CDC) provides service through 3 vacutug. And third, manual emptiers, belongs to harijan community, provides emptying service through generation.

Service Providers

1. Khulna City Corporation (KCC)
2. Community Development Committee (CDC)
3. Manual Emptiers (Sweeper)

1. Khulna City Corporation-run Mechanical Emptying Service

KCC provides mechanical emptying service to citizen through 2 vacutugs. Any citizen can take this service by filling up a form to provide information about the pit/septic tank size, road size in front of house, machine to pit/septic tank distance etc. along with submission of the form, applicants has to submit pay-order issued from a local bank in favor of KCC. Then, a supervisor from the Conservancy Department of KCC visits the home to validate all the information of the application form within 24 hours. After the supervisor gives the go ahead, the vacutug truck reach the client's home within 48 hours. After sludge is pulled out from the storage, it is transported to the treatment plant located at Rajband.

KCC has two vacutugs of 7,000- and 5,000-liters capacity. Presently the vacutug of 5,000 liter is non-functional. Currently, there are 2-3 calls a month for this vacutug.

2. CDC Operated Emptying Service

CDC provides mechanical emptying service through 3 vacutugs with 1,000-liter capacity each. In case of availing the CDC operated service, customers do not need to apply formally and can call directly to the CDC cluster leaders or vacutug truck drivers or helpers for emptying service. Sometimes KCC officials link customers with CDC if they require small capacity trucks or if they are too overburdened to meet customer requests within a reasonable amount of time. The CDC charges flat tariff of BDT 1,000 for each trip for 1,000-litre capacity trucks.

3. Manual Emptiers Provides Emptying Service

Customer can hire informal emptiers through contact in-person or calling them if phone number is available. Emptiers come to customer's house within 24 hours of getting the call. They usually make their demand based on the size & location of the pit/tank, distance between storage and dumping place. After negotiation and having confirmation from customers they start their work.

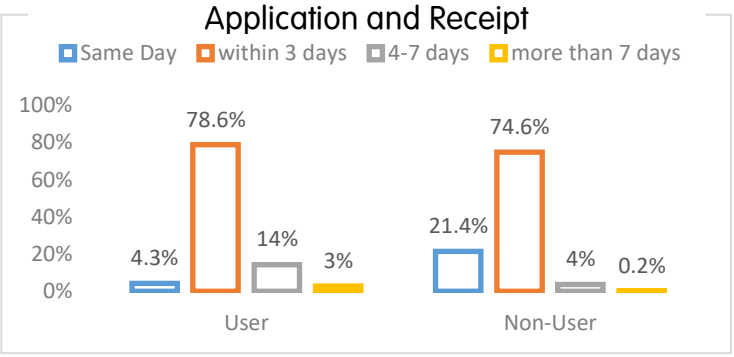
Generally, for a small pit, they charge around BDT 1,200-2000. However, for septic tank clearance, their charge is around BDT 3,000-6,000. This excludes costs of additives (tips for driver) and other materials, which are usually borne by the customer. They also receive around BDT 500-1,000 as tips for a satisfactory job.

3.1.6 Access to Emptying Services

The figure shows that, comparison of accessibility of emptying service between user and non-user group. 78% and 75% of HHs of user and non-user respectively can take the service within 3 days. This indicates that, the emptying service is available and can be taken within very short time.

However, customers want to take the service within next day. 73% and 67% of HH in user and non-user group respectively want to take the service within next day. On the contrary, 29% HH of non-user and 19% HH of user group want to take it on the same day because of the overflow of the tank/pit.

Figure 10: Current Time Lag between Service Application and Receipt



3.1.7 Present Expenditure of Customers

38% of HH from user groups spending on an average BDT 3,100-5,000 in each time of emptying through vacutug. The most important point is that, about 89% of HH spending more than BDT 2,000 in each time, while 24% with spending more than BDT 5,000.

Figure 11: Expected Time Lag

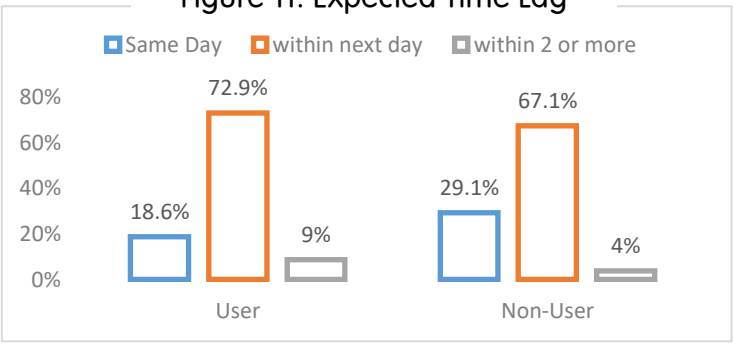


Figure 12: Expense for Mechanical Emptying

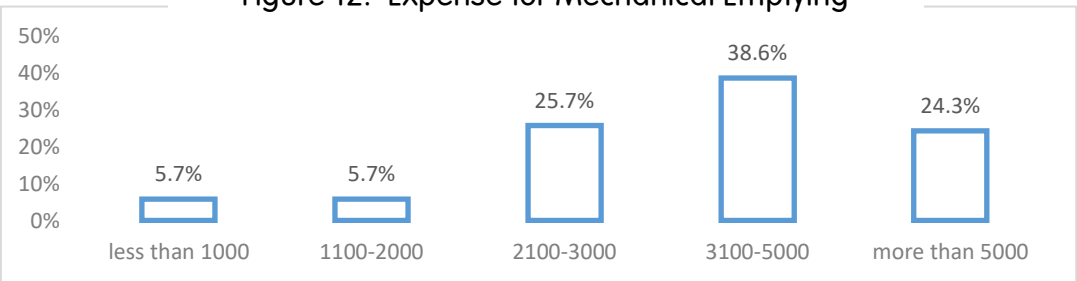
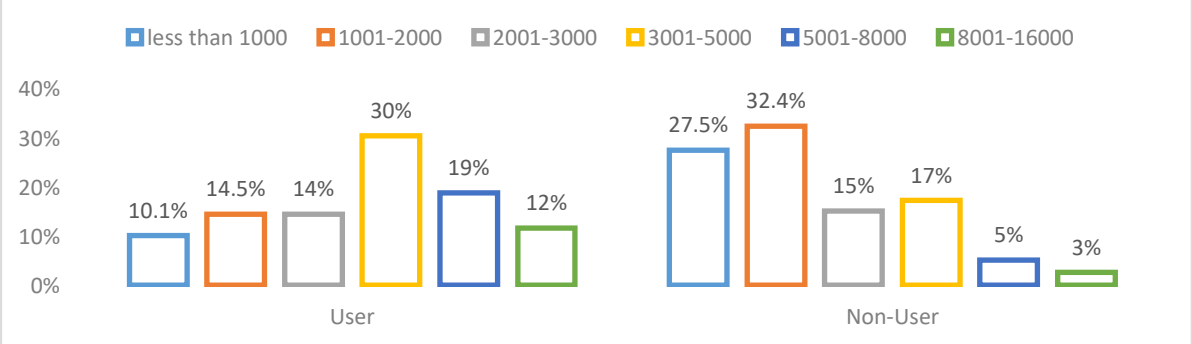


Figure 13: Expense for Manual Emptying



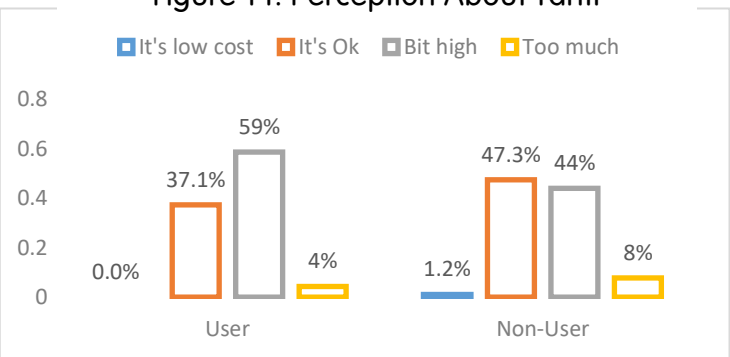
The above figure presents the comparison of expenses for informal emptying services through manual emptiers. The expense of user presents the cost of emptying service they had taken before using the vacutug. 30% of user HH had to spend BDT 3,001-5,000 for emptying while 31% spent more than BDT 5,000. The most important point is that, as the users shifted to mechanical emptying service their expenditure started to decrease. Meanwhile, 32% of non–user HH is spending BDT 2,001-5,000 for each time.

The service charge for emptying was determined as per the number of trips of vacutug in case of user. It depends on the size of the tank/pit in case of non-user HH.

3.1.8 Perception About Current Tariff

59% and 44% HH from user and non-user group responded that, present tariff is a bit high. They desire the service with fewer service charges. But the most important point is that, 37% and 47% of HH from user and non-user respectively stated the charges are ok for them. This indicates, the present service charges are affordable for major portion of HHs. However, 8% from user and 4% from non-user mentioned the charges are too high to bear for them. This portion of respondents belongs to lower income group community.

Figure 14: Perception About Tariff

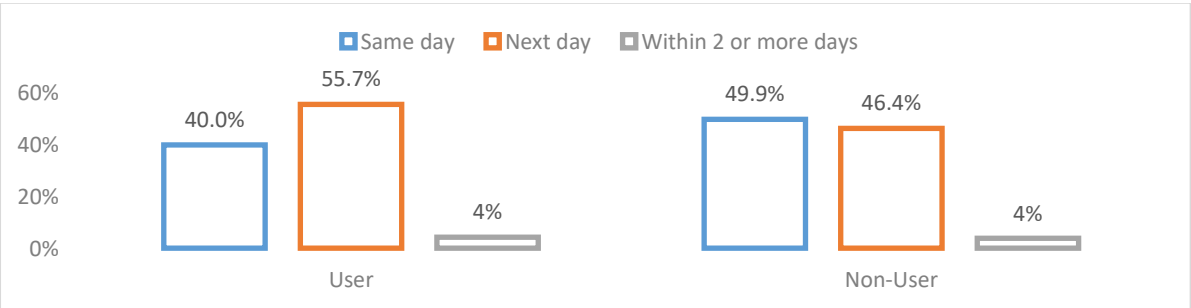


While respondents were asked about how much they would like to pay for the current service, 71% of user HH willing to pay more than BDT 2,000 for the current service. On the contrary, 79% of HH from non-user willing to pay less than BDT 2,000.

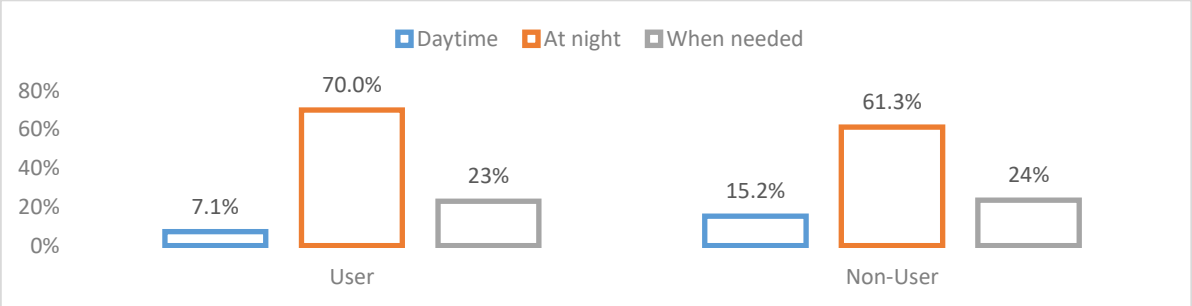
3.1.9 Willingness to Pay for Emptying Service

Respondents were asked about their willingness to pay for their desired emptying service through vacutug.

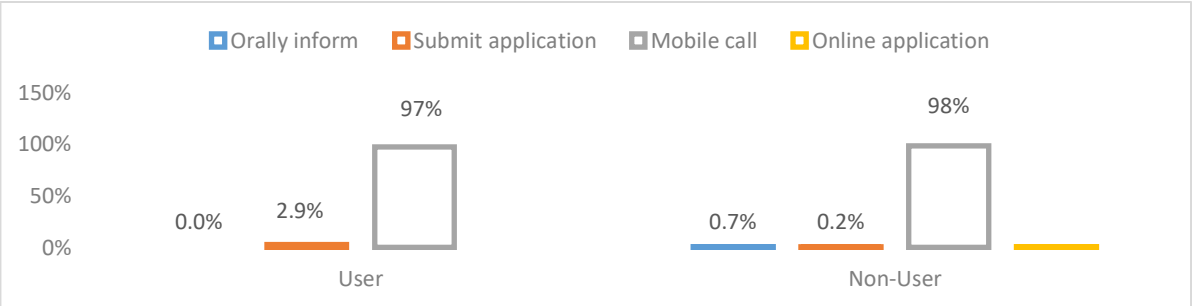
Preferred Service Time-Lag



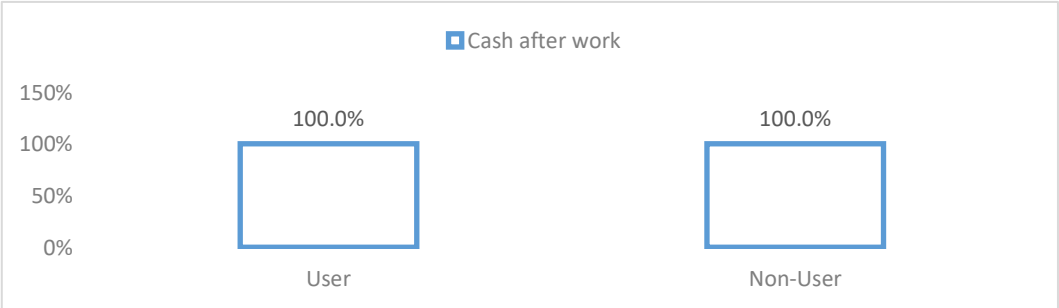
Preferred Time of Receiving Service



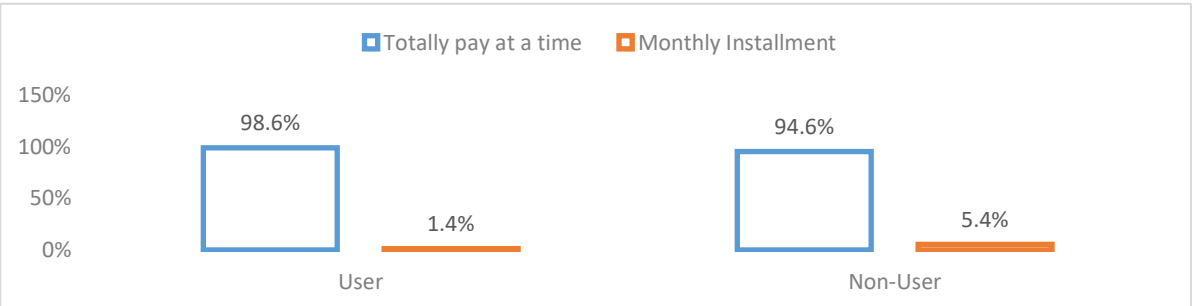
Preferred Communication Method



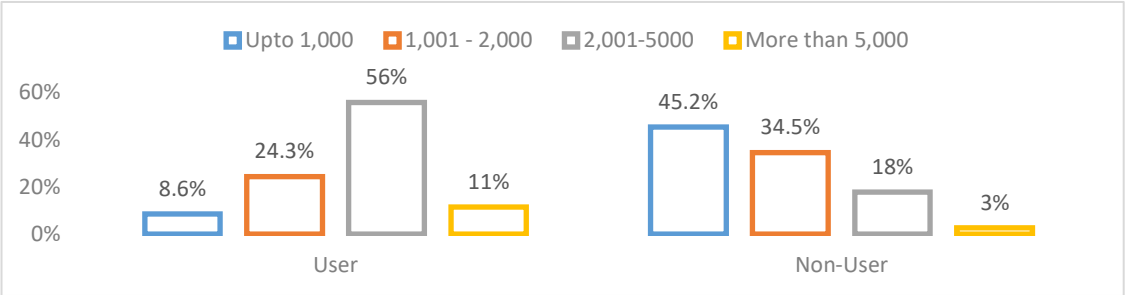
Preferred Mode of Payment



Preferred Payment Method



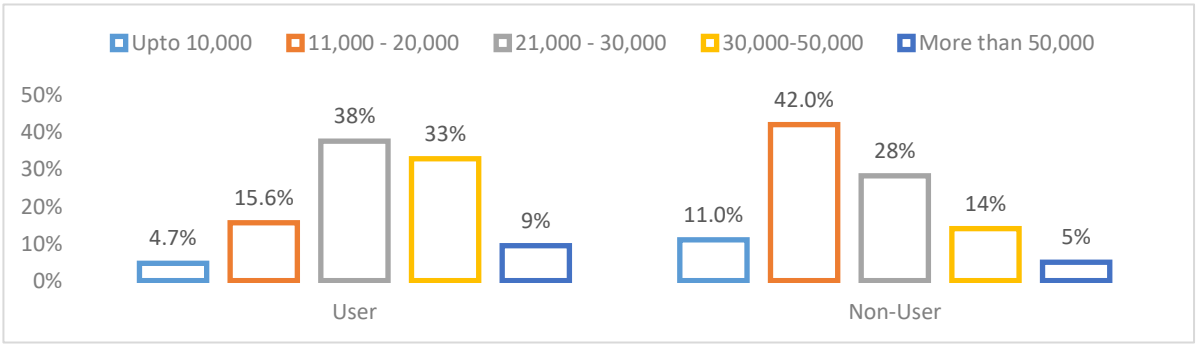
Willing to Pay for Preferred Service



Average Willingness to pay for FSM according to preferred model is given below:

Types of technology	User Group	Non-User Group
Septic Tank User	2,924	2,020
Pit User	1,500	1,090

3.1.10 Income Group of Respondents

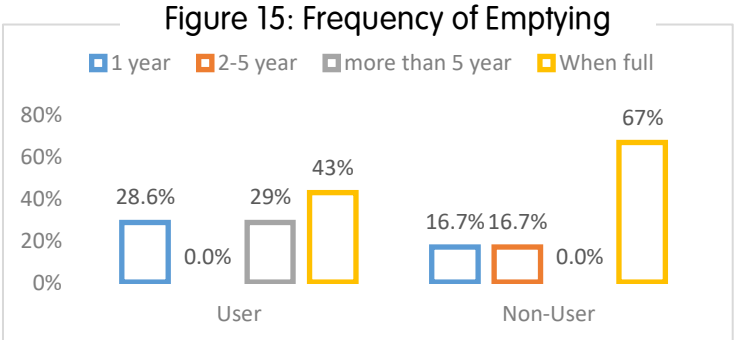


With average HH income 26,734 per month, 42% of user HH's monthly income is more than BDT 30,000. On the contrary, average HH income of non-user is BDT 24,737 per month. 70% of HHs earns BDT 11,000 to 30,000 per month.

3.1.11 Present Emptying Practice Among Institutions

Irrespective of types of institutions, major portion of institutions both from user and non-user group employed emptying service when storage full. They prefer night time for this work as it creates very bad smell during emptying. Majority of institutions do not have choice for season. They have to do it when facing overflow of the sludge.

Figure 15: Frequency of Emptying



13% of non-user spending more than BDT 10,000 for emptying the tank through manual emptiers while user of vacutug spending up to BDT 10,000. This indicates, vacutug emptying service is comparatively cheaper than manual emptying.

The emptying charge for user was fixed considering the number of trips. On the contrary, it was fixed as per the size and location of the tank for the non-user.

Around 56% of non-user stated the current tariff if high while 17% among them mentioned very high.

Irrespective of the mechanical and manual emptying receiver, majority of them want to expend up to BDT 5,000 for the emptying.

Figure 16: Emptying Fee

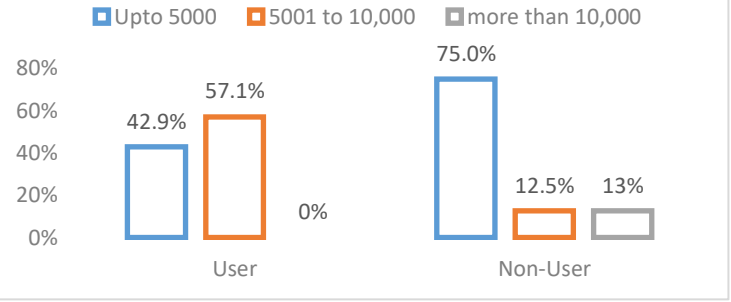
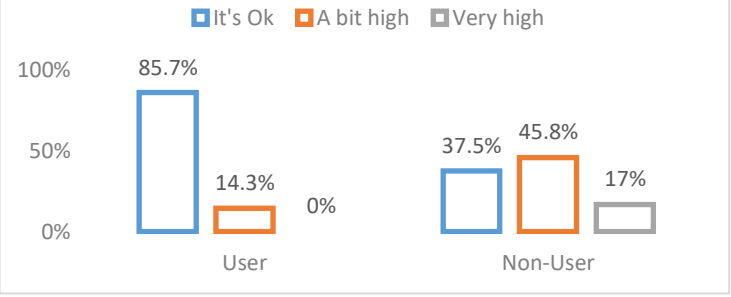
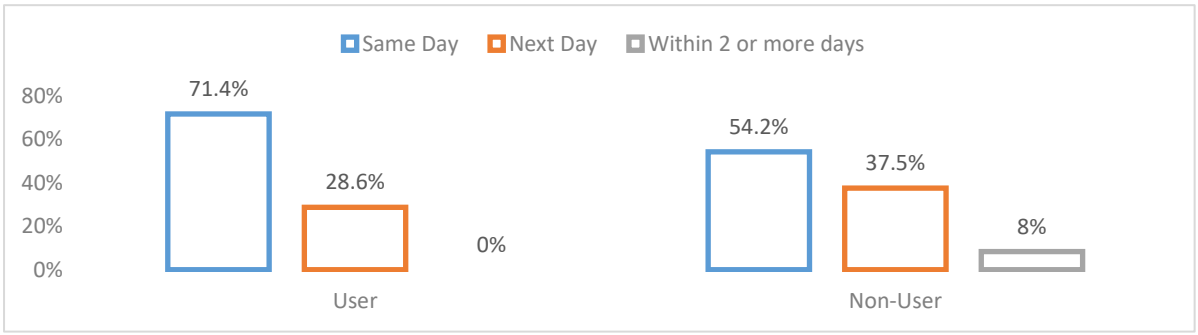


Figure 17: Perception about Emptying fee

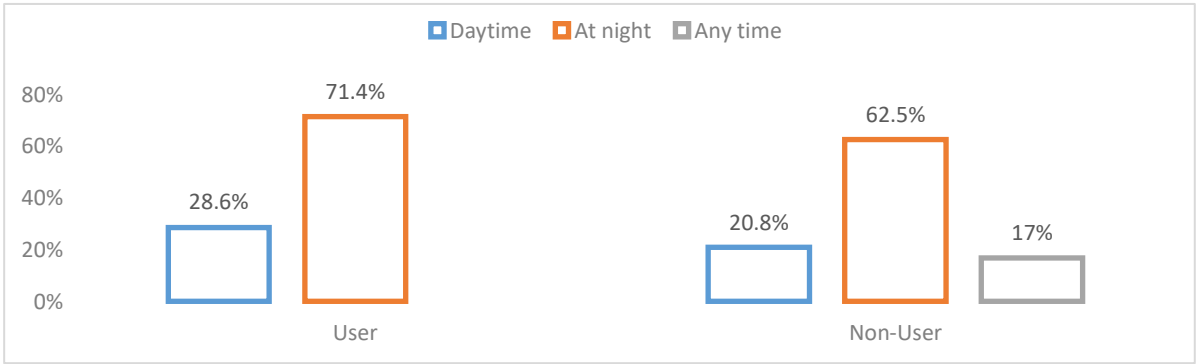


3.1.12 Willingness to Pay for Preferred Service

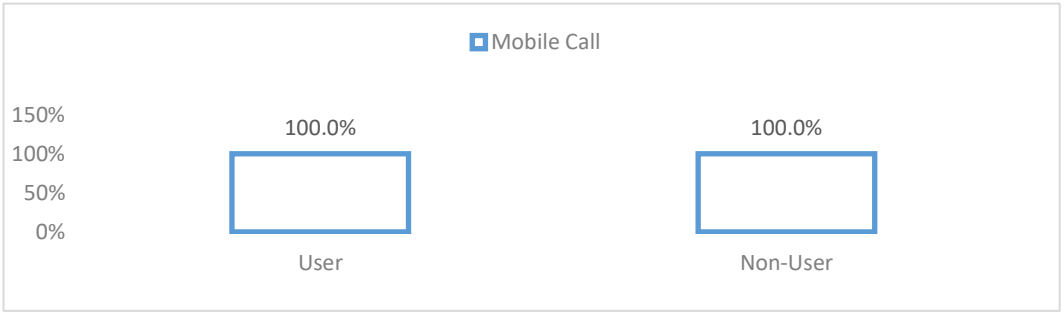
Preferred Service Time-lag



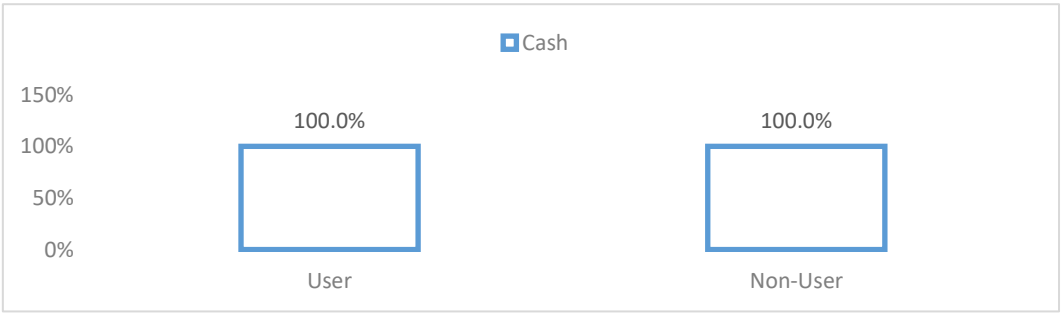
Preferred Time of Receiving Service



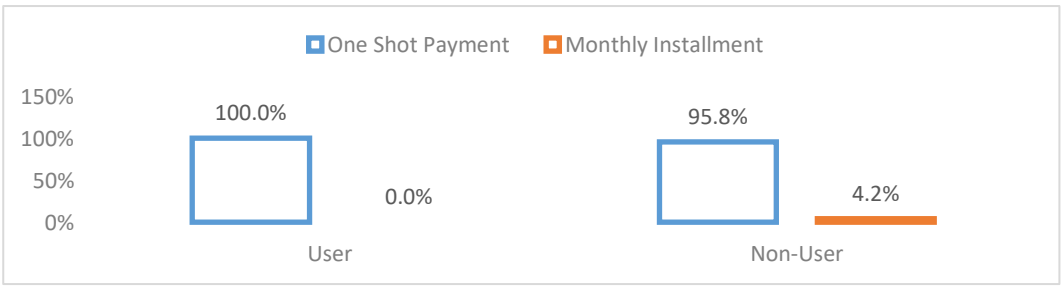
Preferred Communication Method



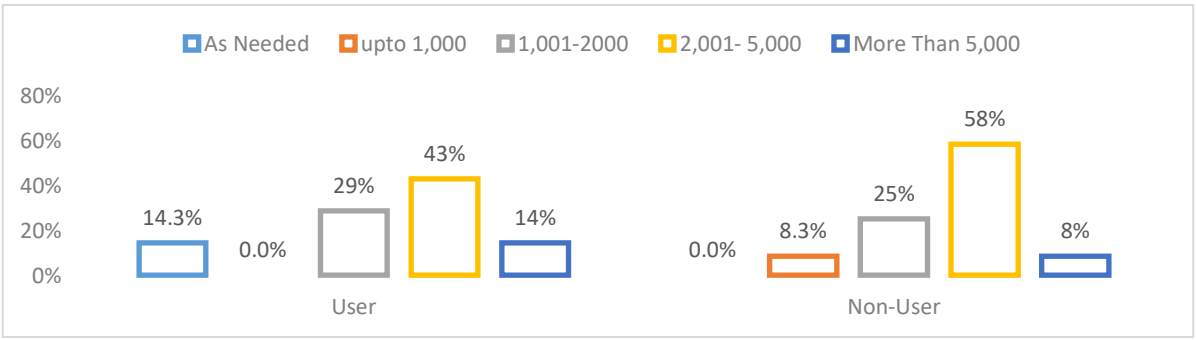
Preferred Mode of Payment



Preferred Payment Method



Willing to Pay for Preferred Service



Average willingness to pay for FSM according to preferred model is near about BDT 4,133 and 3,295 for User and Non-User group accordingly.

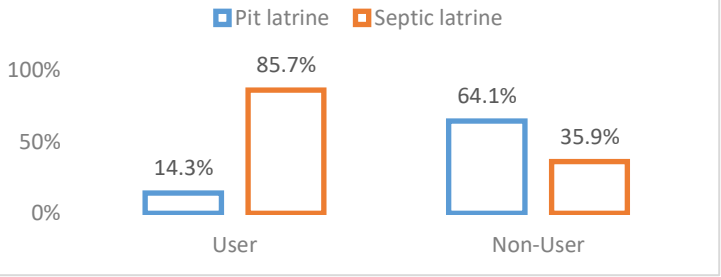
3.2 Results and Findings on Sanitation Status of Jhenaidah Paurashava (JHE)

During the household survey, the study groups were divided into two group, i.e. households (HH) who use the mechanical emptying service (Vacutag) for emptying pit or septic tanks were defined as "User" group and who employ manual sweeper rather using Vacutag were defined as "non-user" group. Total 177 HHs were surveyed; 35 HH surveyed from user group and 142 from non-user group.

3.2.1 Types of Latrines, Ownership and O&M Status

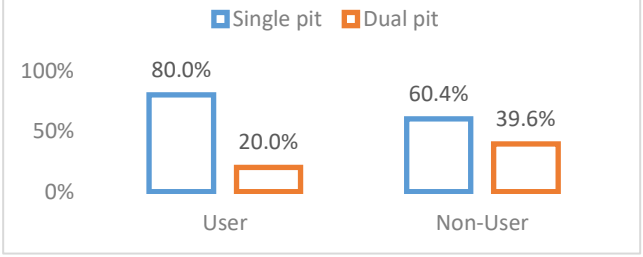
Irrespective of economic status, all the HH have access to toilet facilities. Toilets with septic tank are predominant for user group in Jhenaidah. 86% of user HH has toilets with septic tank. In non-user group, around 64% of HH have the toilets with pit. Which indicates major customers of vacutug emptying service is HH having septic tank. A well-designed septic tank makes the emptying easier. The less availability of septic tank in the non-user HH could be a reason for not using vacutug.

Figure 18: Type of Latrine in JHE



Single pits are predominant where 6-12 rings are being used mostly.

Figure 19: Type of Pit Latrine in JHE



Septic tank with 2 chambers is predominant in both user group (66%) and non-user group (73%). Which indicates that, there are lack of awareness in building ideal septic tank with 3 chambers.

83% of total HH had installed their toilet within 20 years. 43% and 38% had built their toilet less than 10 years ago in user and non-user group respectively.

Irrespective of user and non-user, family members are cleaning their toilets. On an average 71% and 52% of HH from user and non –user respectively spends between BDT 100-300 per month in cleaning and maintenance purpose of toilet.

Figure 20: No. of Chamber in Septic Tank in JHE

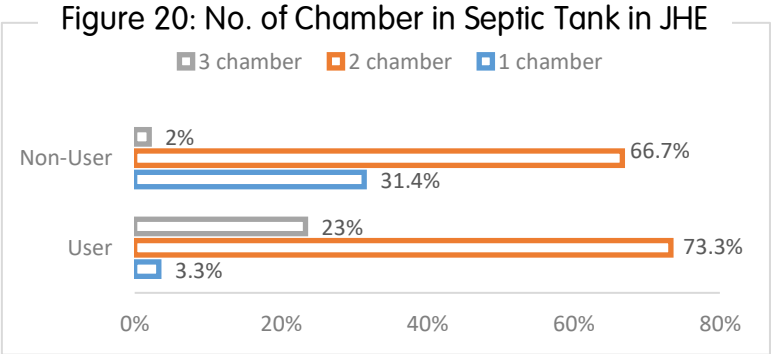
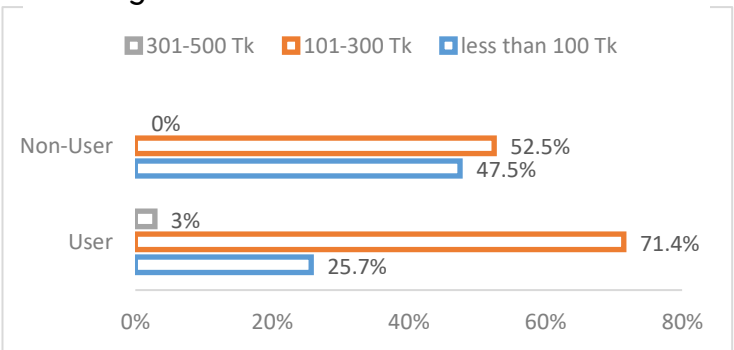


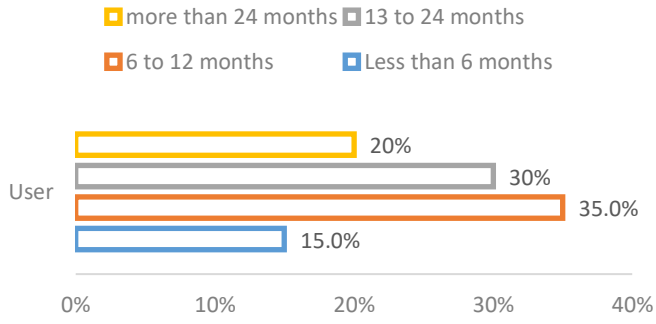
Figure 21: Per Month O&M Cost in JHE



3.2.2 Existing Emptying Practices

It is seen that, generally HHs don't take any initiative to empty their pits or septic tanks until facing the problems for overflow. Due to lack of awareness HHs does not keep the emptying service in their list of priorities. Among the user, 80% of HH employ the emptying service within 24 months. On the other hand, 78% of non-user HHs employs the emptying when the tank is full; more than 24 months ago. This indicates that, the mechanical emptying service is new in the area.

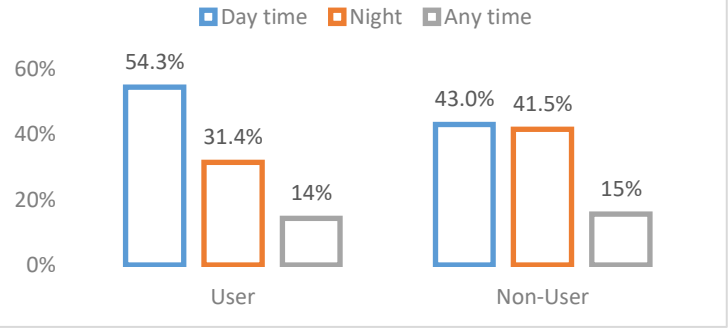
Figure 22: Emptying Practice in JHE



3.2.3 Preference of Time and Season

Among the non-users, 41% prefers night time for this work mainly to avoid bad smell. On the contrary, 54% of users prefer day time as there is chance for bad smell while using vacutug.

Figure 23: Preferred Time of Emptying

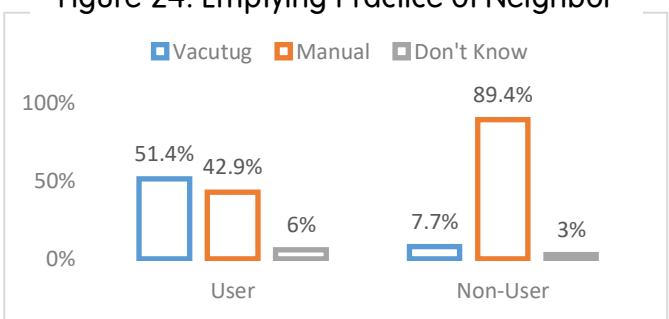


Irrespective of mechanical or manual emptying, most of the HHs (75% of total) has no choice of season for emptying. Having overflowed pit/septic tank they don't have any option to choose season. However, among the users 11% prefer summer and winter season each. Meanwhile, 13% and 11% of non-user HH prefer summer and winter season respectively.

3.2.4 Practice of Neighbors

The figure shows that, 51% of surrounding HHs of Users are also taking the mechanical service while HH 89% of HH around non-users taking manual emptying service. This indicates, mechanical emptying service has not reached in every area of the city.

Figure 24: Emptying Practice of Neighbor



35% of non-users stated they do not know about the mechanical emptying service. Among 65% who knows about the mechanical service, a major portion (31%) thinks the process of getting the service is not easy and it is not available at emergency situation. 18% and 16% are not taking the service due to high cost and narrow lanes in front of house respectively.

3.2.5 Accessibility & Availability of Emptying Services

In Jhenaidah two types of emptying services are being practiced. First, AID foundation (local NGO) has been providing emptying, transportation and treatment service through 2 vacutug. Second, manual emptiers, belongs to harijan community, provides emptying service through generation.

Service Provider

1. Aid Foundation
2. Manual Emptiers (Sweeper)

1. AID Foundation Operated Mechanical Service

AID provides mechanical emptying service to citizen through 2 vacutugs following same tariff structure which Paurashava fixed earlier. Any citizen can take this service by filling up a form to provide information about the pit/septic tank size, road size in front of house, machine to pit/septic tank distance etc. along with submission of the form, applicants has to submit pay-order issued from a local bank in favor of AID. Then, a supervisor visits the home to validate all the information of the application form within 24 hours. After the supervisor gives the go ahead, the vacutug truck reach the client's home within 48 hours. After sludge is pulled out from the storage, it is transported to the treatment plant.

2. Manual Emptier Provides Emptying Service

Customer can hire informal emptiers through contact in-person or calling them if phone number is available. Emptiers come to customer's house within 24 hours of getting the call. They usually make their demand based on the size & location of the pit/tank, distance between storage and dumping place. After negotiation and having confirmation from customers they start their work. Some of the manual emptiers even go door to door and vouch for emptying the HH tank.

Generally, for a small pit, they charge around BDT 1,000-2000. However, for septic tank clearance, their charge is around BDT 2,000-5,000. This excludes costs of additives (tips for driver) and other materials, which are usually borne by the customer. They also receive around BDT 300-1,000 as tips for a satisfactory job.

3.2.6 Access to Emptying Services

The figure shows that, comparison of accessibility of emptying service between user and non-user group. 78% and 47% of HHs of user and non-user respectively can take the service within 3 days. This indicates that, the emptying service is more available for user comparatively to non-users.

However, customers want to take the service within same day or next day after asking for service. 51% and 44% of HH in user and non-user group respectively want to take the service within the same day because of the overflow of the tank/pit. On the contrary, 45% HH of user and 54% HH of non-user group want to take it within the next day after informing for service.

Figure 25: Time Lag between Application and Receipt

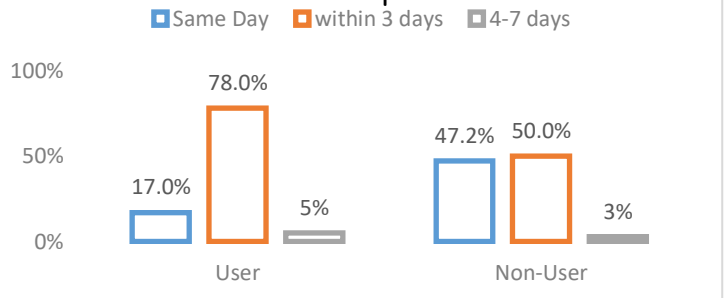
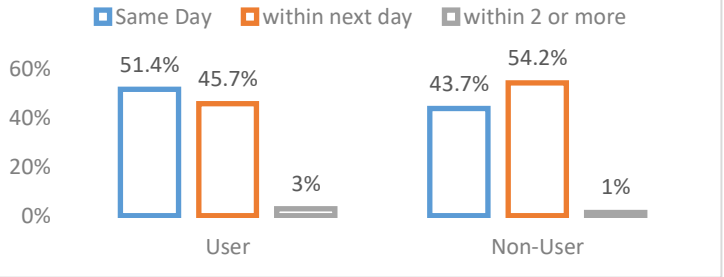
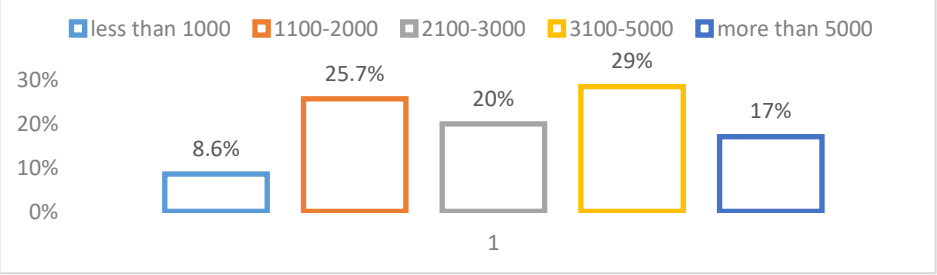


Figure 26: Expected Time Lag for Service



3.2.7 Present Expenditure of Customers

Figure 27: Expenditure of User for Emptying Service



29% of HH from user groups spending on an average BDT 3,100-5,000 in each time of emptying through vacutug. The most important point is that, about 66% of HH spending more than BDT 2,000 in each time, while 17% with spending more than BDT 5,000.

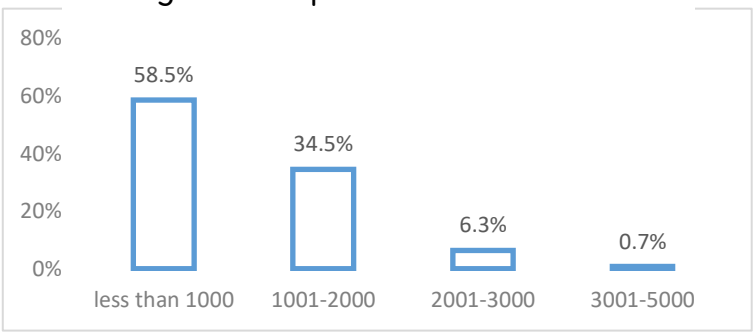
The figure presents the expenses for informal emptying services through manual emptiers. 58% of non-user HH is spending less than BDT 1,000 for the emptying service. The expenditure pattern indicates that, most of the non-user of mechanical service is HH having pit latrines. Meanwhile, only 7% of non–user HH is spending more than BDT 2,000 for each time.

The service charge for emptying was determined as per the number of trips of vacutug in case of user. It depends on the size of the tank/pit in case of non-user HH.

3.2.8 Perception About Current Tariff

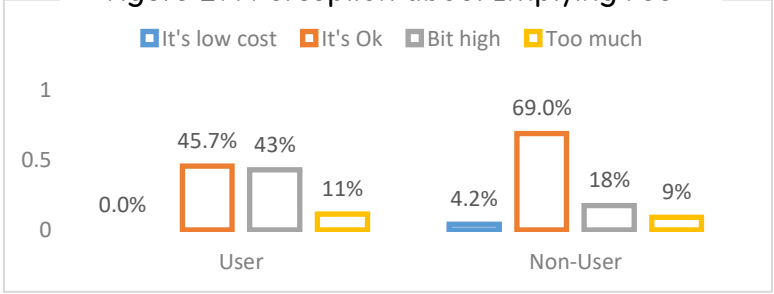
43% and 18% of HH from user and non-user group respectively responded that, present tariff is a bit high. They desire the service with lower service charge. But the most important point is that, 45% and 69% of HH from user and non-user respectively stated the charge is ok for them. This indicates, the present service charges are affordable for major portion of HHs. However, 11% from user and 9% from non-user mentioned the charges are too high to bear for them. This portion of respondents belongs to lower income group community. They need inceptives or subsidized service of emptying.

Figure 28: Expenditure of Non-User



While respondents were asked about how much they would like to pay for the current service, 54% of user HH willing to pay more than BDT 2,000 for the current service. On the contrary, 85% of HH from non-user are willing to pay less than BDT 2,000 for the manual emptying.

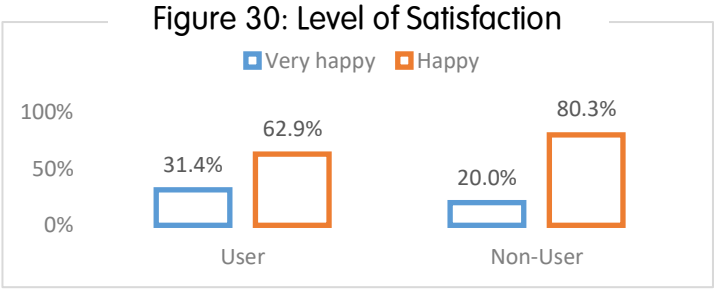
Figure 29: Perception about Emptying Fee



3.2.9 Satisfaction Level on Current Service

The figure presents, irrespective of mechanical and manual user a major portion of HHs are happy with the current service for emptying. This is only because, they can easily get the service from either mechanical emptiers or manual emptiers.

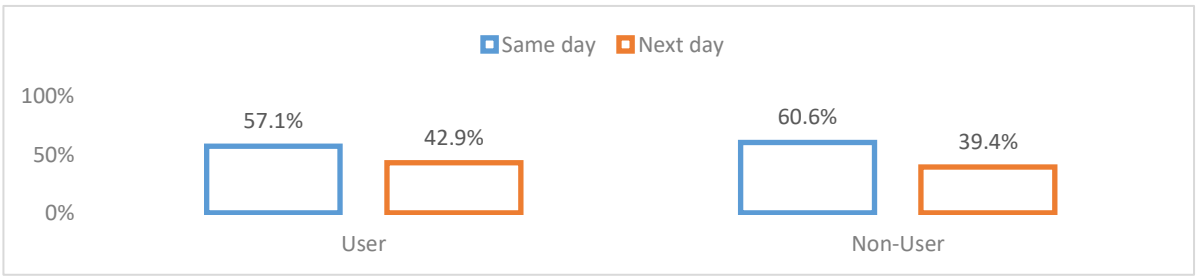
Figure 30: Level of Satisfaction



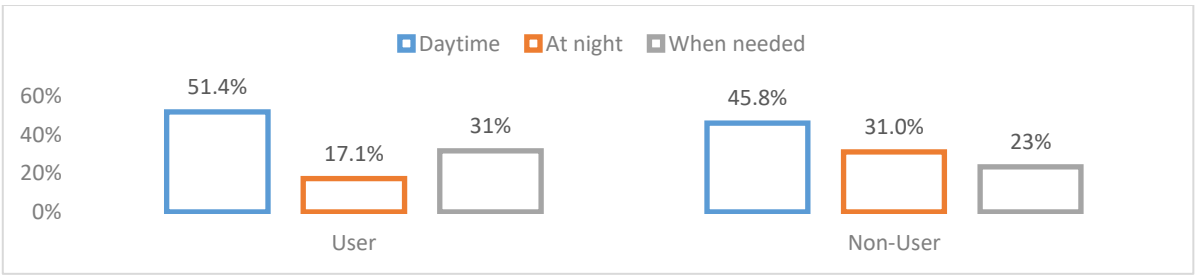
3.2.10 Willingness to Pay for Emptying Service

Respondents were asked about their willingness to pay for their desired emptying service through vacutug.

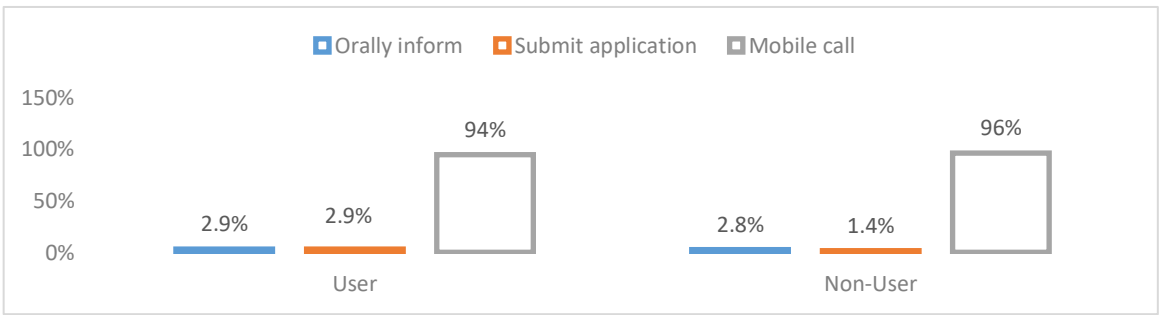
Preferred Service Time-Lag



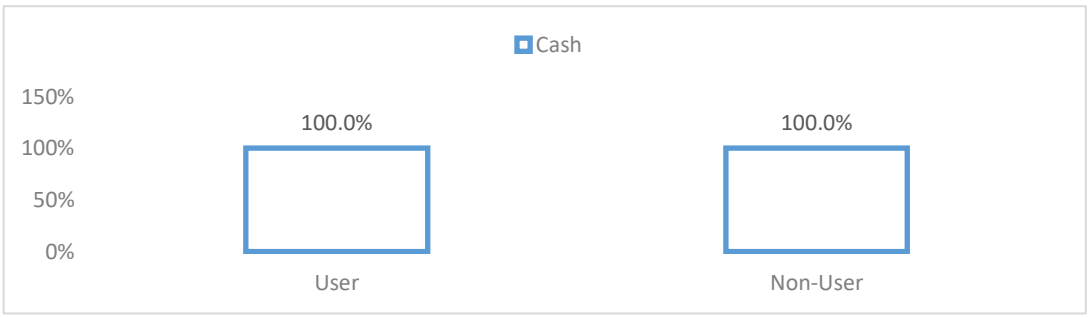
Preferred Time of Receiving Service



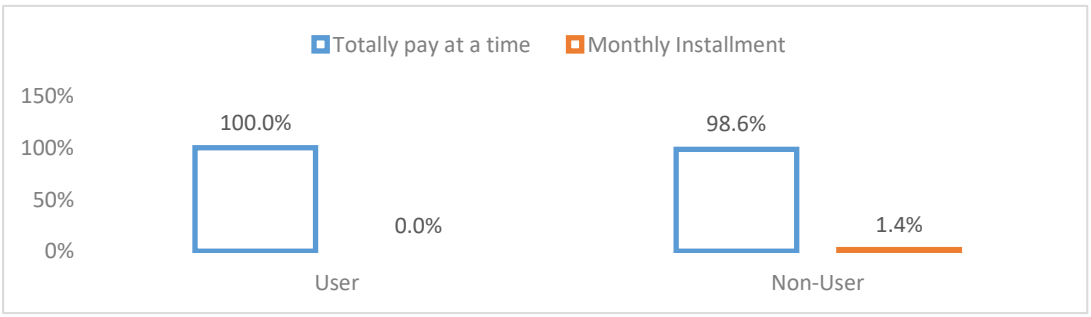
Preferred Communication Method



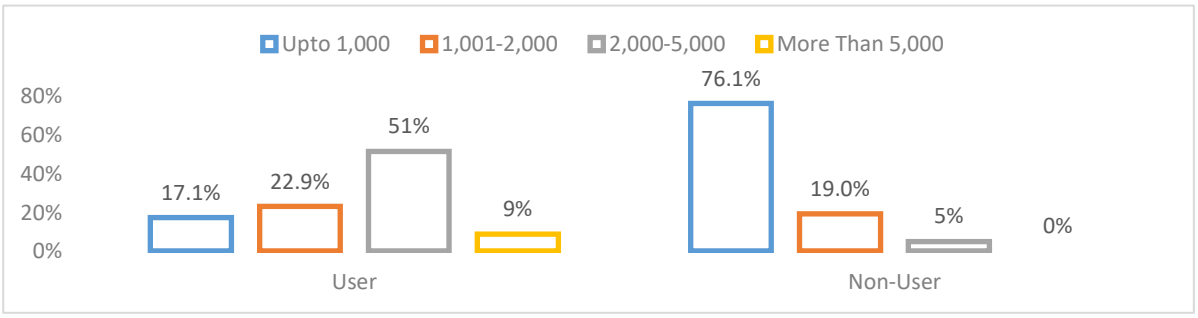
Preferred Mode of Payment



Preferred Payment Method



Willing to Pay for Preferred Service

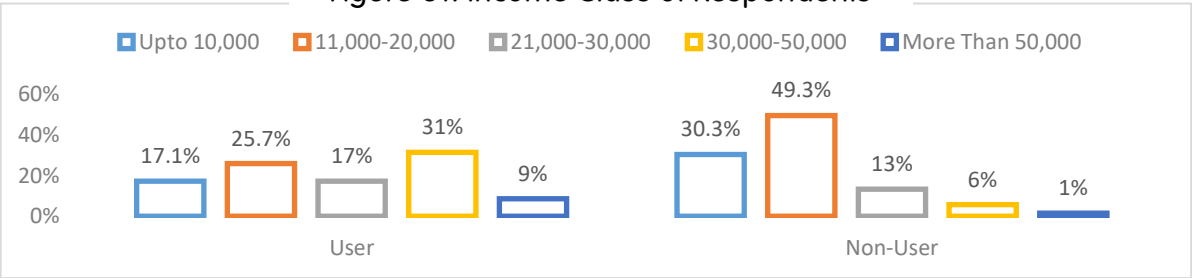


Average Willingness to pay for FSM according to preferred model is given below:

Types of technology	User Group	Non-User Group
Septic Tank User	3,230	1,275
Pit User	1,540	830

3.2.11 Income Group of Respondents

Figure 31: Income Class of Respondents



With average HH income BDT 26,000 per month, 40% of user HH's monthly income is more than BDT 30,000. On the contrary, average HH income of non-user is BDT 16,539 per month. 62% of HHs earns BDT 11,000 to 30,000 per month.

3.2.12 Present Emptying Practice among Institutions

Irrespective of types of institutions, more than 80% of institutions both from user and non-user group employed emptying service when storage full. User HH prefer day time (66%) and non-user HH prefer night time (65%) for this dirty work as it creates very bad smell during emptying. All user institutions and majority of non-user (60%) institutes do not have any choice for season. They have to do it when facing overflow of the sludge.

Figure 32: Frequency of Emptying

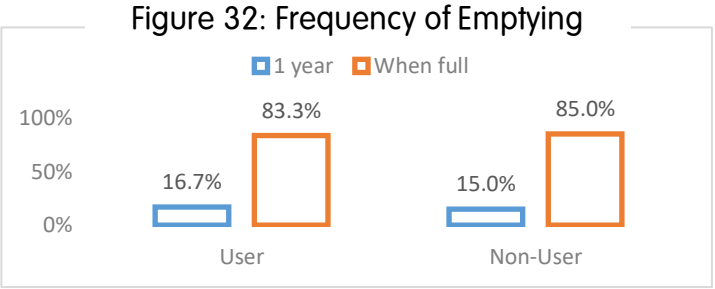
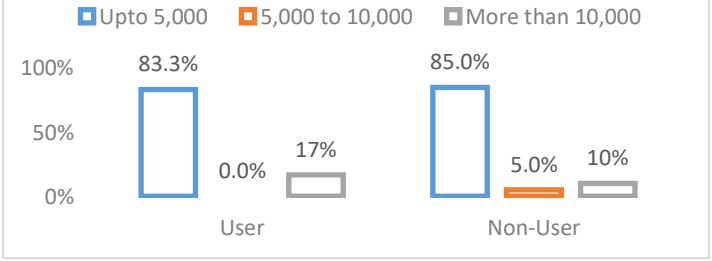


Figure 33: Expenditure for Emptying

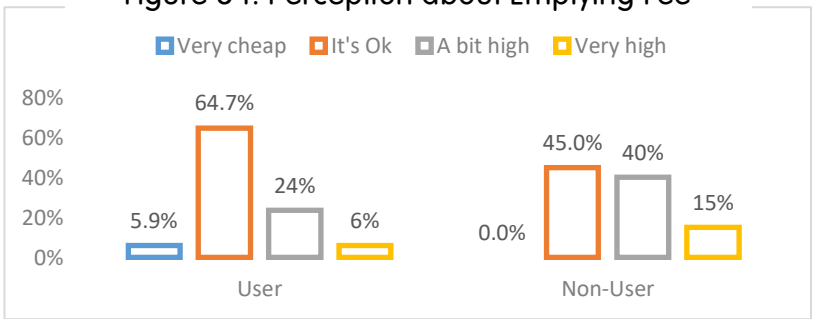


More than 80% of institutes both from user and non-user are spending up to BDT 5,000 for emptying the tank.

The emptying charge for user was fixed considering the number of trips. On the contrary, it was fixed as per the size and location of the tank for the non-user.

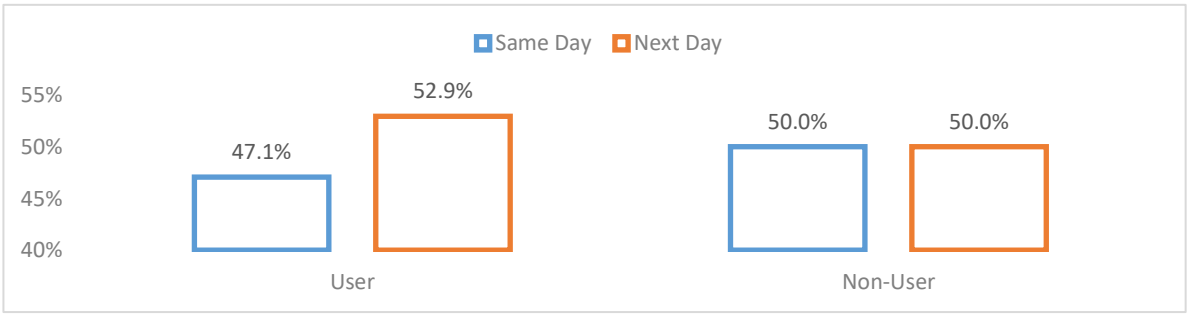
Around 55% of non-user stated the current expense for manual emptying is high for them. On the contrary, 30% of user stated the tariff is high. Even 6% stated the tariff is very cheap. Irrespective of the mechanical and manual emptying receiver, majority of want to expend up to BDT 5,000 for the emptying.

Figure 34: Perception about Emptying Fee

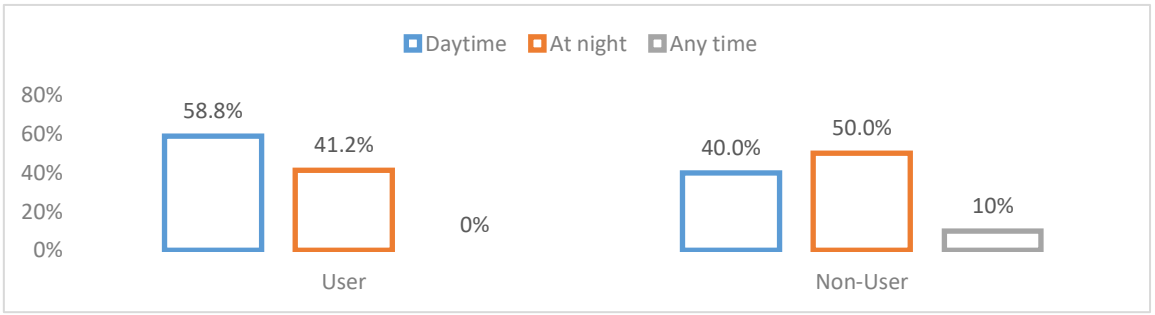


3.2.13 Willingness to Pay

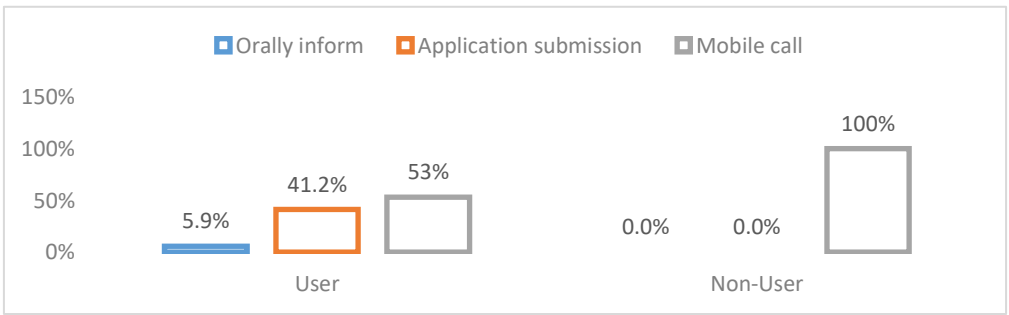
Preferred Service Time-lag



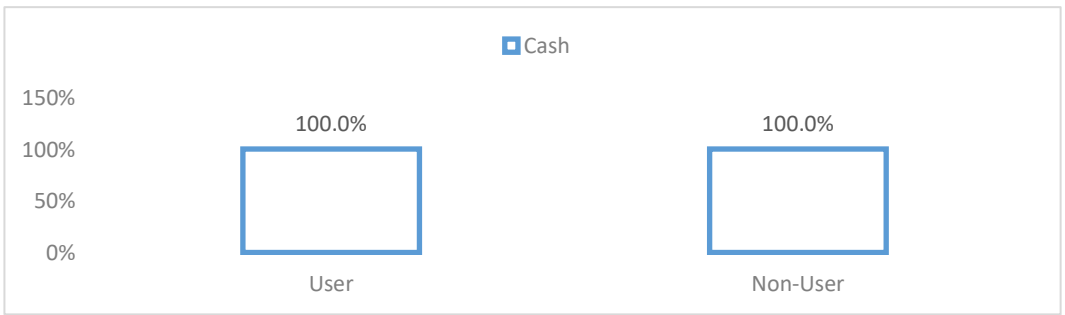
Preferred Time of Receiving Service



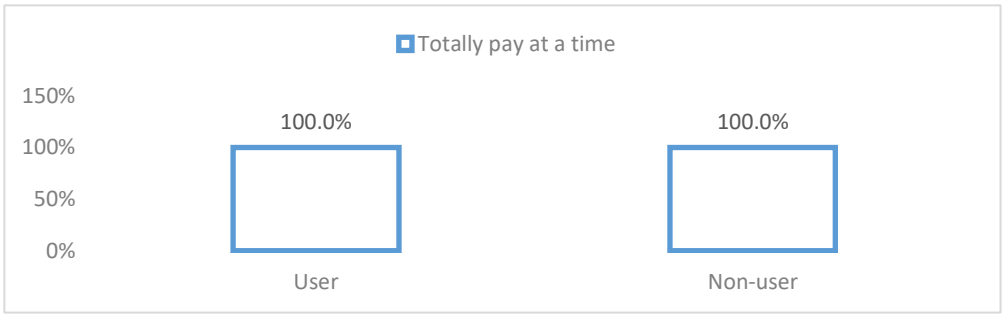
Preferred Communication Method



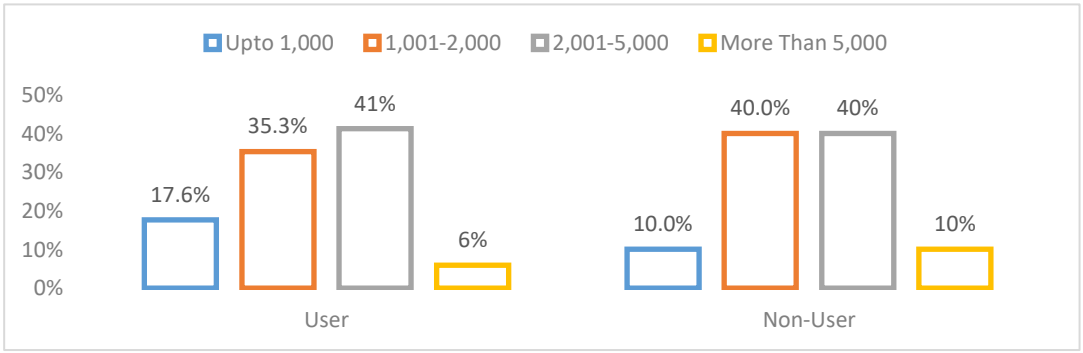
Preferred Mode of Payment



Preferred Payment Method



Willing to Pay for Preferred Service



Average willingness to pay for FSM according to preferred model is near about BDT 4,166 and 2,965 for User and Non-User group accordingly.

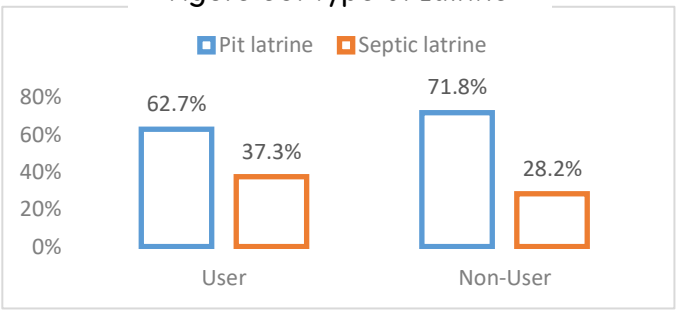
3.3 Results and Findings on Sanitation Status of Kushtia Paurashava (KUS)

During the household survey, the study groups were divided into two group, i.e. households (HH) who use the mechanical emptying service (Vacutag) for emptying pit or septic tanks were defined as "User" group and who hire manual sweeper rather using Vacutag were defined as "non-user" group. Total 152 HH were surveyed; 67 HH surveyed from user group and 85 from non-user group.

3.3.1 Types of Latrines, Ownership and O&M Status

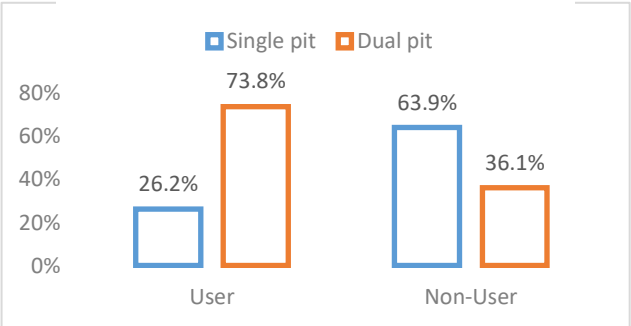
Irrespective of economic status, all of the HH have access to toilet facilities. Toilets with Pit are predominant in the Kushtia. 37% of vacutug customers have septic tank. A well-designed septic tank makes the emptying easier. The less availability of septic tank in the non-user HH could be a reason for not using vacutug.

Figure 35: Type of Latrine



Dual pit latrines are predominant in user group where single pit is more in non-user group. 6-12 rings are found mostly used in both groups.

Figure 36: Type of Pit Latrine



Septic tank with 2 chambers is predominant in both user group (64%) and non-user group (58%). Which indicates that, there lack of awareness in building ideal septic tank with 3 chambers.

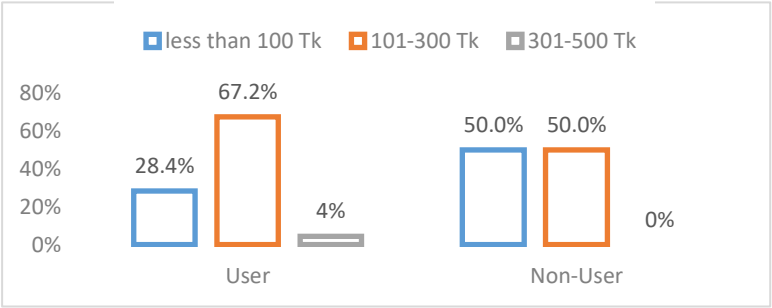
77% of total HH had installed their toilet within 20 years. 34% and 48% of HH had built their toilet less than 10 years ago in user and non-user group respectively.

Irrespective of user and non-user, family members are cleaning their toilets. 67% and 50% of HH from user and non–user respectively are spending on an average between BDT 100-300 per month in cleaning and maintenance purpose of toilet.

3.3.2 Existing Emptying Practices

It is seen that, generally HHs don't take any initiative to empty their pits or septic tanks until facing the problems for overflow. Due to lack of awareness HHs does not keep the emptying service in their list of priorities.

Figure 37: Monthly O&M Expense

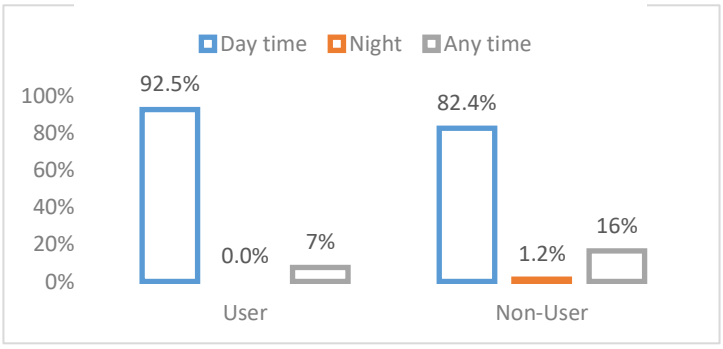


Among the user, more than 90% of HH employ the emptying service once in a 4 year. On the other hand, 88% of non-user HHs employs the emptying when the tank is full.

3.3.3 Preference of Time and Season

Irrespective of mechanical or manual emptying most of HHs prefer day time for emptying. As the vacutug service does not spread the bad smell during emptying and it takes very short time therefore more than 90% of user prefers day time. On the contrary, a major portion of non-user (82%) prefers day time to take the service from manual emptiers. This is because, sweepers prefer to work at day time and house owner also wants to ensure the proper desludging and dumping of sludge at far away from house.

Figure 38: Preferred Time of Emptying



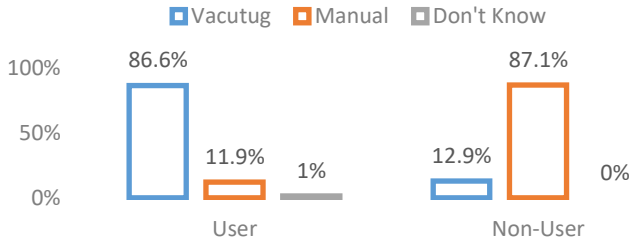
Most of the HHs (78% of total HH) has no choice of season for emptying. Having overflowed pit/septic tank they don't have any option to choose season. However, 22% and 16% of HH from user and non-user respectively prefer summer.

3.3.4 Practice of Neighbors

The figure shows that, 86% of surrounding HHs of Users are also taking the mechanical service while HH 87% of HH around non-users taking manual emptying service.

41% of non-users stated they do not know about the mechanical emptying service. Among 59% of non-user who knows about the mechanical service yet to get it, a major portion thinks the process of getting the service is not easy and it is not available at emergency situation.

Figure 39: Emptying Practice of Neighbor



3.3.5 Accessibility & Availability of Emptying Services

In Kushtia two types of emptying services are being practiced. First, Paurashava has been providing mechanical emptying and service through 3 vacutugs. Second, manual emptiers, belongs to harijan community, provides emptying service through generation. Treatment plant has been operated by an NGO ERAS.

Service Provider

1. Kushtia Municiplaity
2. Manual Emptiers (Sweeper)

1. Kushtia Paurashava Operated Mechanical Service

Paurashava provides mechanical emptying service to citizen through 3 vacutugs. Any citizen can take this service by filling up a form to provide information about the pit/septic tank size, road size in front of house, machine to pit/septic tank distance etc. along with submission of the form, applicants has to make down payment. Then, a supervisor visits the home to validate all the information of the application form within 24 hours. After the supervisor gives the go ahead, the vacutug truck reach the client's home within 48-96 hours. After sludge is pulled out from the storage, it is transported to the treatment plant.

Kushtia Paurashava has three vacutugs of 4,000, 2,000 and 1,000 litres capacity.

2. Manual Emptier Provides Emptying Service

Customer can hire informal emptiers through contact in-person or calling them if phone number is available. Emptiers come to customer's house within 24 hours of getting the call. They usually make their demand based on the size & location of the pit/tank, distance between storage and dumping place. After negotiation and having confirmation from customers they start their work. Some of the manual emptiers even go door to door and vouch for emptying the HH tank.

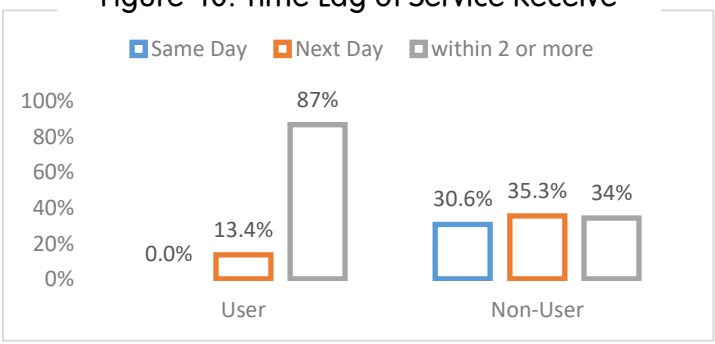
Generally, for a small pit, they charge around BDT 1,000. However, for septic tank clearance, their charge is around BDT 2,000. This excludes costs of additives (tips for driver) and other materials, which are usually borne by the customer. They also receive around BDT 200-500 as tips for a satisfactory job.

3.3.6 Access to Emptying Services

The figure shows that, comparison of accessibility of emptying service between user and non-user group.

For User HH, they have to wait at least 1 day to get the service. As Paurashava has limited resources and therefore cannot provide service to everyone at the same time. On the other hand, 65% of non-user HH can employ sweeper within 1 day after the contacted with them. However, customers want to take the service on the same day or within next day after asking for service.

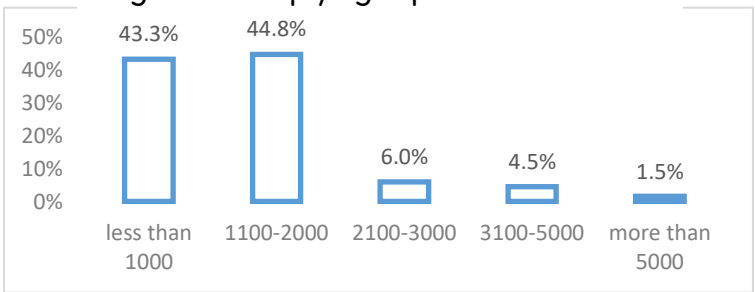
Figure 40: Time Lag of Service Receive



3.3.7 Present Expenditure of Customers

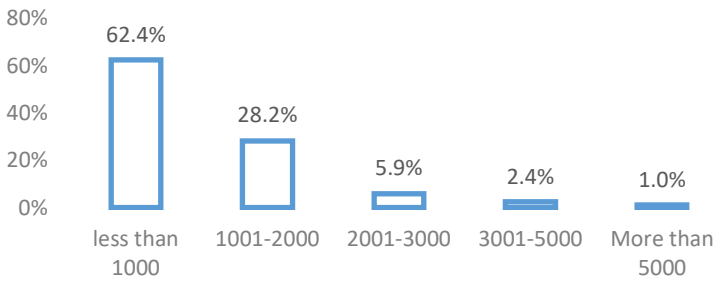
88% of users are spending up to BDT 2,000 in each time of emptying. Only 12% are spending more than BDT 2,000.

Figure 41: Emptying Expenditure of User



On the contrary, a major portion of non-user (62%) is spending up to BDT 1,000 for the emptying.

Figure 42: Emptying Expenditure of Non-User



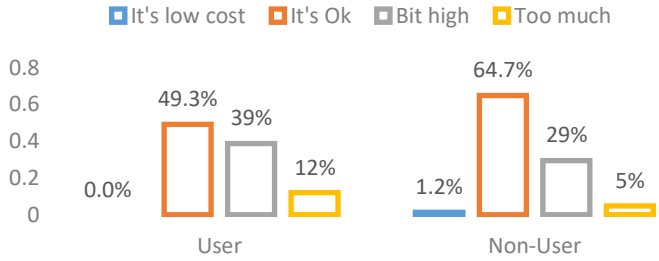
Availability of the manual emptying service at less prices may be one of the reasons for not taking the mechanical emptying by the non-users.

The service charge for emptying was determined as per the number of trips of vacutug in case of user. It depends on the size of the tank/pit in case of non-user HH.

3.3.8 Perception about Current Tariff

Irrespective of the service, in both group a major portion of respondents are happy with the current charge. Non-users are happier compared to user as they get the service at lower prices. However, 29% of non-user stated the price is bit high.

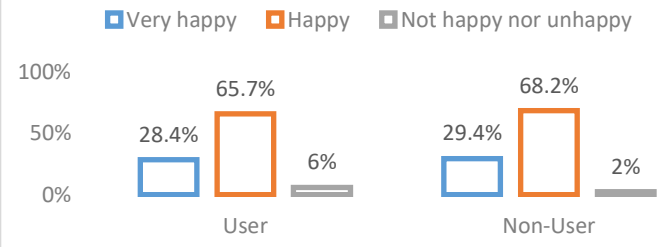
Figure 43: Perception about Emptying Fee



Respondents were asked about how much they would like to pay for the current service, 88% of user HH willing to pay up to BDT 2,000 for the current service. On the contrary, 81% of HH from non-user are willing to pay up to BDT 1,000 for the manual emptying.

3.3.9 Satisfaction Level on Current Service

Figure 44: Level of Satisfaction on Emptying

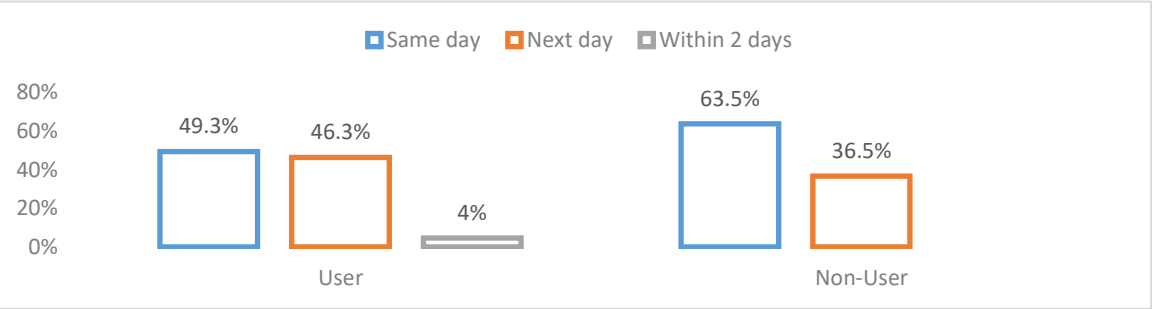


The figure presents, irrespective of mechanical and manual user more than 60% of HHs is happy with the current service for emptying. This is only because; they can easily get the service from either mechanical emptiers or manual emptiers.

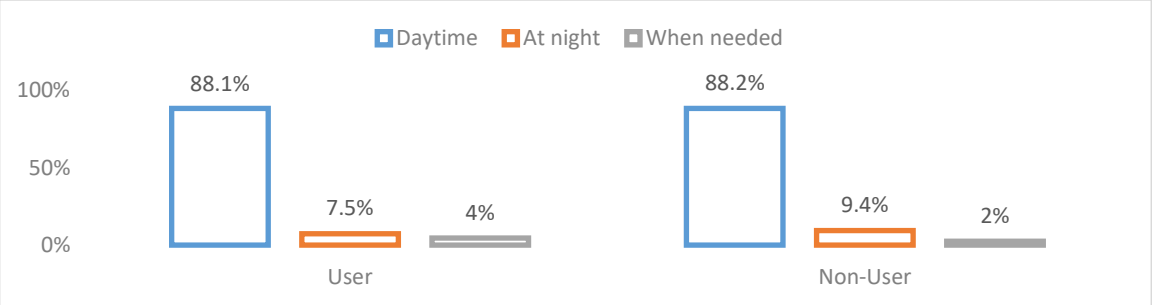
3.3.10 Willingness to Pay for Emptying Service

Respondents were asked about their willingness to pay for their desired emptying service through vacutug.

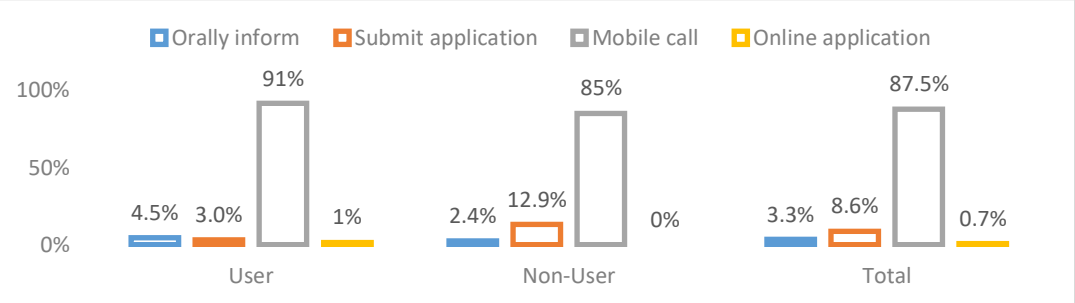
Preferred Service Time-lag



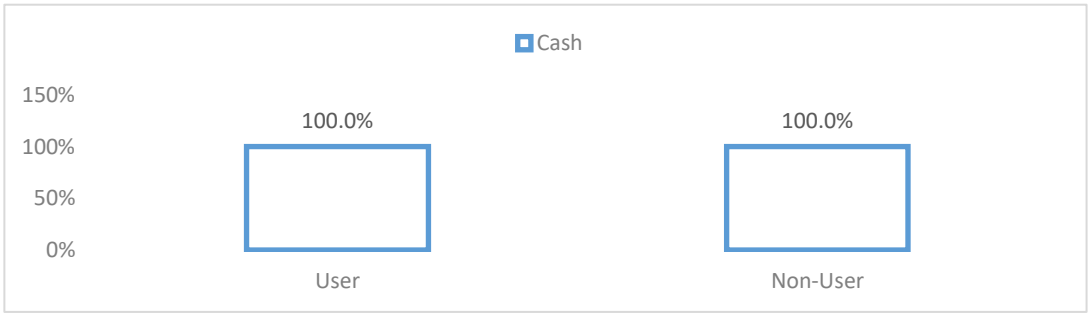
Preferred Time of Receiving Service



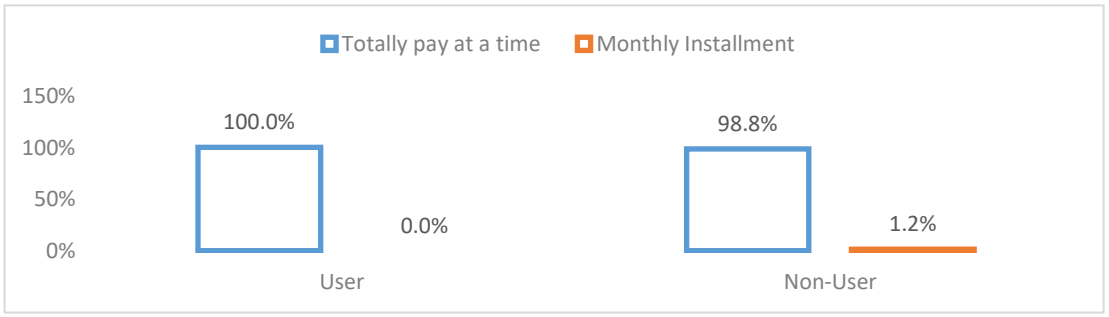
Preferred Communication Method



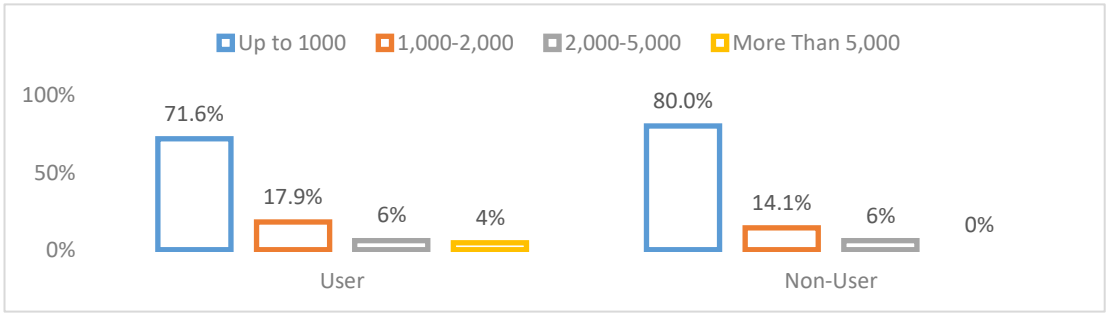
Preferred Mode of Payment



Preferred Payment Method



Willing to Pay for Preferred Service

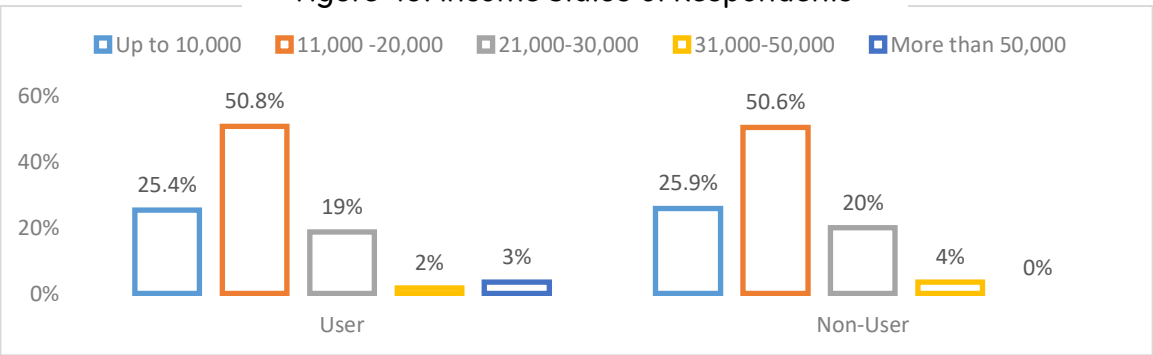


Average Willingness to pay for FSM according to preferred model is given below:

Types of technology	User Group	Non-User Group
Septic Tank User	1,776	1,300
Pit User	685	772

3.3.11 Income Group of Respondents

Figure 45: Income Status of Respondents



With average HH income BDT 18,762 per month, 24% of user HH's monthly income is more than BDT 20,000. On the contrary, average HH income of non-user is BDT 15, 676 per month. 76% of non-user HHs earns BDT 11,000 to 30,000 per month.

3.3.12 Present Emptying Practice among Institutions

Irrespective of types of institutions, more than 75% of institutions both from user and non-user group employed emptying service when storage full. Both user and non-user institutions prefer day time 94% and 77% respectively. 88% of non- user institutions and 58% of user institutes do not have any choice for season. They have to do it when facing overflow of the sludge.

Figure 46: Frequency of Emptying

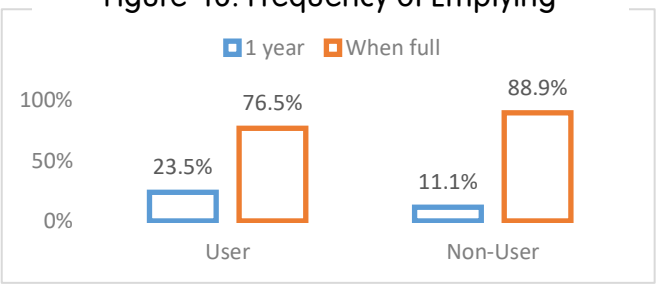
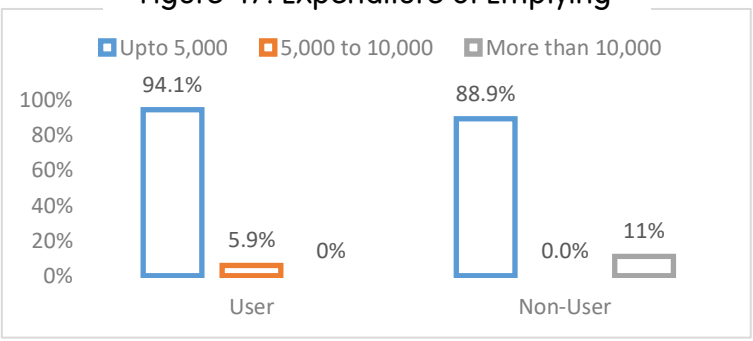


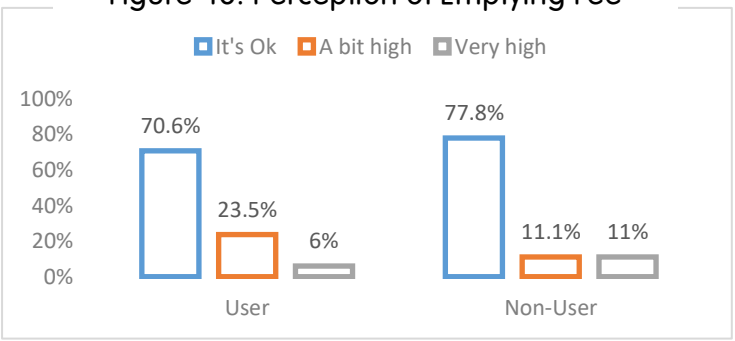
Figure 47: Expenditure of Emptying



More than 88% of institutes both from user and non-user are spending up to BDT 5,000 for emptying the tank. The emptying charge for user was fixed considering the number of trips. On the contrary, it was fixed as per the size and location of the tank for the non-user.

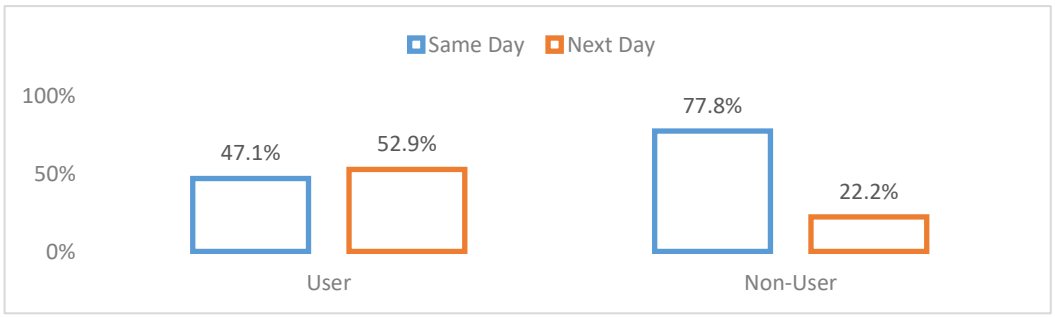
More than 70% of respondents in both user and non-user group stated the price is ok for them.

Figure 48: Perception of Emptying Fee

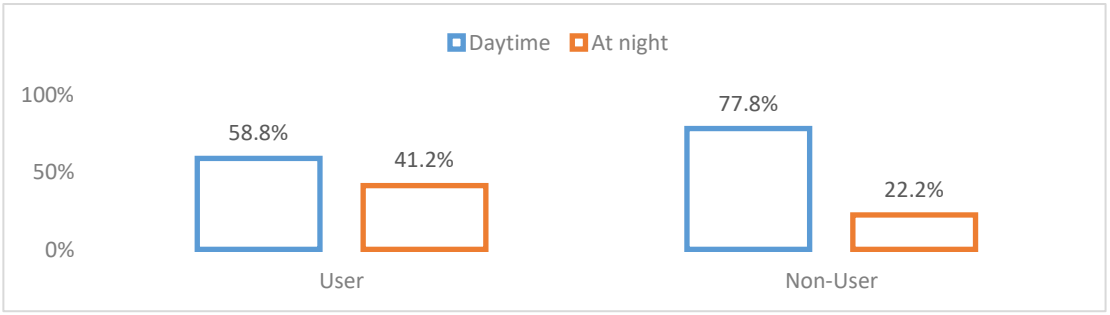


3.3.13 Willingness to Pay

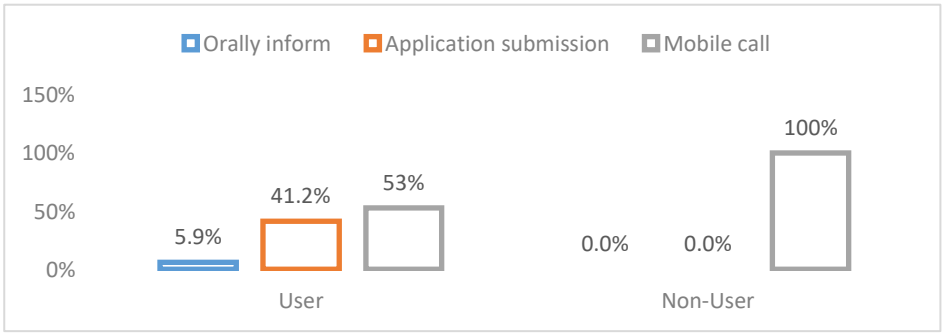
Preferred Service Time-Lag



Preferred Time of Receiving Service

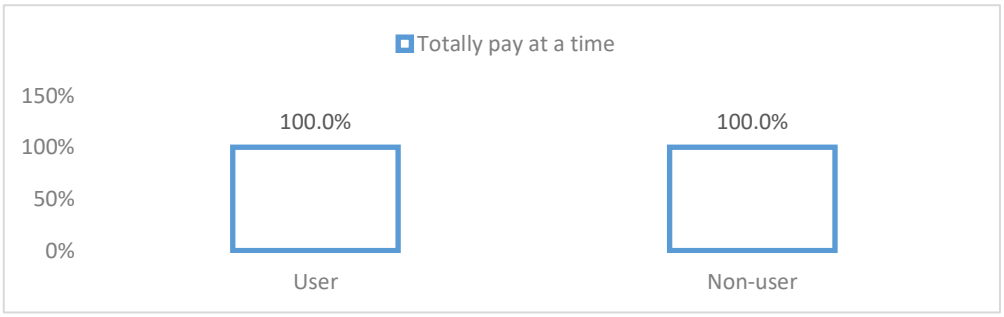


Preferred Communication Method

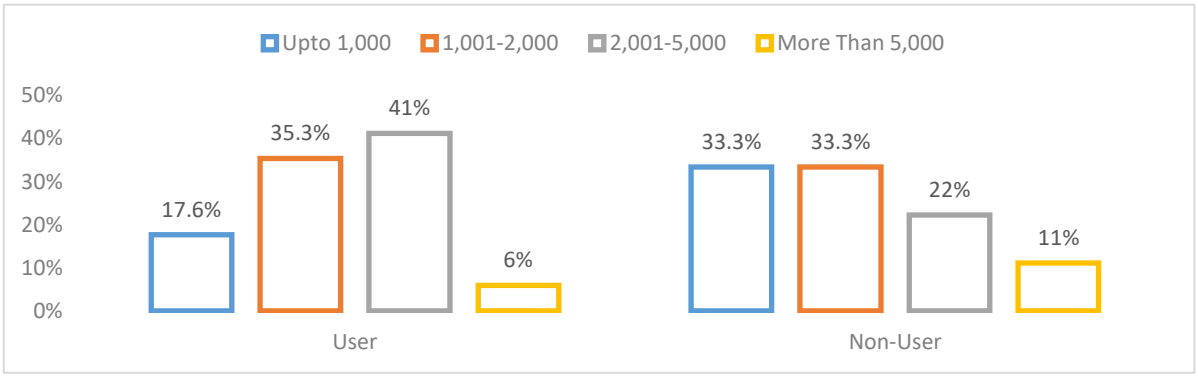


Preferred Mode of Payment

Preferred Payment Method



Willing to Pay for Preferred Service



Average willingness to pay for FSM according to preferred model is near about BDT 2,376 and 2,688 for User and Non-User group accordingly.

3.4 Results and Findings on Sanitation Status of Jashore Paurashava (JAS)

We have conducted interviews only with non-user HH in Jashore. Though municipality has been providing emptying service through one vacutug, which is non-functional in recent days. There is also lack of service receiver data set. In this context, it was difficult for us to track the address of the user HH. That's why we have paid our concentration on the non-user HH to know their willingness to pay for the mechanical emptying service. Total 234 non-user HH was interviewed during the field survey.

3.4.1 Types of Latrines, Ownership and O&M Status

Irrespective of economic status, all the HH have access to toilet facilities in Jashore. Among the interviewed HHs 50% HH have pit latrines and 50% have toilet with septic tank.

Single pit latrine is predominant among the HH who has pit latrine and 6-12 rings are being used mostly.

Septic tank with 2 chambers is predominant in the study area. Which indicates that, there lack of awareness in building ideal septic tank with 3 chambers.

Figure 49: Type of Latrine in JAS

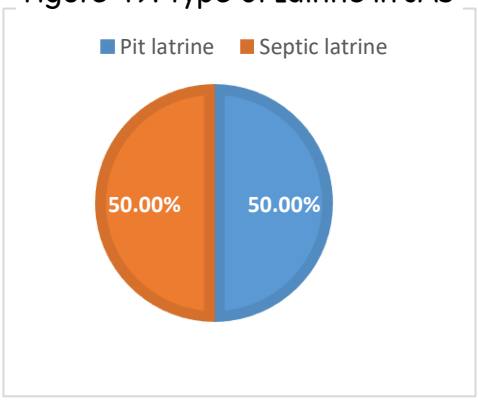
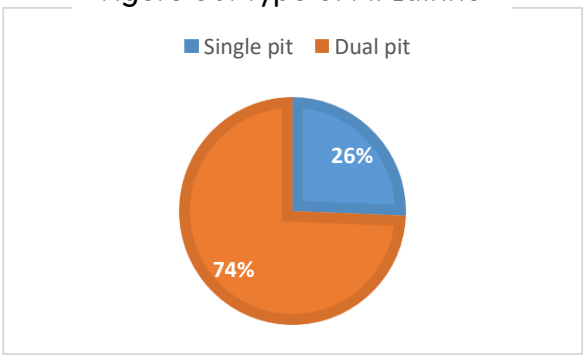


Figure 50: Type of Pit Latrine



74% of total HH had installed their toilet within 20 years. 18% and 7% had built their toilet less than 30 and more than 30 years respectively. Irrespective of types of latrine family members are cleaning their toilets.

74% of HH spends on an average BDT 100-300 per month in cleaning and maintenance purpose of toilet.

Figure 51: Years of Uses the Latrine

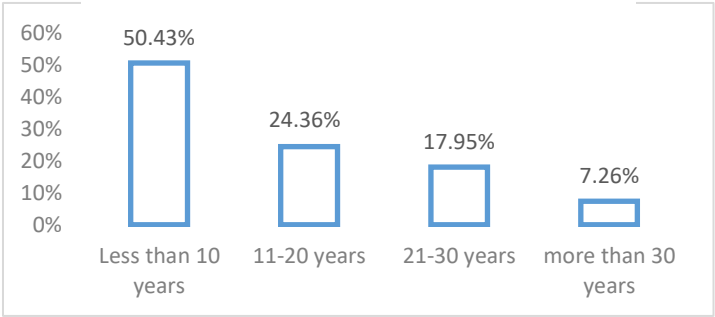
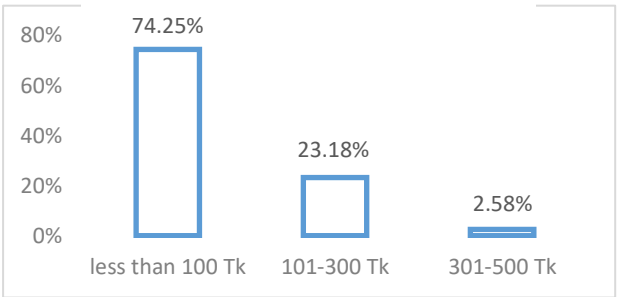


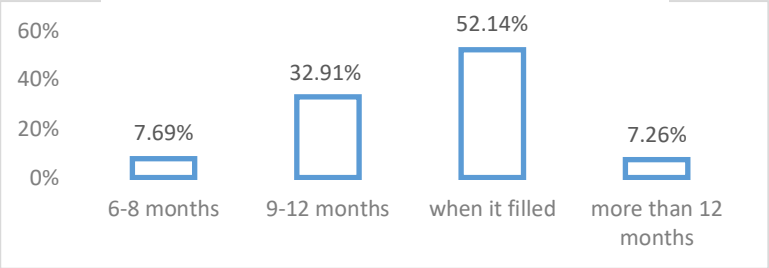
Figure 52: Monthly O&M Cost



3.4.2 Existing Emptying Practices

It is seen that, generally HHs don't take any initiative to empty their pits or septic tanks until facing the problems for overflow. Due to lack of awareness HHs does not keep the emptying service in their list of priorities.

Figure 53: Frequency of Emptying

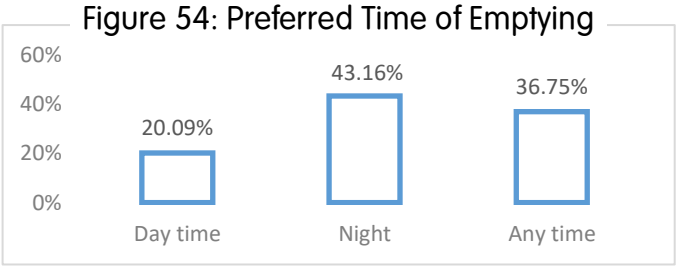


52% of HH employ the emptying service when the storage is full. On the other hand, 40% of HHs employs the emptying once within 12 months.

3.4.3 Preference of Time and Season

43% prefers night time for this work mainly to avoid bad smell. On the contrary, 20% prefer day time so that they can monitor the work and ensure the dumping of sludge far away from the house. Most of the HHs (93%) has no choice of season for emptying as they employ the emptiers when facing the overflow.

Figure 54: Preferred Time of Emptying



3.4.4 Accessibility & Availability of Emptying Services

In Jashore two types of emptying services are being practiced. First, Paurashava has been providing mechanical emptying and service through 1 vacutug. Second, manual emptiers, belongs to harijan community, provides emptying service through generation.

1. Jashore Paurashava Operated Mechanical Service

Paurashava provides mechanical emptying service to citizen through 1 vacutug but it is non-function now. Any citizen can take this service by filling up a form to provide information about the pit/septic tank size, road size in front of house, machine to pit/septic tank distance etc. along with submission of the form, applicants has to make down payment. Then, a supervisor visits the home to validate all the information of the application form within 24 hours. After the supervisor gives the go ahead, the vacutug truck reach the client's home within 48-96 hours. Jashore Paurashava has one vacutug of 1,000 litres capacity.

2. Manual Emptier Provides Emptying Service

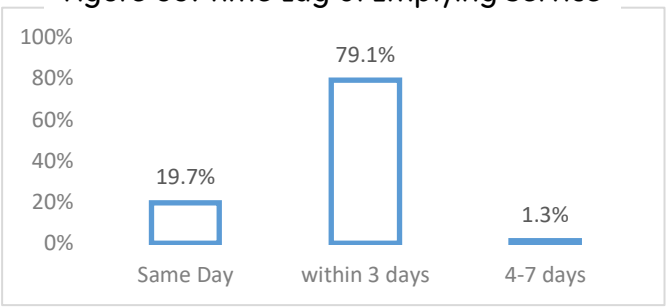
Customer can hire informal emptiers through contact in-person or calling them if phone number is available. Emptiers come to customer's house within 24 hours of getting the call. They usually make their demand based on the size & location of the pit/tank, distance between storage and dumping place. After negotiation and having confirmation from customers they start their work. Some of the manual emptiers even go door to door and vouch for emptying the HH tank.

Generally, for a small pit, they charge around BDT 700-1,200. However, for septic tank clearance, their charge is around BDT 1,800- 2,000. This excludes costs of additives (tips for driver) and other materials, which are usually borne by the customer. They also receive around BDT 200-500 as tips for a satisfactory job.

3.4.5 Access to Emptying Services

The figure shows that, a major portion of HH (79%) not getting the service on the same day. They have to wait up to 3 days after informing sweepers. Only 20% HH can take this service on the same day. However, customers want to take the service within same day or next day after asking for service.

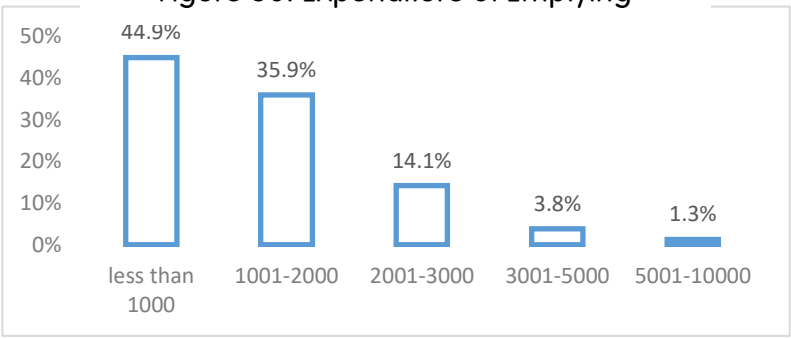
Figure 55: Time Lag of Emptying Service



3.4.6 Present Expenditure of Customers

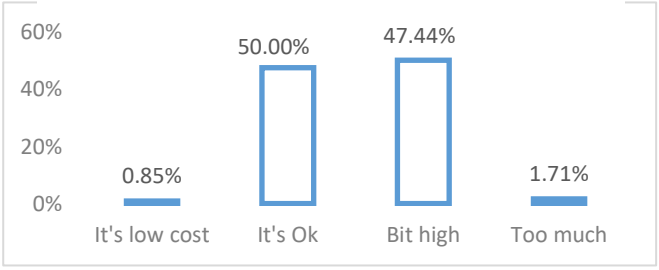
81% of HH are spending up to BDT 2,000 for each time of emptying and 19% of HH, who have septic tank spends more than BDT 2,000.

Figure 56: Expenditure of Emptying



3.4.7 Perception about Current Tariff

Figure 57: Perception about Emptying Fee

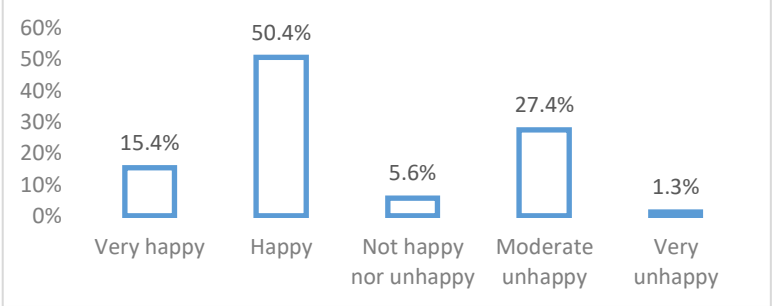


47% HH responded that, present tariff is a bit high. They desire the service with lower service charge. But the most important point is that, 50% and HH stated the charge is ok for them. This indicates, the present service charges are affordable for major portion of HHs.

3.4.8 Satisfaction Level on Current Service

The figure presents, 65% HHs are somewhat happy or very happy with the current service for emptying. On the other hand, 29% HH are somewhat unhappy with 1% very unhappy.

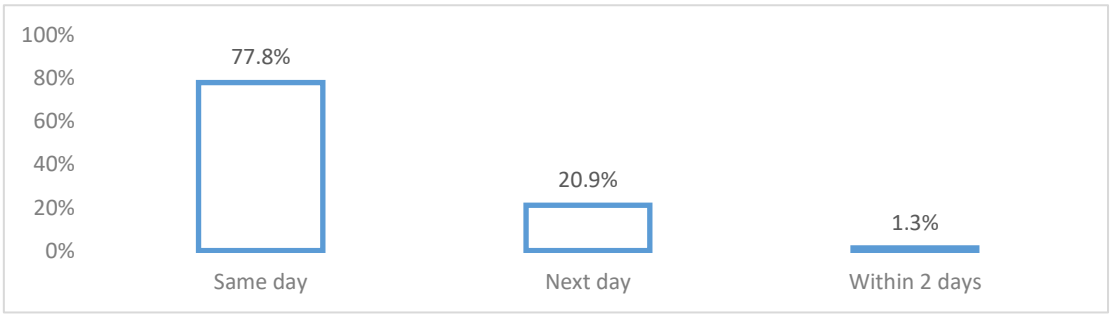
Figure 58: Level of Satisfaction



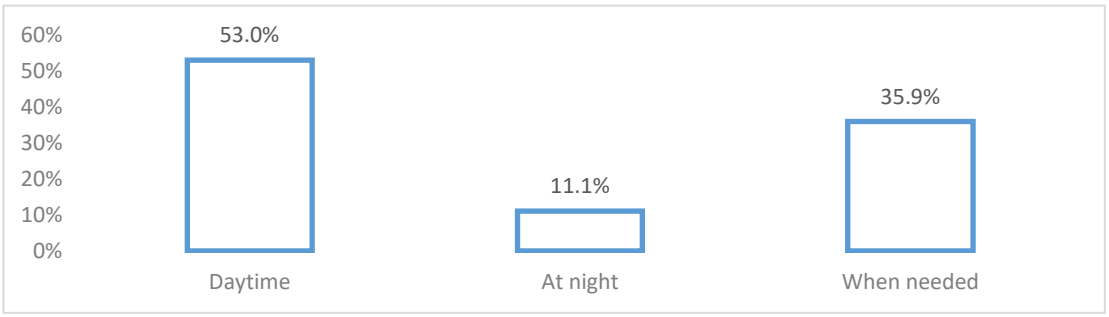
3.4.9 Willingness to Pay for Emptying Service

Respondents were briefed about the service provision model for vacutug based emptying service that exists in Khulna/Kushtia/Jhenaidah city and told to express their interest in availing the Service and in what price range.

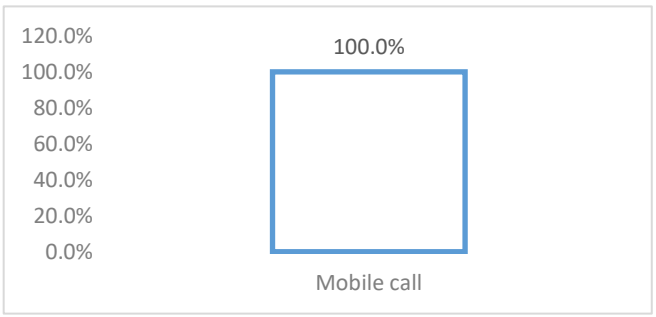
Preferred Service Time-Lag



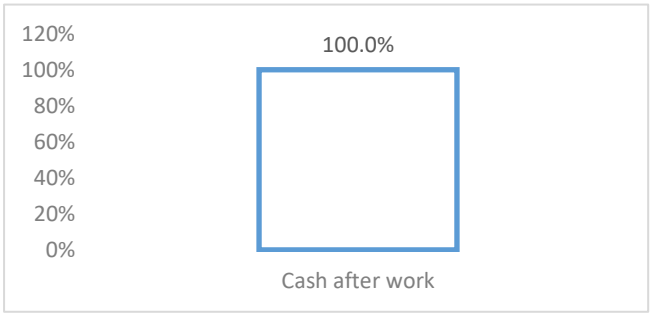
Preferred Time of Receiving Service



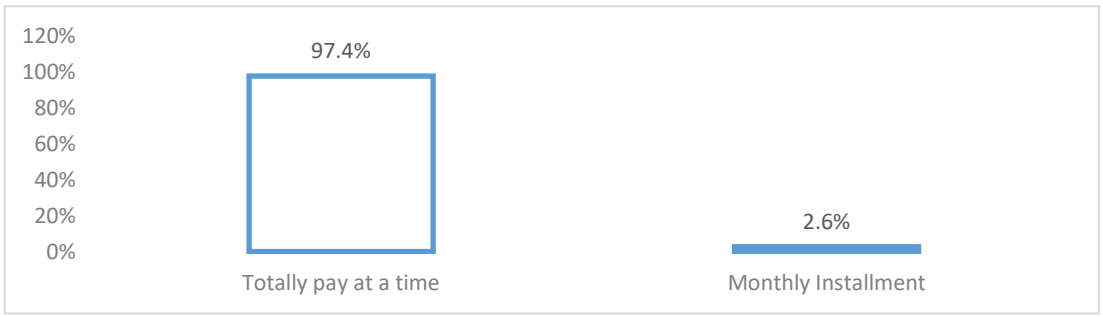
Preferred Communication Method



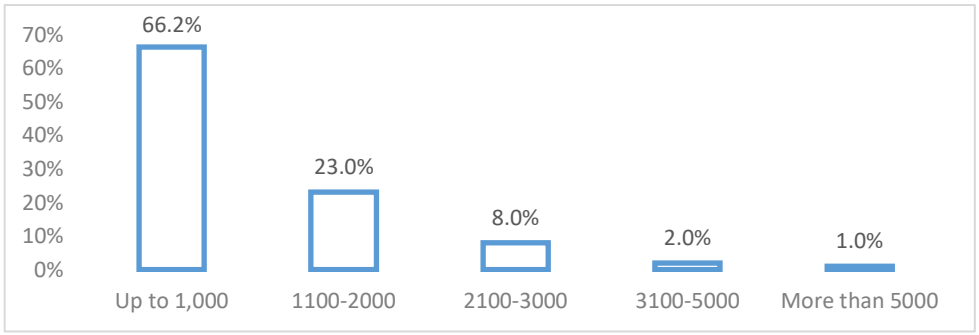
Preferred Mode of Payment



Preferred Payment Method



Willing to Pay for Preferred Service

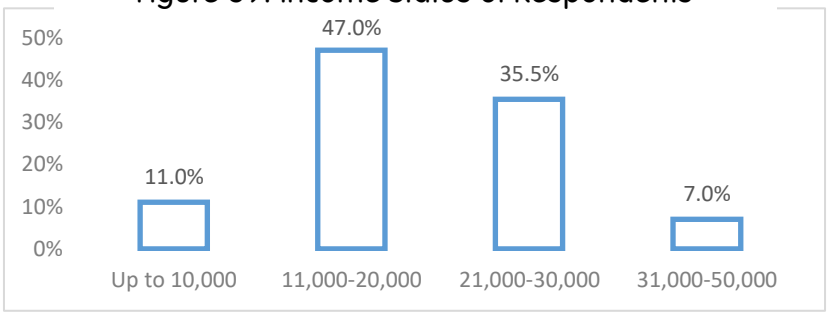


On an average, pit user and septic user willing to pay BDT 886 and 1,487 respectively for the vacutug emptying service.

3.4.10 Income Group of Respondents

With average HH income BDT 21,114 per month, 42% of HH's monthly income is more than BDT 20,000.

Figure 59: Income Status of Respondents

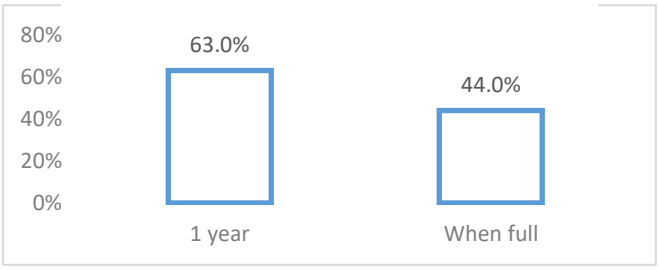


3.4.11 Present Emptying Practice among Institutions

Irrespective of types of institutions, 44% of institutions employed emptying service when storage is full. 44% HH prefer day time to monitor properly and 22% prefer night time as it creates very bad smell during emptying. 96% of institutes do not have any choice of season. They have to do it when facing overflow of the sludge.

More than 80% of institutes are spending up to BDT 5,000 for emptying the tank.

Figure 60: Frequency of Emptying



63% of non-user stated the current expense for manual emptying is high for them. On the contrary, 30% stated the tariff is ok.

Figure 61: Perception about Emptying Fee

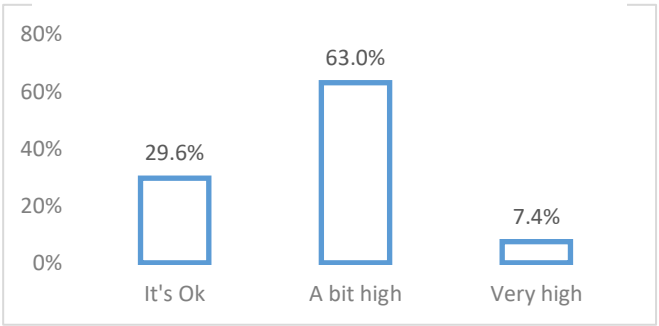
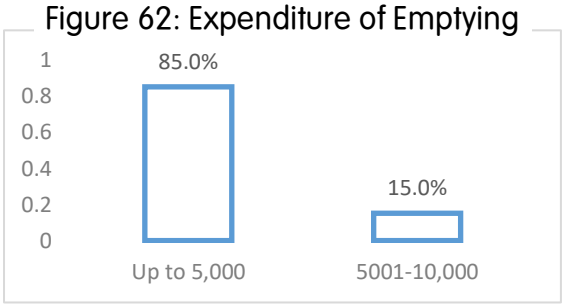
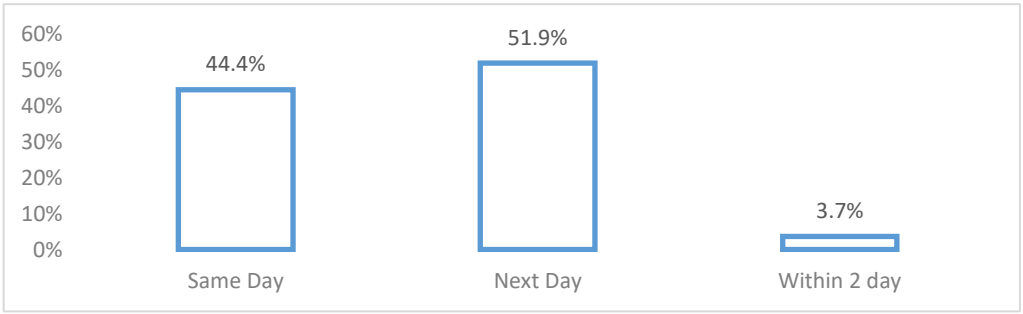


Figure 62: Expenditure of Emptying

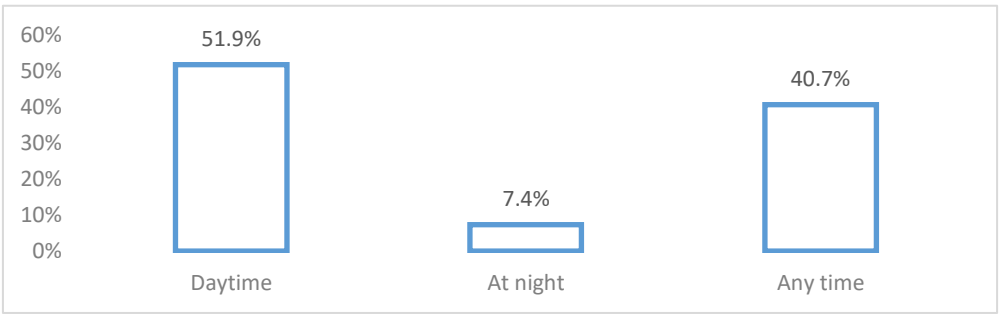


3.4.12 Willingness to Pay

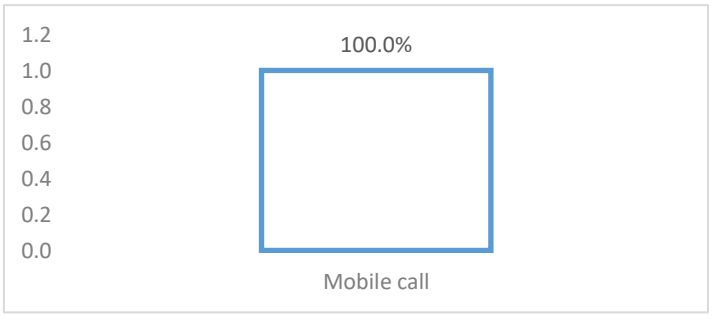
Preferred Service Time-lag



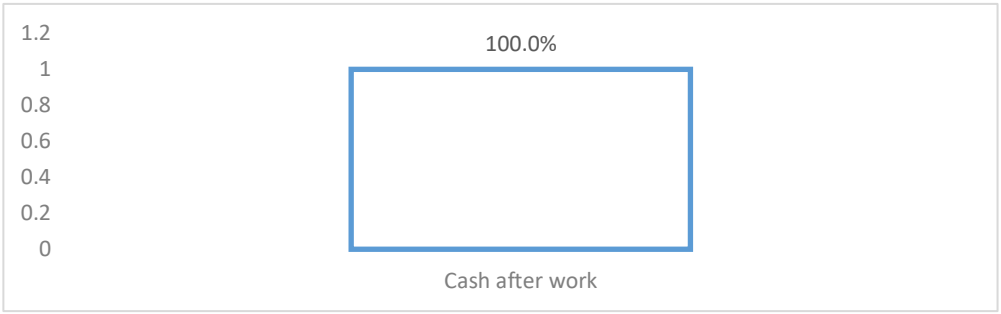
Preferred Time of Receiving Service



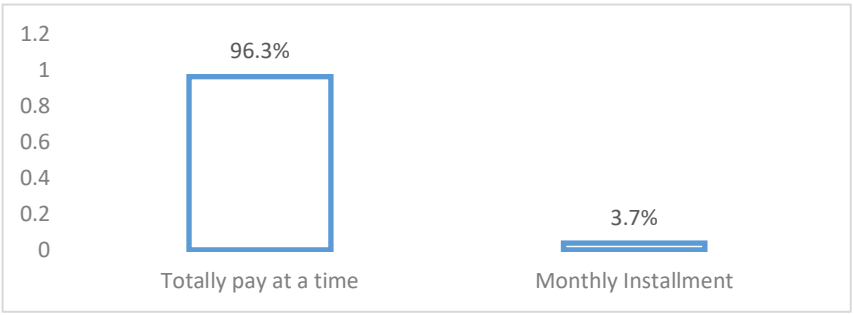
Preferred Communication Method



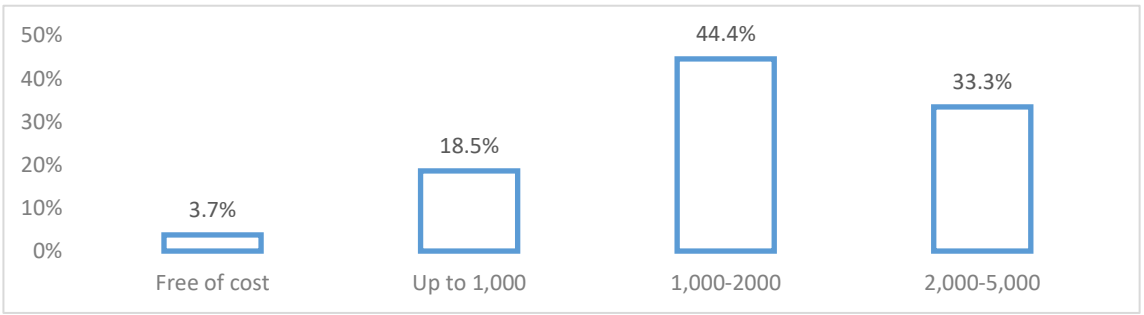
Preferred Mode of Payment



Preferred Payment Method



Willing to Pay for Preferred Service



On an average, institutions are willing to pay BDT 2,116 for the mechanical emptying service.

3.5 Results and Findings on Sanitation Status of Benapole Paurashava (BEN)

In Benapole, mechanical emptying service is not available. So, we had conducted interview with only non-user HH. Total 99 HHs were interviewed during the field survey. We had tried to know their available emptying service and their willingness to pay for the mechanical emptying service.

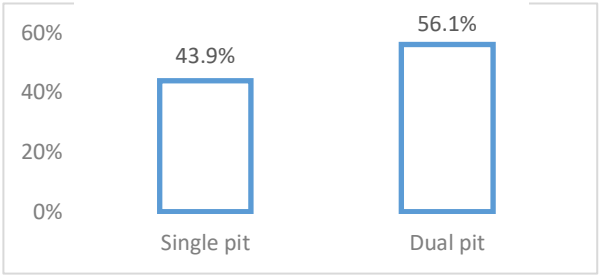
3.5.1 Types of Latrines, Ownership and O&M Status

Irrespective of economic status, all of the HH have access to toilet facilities. Toilets with Pit are predominant in the Benapole. Dual pit latrines are predominant. 6-12 rings are found mostly used (50%) followed by 47% used more than 12 rings.

Septic tank with 2 chambers is predominant (53%) among HH. Which indicates that, there lack of awareness in building ideal septic tank with 3 chambers.

80% of total HH had installed their toilet within 20 years where 64% of HH had built their toilet less than 10 years ago.

Figure 63: Type of Pit Latrine



80% of interviewed HH is spending less than BDT 100 per month in cleaning their toilet. On the other hand, rest of 20% is spending up to BDT 300 per month.

Figure 64: Type of Latrine

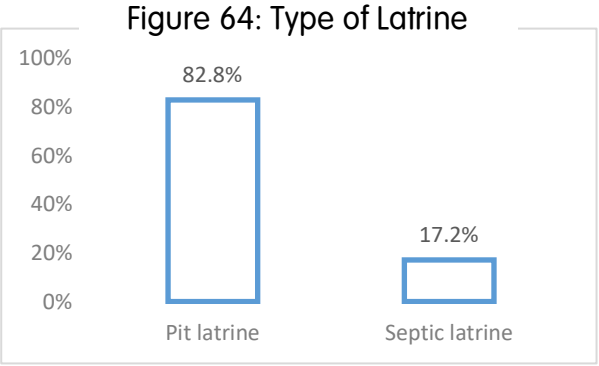
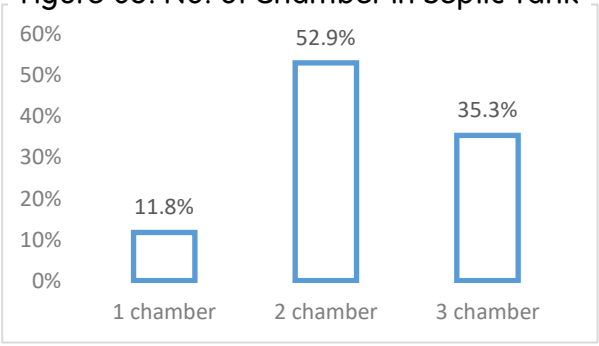


Figure 65: No. of Chamber in Septic Tank



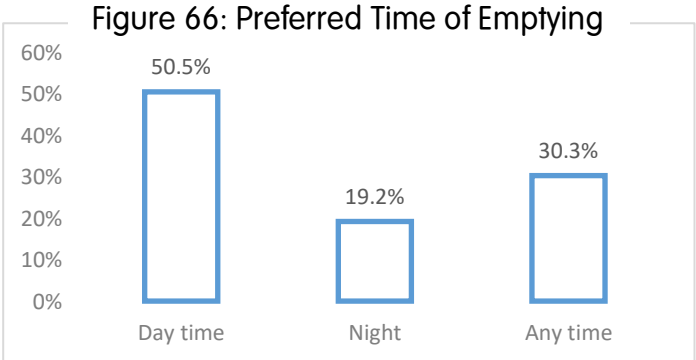
3.5.2 Existing Emptying Practices

It is seen that, generally HHs don't take any initiative to empty their pits or septic tanks until facing the problems for overflow. Due to lack of awareness HHs does not keep the emptying service in their list of priorities. Among the HH, 48% of HH employ the emptying service when the storage is full.

3.5.3 Preference of Time and Season

Half of the interviewed HH prefers day time to take the service from manual emptiers. This is because, sweepers prefer to work at day time and house owner also want to ensure the dumping of sludge at far from house. While 30% of HH have to depend on the emptier's availability. Respondents prefer night time only to avoid the bad smell during the emptying. 96% of HH do not have any choice of season for the emptying.

Figure 66: Preferred Time of Emptying



3.5.4 Accessibility & Availability of Emptying Services

In Benapole all emptying service are being provided by the manual emptiers as there is lack of mechanical emptying service. Manual emptiers, belongs to harijan community, and has been providing the emptying service through generation.

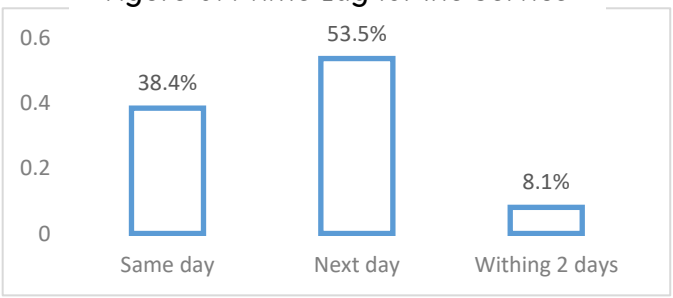
Customer can hire informal emptiers through contact in-person or calling them if phone number is available. Emptiers come to customer's house within 24 hours of getting the call. They usually make their demand based on the size & location of the pit/tank, distance between storage and dumping place. After negotiation and having confirmation from customers they start their work. Some of the manual emptiers even go door to door and vouch for emptying the HH tank.

Generally, for a small pit, they charge around BDT 400-700. However, for septic tank clearance, their charge is around BDT 800- 1,200. This excludes costs of additives (tips for driver) and other materials, which are usually borne by the customer. They also receive around BDT 100-300 as tips for a satisfactory job.

3.5.5 Access to Emptying Services

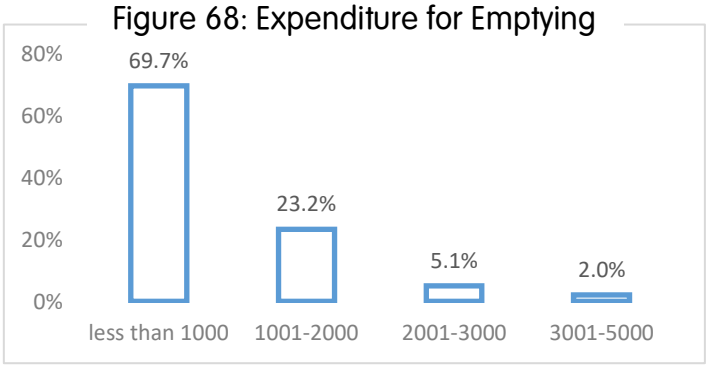
92% of total HH can take this service within the next day after they inform sweepers. This indicates the manual emptying service is easy to access for them.

Figure 67: Time Lag for the Service



3.5.6 Present Expenditure of Customers

Figure 68: Expenditure for Emptying

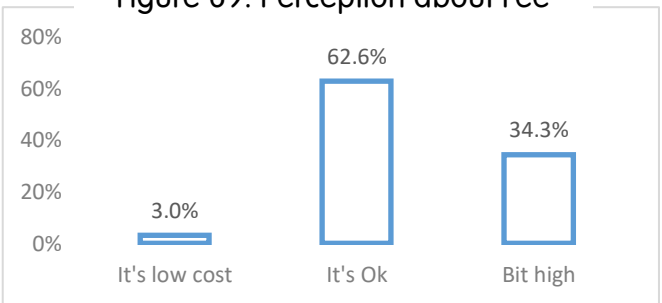


93% of HH are spending up to BDT 2,000 for each time of emptying including 70% HH spend on an average BDT 1,000 for it.

3.5.7 Perception about Current Tariff

More than half respondent (62%) stated the tariff is ok for them. This indicates their ability and affordability to pay for the service.

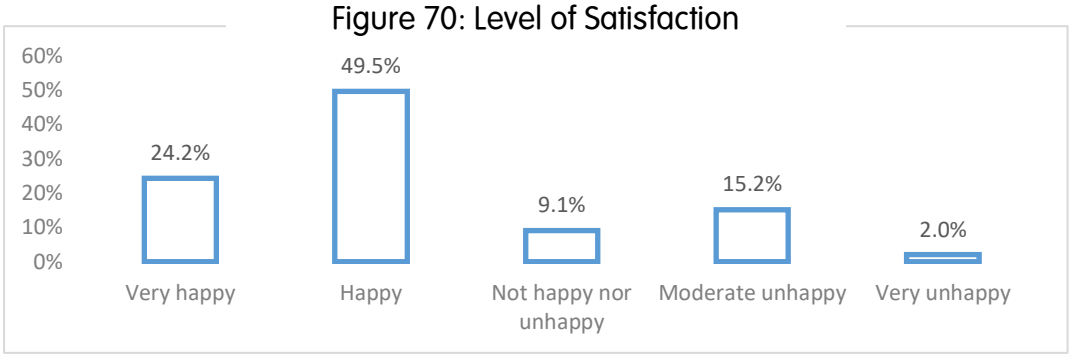
Figure 69: Perception about Fee



3.5.8 Satisfaction Level on Current Service

The figure presents, a major portion of HHs are happy with the current service for emptying. This is only because; they can easily get the service from manual emptiers within short time and at affordable price.

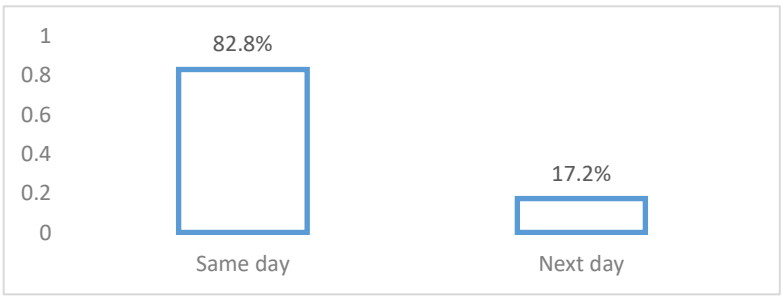
Figure 70: Level of Satisfaction



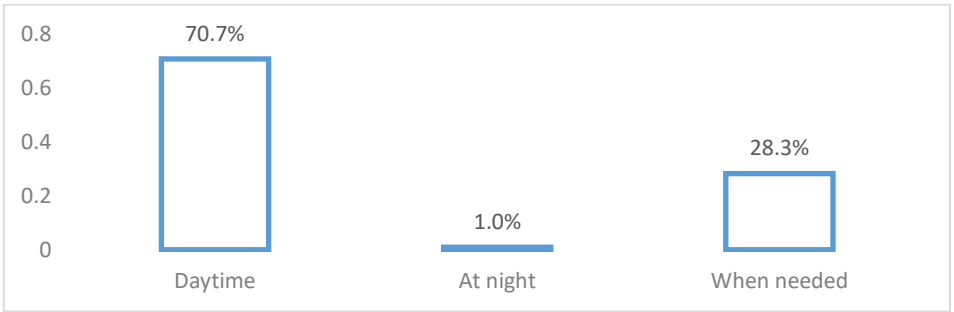
3.5.9 Willingness to Pay for Emptying Service

Respondents were asked whether they heard about the vacutug service. In response to this question, almost all respondents stated they never heard about the vacutug service. After briefing them about the vacutug service, interviewers asked them their willingness to get the service. Collected information is given below:

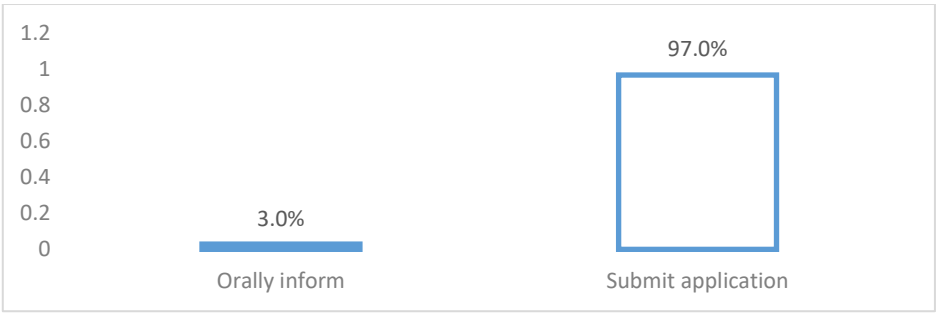
Preferred Service Time-lag



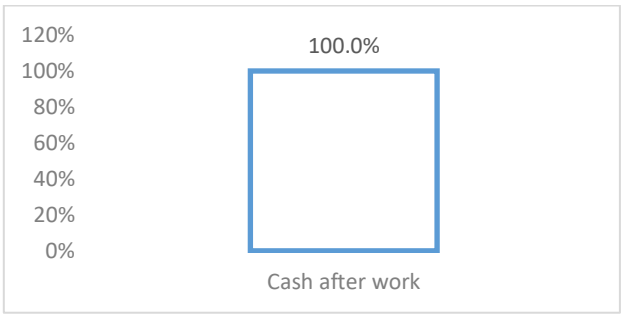
Preferred Time of Receiving Service



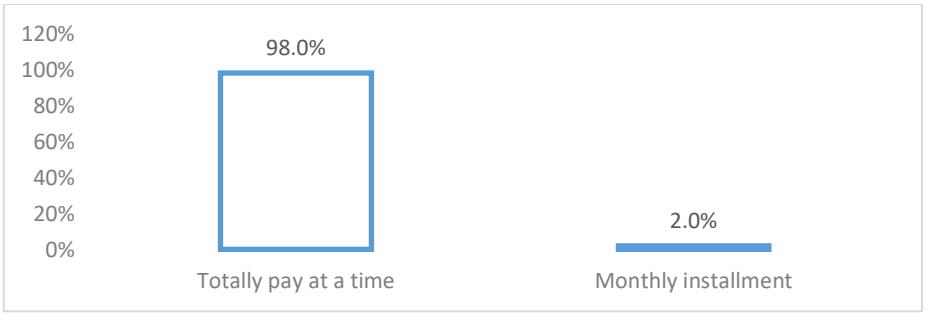
Preferred Communication Method



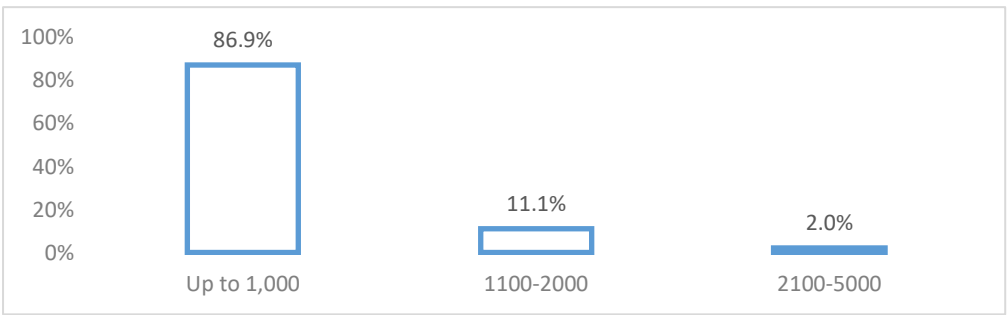
Preferred Mode of Payment



Preferred Payment Method



Willing to Pay for Preferred Service

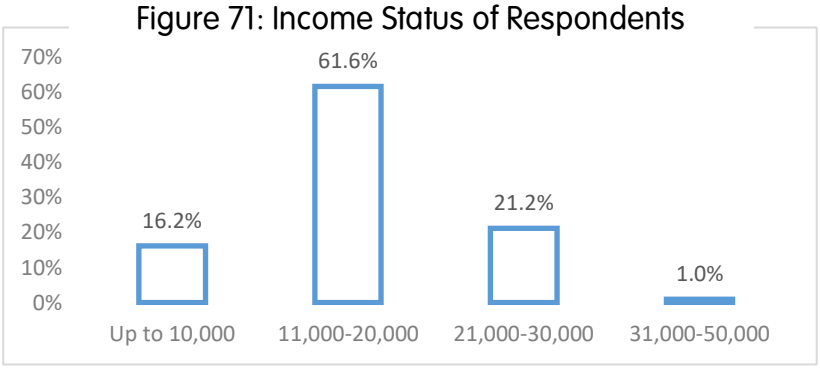


On an average, pit user and septic tank user are willing to pay BDT 480 and 810 respectively for the mechanical emptying service.

3.5.10 Income Group of Respondents

With average HH income BDT 18,656 per month, 82% of HH's monthly income is between BDT 11,000 to 30,000.

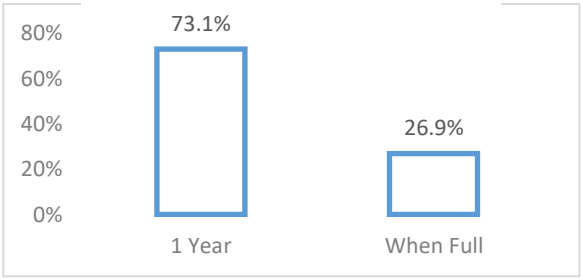
Figure 71: Income Status of Respondents



3.5.11 Present Emptying Practice among Institutions

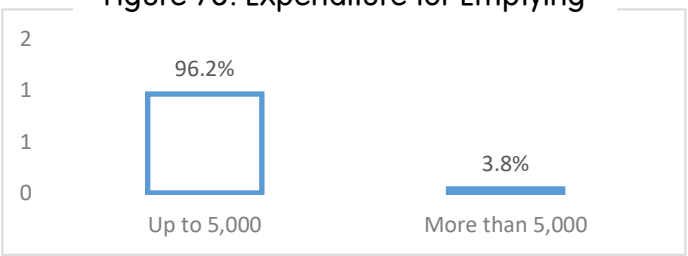
Irrespective of types of institutions, 73% of institutions employed emptying service within 1 year. This indicates their regular emptying practice. 50% of HH prefer day time due to availability of sweeper during day time and other 50% prefer night time for this work as it creates very bad smell during emptying. 96% of institutions do not have any choice of season for emptying.

Figure 72: Emptying Practice



96% of institutes are spending up to BDT 5,000 for emptying the storage. 88% of respondents stated this cost is a bit high for them.

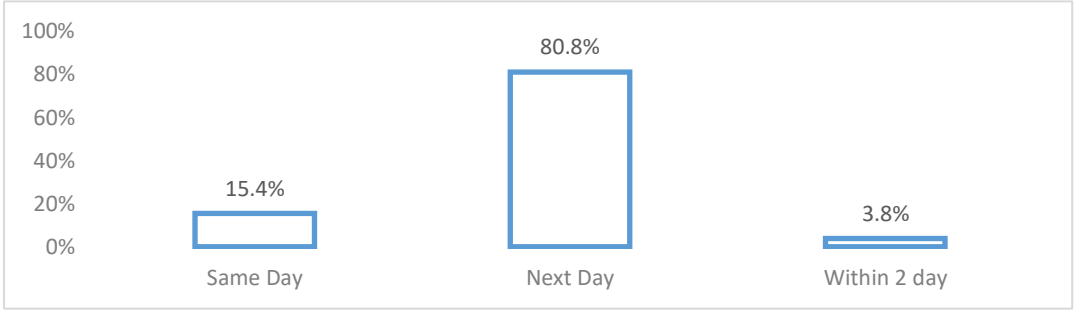
Figure 73: Expenditure for Emptying



3.5.12 Willingness to Pay

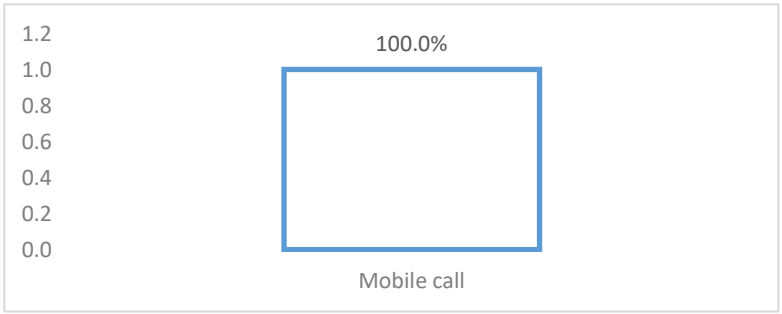
Both HH and non-HH were briefed about the service provision model for vacutug based emptying service that exists in other city and told to express their interest in availing the service and in what price range.

Preferred Service Time-lag

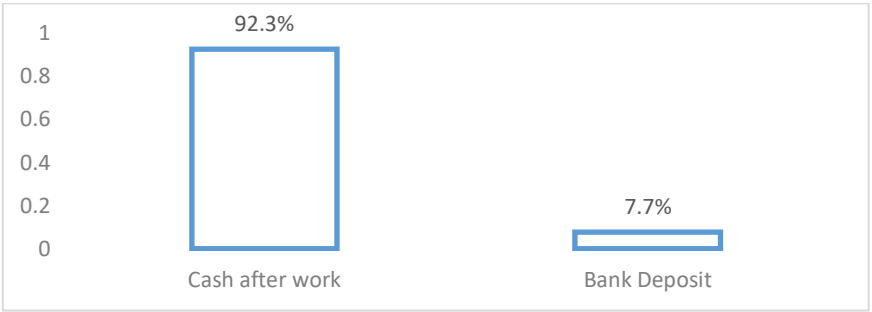


Preferred Time of Receiving Service

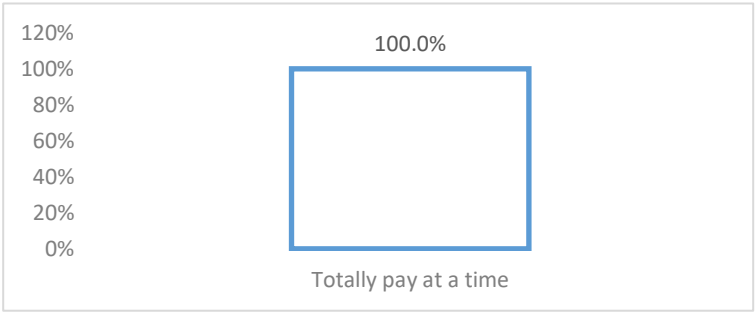
Preferred Communication Method



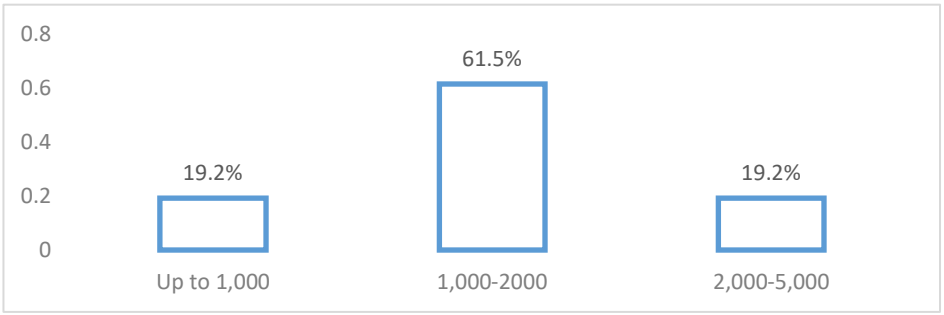
Preferred Mode of Payment



Preferred Payment Method



Willing to Pay for Preferred Service



On an average, institutions are willing to pay BDT 1,742 for the mechanical emptying service.

CHAPTER: FOUR

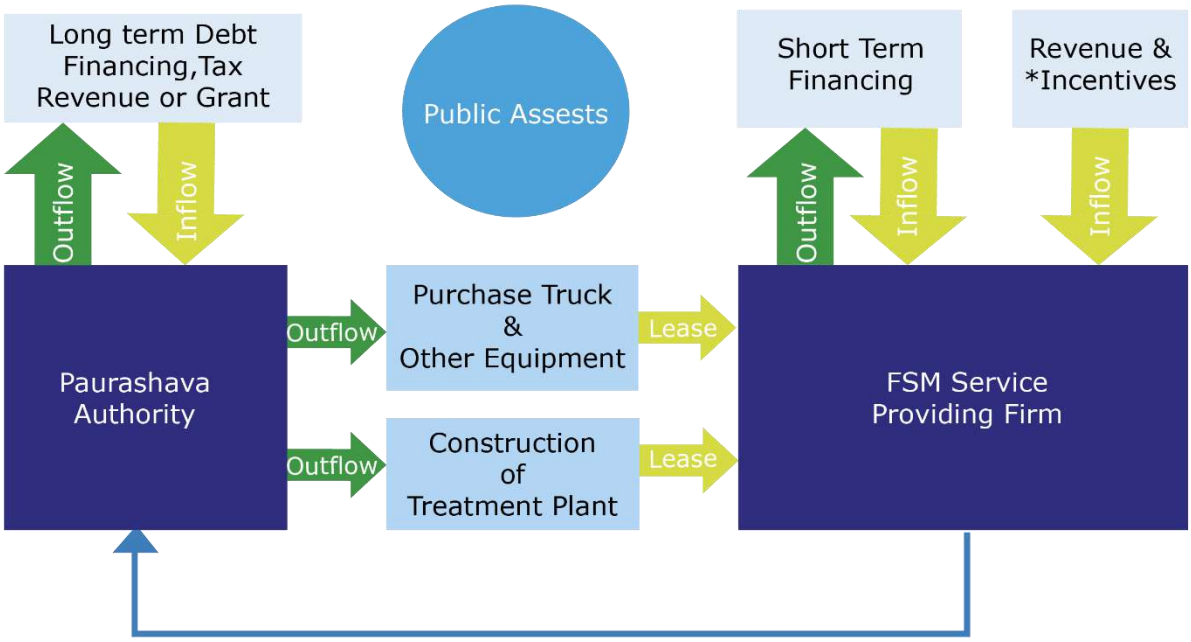
Tariff Model Analysis

The FSM tariff model is a framework comprising all of the activities incurs cost for providing for FSM services. The model not only captures the elements of costs of FSM services but also demonstrates the relationship among the elements. In addition, the tariff model also highlights the sources of fund and cash flows across the FSM value chain cycle. The tariff model for FSM services assists to determine the exact cost of providing the services avoiding the risk of under-costing and over-costing problems. The true costs are the basis for setting appropriate tariff rate which, indeed, is the essential for the sustainability of any FSM business project.

4.1 Sources of Fund for FSM

The FSM service chain requires fund for fixed assets investment and working capital requirement. Followings are the possible sources of finances as per:

Figure 74: FSM Tariff Model for Financial Sustainability



*Paurashava Authority or Government Agency may provide incentives to FSM Service Providing Firm for each truck of dumping.

Figure 74 presents the FSM Tariff Model developed for the purpose of this study separating the operation of FSM services from regulator i.e. Paurashava authority. This standardized model has been developed considering its flexibilities due to contextual factors as well as any future contingency. The model primarily assumes that Paurashava will generate fund from different available sources for capital expenditure required. The major fund for capital expenditure is required for (i) Truck and Equipment for Emitting Services, and (ii) Construction of Recycling Plant.

4.2 The Possible Sources of Finances

The possible sources of finances the Paurashava authority can explore are as follows:

Component of FSM Service Chain	Long term fund for Fixed Assets Requirement	Short term fund for Working Capital Requirement
Emptying & Transportation (Purchasing Truck & other Equipment, and Operating the services) **Treatment & Recycling (Construction of Treatment Plant and operating the plant)**	• Government Grant • Bangladesh Climate Change Trust Fund (BCCTF) • Loan from multilateral organizational such as World Bank, ABD, JICA etc. • Sanitation Tax/charges • Paurashava Bond	• Equity Financing • NGO Funding • Special Loan facilities for environmental impact projects • Other traditional money market options

Afterwards, the Paurashava authority can lease the emitting equipment and construction of recycling plant to FSM entity (O&M Company) for the periodic lease rent along with license fees. The FSM entity can borrow working capital, if required, from available sources mentioned above table as well. This is also noted the two separate firms may operate the emitting and recycling operation. The revenue will be generated by the FSM entity for emitting services from the prescribed tariff charged to customers (i.e. residents). The tariff will be determined by the Paurashava authority based on the total cost comprising depreciation of capital expenditure, operating costs and cost of capital. In case of recycling operation, the entity may generate revenue from reusing of composed fertilized or any incentives given by Government Agency or Climate Fund. The net cash flow of the FSM entity will be used to repayment of lease rent to Paurashava authority.

4.3 Tariff Analysis

4.3.1 Kushtia Paurashava

The Kushtia Paurashava has four vactugs of 500 L, 1,000 L, 2,000 L and 4,000 L capacity. LGED/Ministry provided three of these to them, and one was provided by SNV after purchasing from MAWTS (local supplier). The 500 L capacity tanker started its journey in 2004, but now is under maintenance.

Last year, Kushtia Paurashava revised their emptying tariff. The cost of full emptying of pit latrines is 500 BDT. For septic tank emptying, the fees are BDT 800, 1,000, 1,200 for first trip and BDT 200, 300, 500 from next trips for 1,000, 2,000 and 4,000 L capacity vacuum tankers respectively. 15% VAT is also added to this tariff that the consumer has to pay. Paurashava is also in the process of introducing sanitation tax.

Table 4: Current tariff structure for emptying in Kushtia Paurashava

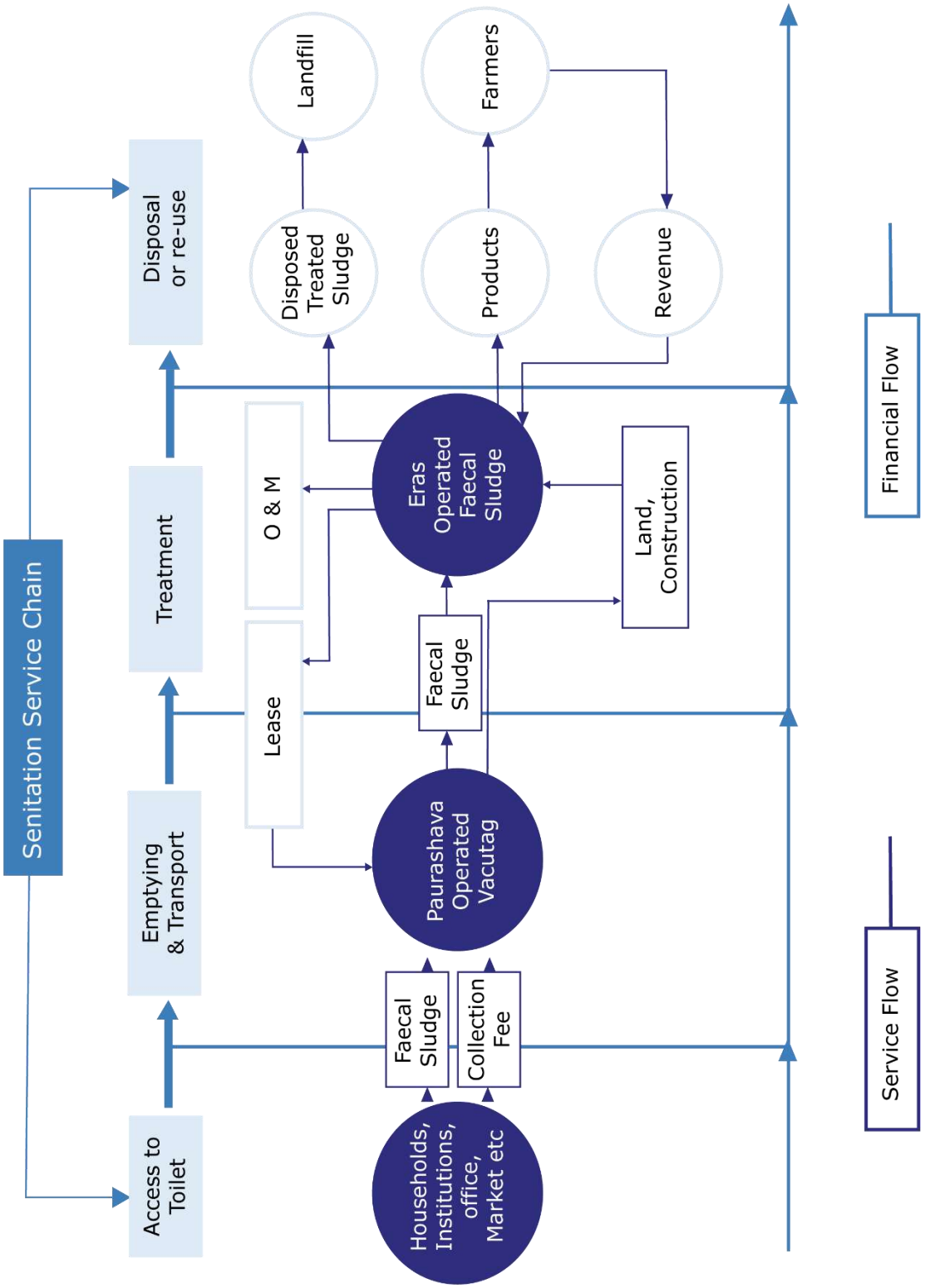
Containment Type	Trip #	Fees (BDT)			Comments
		4,000 L	**2,000 L**	**1,000 L**	
Septic tank	1st trip	1,200	1,000	800	For orders from outside of Paurashava, fuel cost added for additional distance.
	vat	15%	15%	15%	
	2nd trip	500	300	200	
	3rd	500	300	200	
	4th	500	300	200	
Pit	BDT 500 + VAT for full emptying				

A trained group of pits emptier is now operating the system that has changed their practices from providing manual to mechanized service. The local pit emptier community or private sector was made involved in emptying service. There are 2 drivers and around 10 vacutug operators and helpers.

Theoretically, it is possible to make around 120 trips per month by a vacutug having capacity of 1,000, if 5-6 trips by this vacutug are possible per day and the service is available for 5 days in a week. However, the number of trips that a 2,000 L capacity and a 4,000 L capacity vacutugs can make per week would be around 80 and 60 approximately, since it takes more time to empty a larger size pit/septic tank. Therefore, in total, approximately 260 (120+80+60) trips with three vacutugs per month would be possible. However, currently, total trip per month is approximately 120-130 in Kushtia Paurashava. Therefore, it is evident that these vacutugs are underutilized due to lack of adequate demand.

Although the expected number of trips that a vacutug can make per month would be around 120, this has to be a factor of distance as well as condition of the vehicle as these vehicles need periodic maintenance. Considering this, it is assumed for our analysis that one vehicle of 1,000 L capacity will make 100 trip per month. Therefore, the tariff model has been developed based on this number. For 2,000 L and 4,000 L capacity vacutugs, the expected number of trips remains to be 80 and 60 per month respective

Present FSM Model of Kushtia Paurashava:



4.3.1.1 Cost Analysis of KUS

The vacutugs that were used in Kushtia Paurashava for emptying and transportation of fecal sludge were provided by Government and NGOs. Table-5 below provides information regarding cost of the vacutugs and source of funding.

Table 5: Source of funding and cost of vacutugs in operation in KUS

Vacutug Capacity	Price (BDT) (Approximate)	Donor
1,000 L	10,00,000	(SNV, 2016)
2,000 L	15,00,000	(STIFPP, 2011)
4,000 L	22,00,000	(LGED, 2013)

The treatment plant, which is now operated by ERAS Foundation, which is a private organization, was constructed on 1-acre land that was provided by Kushtia Paurashava. The land cost would be approximately BDT 3,000,000. The treatment plant was constructed by Kushtia Paurashava under a project.

For regular operation of emptying service, which is operated by Kushtia Paurashava, a number of staffs are employed on full-time and part-time basis. Considering the current practice and requirement targeting scaling-up of the systems and possible increase in future demand, table-6 summarizes the operational cost requirement to run the emptying service. However, these assumptions could be changed as per requirement to adjust with scale of service provision.

Table 6: Basis of assumption (for each vacutug of 1,000 L capacity) for operational cost of emptying service in Kushtia Paurashava

Item	Unit rate (BDT)	Unit	Basis of assumption
1. Vacutug operator	8,000	Month	Average salary of a vacutug operator considering monthly salaries of the operators at present.
2. Driver	12,000	Month	There are **two drivers** employed at present. The main driver gets BDT 22,000 per month for fecal waste and solid waste collection. Considering his support for fecal sludge collection only, salary has been set as BDT 12,000.
3. Helper	6,000	Month	Though same person in Kushtia works as operator, for convenience separate helper is proposed.
4. Marketing officer	10,000	Month	Proposed position for future to increase demand from customers and to promote the service.
5. Fuel cost	15,000	Month	Provided data says fuel of BDT 17,000 was needed per month, for total trip of 120-130/month. So, approximately fuel of BDT 15,000 will be needed for 100 trips per month.
6. Maintenance cost per vehicle	6,000	Month	Assuming that maintenance of BDT 72,000 would be needed per year. However, it is not constant.
7. Office support cost	10,000	Month	Although Paurashava does not consider this at present, considering increased demand and cost of processing and logistics, it has been proposed.
8. Lease payment per vacutug	50,000	Yearly	To pay back the investment cost of vacutug, which can be used to purchase new vehicles in future, this has been proposed.
Total (Operational Cost per Year)	**854,000**		

Based on assumptions for operational cost for emptying service, models for different service categories, i.e. one-vehicle to up to five vehicle services have been developed. It needs to be noted that one-vehicle service means that there is monthly demand for 100 trips and one vacutug will be in operation to cater to this demand. Table-7 shows the cost estimation for different models from one to five vehicle category services.

Table 7: Cost of emptying service using 1,000 L capacity vacutug in KUS

Item	Cost/month of different service category (BDT)				
	one-vehicle	**two-vehicle**	**three-vehicle**	**four-vehicle**	**five-vehicle**
1. Vacutug operator	8,000	16,000	24,000	32,000	40,000
2. Driver	12,000	24,000	36,000	48,000	60,000
3. Helper	6,000	12,000	18,000	24,000	30,000
4. Marketing officer	10,000	10,000	10,000	10,000	10,000
5. Fuel cost	15,000	30,000	45,000	60,000	75,000
6. Maintenance cost	6,000	12,000	18,000	24,000	30,000
7. Office support cost	10,000	10,000	10,000	10,000	10,000
8. Lease payment	4,167	8,333	12,500	16,667	20,833
Total operational cost/month (sum 1-8)	**71,167**	**122,333**	**173,500**	**224,667**	**275,833**
9. Cost of capital (cost of investment*cost of capital)	10,000	20,000	30,000	40,000	50,000
Basis of pricing (sum 1-9)	**81,167**	**142,333**	**203,500**	**264,667**	**325,833**
Emptying cost/Liter of FS	**0.81**	**0.71**	**0.68**	**0.66**	**0.65**

For requirement of any additional trip of 1,000 L capacity vacutug by the same customer at a time, items 1, 2, 3, 5 and 6 with 5% profit for the service providers have been considered to calculate tariff for next trips. The estimated cost of service for 1,000 L vacutug based on such assumptions is provided in Table-8 below.

Table 8: Cost of service for 1,000 L capacity vacutug in Kushtia Paurashava

Trip #	Cost of different service system (BDT)				
	one-vehicle	**two-vehicle**	**three-vehicle**	**four-vehicle**	**five-vehicle**
1st trip	812	712	678	662	652
2nd trip	494	494	494	494	494
3rd trip	494	494	494	494	494

The cost above is not inclusive of VAT. Hence, 15% vat will be added to the figures in table-8 above. From the table, it is evident that if demand increases, which means a service system with higher number of vacutugs, the cost will be lower with addition of each vehicle in the system. Therefore, the consumers can be served at a lower service fees if the overall demand for emptying service can be increased.

For 2,000 L capacity vacutug based system, the demand is as low as one per month. However, it is possible to make approximately 80 trips per month by this vacutug. Hence, for this analysis, it is assumed that the 2,000 L capacity vacutug can serve up to 80 trips per month and the operation cost has been estimated based on this assumption. Table-9 summarizes the operational cost requirement to run the 2,000 L vacutug for emptying.

Table 9: Basis of assumption (for each vacutug of 2,000 L capacity) for operational cost of emptying service in KUS

Item	Unit rate (BDT)	Unit	Basis of assumption
1. Vacutug operator	8,000	Month	Average salary of a vacutug operator considering monthly salaries of the operators at present.
2. Driver	12,000	Month	There are **two drivers** employed at present. The main driver gets BDT 22,000 per month for fecal waste and solid waste collection. Considering his support for fecal sludge collection only, salary has been set as BDT 12,000.
3. Helper	6,000	Month	Though same person in Kushtia works as operator, for convenience separate helper is proposed.
4. Marketing officer	10,000	Month	Proposed position for future to increase demand from customers and to promote the service.
5. Fuel cost	15,000	Month	The average fuel requirement per trip was assumed BDT 150 for 1,000 L capacity vacutug. For 2,000 L, assumed cost is BDT 200/trip.
6. Maintenance cost per vehicle	6,000	Month	Assuming that maintenance of BDT 72,000 would be needed per year. However, it is not constant.
7. Office support cost	10,000	Month	Although Paurashava does not consider this at present, considering increased demand and cost of processing and logistics, it has been proposed.
8. Lease payment per vacutug	75,000	Yearly	To pay back the investment cost of vacutug, which can be used to purchase new vehicles in future, this has been proposed.
Total (Operational Cost per Year)	**891,000**		

Table-10 shows the cost estimation for different models from one to five vehicle category services for a 2,000 L vacutug.

Table 10: Cost of emptying service using 2,000 L capacity vacutug in KUS

Item	Cost/month of different service category (BDT)				
	one-vehicle	**two-vehicle**	**three-vehicle**	**four-vehicle**	**five-vehicle**
1. Vacutug operator	8,000	16,000	24,000	32,000	40,000
2. Driver	12,000	24,000	36,000	48,000	60,000
3. Helper	6,000	12,000	18,000	24,000	30,000
4. Marketing officer	10,000	10,000	10,000	10,000	10,000
5. Fuel cost	16,000	32,000	48,000	64,000	80,000
6. Maintenance cost	6,000	12,000	18,000	24,000	30,000
7. Office support cost	10,000	10,000	10,000	10,000	10,000
8. Lease payment	6,250	12,500	18,750	25,000	31,250
Total operational cost/month (sum 1-8)	74,250	128,500	182,750	237,000	291,250
9. Cost of capital (cost of investment*cost of capital)	15,000	30,000	45,000	60,000	75,000
Basis of pricing (sum 1-9)	**89,250**	**158,500**	**227,750**	**297,000**	**366,250**
Emptying cost/Liter of FS	**0.56**	**0.50**	**0.47**	**0.46**	**0.46**

For requirement of any additional trip of 2,000 L capacity vacutug by the same customer at a time, items 1, 2, 3, 5 and 6 with 5% profit for the service providers have been considered to calculate tariff for next trips. The estimated cost of service for 2,000 L vacutug based on such assumptions is provided in Table-11 below.

Table 11: Cost of service for 2,000 L capacity vacutug in KUS

Trip #	Cost of different service system (BDT)*				
	one-vehicle	**two-vehicle**	**three-vehicle**	**four-vehicle**	**five-vehicle**
1st trip	1,116	991	949	928	916
2nd trip	630	630	630	630	630
3rd trip	630	630	630	630	630

* The cost above is not inclusive of VAT. Hence, 15% vat will be added to the figures in table-11 above.

For 4,000 L capacity vacutug based system, currently the demand is very low. However, it is possible to make approximately 60 trips per month by this vacutug. Hence, for this analysis, it is assumed that the 4,000 L capacity vacutug can serve up to 60 trips per month and the operation cost has been estimated based on this assumption. Table-12, on the next page, summarizes the operational cost requirement to run the 4,000 L vacutug for emptying.

Table 12: Basis of assumption (for each vacutug of 4,000 L capacity) for operational cost of emptying service in KUS

Item	Unit rate (BDT)	Unit	Basis of assumption
1. Vacutug operator	8,000	Month	Average salary of a vacutug operator considering monthly salaries of the operators at present.
2. Driver	12,000	Month	There are **two drivers** employed at present. The main driver gets BDT 22,000 per month for fecal waste and solid waste collection. Considering his support for fecal sludge collection only, salary has been set as BDT 12,000.
3. Helper	6,000	Month	Though same person in Kushtia works as operator, for convenience separate helper is proposed.
4. Marketing officer	10,000	Month	Proposed position for future to increase demand from customers and to promote the service.
5. Fuel cost	15,000	Month	The average fuel requirement per trip was assumed BDT 150 for 1,000 L capacity vacutug. For 4,000 L, assumed cost is BDT 250/trip.
6. Maintenance cost per vehicle	8,000	Month	Assuming that maintenance of BDT 96,000 would be needed per year. However, it is not constant.
7. Office support cost	10,000	Month	Although Paurashava does not consider this at present, considering increased demand and cost of processing and logistics, it has been proposed.
8. Lease payment per vacutug	100,000	Yearly	To pay back the investment cost of vacutug, which can be used to purchase new vehicles in future, this has been proposed.
Total (Operational Cost per Year)	**928,000**		

Table-13 shows the cost estimation for different models from one to five vehicle category services for a 4,000 L vacutug.

Table 13: Cost of emptying service using 4,000 L capacity vacutug in KUS

Item	Cost/month of different service category (BDT)				
	one-vehicle	**two-vehicle**	**three-vehicle**	**four-vehicle**	**five-vehicle**
1. Vacutug operator	8,000	16,000	24,000	32,000	40,000
2. Driver	12,000	24,000	36,000	48,000	60,000
3. Helper	6,000	12,000	18,000	24,000	30,000
4. Marketing officer	10,000	10,000	10,000	10,000	10,000
5. Fuel cost	15,000	30,000	45,000	60,000	75,000
6. Maintenance cost	8,000	16,000	24,000	32,000	40,000
7. Office support cost	10,000	10,000	10,000	10,000	10,000
8. Lease payment	8,333	16,667	25,000	33,333	41,667
Total operational cost/month (sum 1-8)	77,333	134,667	192,000	249,333	306,667
9. Cost of capital (cost of investment*cost of capital)	22,000	44,000	66,000	88,000	110,000
Basis of pricing (sum 1-9)	**99,333**	**178,667**	**258,000**	**337,333**	**416,667**
Emptying cost/Liter of FS	0.41	0.37	0.36	0.35	0.35

For requirement of any additional trip of 4,000 L capacity vacutug by the same customer at a time, items 1, 2, 3, 5 and 6 with 5% profit for the service providers have been considered to calculate tariff for next trips. The estimated cost of service for 4,000 L vacutug based on such assumptions is provided in Table-14 below.

Table 14: Cost of service for 4,000 L capacity vacutug in Kushtia Paurashava

Trip #	Cost of different service system (BDT)*				
	one-vehicle	two-vehicle	three-vehicle	four-vehicle	five-vehicle
1st trip	1,656	1,489	1,433	1,406	1,389
2nd trip	858	858	858	858	858
3rd trip	858	858	858	858	858

* The cost above is not inclusive of VAT. Hence, 15% vat will be added to the figures in table-14 above.

4.3.2 Jhenaidah Paurashava (JHE)

Two vacutugs are used in Jhenaidah Paurashava for collection and transportation of fecal sludge. The capacities of these vacutugs are 1,000 L and 2,000 L. Both Jhenaidah Paurashava and AID Foundation provides emptying service in the Paurashava. For emptying pits, the customers need to pay BDT 575 and BDT 805 as application fees for 1,000 L and 2,000 L capacity vacutugs respectively. In addition, they have to pay BDT 400 for first trip and BDT 300 for second trip for 1,000 L vacutug, and BDT 500 for first trip and BDT 400 for second trip for 2,000 L capacity vacutug.

For emptying septic tanks, the customers need to pay BDT 1,150 and BDT 1,725 as application fees for 1,000 L and 2,000 L capacity vacutugs respectively to either Paurashava or AID Foundation. In addition, they have to pay BDT 500 for first trip, BDT 400 for second to fourth trip and BDT 300 for next trips for 1,000 L capacity vacutug. This rate is BDT 700 for first trip, BDT 600 for second to fourth trip and BDT 500 for next trips for 2,000 L capacity vacutug. Table XX below summarizes the current tariff structure for emptying service in Jhenaidah Paurashava.

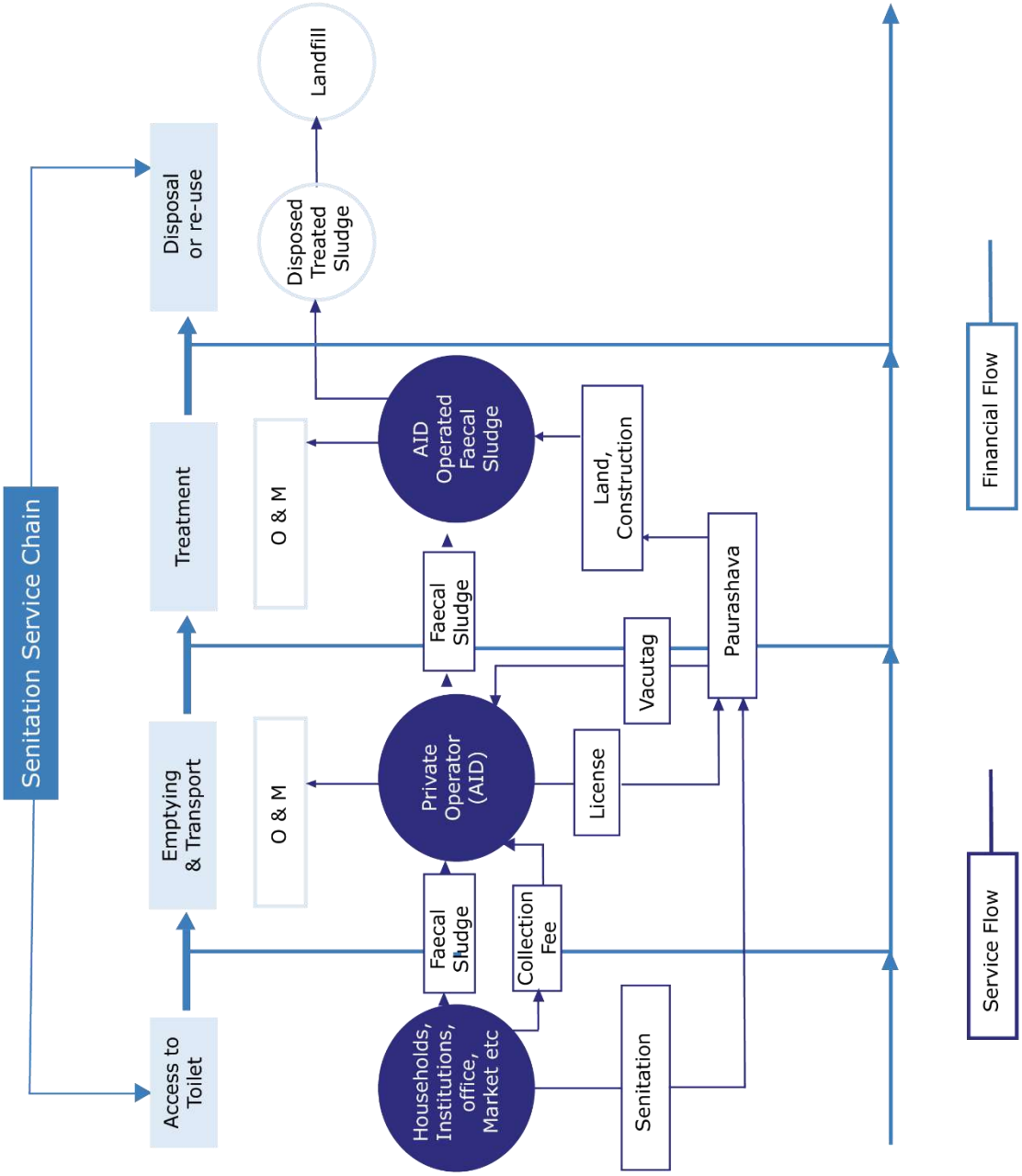
Table 15: Current tariff structure for emptying in JHE

Item	Fees (BDT)			
	1,000 L		2,000 L	
	Septic Tank	Pit	Septic Tank	Pit
Pay order	1,000	500	1,500	700
Vat (15%)	150	75	225	105
Total	1,150	575	1,725	805
1st trip	500	400	700	500
2nd to 4th	400	300	600	400
5th onward	300		500	

The basis of assumption for calculating number of trips in Jhenaidah Paurashava is similar to the assumptions for Khushtia. Theoretically, it is possible to make around 120 trips per month by a vacutug having capacity of 1,000, provided that 5-6 trips by this vacutug are possible per day and the service is available for 5 days in a week. The number of trips that a 2,000 L capacity vacutug can make per week would be around 80. Therefore, in total, approximately 200 (120+80) trips with two vacutugs per month would be possible. But currently, total trip per month is approximately 40-50 in Jhenaidah Paurashava. Therefore, it is evident that these vacutugs are underutilized due to lack of adequate demand.

However, similar to Kushtia, it is assumed for our analysis that one vehicle of 1,000 L capacity will make 100 trip per month in Jhenaidah Paurashava. Therefore, the tariff model has been developed based on this number. For 2,000 L capacity vacutug, the expected number of trips remains to be 80 per month.

Present FSM Model of Jhenaidah Municiplaity:



4.3.2.1 Cost Analysis of JHE

The vacutugs that are used in Jhenaidah Paurashava for emptying and transportation of fecal sludge were provided by NGOs. Table-16 below provides information regarding cost of the vacutugs and source of funding.

Table 16: Source of funding and cost of vacutugs in operation in JHE

Vacutug Capacity	Price (BDT)	Donor
1,000 L	15,00,000 – 20,00,000	SNV
2,000 L	15,00,000 – 20,00,000	SNV

The collected fecal waste from pits or septic tanks is dumped in the treatment plant. AID Foundation operates the treatment plant in Jhenaidah Paurashava which is constructed on 2.4-acre land provided by the Paurashava. It is in operation since December, 2016 and needed capital investment of BDT 8,460,920.

For regular operation of emptying service, which is operated by Jhenaidah Paurashava, a number of staffs are employed on full-time and part-time basis. Considering the current practice and also requirement targeting scaling-up of the systems and possible increase in future demand, table-17 summarizes the operational cost requirement to run the emptying service. However, these assumptions could be changed as per requirement to adjust with scale of service provision.

Table 17: Basis of assumption (for each vacutug of 1,000 L capacity) for operational cost of emptying service in JHE

Item	Unit rate (BDT)	Unit	Basis of assumption
1. Vacutug operator	7,000	Month	Minimum salary of a vacutug operator is BDT 4,000 per month. In addition, he/she will receive BDT 30 for each trip.
2. Driver	12,000	Month	Minimum salary of a vacutug driver is BDT 7,000 per month. In addition, he/she will receive BDT 50 for each trip.
3. Helper	5,000	Month	BDT 50 for each trip.
4. Project manager	20,000	Month	Position already exists.
5. Marketing officer	10,000	Month	Proposed position for future to increase demand from customers and to promote the service.
6. Fuel cost	15,000	Month	Provided data says fuel of BDT 34,000 BDT was needed for 268 trips. So, approximately fuel of BDT 15,000 will be needed for 100 trips per month.
7. Maintenance cost per vehicle	6,000	Month	Assuming that maintenance of BDT 72,000 would be needed per year. However, it is not constant.
8. Office support cost	10,000	Month	Although Paurashava does not consider this at present, considering increased demand and cost of processing and logistics, it has been proposed.
9. Lease payment per vacutug	75,000	Yearly	To pay back the investment cost of vacutug in 20 years, which can be used to purchase new vehicles in future, this has been proposed.
Total (Operational Cost per Year)	**1095,000**		

Based on assumptions for operational cost for emptying service, models for different service categories, i.e. one-vehicle to up to five vehicle services have been developed for Jhenaidah Paurashava. It has to be noted that one-vehicle service means that there is monthly demand for 100 trips and one vacutug will be in operation to cater to this demand. Table-18 shows the cost estimation for different models from one to five vehicle category services.

Table 18: Cost of emptying service using 1,000 L capacity vacutug in JHE

Item	Cost/month of different service category (BDT)				
	one-vehicle	**two-vehicle**	**three-vehicle**	**four-vehicle**	**five-vehicle**
1. Vacutug operator	7,000	14,000	21,000	28,000	35,000
2. Driver	12,000	24,000	36,000	48,000	60,000
3. Helper	5,000	10,000	15,000	20,000	25,000
4. Project manager	20,000	20,000	20,000	20,000	20,000
5. Marketing officer	10,000	10,000	10,000	10,000	10,000
6. Fuel cost	15,000	30,000	45,000	60,000	75,000
7. Maintenance cost per vehicle	6,000	12,000	18,000	24,000	30,000
8. Office support cost	10,000	10,000	10,000	10,000	10,000
9. Lease payment	6,250	12,500	18,750	25,000	31,250
Total operational cost/month (sum 1-9)	**91,250**	**142,500**	**193,750**	**245,000**	**296,250**
10. Cost of capital (cost of investment*cost of capital)	15,000	30,000	45,000	60,000	75,000
Basis of pricing (sum 1-10)	**106,250**	**172,500**	**238,750**	**305,000**	**371,250**
Emptying cost/Liter of FS	**1.06**	**0.86**	**0.80**	**0.76**	**0.74**

For requirement of any additional trip of 1,000 L capacity vacutug by the same customer at a time, items 1, 2, 3, 6 and 7 with 5% profit for the service providers have been considered to calculate tariff for next trips. The estimated cost of service for 1,000 L vacutug based on such assumptions is provided in Table-19 below.

Table 19: Cost of service for 1,000 L capacity vacutug in JHE

Trip #	Cost of different service system (BDT)				
	one-vehicle	**two-vehicle**	**three-vehicle**	**four-vehicle**	**five-vehicle**
1st trip	1,063	863	796	763	743
2nd trip	473	473	473	473	473
3rd trip	473	473	473	473	473

The cost above is not inclusive of VAT. Hence, 15% vat will be added to the figures in table-19 above. From the table, it is evident that if demand increases, which means a service system with higher number of vacutugs, the cost will be lower with addition of each vehicle in the system. Therefore, the consumers can be served at a lower service fees if the overall demand for emptying service can be increased.

For 2,000 L capacity vacutug based system, the demand very low. However, it is possible to make approximately 80 trips per month by this vacutug. Hence, for this analysis, it is assumed that the 2,000 L capacity vacutug can serve up to 80 trips per month and the operation cost has been estimated based on this assumption.

Table-20 summarizes the operational cost requirement to run the 2,000 L vacutug for emptying.

Table 20: Basis of assumption (for each vacutug of 2,000 L capacity) for operational cost of emptying service in JHE

Item	Unit rate (BDT)	Unit	Basis of assumption
1. Vacutug operator	7,200	Month	Minimum salary of a vacutug operator is BDT 4,000 per month. In addition, he/she will receive BDT 40 for each trip.
2. Driver	12,600	Month	Minimum salary of a vacutug driver is BDT 7,000 per month. In addition, he/she will receive BDT 70 for each trip.
3. Helper	5,600	Month	BDT 70 for each trip.
4. Project manager	20,000	Month	Position already exists.
5. Marketing officer	10,000	Month	Proposed position for future to increase demand from customers and to promote the service.
6. Fuel cost	16,000	Month	The average fuel requirement per trip was assumed BDT 150 for 1,000 L capacity vacutug. For 2,000 L, assumed cost is BDT 200/trip.
7. Maintenance cost per vehicle	6,000	Month	Assuming that maintenance of BDT 72,000 would be needed per year. However, it is not constant.
8. Office support cost	10,000	Month	Although Paurashava does not consider this at present, considering increased demand and cost of processing and logistics, it has been proposed.
9. Lease payment per vacutug	100,000	Yearly	To pay back the investment cost of vacutug in 20 years, which can be used to purchase new vehicles in future, this has been proposed.
Total (Operational Cost per Year)	**1,148,800**		

Table-21 shows the cost estimation for different models from one to five vehicle category services for a 2,000 L vacutug.

Table 21: Cost of emptying service using 2,000 L capacity vacutug in JHE

Item	Cost/month of different service category (BDT)				
	one-vehicle	two-vehicle	three-vehicle	four-vehicle	five-vehicle
1. Vacutug operator	7,200	14,400	21,600	28,800	36,000
2. Driver	12,600	25,200	37,800	50,400	63,000
3. Helper	5,600	11,200	16,800	22,400	28,000
4. Project manager	20,000	20,000	20,000	20,000	20,000
5. Marketing officer	10,000	10,000	10,000	10,000	10,000
6. Fuel cost	16,000	32,000	48,000	64,000	80,000
7. Maintenance cost per vehicle	6,000	12,000	18,000	24,000	30,000
8. Office support cost	10,000	10,000	10,000	10,000	10,000
9. Lease payment	8,333	16,667	25,000	33,333	41,667
Total operational cost/month (sum 1-9)	95,733	151,467	207,200	262,933	318,667
10. Cost of capital (cost of investment*cost of capital)	20,000	40,000	60,000	80,000	100,000
Basis of pricing (sum 1-10)	115,733	191,467	267,200	342,933	418,667
Emptying cost/Liter of FS	0.72	0.60	0.56	0.54	0.52

For requirement of any additional trip of 2,000 L capacity vacutug by the same customer at a time, items 1, 2, 3, 6 and 7 with 5% profit for the service providers have been considered to calculate tariff for next trips. The estimated cost of service for 2,000 L vacutug based on such assumptions is provided in Table-22 below.

Table 22: Cost of service for 2,000 L capacity vacutug in JHE

Trip #	Cost of different service system (BDT)*				
	one-vehicle	two-vehicle	three-vehicle	four-vehicle	five-vehicle
1st trip	1,447	1,197	1,113	1,072	1,047
2nd trip	622	622	622	622	622
3rd trip	622	622	622	622	622

* The cost above is not inclusive of VAT. Hence, 15% vat will be added to the figures in table-22 above.

4.3.3 Khulna City Corporation

There are two service providers in Khulna City Corporation (KCC) for mechanical emptying service:

1. Paurashava/city authority-led emptying services;
2. Community based organization named Community Development Committee (CDC).

CDC operates 3 vacutugs having capacity of 1,000 L each. KCC operates two vacutugs of 5,000 and 7,000 L capacity. The 7,000 L capacity vacutug is used as secondary transfer station and was provided by SNV, which was manufactured locally. The 5,000 L vacutug was prepared by MAWTS and is mostly used for drain cleaning.

Table-23 and 24 below summarize the current tariff structure used for emptying service in KCC by City Corporation and CDC respectively.

Table 23: Current tariff structure used by KCC

Containment type	Item	Fees (BDT)		Comments
		7,000 L	**5,000 L**	
Septic tank	**Pay order**	3,500	2,500	For orders from outside of Paurashava, fuel cost added for additional distance.
	Cleaner	1,000	1,200	
	IT	175	125	
	Vat	525	375	
	Total (1st trip)	**5,295**	**4,095**	
	From next trips (2nd – onwards)	**4,295**	**3,095**	
Pit	Transfer the request to CDC			

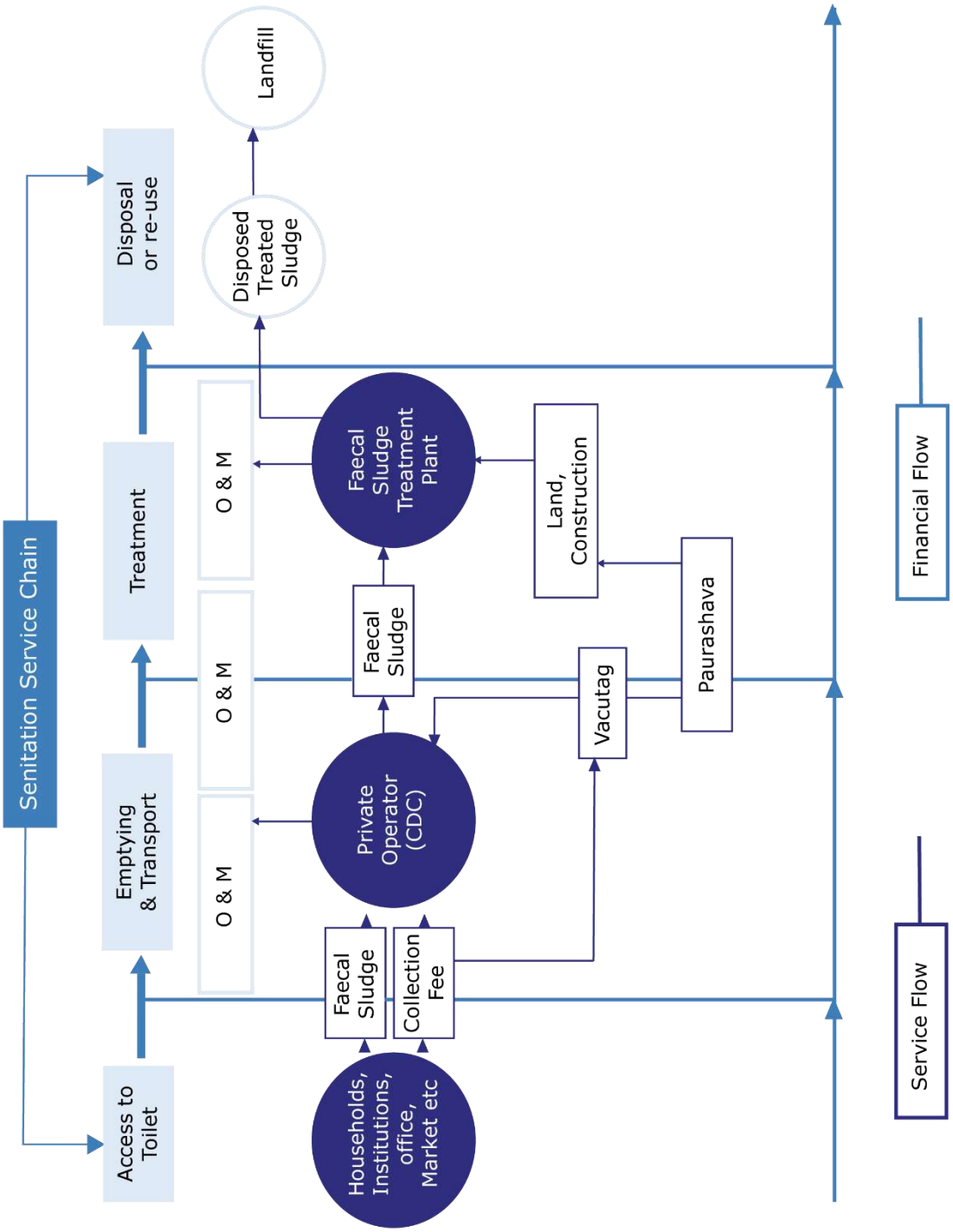
Table 24: Current tariff structure used by CDC for emptying

Containment type	Fees (BDT) for 1,000 L vacutugs
Septic tank	1,000
Pit	1,000

The basis of assumption for calculating number of trips in KCC is similar to the assumptions made for Khushtia. Theoretically, it is possible to make around 120 trips per month by a vacutug having capacity of 1,000, if 5-6 trips by this vacutug are possible per day and the service is available for 5 days in a week. The number of trips that a 5,000 L and 7,000 L capacity vacutugs can make per week would be around 60. Therefore, in total, approximately 480 (120*3+60+60) trips with five vacutugs per month would be possible. But currently, total trip per month is approximately 80 in KCC, where there very little demand for 5,000 L and 7,000 L capacity vacutugs. Therefore, it is evident that these vacutugs are underutilized due to lack of adequate demand in KCC.

However, similar to Kushtia, it is assumed for our analysis that one vehicle of 1,000 L capacity will make 100 trip per month in KCC. Therefore, the tariff model has been developed based on this number. For calculation for 5,000 L and 7,000 L capacity vacutugs, the expected number of trips remains to be 60 per month.

Present FSM Model of Khulna City Corporation:



4.3.3.1 Cost Analysis of KCC

Government and NGOs provided the vacutugs that were used in KCC for emptying and transportation of fecal sludge. Table-25 below provides information regarding cost of the vacutugs and source of funding.

Table 25: Source of funding and cost of vacutugs in operation in KCC

Vacutug Capacity	Price (BDT)	Donor
1,000 L (#3)	15,00,000 – 20,00,000	UPPR Project
5,000 L	40,00,000	LGED
7,000 L	50,00,000	SNV

The Faecal Sludge Treatment Plant (FSTP) with constructed wetland and drying bed technology has been constructed on 1.3-acre land at Rajbandh in KCC, where the land was provided by KCC. For construction of the, BDT 1.9 crore fund was provided by Bill and Melinda Gates Foundation.

For regular operation of emptying service, a number of staffs are employed on full-time and part-time basis. Considering the current practice and requirement targeting scaling-up of the systems and possible increase in future demand, table-26 summarizes the operational cost requirement to run the emptying service. However, these assumptions could change as per requirement to adjust with scale of service.

Table 26: Basis of assumption (for each vacutug of 1,000 L capacity operated by CDC) for operational cost of emptying service in KCC

Item	Unit rate (BDT)	Unit	Basis of assumption
1. Vacutug operator	20,000	Month	BDT 200*number of trip/month (100).
2. Driver	30,000	Month	BDT 300*number of trip/month (100).
3. Helper	10,000	Month	BDT 100*number of trip/month (100).
4. Marketing officer	10,000	Month	Proposed position for future to increase demand from customers and to promote the service.
5. Fuel cost	15,000	Month	On average, BDT 150 per trip.
6. Maintenance cost per vehicle	6,000	Month	Assuming that maintenance of BDT 72,000 would be needed per year. However, it is not constant.
7. Office support cost	10,000	Month	For logistics and other official supports.
8. Lease payment per vacutug	75,000	Yearly	To pay back the investment cost of vacutug, which can be used to purchase new vehicles in future, this has been proposed.
Total (Operational Cost per Year)	1,287,000		

Based on assumptions for operational cost for emptying service, models for different service categories, i.e. one-vehicle to up to five vehicle services have been developed. It needs to be noted that one-vehicle service means that there is monthly demand for 100 trips and one vacutug will be in operation to cater to this demand.

Table-27 shows the cost estimation for different models from one to five vehicle category services.

Table 27: Cost of emptying service using 1,000 L capacity vacutug in KCC

Item	Cost/month of different service category (BDT)				
	one-vehicle	**two-vehicle**	**three-vehicle**	**four-vehicle**	**five-vehicle**
1. Vacutug operator	20,000	40,000	60,000	80,000	100,000
2. Driver	30,000	60,000	90,000	120,000	150,000
3. Helper	10,000	20,000	30,000	40,000	50,000
4. Marketing officer	10,000	10,000	10,000	10,000	10,000
5. Fuel cost	15,000	30,000	45,000	60,000	75,000
6. Maintenance cost	6,000	12,000	18,000	24,000	30,000
7. Office support cost	10,000	10,000	10,000	10,000	10,000
8. Lease payment	6,250	12,500	18,750	25,000	31,250
Total operational cost/month (sum 1-8)	**107,250**	**194,500**	**281,750**	**369,000**	**456,250**
9. Cost of capital (cost of investment*cost of capital)	15,000	30,000	45,000	60,000	75,000
Basis of pricing (sum 1-9)	**122,250**	**224,500**	**326,750**	**429,000**	**531,250**
Emptying cost/Liter of FS	1.22	1.12	1.09	1.07	1.06

For requirement of any additional trip of 1,000 L capacity vacutug by the same customer at a time, items 1, 2, 3, 5 and 6 with 5% profit for the service providers have been considered to calculate tariff for next trips. The estimated cost of service for 1,000 L vacutug based on such assumptions is provided in Table-28 below.

Table 28: Cost of service for 1,000 L capacity vacutug in KCC

Trip #	Cost of different service system (BDT)				
	one-vehicle	**two-vehicle**	**three-vehicle**	**four-vehicle**	**five-vehicle**
1st trip	1,223	1,123	1,089	1,073	1,063
2nd trip	851	851	851	851	851
3rd trip	851	851	851	851	851

The cost above is not inclusive of VAT. Hence, 15% vat will be added to the figures in table-28 above. From the table, it is evident that if demand increases, which means a service system with higher number of vacutugs, the cost will be lower with addition of each vehicle in the system. Therefore, the consumers can be served at a lower service fees if the overall demand for emptying service can be increased.

For 5,000 L and 7,000 L capacity vacutug based systems, the demand is very low in KCC. However, it is possible to make approximately 60 trips per month by these vacutugs. Hence, for this analysis, it is assumed that the 5,000 L and 7,000 L capacity vacutugs can serve up to 60 trips per month and the operation cost has been estimated based on this assumption.

Table-29 summarizes the operational cost requirement to run the 5,000 L and 7,000 L vacutug for emptying.

Table 29: Basis of assumption (for vacutugs of 5,000 L and 7,000 L capacity) for operational cost of emptying service in KCC

Item	Unit rate (BDT)	Unit	Basis of assumption
1. Vacutug operator	21,000	Month	BDT 300*number of trip/month (100).
2. Driver	30,000	Month	BDT 500*number of trip/month (100).
3. Helper	12,000	Month	BDT 200*number of trip/month (100).
4. Marketing officer	10,000	Month	Proposed position for future to increase demand from customers and to promote the service.
5. Fuel cost	15,000	Month	On average, BDT 250 per trip.
6. Maintenance cost per vehicle	8,000	Month	Assuming that maintenance of BDT 96,000 would be needed per year. However, it is not constant.
7. Office support cost	10,000	Month	For logistics and other official supports.
8. Lease payment per vacutug	200,000 (5,000 L) 250,000 (7,000 L)	Yearly	To pay back the investment cost of vacutug, which can be used to purchase new vehicles in future, this has been proposed.
Total (Operational Cost per Year)	1,472,000 (5,000 L) 1,522,000 (7,000 L)		

Table-30 and table-31 (on the next page) show the cost estimation for different models from one to five vehicle category services for 5,000 L and 7,000 L vacutugs.

Table 30: Cost of emptying service using 5,000 L capacity vacutugs in KCC

Item	Cost/month of different service category (BDT)				
	one-vehicle	**two-vehicle**	**three-vehicle**	**four-vehicle**	**five-vehicle**
1. Vacutug operator	21,000	42,000	63,000	84,000	105,000
2. Driver	30,000	60,000	90,000	120,000	150,000
3. Helper	12,000	24,000	36,000	48,000	60,000
4. Marketing officer	10,000	10,000	10,000	10,000	10,000
5. Fuel cost	15,000	30,000	45,000	60,000	75,000
6. Maintenance cost	8,000	16,000	24,000	32,000	40,000
7. Office support cost	10,000	10,000	10,000	10,000	10,000
8. Lease payment	16,667	33,333	50,000	66,667	83,333
Total operational cost/month (sum 1-8)	**122,667**	**225,333**	**328,000**	**430,667**	**533,333**
9. Cost of capital (cost of investment*cost of capital)	40,000	80,000	120,000	160,000	200,000
Basis of pricing (sum 1-9)	**162,667**	**305,333**	**448,000**	**590,667**	**733,333**
Emptying cost/Liter of FS	0.54	0.51	0.50	0.49	0.49

Table 31: Cost of emptying service using 7,000 L capacity vacutugs in KCC

Item	Cost/month of different service category (BDT)				
	one-vehicle	**two-vehicle**	**three-vehicle**	**four-vehicle**	**five-vehicle**
1. Vacutug operator	21,000	42,000	63,000	84,000	105,000
2. Driver	30,000	60,000	90,000	120,000	150,000
3. Helper	12,000	24,000	36,000	48,000	60,000
4. Marketing officer	10,000	10,000	10,000	10,000	10,000
5. Fuel cost	15,000	30,000	45,000	60,000	75,000
6. Maintenance cost	8,000	16,000	24,000	32,000	40,000
7. Office support cost	10,000	10,000	10,000	10,000	10,000
8. Lease payment	20,833	41,667	62,500	83,333	104,167
Total operational cost/month (sum 1-8)	**126,833**	**233,667**	**340,500**	**447,333**	**554,167**
9. Cost of capital (cost of investment*cost of capital)	50,000	100,000	150,000	200,000	250,000
Basis of pricing (sum 1-9)	**176,833**	**333,667**	**490,500**	**647,333**	**804,167**
Emptying cost/Liter of FS	**0.42**	**0.40**	**0.39**	**0.39**	**0.38**

For requirement of any additional trip of 5,000 L/7,000 L capacity vacutugs by the same customer at a time, items 1, 2, 3, 5 and 6 with 5% profit for the service providers have been considered to calculate tariff for next trips. The estimated cost of service for 5,000 L and 7,000 L capacity vacutugs based on such assumptions is provided in Table-32 and Table-33 below.

Table 32: Cost of service for 5,000 L capacity vacutug in KCC

Trip #	Cost of different service system (BDT)*				
	one-vehicle	two-vehicle	three-vehicle	four-vehicle	five-vehicle
1st trip	2,711	2,544	2,489	2,461	2,444
2nd trip	1,505	1,505	1,505	1,505	1,505
3rd trip	1,505	1,505	1,505	1,505	1,505

* The cost above is not inclusive of VAT. Hence, 15% vat will be added to the figures in table-32 above.

Table 33: Cost of service for 7,000 L capacity vacutug in KCC

Trip #	Cost of different service system (BDT)*				
	one-vehicle	two-vehicle	three-vehicle	four-vehicle	five-vehicle
1st trip	2,947	2,781	2,725	2,697	2,681
2nd trip	1,505	1,505	1,505	1,505	1,505
3rd trip	1,505	1,505	1,505	1,505	1,505

* The cost above is not inclusive of VAT. Hence, 15% vat will be added to the figures in table XX above.

CHAPTER: FIVE

Conclusion

5.1 Conclusion

It is found, the sanitation in the five cities is based on on-site sanitation system consists of septic tanks and pit latrines. The periodical emptying of the system is neglected in five cities due to lack of awareness of the citizens. Though, it is required to empty the septic tank or pit once in a 2-5 years interval, but generally citizen attempt to do it when problems like blocking of the toilet or bad smell occurs because of the tank is completely full with settled solids. Both mechanical and manual emptying service is available in 3 cities (Khulna, Kushtia, and Jhenaidah) and only manual emptying available in Jashore and Benapole. Municipal and the private sweepers both are involved in emptying the septic tank or pit in manual process. In Khulna, apart from the municipal, Community Development Committee (CDC) are also providing mechanical emptying services to city dwellers. Jhenaidah Paurashava outsourced their service to a local NGO "AID Foundation" to ensure the smooth service for citizen. Kushtia Paurashava provides the emptying and transportation service and leased the treatment plant to a local NGO ERAS. It is found from the Khulna municipal records that the vehicles are considerably underutilized and there is a significant shortfall between earning and expenditure.

The large vacutug (5,000 or 7,000 Ltr.) cannot enter into narrow roads which results in very few numbers of service in a month. The informal service by private sweepers is easily available and comparatively cheaper than the municipal service. The bureaucratic system and lengthy procedure of the municipal service lead people to take the service. The private service consists of manual emptying and crude disposal in open environment.

Some of the key overall findings that emerge from this study are highlighted below:

- Emptying and transportation of fecal sludge is a profitable business.
- The potential for earned revenue in household emptying services as major HH rely on on-site sanitation.
- While a mechanical emptying service is available, a large portion of citizen in respective cities still depends on manual emptiers.
- Challenges faced by the private service providers

    - *Lack of access to finance to increase number of trucks*
    - *Poor supply chain of spare parts for the maintenance of the trucks*
    - *Long distances to dump sites cause very high fuel costs*

- The biggest failure of the FSM value chain is the lack of appropriate fecal sludge in treatment facilities in Jashore and Benapole.

As seen in Chapter-4, increase the number of vehicles, the tariff decreases. With a view to establishing multi-vehicle business few measures are need to be considerd to improve the business environment for a sustainable FSM service operation. These measures include:

- *Reducing operational costs (fuel and maintenance)*
- *Manufacturing vehicle locally*
- *Reducing import taxes in case of import*

A robust and accurate database should be prepared and maintained on the number and types of on-site sanitation systems in the city. It will help us in regular de-sludging of those technologies.

Tariffs could be based on the number of trips the trucks need to make to empty the septic tank, as well as the distance that they need to travel to dispose of the sludge. Penalties for illegal roadside dumping need to be placed and more strictly enforced, especially if tariffs include extra charges for traveling longer distances to official dumping sites. Public awareness and education campaigns will also be needed to provide information about the regulations, the need for them and the need for regular desludging and safe disposal.

Clearly, funding for construct the treatment plant requires high financial investment and political will. Some of the operational costs could be recovered from an additional surcharge to monthly water bills, sanitation Tax or sale and reuse of the treated sludge, but full cost recovery may not be possible. However, economic costs may be more than recouped through the benefits to public health and productivity.

Municipal authority could purchase more vehicles and provide the private entrepreneurs under different financial arrangements such as straight leasing, or shared profits. Alternatively, municipal authority can partner with leasing companies to handle both the purchase and management of the vehicles.

This report has presented different tariff model for 3 cities from the perspective of interactions between different key stakeholders involved in the provision of FSM services. Implementation of suggested models requires well-formulated PPPs, and supporting policy instruments and financing arrangements. Engagement of the private sector in sanitation is still low, and participation is mostly observed in the pit/septic tank emptying component of the sanitation service chain. The treatment component of the chain is dominated by the public sector due to low revenue collected along with low incentives to attract private capital.

5.2 Recommendation

5.2.1 Recommendation for Khulna City Corporation

- Introducing Sanitation tax to reduce the burden of lease payment by O&M entity for capital expenditure of emptying equipment.
- Introducing Sanitation tax to reduce the burden of operating expenses by O&M entity for capital expenditure of treatment plant.
- Developing guideline for Private Service providers of FSM, including emptying, transportation, disposal, treatment and re-use.
- VAT can be exempted from the service fee due to considering the positive environmental impact of FSM and to keep the service fee within affordable limit.
- Cost of Capital can be reduced by exploring alternative and/or cheaper sources of fund
- Formulating appropriate and effective Marketing Strategy for the Paurashava to increase demand of FSM service. Since the system is not operating at its full potential now, demand creation would help minimizing the management cost.
- Undertake greater promotional activities to increase awareness about the service
- Formulate "Monitoring Cell" with members of local government and local experts to monitor the overall management of FSM service in Paurashava.
- Sanctions and enforcements for Mandatory periodic Mechanical Emptying of pits and septic tanks using mechanical service. Although it is recommended that septic tanks should be emptied at least once a year, considering the present practice, affordability and design of pits/septic tanks in the Paurashava, the emptying frequency should be set which might vary for different containment systems.
- Installment payment system can be considered for low-income people when they avail the mechanical emptying service.
- Working in close collaboration with Alliance with local community-based organization and environmental activists to promote FSM in the Paurashava.

5.2.2 Recommendation for Kushtia Paurashava

- Introducing Sanitation tax to reduce the burden of lease payment by O&M entity for capital expenditure of emptying equipment.
- Introducing Sanitation tax to reduce the burden of operating expenses by O&M entity for capital expenditure of treatment plant.
- Developing guideline for Private Service providers of FSM, including emptying, transportation, disposal, treatment and re-use.
- VAT can be exempted from the service fee due to considering the positive environmental impact of FSM and to keep the service fee within affordable limit.
- Cost of Capital can be reduced by exploring alternative and/or cheaper sources of fund.
- Formulating appropriate and effective Marketing Strategy for the Paurashava to increase demand of FSM service. Since the system is not operating at its full potential now, demand creation would help minimizing the management cost.

- Undertake greater promotional activities to increase awareness about the service
- Formulate "Monitoring Cell" with members of local government and local experts to monitor the overall management of FSM service in Paurashava.
- Sanctions and enforcements for Mandatory periodic Mechanical Emptying of pits and septic tanks using mechanical service. Although it is recommended that septic tanks should be emptied at least once a year, considering the present practice, affordability and design of pits/septic tanks in the Paurashava, the emptying frequency should be set which might vary for different containment systems.
- Installment payment system can be considered for low-income people when they avail the mechanical emptying service.
- Working in close collaboration with Alliance with local community-based organization and environmental activists to promote FSM in the Paurashava.

5.2.3 Recommendation for Jhenaidah Paurashava

- Sanitation tax can be setoff with depreciation to reduce the burden of lease payment by O&M entity for capital expenditure of emptying equipment such as for purchasing vacutugs.
- Sanitation tax can be setoff with depreciation to reduce the burden of operating expenses by O&M entity for capital expenditure of treatment plant such as for construction of treatment plant, land purchase etc.
- VAT can be exempted from the service fee due to considering the positive environmental impact of FSM and to keep the service fee within affordable limit.
- Cost of Capital can be reduced by exploring alternative and/or cheaper sources of fund.
- Formulating appropriate and effective Marketing Strategy for the Paurashava to increase demand of FSM service. Since the system is not operating at its full potential now, demand creation would help minimizing the management cost.
- Undertake greater promotional activities to increase awareness among the citizens about the FSM service.
- Formulate "Monitoring Cell" with members of local government and local experts to monitor the overall management of FSM service in Paurashava.
- Sanctions and enforcements for Mandatory periodic Mechanical Emptying of pits and septic tanks using mechanical service. Although it is recommended that septic tanks should be emptied at least once a year, considering the present practice, affordability and design of pits/septic tanks in the Paurashava, the emptying frequency should be set which might vary for different containment systems.
- Installment payment system can be considered for low-income people when they avail the mechanical emptying service.
- Working in close collaboration with Alliance with local community-based organization and environmental activists to promote FSM in the Paurashava.

Annexure: Questionnaires

Questionnaire for Household Survey (User)

আমার নাম .....। আমি NewVision Solutions Ltd. থেকে এসেছি। বর্তমানে প্রতিষ্ঠানটি আপনার এলাকাতে পায়খানার বর্জ্য ব্যবস্থাপনার উপর একটি জরিপ করছে । এই বিষয়ে আমরা আপনার মূল্যবান মতামত জানতে আগ্রহী। আমরা নিশ্চিত করছি যে, প্রাপ্ত তথ্য শুধুমাত্র গবেষণার কাজে ব্যবহার করা হবে এবং এই বিষয়ে সম্পূর্ণ গোপনীয়তা রক্ষা করা হবে ।

নির্দেশনা:

- যারা ভ্যাকু ট্যাগ দিয়ে পরিষ্কার করেছে শুধু তাদের কে ইন্টারভিউ করতে হবে
- বাড়ির মালিক কে ইন্টার্ভিউ করতে হবে

শুরুর সময়	মিনিট
শেষের সময়	মিনিট

a. তারিখঃ _____/_____/2018

b. প্রশ্নপত্রের সিরিয়াল নম্বরঃ

c. এলাকাঃ

1. কুষ্টিয়া	**2. ঝিনাইদাহ**	**3. খুলনা**	**4. যশোর**	**৫ বেনাপোল**

d. উত্তরদাতার নাম: _____ e. পরিবারের মোট সদস্য সংখ্যা-

f. **মোবাইল নং**

0	1									

g. ঠিকানা:

ওয়ার্ড নং	পাড়া/বস্তির নাম	রোড নং	বাড়ি নং	

1.0 Types of Latrine, Ownership and O&M

	Questions	Types of coding			Skip
Q 1.1	আপনার নিজের ল্যাট্রিনটি/পায়খানাটি কেমন? (নিজে ল্যাট্রিন/পায়খানা দেখে লিখুন)	1 পিট ল্যাট্রিন (রিং স্লাব)		1 **সিঙ্গেল পিট ল্যাট্রিন (একটা পিট)**	
				2 **ডুয়েল পিট ল্যাট্রিন (২ টা পিট)**	
		2 সেপটিক ট্যাঙ্ক সহ ল্যাট্রিন			
		99. **অন্যান্য**			
Q 1.2	আপনার পায়খানাটি যদি রিং স্লাব এর হয়, তাহলে কয়টি রিং আছে?	মোট রিং ..... টি (আনুমানিক)			
Q 1.3	আপনার পায়খানাতে যদি সেপটিক ট্যাঙ্ক থাকে তাহলে তার আয়তন কত?	1. দৈর্ঘ্য		ফিট	
		2. প্রস্থ		ফিট	
		3. উচ্চতা (গভিরতা)		ফিট	
		4. মোট আয়তন _____ফিট^3 (আনুমানিক)			
Q 1.4	আপনার সেপটিক ট্যাঙ্কে কয়টি চেম্বার আছে?	1. ১ টা চেম্বার			
		2. ২ টা চেম্বার			
		3. ৩ টা চেম্বার			
		4. জানিনা			
Q 1.5	আপনি কতদিন ধরে এই পায়খানাটি ব্যবহার করছেন?	**1. মোট _____মাস (আনুমানিক)**			
Q 1.6	মোট কতজন এই পায়খানাটি ব্যবহার করছে?	মোট _____জন (আনুমানিক)			
Q 1.7	আপনার পায়খানাটি রক্ষনাবেক্ষন/পরিস্কার করে কে?	1. নিজেই করি			
		2. কেয়ারটেকার করে			
		99. অন্যান্য (উল্লেখ করুন)			
Q 1.8	পায়খানা রক্ষনাবেক্ষন/পরিস্কার করার জন্য আপনি কি টাকা খরচ করেন?	1. হ্যাঁ			
		2. না			
Q 1.9	**যদি আপনি টাকা খরচ করেন, তাহলে প্রতি মাসে গড়ে কত টাকা খরচ করেন?**	**মোট _____ টাকা (আনুমানিক)**			**কমিউনিটির ক্ষেত্রে মোট খরচ আসবে**

2.0 Existing Emptying Practices

	Questions	Types of coding	Skip
Q 2.1	আপনি কি আপনার টয়লেটের পিট/সেপটিক ট্যাঙ্ক কখনও পরিষ্কার করেছেন?	1. হ্যাঁ	**চলবে**
		2. না	**প্রশ্ন**
Q 2.2	কতদিন পর পর আপনার পিট/সেপটিক ট্যাঙ্ক পরিষ্কার করেন বা করেছেন?	1. ৩-৫ মাস	
		2. ৬-৮ মাস	
		3. ১ বছর	
		4. ২ বছর	
		5. পূর্ণ হয়ে গেলে	
		99. অন্যান্য (উল্লেখ করুন)	
Q 2.3	আপনার টয়লেটের পিট/সেপটিক ট্যাঙ্ক পরিষ্কারের সেবা কে প্রদান করছে?	1. পৌরসভা	
		2. সিটি কর্পোরেশন	
		3. CBO/NGO	
		4. সুইপার	
		99. অন্যান্য (উল্লেখ করুন)	
Q 2.4	পিট/সেপটিক ট্যাঙ্ক পরিষ্কারের জন্য কোন সময়টা আপনি পছন্দ করেন?	1. দিনের বেলা	
		2. রাতের বেলা	
		3. যে কোন সময়/ কোন পছন্দ নেই	
		99. অন্যান্য (উল্লেখ করুন)	
Q 2.5	যদি আপনি রাতের বেলা পছন্দ করেন, তাহলে কেন করেন?	1. খুব দুর্গন্ধ ছড়ায়	
		2. যে কোন জায়গায় ফেলা যায়	
		3. রাতের বেলা পায়খানা কম ব্যবহার হয়	
		4. পরিষ্কার করতে অনেক সময় লাগে	
		99. অন্যান্য (উল্লেখ করুন)	
Q 2.6	পিট/সেপটিক ট্যাঙ্ক পরিষ্কারের জন্য কোন ঋতু আপনি পছন্দ করেন?	1. গ্রীষ্মকাল (গরমকাল)	
		2.শীতকাল	
		3.বর্ষাকাল	
		4. যে কোন ঋতু/কোন পছন্দ নেই	
Q 2.7	ঐ ঋতু পছন্দ করার কারন টা বলবেন কি?		
Q 2.8	আপনার প্রতিবেশীরা সাধারনত কিভাবে তাদের পিট/সেপটিক ট্যাঙ্ক পরিষ্কার করে?	1. যন্ত্রপাতি/ভ্যাকুটেগ ব্যবহার করে	
		2. ম্যানুয়াল পদ্ধতিতে	
		99. **অন্যান্য (উল্লেখ করুন)**	

3.0 Accessibility & Availability of Emptying Services

	Questions	Types of coding	Skip
Q 3.1	পিট/সেপটিক ট্যাঙ্ক পরিষ্কারের সেবা নিতে হলে আপনাকে কি করতে হয়? (উত্তর একাধিক হতে পারে)	1. অফিসে গিয়ে মৌখিকভাবে বললেই হয় 2. নির্ধারিত ফর্ম পুরন করে আবেদন করতে হয় 3. সার্ভিস চার্জ আগেই পরিশোধ করতে হয় **99.** অন্যান্য (উল্লেখ করুন)	
Q 3.2	জানানোর পর সেবা পেতে কতদিন লাগে?	_____ দিন	
Q 3.3	আপনার মতে, জানানোর পর কত দিনের মধ্যে এই সেবা পাওয়া উচিত/ আপনি কত দিনের মধ্যে এই সেবা পেতে চান?	_____ দিন	
Q 3.4	পিট/সেপটিক ট্যাঙ্ক পরিষ্কারের সেবা নিতে আপনি কি কোন সমস্যার সম্মুখীন হয়েছেন?	1. হ্যাঁ 2. না	
Q 3.5	যদি হ্যাঁ হয়, কি কি সমস্যার সম্মুখীন হয়েছেন? (একাধিক উত্তর হতে পারে)	1. অনেক বেশি খরচ 2. সহজে (সময়মত) পাওয়া যায় না 3. জরুরি মুহূর্তে সেবা পাওয়া যায় না 4. পিট/ট্যাঙ্ক পুরোপুরি পরিষ্কার করে না 5. অনেক বেশি বকশিস চায় 6. টাকা পরিশোধের সিস্টেমটা ভাল না 7. রাস্তা সরু, গাড়ি আসতে পারেনা **99.** অন্যান্য (উল্লেখ করুন)	
Q 3.6	গড়ে পিট/সেপটিক ট্যাঙ্ক পরিষ্কার করতে সাধারনত কতক্ষণ সময় লাগে?	পিট _____ ঘণ্টা সেপটিক ট্যাঙ্ক _____ ঘণ্টা	
Q 3.7	পিট/সেপটিক ট্যাঙ্ক পরিষ্কারের সেবা সম্পর্কে আপনি কোথা থেকে জেনেছেন?	1. পৌরসভা 2. সিটি কর্পোরেশন 3. NGO 4. বন্ধু-বান্ধব/আত্মীয় 5. প্রতিবেশি **99.** অন্যান্য (উল্লেখ করুন)	
Q 3.8	ভ্যাকুট্যাগ দিয়ে আপনি কতদিন আগে প্রথম পরিষ্কারের কাজ করেছেন?		
Q 3.9	আপনি কেন ভ্যাকুট্যাগের সেবা বেছে নিলেন?	1. পরিবেশ দূষণ কমানোর জন্য 2. স্বাস্থ্যসম্মত উপায়ে পরিষ্কার করার জন্য (স্বাস্থ্যের কথা ভেবে) 3. কম খরচে সেবা পাওয়া যায় 4. কম সময়ে (তাড়াতাড়ি) পরিষ্কার করা যায় 5. প্রতিবেশীরা সবাই নিচ্ছে তাই **99. অন্যান্য**	

4.0 Price/Cost of Emptying Services

	Questions	Types of coding	Skip
Q 4.1	পিট/সেপটিক ট্যাঙ্ক পরিষ্কার করার জন্য আপনি কত টাকা ব্যয় করেছেন?		

	ভ্যাকুট্যাগ দিয়ে	সুইপার দিয়ে
1. আগে জমা দিয়েছেন/চুক্তি করেছেন		
2. অন্যান্য উপকরন (কেরোসিন, ঝাড়ু, ইত্যাদি)		
3. বকশিস		
4. অন্যান্য খরচ (যদি থাকে)		
মোট		

Q 4.2	পরিষ্কারের ফী কিভাবে নির্ধারিত হয়েছে?	1. পিট/সেপটিক ট্যাঙ্কের সাইজ অনুযায়ী 2. গাড়ির প্রতিটি ট্রিপ অনুযায়ী 3. পিট/সেপটিক এঁর জন্য নির্দিষ্ট ফী আছে 99. অন্যান্য (উল্লেখ করুন)	
Q 4.2.1	আপনার পিট/ সেপটিক ট্যাঙ্ক পরিষ্কার করতে যে ভ্যাকুট্যাগ এসেছিল তার সাইজ ও কয়টি ট্রিপ লেগেছিল?	সাইজ (লিটার) / ট্রিপ	
Q 4.3	আপনি কিভাবে টাকা পরিশোধ করেছেন?	1. নগদ 2. ব্যাংকের মাধ্যমে 3. মোবাইল বাঙ্কিং/বিকাশ 99. অন্যান্য (উল্লেখ করুন)	
Q 4.4	আপনি এখন যেভাবে টাকা পরিশোধ করছেন সেটা কি সব চেয়ে ভাল ও সহজ উপায়?	1. হ্যাঁ 2. না	
Q 4.5	যদি না হয়, তাহলে কিভাবে টাকা পরিশোধ করলে সবচেয়ে সহজ হবে বলে আপনার মনে হয়?		
Q 4.6	পরিষ্কারের জন্য আপনি যে ফী প্রদান করছেন, সেটা সম্পর্কে আপনার মতামত কি?	1. এটা অনেক কম 2. এটাই ঠিক আছে 3. একটু বেশি মনে হয় 4. অনেক বেশি	
Q 4.7	বর্তমানে যে সেবা আপনি পাচ্ছেন, তার জন্য আপনি কত টাকা খরচ করতে আগ্রহী?		

5.0 Tax for Service

	Questions	Types of coding	Skip
Q 5.1	পৌরসভা/সিটি কর্পোরেশনকে পরিষ্কারের সেবার জন্য আপনি কি কোন ফী/ট্যাক্স প্রদান করেন?	1. হ্যাঁ 2. না	
Q 5.2	যদি দিয়ে থাকেন, তাহলে বছরে কত টাকা দিচ্ছেন?		
Q 5.3	যদি না দিয়ে থাকেন, তাহলে আপনি কি ফী/ট্যাক্স প্রদান করতে আগ্রহী?	1. হ্যাঁ 2. না	
Q 5.4	যদি আগ্রহী হন, তাহলে কত টাকা দিতে আগ্রহী?		

6.0 Willingness to Pay

আপনার প্রত্যাশিত সেবা সম্পর্কে বলুনঃ

	Questions	Types of coding	Skip
Q 6.1	কত দিনের মধ্যে সেবা পেতে চান?	1. যেদিন জানাবো সেই দিন 2. জানানোর ১ দিনের মধ্যে 3. জানানোর ২ দিনের মধ্যে 99. অন্যান্য (দিন উল্লেখ করুন)	
Q 6.2	কোন সময় সেবাটি পেতে চান?	1. দিনের বেলা 2. রাতের বেলা 3. যখনই প্রয়োজন	
Q 6.3	সেবা পাওয়ার জন্য কিভাবে আবেদন করলে সবচেয়ে সুবিধা হয়?	1. অফিসে গিয়ে মৌখিকভাবে জানালে 2. আবেদনপত্র জমা দিলে 3. মোবাইল ফোনে জানালে 99. অন্যান্য	
Q 6.4	কিভাবে পরিষ্কারের ফী প্রদান করতে চান?	1. কাজ শেষে নগদ 2. ব্যাংকের মাধ্যমে প্রদান 99. অন্যান্য	
Q 6.5	কিভাবে টাকা পরিশোধ করতে চান?	1. এককালীন (একেবারে) 2. মাসিক কিস্তিতে 99. অন্যান্য	
Q 6.6	আপনার বাছাইকৃত উপরের সব সুবিধা বিবেচনে করে, আপনি পরিষ্কারের সেবার জন্য কত টাকা পর্যন্ত ব্যয় করতে চান?		
Q 6.7	বর্তমানে টয়লেটের ময়লা ব্যবস্থাপনায় পৌরসভা যে সেবা দিচ্ছে তাতে আপনি খুশি না অখুশি?	1. অনেক বেশি খুশি 2. মোটামুটি খুশি 3. খুশিও না আবার অখুশিও না 4. মোটামুটি অখুশি 5. অনেক বেশি অখুশি **99. অন্যান্য (উল্লেখ করুন)**	

7.0 Information on Income and Expenditure

	Questions	Types of coding
Q 7.1	প্রতিমাসে আপনার পরিবারের মোট খরচ কত?	**মোট _____টাকা**
Q 7.2	প্রতিমাসে আপনার পরিবারের মোট আয় কত?	**মোট _____টাকা**
Q 7.3	আপনার পরিবারের প্রতিমাসে কোন সঞ্চয় আছে কি?	**1. হ্যাঁ**
		2. না
Q 7.4	**যদি সঞ্চয় থাকে তাহলে বলুন প্রতিমাসে কত টাকা সঞ্চয় করেন?**	**মোট _____টাকা**

Questionnaire for Household Survey (Non-User)

আমার নাম .....। আমি NewVision Solutions Ltd. থেকে এসেছি। বর্তমানে প্রতিষ্ঠানটি আপনার এলাকাতে পায়খানার বর্জ্য ব্যবস্থাপনার উপর একটি জরিপ করছে । এই বিষয়ে আমরা আপনার মূল্যবান মতামত জানতে আগ্রহী। আমরা নিশ্চিত করছি যে, প্রাপ্ত তথ্য শুধুমাত্র গবেষণার কাজে ব্যবহার করা হবে এবং এই বিষয়ে সম্পূর্ণ গোপনীয়তা রক্ষা করা হবে ।

নির্দেশনা:

- যারা সুইপার দিয়ে পরিষ্কার করেছে (কখনও ভ্যাকুট্যাগ ব্যবহার করেনি) শুধু তাদের কে ইন্টারভিউ করতে হবে
- বাড়ির মালিক কে ইন্টার্ভিউ করতে হবে

a. তারিখঃ ____/____/ 2018

শুরুর সময়	মিনিট
শেষের সময়	মিনিট

b. প্রশ্নপত্রের সিরিয়াল নম্বরঃ

c. এলাকাঃ

1. কুষ্টিয়া	2. ঝিনাইদাহ	3. খুলনা	4. যশোর	5. বেনাপোল

d. উত্তরদাতার নাম: _____

e. পরিবারের মোট সদস্য সংখ্যা-

f. **মোবাইল নং**

0	1									

g. ঠিকানা:

ওয়ার্ড নং	পাড়া/বস্তির নাম	রোড নং	বাড়ি নং	

1.0 Types of Latrine, Ownership and O&M

	Questions	Types of coding			Skip
Q 1.1	আপনার নিজের ল্যাট্রিনটি/পায়খানাটি কেমন? (নিজে ল্যাট্রিন/পায়খানা দেখে লিখুন)	1. পিট ল্যাট্রিন (রিং স্লাব)		**1** সিঙ্গেল পিট ল্যাট্রিন (একটা পিট)	
				2 ডুয়েল পিট ল্যাট্রিন (২ টা পিট)	
		2. সেপটিক ট্যাঙ্ক সহ ল্যাট্রিন			
		99. **অন্যান্য**			
Q 1.2	আপনার পায়খানাটি যদি রিং স্লাব এর হয়, তাহলে কয়টি রিং আছে?	মোট রিং ..... টি (আনুমানিক)			
Q 1.3	আপনার পায়খানাতে যদি সেপটিক ট্যাঙ্ক থাকে তাহলে তার আয়তন কত?	1. দৈর্ঘ্য		ফিট	
		2. প্রস্থ		ফিট	
		3. উচ্চতা (গভিরতা)		ফিট	
		4. মোট আয়তন _____ফিট^3 (আনুমানিক)			
Q 1.4	আপনার সেপটিক ট্যাঙ্কে কয়টি চেম্বার আছে?	1. ১ টা চেম্বার			
		2. ২ টা চেম্বার			
		3. ৩ টা চেম্বার			
		4. জানিনা			
Q 1.5	আপনি কতদিন ধরে এই পায়খানাটি ব্যবহার করছেন?	**1. মোট _____মাস (আনুমানিক)**			
Q 1.6	মোট কতজন এই পায়খানাটি ব্যবহার করছে?	মোট _____জন (আনুমানিক)			
Q 1.7	আপনার পায়খানাটি রক্ষনাবেক্ষন/পরিস্কার করে কে?	1. নিজেই করি			
		2. কেয়ারটেকার করে			
		99. অন্যান্য (উল্লেখ করুন)			
Q 1.8	পায়খানা রক্ষনাবেক্ষন/পরিস্কার করার জন্য আপনি কি টাকা খরচ করেন?	1. হ্যাঁ			
		2. না			
Q 1.9	**যদি আপনি টাকা খরচ করেন, তাহলে প্রতি মাসে গড়ে কত টাকা খরচ করেন?**	**মোট _____ টাকা (আনুমানিক)**			**কমিউনিটির ক্ষেত্রে মোট খরচ আসবে**

2.0 Existing Emptying Practices

	Questions	Types of coding	Skip
Q 2.1	আপনি কি আপনার টয়লেটের পিট/সেপটিক ট্যাঙ্ক কখনও পরিষ্কার করেছেন?	1. হ্যাঁ	**চলবে**
		2. না	**প্রশ্ন**
Q 2.2	কতদিন পর পর আপনার পিট/সেপটিক ট্যাঙ্ক পরিষ্কার করেন বা করেছেন?	1. ৩-৫ মাস	
		2. ৬-৮ মাস	
		3. ১ বছর	
		4. ২ বছর	
		5. পূর্ণ হয়ে গেলে	
		99. অন্যান্য (উল্লেখ করুন)	
Q 2.3	আপনার টয়লেটের পিট/সেপটিক ট্যাঙ্ক পরিষ্কারের সেবা কে প্রদান করছে?	1. পৌরসভা	
		2. সিটি কর্পোরেশন	
		3. CBO/NGO	
		4. সুইপার	
		99. অন্যান্য (উল্লেখ করুন)	
Q 2.4	পিট/সেপটিক ট্যাঙ্ক পরিষ্কারের জন্য কোন সময়টা আপনি পছন্দ করেন?	1. দিনের বেলা	
		2. রাতের বেলা	
		3. যে কোন সময়/ কোন পছন্দ নেই	
		99. অন্যান্য (উল্লেখ করুন)	
Q 2.5	যদি আপনি রাতের বেলা পছন্দ করেন, তাহলে কেন করেন?	1. খুব দুর্গন্ধ ছড়ায়	
		2. যে কোন জায়গায় ফেলা যায়	
		3. রাতের বেলা পায়খানা কম ব্যবহার হয়	
		4. পরিষ্কার করতে অনেক সময় লাগে	
		99. অন্যান্য (উল্লেখ করুন)	
Q 2.6	পিট/সেপটিক ট্যাঙ্ক পরিষ্কারের জন্য কোন ঋতু আপনি পছন্দ করেন?	1. গ্রীষ্মকাল (গরমকাল)	
		2. শীতকাল	
		3. বর্ষাকাল	
		4. যে কোন ঋতু/কোন পছন্দ নেই	
Q 2.7	ঐ ঋতু পছন্দ করার কারন টা বলবেন কি?		
Q 2.8	আপনার প্রতিবেশীরা সাধারনত কিভাবে তাদের পিট/সেপটিক ট্যাঙ্ক পরিষ্কার করে?	1. যন্ত্রপাতি/ভ্যাকুটেগ ব্যবহার করে	
		2. ম্যানুয়াল পদ্ধতিতে	
		99. **অন্যান্য (উল্লেখ করুন)**	

3.0 Accessibility & Availability of Emptying Services

	Questions	Types of coding	Skip
Q 3.1	পিট/সেপটিক ট্যাঙ্ক পরিষ্কারের সেবা নিতে হলে আপনাকে কি করতে হয়? (উত্তর একাধিক হতে পারে)	1. অফিসে গিয়ে বলে আসতে হয় 2. ফোন করে সুইপারকে জানাতে হয় 3. সুইপার কলোনিতে গিয়ে বলে আসতে হয়/সাথে করে নিয়ে আসতে হয় **99.** অন্যান্য (উল্লেখ করুন)	
Q 3.2	জানানোর পর সেবা পেতে কতদিন লাগে?	_____ দিন	
Q 3.3	আপনার মতে, জানানোর পর কত দিনের মধ্যে এই সেবা পাওয়া উচিত/ আপনি কত দিনের মধ্যে এই সেবা পেতে চান?	_____ দিন	
Q 3.4	পিট/সেপটিক ট্যাঙ্ক পরিষ্কারের সেবা নিতে আপনি কি কোন সমস্যার সম্মুখীন হয়েছেন?	1. হ্যাঁ 2. না	
Q 3.5	যদি হ্যাঁ হয়, কি কি সমস্যার সম্মুখীন হয়েছেন? (একাধিক উত্তর হতে পারে)	1. অনেক বেশি টাকা চায় 2. সহজে (সময়মত) পাওয়া যায় না 3. জরুরি মুহূর্তে সেবা পাওয়া যায় না 4. পিট/ট্যাঙ্ক পুরোপুরি পরিষ্কার করে না 5. অনেক বেশি বকশিস চায় 6. খুব দুর্গন্ধ ছড়ায় 7. পরিবেশ দুষিত হয় **99.** অন্যান্য (উল্লেখ করুন)	
Q 3.6	গড়ে পিট/সেপটিক ট্যাঙ্ক পরিষ্কার করতে সাধারনত কতক্ষণ সময় লাগে?	পিট _____ ঘণ্টা সেপটিক ট্যাঙ্ক _____ ঘণ্টা	
Q 3.7	আপনি কি ভ্যাকুট্যাগ দিয়ে পরিষ্কারের কথা শুনেছেন?	1. হ্যাঁ 2. না (প্রশ্ন Q 3.12 তে যান)	
Q 3.8	যদি শুনে থাকেন, তাহলে বলতে পারেন এই সেবা কারা দিচ্ছে?	1. পৌরসভা 2. সিটি কর্পোরেশন 3. NGO **99.** অন্যান্য (উল্লেখ করুন)	
Q 3.9	ভ্যাকুট্যাগ দিয়ে পরিষ্কারের সেবা পেতে কত দিন লাগে?	_____ দিন	

Q 3.10	ভ্যাকুট্যাগ দিয়ে পরিষ্কারের সুবিধা গুলো কি কি? (একাধিক উত্তর হতে পারে)	1. পরিবেশ দূষণ কম হয় (দুর্গন্ধ হয় না) 2. স্বাস্থ্যসম্মত উপায়ে পরিষ্কার করা হয় (স্বাস্থ্যের কথা ভেবে) 3. কম খরচে সেবা পাওয়া যায় 4. কম সময়ে (তাড়াতাড়ি) পরিষ্কার করা যায় **99.** অন্যান্য	
Q 3.11	ভ্যাকুট্যাগ দিয়ে পরিষ্কার করতে কত টাকা লাগে?		
Q 3.12	আপনি কেন ভ্যাকুট্যাগ দিয়ে পরিষ্কার করান না? (একাধিক উত্তর হতে পারে)	1. আমার এলাকায় এই সেবা নেই 2. সেবা পেতে অনেক বেশি সময় লাগে 3. আবেদন করা/টাকা জমা দেয়াটা ঝামেলা মনে হয় 4. অনেক বেশি টাকা লাগে 5. আমার বাসা পর্যন্ত পাইপ আসেনা/রাস্তা সরু **99.** অন্যান্য (উল্লেখ করুন)	
Q 3.13	আপনি কি পরবর্তীতে ভ্যাকুট্যাগ দিয়ে পরিষ্কার করতে চান?	1. হ্যাঁ **2. না**	

4.0 Price/Cost of Emptying Services

	Questions	Types of coding	Skip
Q 4.1	পিট/সেপটিক ট্যাঙ্ক পরিষ্কার করার জন্য আপনি কত টাকা ব্যয় করেছেন?	<table><tr><td></td><td>সুইপার দিয়ে</td></tr><tr><td>**1.** চুক্তি করেছেন</td><td></td></tr><tr><td>**2.** অন্যান্য উপকরন (কেরোসিন, ঝাড়ু, ইত্যাদি)</td><td></td></tr><tr><td>**3.** বকশিস</td><td></td></tr><tr><td>**4.** অন্যান্য খরচ (যদি থাকে)</td><td></td></tr><tr><td>মোট</td><td></td></tr></table>	
Q 4.1.1	পিট/সেপটিক ট্যাঙ্ক পরিষ্কার করার জন্য কতজন সুইপার কাজ করেছিল?		
Q 4.2	পরিষ্কারের ফী কিভাবে নির্ধারিত হয়েছে?	1. পিট/সেপটিক ট্যাঙ্কের সাইজ অনুযায়ী 2. পিট/সেপটিক ট্যাঙ্কের অবস্থান অনুযায়ী **99.** অন্যান্য (উল্লেখ করুন)	
Q 4.3	আপনি কিভাবে টাকা পরিশোধ করেছেন?	1. নগদ 2. মোবাইল বাঙ্কিং/বিকাশ 99. অন্যান্য (উল্লেখ করুন)	
Q 4.4	আপনি এখন যেভাবে টাকা পরিশোধ করছেন সেটা কি সব চেয়ে ভাল ও সহজ উপায়?	1. হ্যাঁ 2. না	
Q 4.5	যদি না হয়, তাহলে কিভাবে টাকা পরিশোধ করলে সবচেয়ে সহজ হবে বলে আপনার মনে হয়?		
Q 4.6	পরিষ্কারের জন্য আপনি যে ফী প্রদান করছেন, সেটা সম্পর্কে আপনার মতামত কি?	1. এটা অনেক কম 2. এটাই ঠিক আছে 3. একটু বেশি মনে হয় 4. অনেক বেশি	
Q 4.7	**বর্তমানে যে সেবা আপনি পাচ্ছেন, তার জন্য আপনি কত টাকা খরচ করতে আগ্রহী?**		

5.0 Tax for Service

	Questions	Types of coding	Skip
Q 5.1	পৌরসভা/সিটি কর্পোরেশনকে পরিষ্কারের সেবার জন্য আপনি কি কোন ফী/ট্যাক্স প্রদান করেন?	1. হ্যাঁ 2. না	
Q 5.2	যদি দিয়ে থাকেন, তাহলে বছরে কত টাকা দিচ্ছেন?		
Q 5.3	যদি না দিয়ে থাকেন, তাহলে আপনি কি ফী/ট্যাক্স প্রদান করতে আগ্রহী?	1. হ্যাঁ 2. না	
Q 5.4	যদি আগ্রহী হন, তাহলে কত টাকা দিতে আগ্রহী?		

6.0 Willingness to pay

আপনি যদি ভ্যাকুট্যাগ দিয়ে সেবা নেন, আপনার প্রত্যাশিত সেবা সম্পর্কে বলুনঃ

	Questions	Types of coding	Skip
Q 6.1	কত দিনের মধ্যে সেবা পেতে চান?	1. যেদিন জানাবো সেই দিন 2. জানানোর ১ দিনের মধ্যে 3. জানানোর ২ দিনের মধ্যে 99. অন্যান্য (দিন উল্লেখ করুন)	
Q 6.2	কোন সময় সেবাটি পেতে চান?	1. দিনের বেলা 2. রাতের বেলা 3. যখনই প্রয়োজন	
Q 6.3	সেবা পাওয়ার জন্য কিভাবে আবেদন করলে সবচেয়ে সুবিধা হয়?	1. অফিসে গিয়ে মৌখিকভাবে জানালে 2. আবেদনপত্র জমা দিলে 3. মোবাইল ফোনে জানালে 99. অন্যান্য	
Q 6.4	কিভাবে পরিষ্কারের ফী প্রদান করতে চান?	1. কাজ শেষে নগদ 2. ব্যাংকের মাধ্যমে প্রদান 99. অন্যান্য	
Q 6.5	কিভাবে টাকা পরিশোধ করতে চান?	1. এককালীন (একেবারে) 2. মাসিক কিস্তিতে 99. অন্যান্য	
Q 6.6	আপনার বাছাইকৃত উপরের সব সুবিধা বিবেচনে করে, আপনি পরিষ্কারের সেবার জন্য কত টাকা পর্যন্ত ব্যয় করতে চান?		
Q 6.7	বর্তমানে টয়লেটের ময়লা ব্যবস্থাপনায় পৌরসভা যে সেবা দিচ্ছে তাতে আপনি খুশি না অখুশি?	1. অনেক বেশি খুশি 2. মোটামুটি খুশি 3. খুশিও না আবার অখুশিও না 4. মোটামুটি অখুশি 5. অনেক বেশি অখুশি **99. অন্যান্য (উল্লেখ করুন)**	

7.0 Information on Income and Expenditure

	Questions	Types of coding
Q 7.1	প্রতিমাসে আপনার পরিবারের মোট খরচ কত?	**মোট** _____**টাকা**
Q 7.2	প্রতিমাসে আপনার পরিবারের মোট আয় কত?	**মোট** _____**টাকা**
Q 7.3	আপনার পরিবারের প্রতিমাসে কোন সঞ্চয় আছে কি?	**1. হ্যাঁ** **2. না**
Q 7.4	**যদি সঞ্চয় থাকে তাহলে বলুন প্রতিমাসে কত টাকা সঞ্চয় করেন?**	**মোট** _____**টাকা**

Questionnaire for Institution/market/hospital Survey (User)

আমার নাম .....। আমি NewVision Solutions Ltd. থেকে এসেছি। বর্তমানে প্রতিষ্ঠানটি আপনার এলাকাতে পায়খানার বর্জ্য ব্যবস্থাপনার উপর একটি জরিপ করছে । এই বিষয়ে আমরা আপনার মূল্যবান মতামত জানতে আগ্রহী। আমরা নিশ্চিত করছি যে, প্রাপ্ত তথ্য শুধুমাত্র গবেষণার কাজে ব্যবহার করা হবে এবং এই বিষয়ে সম্পূর্ণ গোপনীয়তা রক্ষা করা হবে ।

নির্দেশনা:

- যারা ভ্যাকুট্যাগ দিয়ে পরিষ্কার করেছে শুধু তাদের কে ইন্টারভিউ করতে হবে
- প্রতিষ্ঠানের প্রধানকে কে ইন্টার্ভিউ করতে হবে

a. তারিখঃ _____/_____/2018

শুরুর সময়	মিনিট
শেষের সময়	মিনিট

b. প্রশ্নপত্রের সিরিয়াল নম্বরঃ

c. এলাকাঃ

1. কুষ্টিয়া	2. ঝিনাইদাহ	3. খুলনা	4. যশোর	5. বেনাপোল

d. উত্তরদাতার নাম: _____ e. উত্তরদাতার পদবীঃ

f. প্রতিষ্ঠানের নামঃ

g. প্রতিষ্ঠানের ধরনঃ

1	2	3	4	99
শিক্ষা প্রতিষ্ঠান (স্কুল/কলেজ/মাদ্রাসা)	মার্কেট (হাঁট/ বাযার/শপিং মল)	সরকারি/বেসরকারি প্রতিষ্ঠান	হাসপাতাল/ক্লিনিক	অন্যান্য

h. **মোবাইল নং**

0	1									

g. ঠিকানা:

ওয়ার্ড নং	পাড়া/বস্তির নাম	রোড নং	বাড়ি নং	

1.0 Types of Latrine, Ownership and O&M

	Questions	Types of coding	Skip
Q 1.1	আপনার প্রতিষ্ঠানে কয়টি ল্যাট্রিন আছে?		
Q 1.2	ল্যাট্রিন/পায়খানাগুলো কেমন? (নিজে ল্যাট্রিন/পায়খানা দেখে লিখুন)	1. পিট ল্যাট্রিন (রিং স্লাব) 1. 1 **সিঙ্গেল পিট ল্যাট্রিন (একটা পিট)** 1. 2 **ডুয়েল পিট ল্যাট্রিন (২ টা পিট)** 2. সেপটিক ট্যাঙ্ক সহ ল্যাট্রিন 99. **অন্যান্য**	
Q 1.3	যদি রিং স্লাব এর হয়, তাহলে কয়টি রিং আছে?	**মোট রিং ..... টি (আনুমানিক)**	
Q 1.4	যদি সেপটিক ট্যাঙ্ক থাকে তাহলে তার আয়তন কত?	1. দৈর্ঘ্য ____ ফিট 2. প্রস্থ ____ ফিট 3.উচ্চতা (গভিরতা) ____ ফিট 4. মোট আয়তন _____ফিট^3 (আনুমানিক)	
Q 1.5	সেপটিক ট্যাঙ্কে কয়টি চেম্বার আছে?	1. ১ টা চেম্বার 2. ২ টা চেম্বার 3. ৩ টা চেম্বার 4. জানিনা	
Q 1.6	আপনি কতদিন ধরে এই পায়খানাটি ব্যবহার করছেন?	1. **মোট _____মাস (আনুমানিক)**	
Q 1.7	মোট কতজন এই পায়খানাটি ব্যবহার করছে?	মোট_____জন (আনুমানিক)	
Q 1.8	আপনার পায়খানাটি রক্ষনাবেক্ষন/পরিস্কার করে কে?	1. নিজেই করি 2. কেয়ারটেকার করে 99. অন্যান্য (উল্লেখ করুন)	
Q 1.9	পায়খানা রক্ষনাবেক্ষন/পরিস্কার করার জন্য আপনি কি টাকা খরচ করেন?	1. হ্যাঁ 2. না	
Q 1.10	**যদি আপনি টাকা খরচ করেন, তাহলে প্রতি মাসে গড়ে কত টাকা খরচ করেন?**	**মোট _____ টাকা (আনুমানিক)**	**কমিউনিটির ক্ষেত্রে মোট খরচ আসবে**

2.0 Existing Emptying Practices

	Questions	Types of coding	Skip
Q 2.1	পিট/সেপটিক ট্যাঙ্ক কখনও পরিষ্কার করেছেন?	1. হ্যাঁ	**চলবে**
		2. না	**প্রশ্ন**
Q 2.2	কতদিন পর পর আপনার পিট/সেপটিক ট্যাঙ্ক পরিষ্কার করেন বা করেছেন?	1. ৩-৫ মাস	
		2. ৬-৮ মাস	
		3. ১ বছর	
		4. ২ বছর	
		5. পূর্ণ হয়ে গেলে	
		99. অন্যান্য (উল্লেখ করুন)	
Q 2.3	আপনার টয়লেটের পিট/ সেপটিক ট্যাঙ্ক পরিষ্কারের সেবা কে প্রদান করছে?	1. পৌরসভা	
		2. সিটি কর্পোরেশন	
		3. CBO/NGO	
		4. সুইপার	
		99. অন্যান্য (উল্লেখ করুন)	
Q 2.4	পিট/সেপটিক ট্যাঙ্ক পরিষ্কারের জন্য কোন সময়টা আপনি পছন্দ করেন?	1. দিনের বেলা	
		2. রাতের বেলা	
		3. যে কোন সময়/ কোন পছন্দ নেই	
		99. অন্যান্য (উল্লেখ করুন)	
Q 2.5	যদি আপনি রাতের বেলা পছন্দ করেন, তাহলে কেন করেন?	1. খুব দুর্গন্ধ ছড়ায়	
		2. যে কোন জায়গায় ফেলা যায়	
		3. রাতের বেলা পায়খানা কম ব্যবহার হয়	
		4. পরিষ্কার করতে অনেক সময় লাগে	
		99. অন্যান্য (উল্লেখ করুন)	
Q 2.6	পিট/সেপটিক ট্যাঙ্ক পরিষ্কারের জন্য কোন ঋতু আপনি পছন্দ করেন?	1. গ্রীষ্মকাল (গরমকাল)	
		2. শীতকাল	
		3. বর্ষাকাল	
		4. যে কোন ঋতু/ কোন পছন্দ নেই	
Q 2.7	ঐ ঋতু পছন্দ করার কারন টা বলবেন কি?		
Q 2.8	অন্যান্য প্রতিষ্ঠান সাধারনত কিভাবে তাদের পিট/সেপটিক ট্যাঙ্ক পরিষ্কার করে?	1. যন্ত্রপাতি/ ভ্যাকুটেগ ব্যবহার করে	
		2. ম্যানুয়াল পদ্ধতিতে	
		99. **অন্যান্য (উল্লেখ করুন)**	

3.0 Accessibility & Availability of emptying services

	Questions	Types of coding	Skip
Q 3.1	পিট/সেপটিক ট্যাঙ্ক পরিষ্কারের সেবা নিতে হলে আপনাকে কি করতে হয়? (উত্তর একাধিক হতে পারে)	1. অফিসে গিয়ে মৌখিকভাবে বললেই হয় 2. নির্ধারিত ফর্ম পুরন করে আবেদন করতে হয় 3. সার্ভিস চার্জ আগেই পরিশোধ করতে হয় **99.** অন্যান্য (উল্লেখ করুন)	
Q 3.2	জানানোর পর সেবা পেতে কতদিন লাগে?	_____ দিন	
Q 3.3	আপনার মতে, জানানোর পর কত দিনের মধ্যে এই সেবা পাওয়া উচিত/ আপনি কত দিনের মধ্যে এই সেবা পেতে চান?	_____ দিন	
Q 3.4	পিট/সেপটিক ট্যাঙ্ক পরিষ্কারের সেবা নিতে আপনি কি কোন সমস্যার সম্মুখীন হয়েছেন?	1. হ্যাঁ 2. না	
Q 3.5	যদি হ্যাঁ হয়, কি কি সমস্যার সম্মুখীন হয়েছেন? (একাধিক উত্তর হতে পারে)	1. অনেক বেশি খরচ 2. সহজে (সময়মত) পাওয়া যায় না 3. জরুরি মুহূর্তে সেবা পাওয়া যায় না 4. পিট/ট্যাঙ্ক পুরোপুরি পরিষ্কার করে না 5. অনেক বেশি বকশিস চায় 6. টাকা পরিশোধের সিস্টেমটা ভাল না 7. রাস্তা সরু, গাড়ি আসতে পারেনা **99.** অন্যান্য (উল্লেখ করুন)	
Q 3.6	গড়ে পিট/সেপটিক ট্যাঙ্ক পরিষ্কার করতে সাধারনত কতক্ষণ সময় লাগে?	পিট _____ ঘণ্টা সেপটিক ট্যাঙ্ক _____ ঘণ্টা	
Q 3.7	পিট/সেপটিক ট্যাঙ্ক পরিষ্কারের সেবা সম্পর্কে আপনি কোথা থেকে জেনেছেন?	1. পৌরসভা 2. সিটি কর্পোরেশন 3. NGO 4. বন্ধু-বান্ধব/আত্মীয় 5. প্রতিবেশি **99.** অন্যান্য (উল্লেখ করুন)	
Q 3.8	ভ্যাকুট্যাগ দিয়ে আপনি কতদিন আগে প্রথম পরিষ্কারের কাজ করেছেন?		
Q 3.9	ভ্যাকুট্যাগের সেবার সুবিধা গুলো কি কি? (একাধিক উত্তর হতে পারে)	1. পরিবেশ দূষণ কমানোর জন্য 2. স্বাস্থ্যসম্মত উপায়ে পরিষ্কার করার জন্য (স্বাস্থ্যের কথা ভেবে) 3. কম খরচে সেবা পাওয়া যায় 4. কম সময়ে (তাড়াতাড়ি) পরিষ্কার করা যায় 5. প্রতিবেশীরা সবাই নিচ্ছে তাই **99. অন্যান্য**	

4.0 Price/ Cost of Emptying Services

	Questions	Types of coding	Skip
Q 4.1	পিট/সেপটিক ট্যাঙ্ক পরিষ্কার করার জন্য আপনি কত টাকা ব্যয় করেছেন?	<table><tr><td></td><td>ভ্যাকুট্যাগ দিয়ে</td><td>সুইপার দিয়ে (আগের)</td></tr><tr><td>**1.** আগে জমা দিয়েছেন/চুক্তি করেছেন</td><td></td><td></td></tr><tr><td>2. অন্যান্য উপকরন (কেরোসিন, ঝাড়ু, ইত্যাদি)</td><td></td><td></td></tr><tr><td>3. বকশিস</td><td></td><td></td></tr><tr><td>4. অন্যান্য খরচ (যদি থাকে)</td><td></td><td></td></tr><tr><td>মোট</td><td></td><td></td></tr></table>	
Q 4.2	পরিষ্কারের ফী কিভাবে নির্ধারিত হয়েছে?	1. পিট/সেপটিক ট্যাঙ্কের সাইজ অনুযায়ী 2. গাড়ির প্রতিটি ট্রিপ অনুযায়ী 3. পিট/সেপটিক এঁর জন্য নির্দিষ্ট ফী আছে **99.** অন্যান্য (উল্লেখ করুন)	
Q 4.2.1	আপনার পিট/ সেপটিক ট্যাঙ্ক পরিষ্কার করতে যে ভ্যাকুট্যাগ এসেছিল তার সাইজ ও কয়টি ট্রিপ লেগেছিল?	সাইজ (লিটার) / ট্রিপ	
Q 4.3	আপনি কিভাবে টাকা পরিশোধ করেছেন?	1. নগদ 2. ব্যাংকের মাধ্যমে 3. মোবাইল বাঙ্কিং/বিকাশ 99. অন্যান্য (উল্লেখ করুন)	
Q 4.4	আপনি এখন যেভাবে টাকা পরিশোধ করছেন সেটা কি সব চেয়ে ভাল ও সহজ উপায়?	1. হ্যাঁ 2. না	
Q 4.5	যদি না হয়, তাহলে কিভাবে টাকা পরিশোধ করলে সবচেয়ে সহজ হবে বলে আপনার মনে হয়?		
Q 4.6	পরিষ্কারের জন্য আপনি যে ফী প্রদান করছেন, সেটা সম্পর্কে আপনার মতামত কি?	1. এটা অনেক কম 2. এটাই ঠিক আছে 3. একটু বেশি মনে হয় 4. অনেক বেশি	
Q 4.7	**বর্তমানে যে সেবা আপনি পাচ্ছেন, তার জন্য আপনি কত টাকা খরচ করতে আগ্রহী?**		

5.0 Tax for Service

	Questions	Types of coding	Skip
Q 5.1	পৌরসভা/সিটি কর্পোরেশনকে পরিষ্কারের সেবার জন্য আপনি কি কোন ফী/ট্যাক্স প্রদান করেন?	1. হ্যাঁ 2. না	
Q 5.2	যদি দিয়ে থাকেন, তাহলে বছরে কত টাকা দিচ্ছেন?		
Q 5.3	যদি না দিয়ে থাকেন, তাহলে আপনি কি ফী/ট্যাক্স প্রদান করতে আগ্রহী?	1. হ্যাঁ 2. না	
Q 5.4	যদি আগ্রহী হন, তাহলে কত টাকা দিতে আগ্রহী?		

6.0 Willingness to Pay

আপনার প্রত্যাশিত সেবা সম্পর্কে বলুনঃ

	Questions	Types of coding	Skip
Q 6.1	কত দিনের মধ্যে সেবা পেতে চান?	1. যেদিন জানাবো সেই দিন 2. জানানোর ১ দিনের মধ্যে 3. জানানোর ২ দিনের মধ্যে 99. অন্যান্য (দিন উল্লেখ করুন)	
Q 6.2	কোন সময় সেবাটি পেতে চান?	1. দিনের বেলা 2. রাতের বেলা 3. যখনই প্রয়োজন	
Q 6.3	সেবা পাওয়ার জন্য কিভাবে আবেদন করলে সবচেয়ে সুবিধা হয়?	1. অফিসে গিয়ে মৌখিকভাবে জানালে 2. আবেদনপত্র জমা দিলে 3. মোবাইল ফোনে জানালে 99. অন্যান্য	
Q 6.4	কিভাবে পরিষ্কারের ফী প্রদান করতে চান?	1. কাজ শেষে নগদ 2. ব্যাংকের মাধ্যমে প্রদান 99. অন্যান্য	
Q 6.5	কিভাবে টাকা পরিশোধ করতে চান?	1. এককালীন (একেবারে) 2. মাসিক কিস্তিতে 99. অন্যান্য	
Q 6.6	আপনার বাছাইকৃত উপরের সব সুবিধা বিবেচনে করে, আপনি পরিষ্কারের সেবার জন্য কত টাকা পর্যন্ত ব্যয় করতে চান?		
Q 6.7	বর্তমানে টয়লেটের ময়লা ব্যবস্থাপনায় পৌরসভা যে সেবা দিচ্ছে তাতে আপনি খুশি না অখুশি?	1. অনেক বেশি খুশি 2. মোটামুটি খুশি 3. খুশিও না আবার অখুশিও না 4. মোটামুটি অখুশি 5. অনেক বেশি অখুশি **99. অন্যান্য (উল্লেখ করুন)**	

Questionnaire for Institution/market/hospital Survey (Non-User)

আমার নাম .....। আমি NewVision Solutions Ltd. থেকে এসেছি। বর্তমানে প্রতিষ্ঠানটি আপনার এলাকাতে পায়খানার বর্জ্য ব্যবস্থাপনার উপর একটি জরিপ করছে । এই বিষয়ে আমরা আপনার মূল্যবান মতামত জানতে আগ্রহী। আমরা নিশ্চিত করছি যে, প্রাপ্ত তথ্য শুধুমাত্র গবেষণার কাজে ব্যবহার করা হবে এবং এই বিষয়ে সম্পূর্ণ গোপনীয়তা রক্ষা করা হবে।

নির্দেশনাঃ

- যারা সুইপার দিয়ে পরিষ্কার করেছে (কখনও ভ্যাকুট্যাগ ব্যবহার করেনি) শুধু তাদের কে ইন্টারভিউ করতে হবে
- প্রতিষ্ঠানের প্রধানকে ইন্টার্ভিউ করতে হবে

a. তারিখঃ ____/____/2018

শুরুর সময়	মিনিট
শেষের সময়	মিনিট

b. প্রশ্নপত্রের সিরিয়াল নম্বরঃ

c. এলাকাঃ

1. কুষ্টিয়া	2. ঝিনাইদাহ	3. খুলনা	4. যশোর	5. বেনাপোল

d. উত্তরদাতার নামঃ _____ e. উত্তরদাতার পদবীঃ

f. প্রতিষ্ঠানের নামঃ

g. প্রতিষ্ঠানের ধরনঃ

1	**2**	**3**	**4**	**99**
শিক্ষা প্রতিষ্ঠান (স্কুল/কলেজ/মাদ্রাসা)	মার্কেট (হাঁট/ বাঁজার/ শপিং মল)	সরকারি/বেসরকারি প্রতিষ্ঠান	হাস্পাতাল/ক্লিনিক	অন্যান্য

h. মোবাইল নংঃ

0	1									

i. ঠিকানাঃ

ওয়ার্ড নং	পাড়া/বস্তির নাম	রোড নং	বাড়ি নং	

1.0 Types of Latrine, Ownership and O&M1b

	Questions	Types of coding	Skip
Q 1.1	আপনার প্রতিষ্ঠানে কয়টি ল্যাট্রিন আছে?		
Q 1.2	ল্যাট্রিন/পায়খানাগুলো কেমন? (নিজে ল্যাট্রিন/পায়খানা দেখে লিখুন)	1 পিট ল্যাট্রিন (রিং স্লাব) 1. 1 সিঙ্গেল পিট ল্যাট্রিন (একটা পিট) 1. 2 ডুয়েল পিট ল্যাট্রিন (২ টা পিট) 2 সেপটিক ট্যাঙ্ক সহ ল্যাট্রিন 99. অন্যান্য	
Q 1.3	যদি রিং স্লাব এর হয়, তাহলে কয়টি রিং আছে?	মোট রিং..... টি (আনুমানিক)	
Q 1.4	যদি সেপটিক ট্যাঙ্ক থাকে তাহলে তার আয়তন কত?	1. দৈর্ঘ্য ____ ফিট 2. প্রস্থ ____ ফিট 3.উচ্চতা (গভিরতা) ____ ফিট 4. মোট আয়তন _____ফিট৩ (আনুমানিক)	
Q 1.5	আপনার সেপটিক ট্যাঙ্কে কয়টি চেম্বার আছে?	1. ১ টা চেম্বার 2. ২ টা চেম্বার 3. ৩ টা চেম্বার 4. জানিনা	
Q 1.6	আপনি কতদিন ধরে এই পায়খানাটি ব্যবহার করছেন?	**1.** মোট _____ মাস **(আনুমানিক)**	
Q 1.7	মোট কতজন এই পায়খানাটি ব্যবহার করছে?	মোট _____জন (আনুমানিক)	
Q 1.8	আপনার পায়খানাটি রক্ষনাবেক্ষন/ পরিস্কার করে কে?	1. নিজেই করি 2. কেয়ারটেকার করে **99.** অন্যান্য (উল্লেখ করুন)	
Q 1.9	পায়খানা রক্ষনাবেক্ষন/পরিস্কার করার জন্য আপনি কি টাকা খরচ করেন?	1. হ্যাঁ 2. না	
Q 1.10	যদি আপনি টাকা খরচ করেন, তাহলে প্রতি মাসে গড়ে কত টাকা খরচ করেন?	মোট _____ টাকা (আনুমানিক)	

2.0 Existing Emptying Practices

	Questions	Types of coding	Skip
Q 2.1	টয়লেটের পিট/সেপটিক ট্যাঙ্ক কখনও পরিষ্কার করেছেন?	1. হ্যাঁ 2. না	
Q 2.2	কতদিন পর পর আপনার পিট/সেপটিক ট্যাঙ্ক পরিষ্কার করেন বা করেছেন?	1. ৩-৫ মাস 2. ৬-৮ মাস 3. ১ বছর 4. ২ বছর 5. পূর্ণ হয়ে গেলে **99.** অন্যান্য (উল্লেখ করুন)	
Q 2.3	আপনার টয়লেটের পিট/সেপটিক ট্যাঙ্ক পরিষ্কারের সেবা কে প্রদান করছে?	1. পৌরসভা 2. সিটি কর্পোরেশন 3. CBO/NGO 4. সুইপার **99.** অন্যান্য (উল্লেখ করুন)	
Q 2.4	পিট/সেপটিক ট্যাঙ্ক পরিষ্কারের জন্য কোন সময়টা আপনি পছন্দ করেন?	1. দিনের বেলা 2. রাতের বেলা 3. যে কোন সময়/ কোন পছন্দ নেই **99.** অন্যান্য (উল্লেখ করুন)	
Q 2.5	যদি আপনি রাতের বেলা পছন্দ করেন, তাহলে কেন করেন?	1. খুব দুর্গন্ধ ছড়ায় 2. যে কোন জায়গায় ফেলা যায় 3. রাতের বেলা পায়খানা কম ব্যবহার হয় 4. পরিষ্কার করতে অনেক সময় লাগে **99.** অন্যান্য (উল্লেখ করুন)	
Q 2.6	পিট/সেপটিক ট্যাঙ্ক পরিষ্কারের জন্য কোন ঋতু আপনি পছন্দ করেন?	1. গ্রীষ্মকাল (গরমকাল) 2. শীতকাল 3. বর্ষাকাল 4. যে কোন ঋতু/কোন পছন্দ নেই	
Q 2.7	ঐ ঋতু পছন্দ করার কারন টা বলবেন কি?		
Q 2.8	অন্যান্য প্রতিষ্ঠান সাধারনত কিভাবে তাদের পিট/সেপটিক ট্যাঙ্ক পরিষ্কার করে?	1. যন্ত্রপাতি/ভ্যাকুটেগ ব্যবহার করে 2. ম্যানুয়াল পদ্ধতিতে 99. অন্যান্য (উল্লেখ করুন)	

3.0 Accessibility & Availability of emptying services

	Questions	Types of coding	Skip
Q 3.1	পিট/সেপটিক ট্যাঙ্ক পরিষ্কারের সেবা নিতে হলে আপনাকে কি করতে হয়? (উত্তর একাধিক হতে পারে)	1. অফিসে গিয়ে বলে আসতে হয় 2. ফোন করে সুইপারকে জানাতে হয় 3. সুইপার কলোনিতে গিয়ে বলে আসতে হয়/সাথে করে নিয়ে আসতে হয় **99.** অন্যান্য (উল্লেখ করুন)	
Q 3.2	জানানোর পর সেবা পেতে কতদিন লাগে?	____ দিন	
Q 3.3	আপনার মতে, জানানোর পর কত দিনের মধ্যে এই সেবা পাওয়া উচিত/ আপনি কত দিনের মধ্যে এই সেবা পেতে চান?	____ দিন	
Q 3.4	পিট/সেপটিক ট্যাঙ্ক পরিষ্কারের সেবা নিতে আপনি কি কোন সমস্যার সম্মুখীন হয়েছেন?	1. হ্যাঁ 2. না	
Q 3.5	যদি হ্যাঁ হয়, কি কি সমস্যার সম্মুখীন হয়েছেন? (একাধিক উত্তর হতে পারে)	1. অনেক বেশি টাকা চায় 2. সহজে (সময়মত) পাওয়া যায় না 3. জরুরি মুহূর্তে সেবা পাওয়া যায় না 4. পিট/ট্যাঙ্ক পুরোপুরি পরিষ্কার করে না 5. অনেক বেশি বকশিস চায় 6. খুব দুর্গন্ধ ছড়ায় 7. পরিবেশ দুষিত হয় **99.** অন্যান্য (উল্লেখ করুন)	
Q 3.6	গড়ে পিট/সেপটিক ট্যাঙ্ক পরিষ্কার করতে সাধারনত কতক্ষণ সময় লাগে?	পিট ____ ঘণ্টা সেপটিক ট্যাঙ্ক ____ ঘণ্টা	
Q 3.7	আপনি কি ভ্যাকুট্যাগ দিয়ে পরিষ্কারের কথা শুনেছেন?	1. হ্যাঁ 2. না (প্রশ্ন Q 3.12 তে যান)	
Q 3.8	যদি শুনে থাকেন, তাহলে বলতে পারেন এই সেবা কারা দিচ্ছে?	1. পৌরসভা 2. সিটি কর্পোরেশন 3. NGO **99.** অন্যান্য (উল্লেখ করুন)	
Q 3.9	ভ্যাকুট্যাগ দিয়ে পরিষ্কারের সেবা পেতে কত দিন লাগে?	দিন	
Q 3.10	ভ্যাকুট্যাগ দিয়ে পরিষ্কারের সুবিধা গুলো কি কি? (একাধিক উত্তর হতে পারে)	1. পরিবেশ দূষণ কম হয় (দুর্গন্ধ হয় না) 2. স্বাস্থ্যসম্মত উপায়ে পরিষ্কার করা হয় (স্বাস্থ্যের কথা ভেবে) 3. কম খরচে সেবা পাওয়া যায় 4. কম সময়ে (তাড়াতাড়ি) পরিষ্কার করা যায় **99.** অন্যান্য	

Q 3.11	ভ্যাকুট্যাগ দিয়ে পরিষ্কার করতে কত টাকা লাগে?		
Q 3.12	আপনি কেন ভ্যাকুট্যাগ দিয়ে পরিষ্কার করান না? (একাধিক উত্তর হতে পারে)	1. আমার এলাকায় এই সেবা নেই 2. সেবা পেতে অনেক বেশি সময় লাগে 3. আবেদন করা/টাকা জমা দেয়াটা ঝামেলা মনে হয় 4. অনেক বেশি টাকা লাগে 5. আমার বাসা পর্যন্ত পাইপ আসেনা/রাস্তা সরু **99.** অন্যান্য (উল্লেখ করুন)	
Q 3.13	আপনি কি পরবর্তীতে ভ্যাকুট্যাগ দিয়ে পরিষ্কার করতে চান?	1. হ্যাঁ **2.** না	

4.0 Price/Cost of emptying services

	Questions	Types of coding	Skip
Q 4.1	পিট/সেপটিক ট্যাঙ্ক পরিষ্কার করার জন্য আপনি কত টাকা ব্যয় করেছেন?		

	সুইপার দিয়ে
1. চুক্তি করেছেন	
2. অন্যান্য উপকরন (কেরোসিন, ঝাড়ু, ইত্যাদি)	
3. বকশিস	
4. অন্যান্য খরচ (যদি থাকে)	
মোট	

Q 4.1.1	পিট/সেপটিক ট্যাঙ্ক পরিষ্কার করার জন্য কতজন সুইপার এসেছিল?		
Q 4.2	পরিষ্কারের ফী কিভাবে নির্ধারিত হয়েছে?	1. পিট/সেপটিক ট্যাঙ্কের সাইজ অনুযায়ী 2. পিট/সেপটিক ট্যাঙ্কের অবস্থান অনুযায়ী **99.** অন্যান্য (উল্লেখ করুন)	
Q 4.3	আপনি কিভাবে টাকা পরিশোধ করেছেন?	1. নগদ 2. মোবাইল বাঙ্কিং/বিকাশ 99. অন্যান্য (উল্লেখ করুন)	
Q 4.4	আপনি এখন যেভাবে টাকা পরিশোধ করছেন সেটা কি সব চেয়ে ভাল ও সহজ উপায়?	1. হ্যাঁ 2. না	
Q 4.5	যদি না হয়, তাহলে কিভাবে টাকা পরিশোধ করলে সবচেয়ে সহজ হবে বলে আপনার মনে হয়?		
Q 4.6	পরিষ্কারের জন্য আপনি যে ফী প্রদান করছেন, সেটা সম্পর্কে আপনার মতামত কি?	1. এটা অনেক কম 2. এটাই ঠিক আছে 3. একটু বেশি মনে হয় 4. অনেক বেশি	
Q 4.7	বর্তমানে যে সেবা আপনি পাচ্ছেন, তার জন্য আপনি কত টাকা খরচ করতে আগ্রহী?		

5.0 Tax for Service

	Questions	Types of coding	Skip
Q 5.1	পৌরসভা/সিটি কর্পোরেশনকে পরিষ্কারের সেবার জন্য আপনি কি কোন ফী/ট্যাক্স প্রদান করেন?	1. হ্যাঁ 2. না	
Q 5.2	যদি দিয়ে থাকেন, তাহলে বছরে কত টাকা দিচ্ছেন?		
Q 5.3	যদি না দিয়ে থাকেন, তাহলে আপনি কি ফী/ট্যাক্স প্রদান করতে আগ্রহী?	1. হ্যাঁ 2. না	
Q 5.4	যদি আগ্রহী হন, তাহলে কত টাকা দিতে আগ্রহী?		

6.0 Willingness to Pay

আপনি যদি ভ্যাকুট্যাগ দিয়ে সেবা নেন, আপনার প্রত্যাশিত সেবা সম্পর্কে বলুনঃ

	Questions	Types of coding	Skip
Q 6.1	কত দিনের মধ্যে সেবা পেতে চান?	1. যেদিন জানাবো সেই দিন 2. জানানোর ১ দিনের মধ্যে 3. জানানোর ২ দিনের মধ্যে 99. অন্যান্য (দিন উল্লেখ করুন)	
Q 6.2	কোন সময় সেবাটি পেতে চান?	1. দিনের বেলা 2. রাতের বেলা 3. যখনই প্রয়োজন	
Q 6.3	সেবা পাওয়ার জন্য কিভাবে আবেদন করলে সবচেয়ে সুবিধা হয়?	1. অফিসে গিয়ে মৌখিকভাবে জানালে 2. আবেদনপত্র জমা দিলে 3. মোবাইল ফোনে জানালে 99. অন্যান্য	
Q 6.4	কিভাবে পরিষ্কারের ফী প্রদান করতে চান?	1. কাজ শেষে নগদ 2. ব্যাংকের মাধ্যমে প্রদান 99. অন্যান্য	
Q 6.5	কিভাবে টাকা পরিশোধ করতে চান?	1. এককালীন (একেবারে) 2. মাসিক কিস্তিতে 99. অন্যান্য	
Q 6.6	আপনার বাছাইকৃত উপরের সব সুবিধা বিবেচনে করে, আপনি পরিষ্কারের সেবার জন্য কত টাকা পর্যন্ত ব্যয় করতে চান?		
Q 6.7	বর্তমানে টয়লেটের ময়লা ব্যবস্থাপনায় পৌরসভা যে সেবা দিচ্ছে তাতে আপনি খুশি না অখুশি?	1. অনেক বেশি খুশি 2. মোটামুটি খুশি 3. খুশিও না আবার অখুশিও না 4. মোটামুটি অখুশি 5. অনেক বেশি অখুশি **99.** অন্যান্য (উল্লেখ করুন)