# **CHAPTER ONE**

# **INTRODUCTION**

Following the first visit where entrepreneurs had the opportunity to observe and understudy the three natural resource towns, the second visit was scheduled to afford entrepreneurs the an in-depth knowledge about how their problems they have chosen to address manifest themselves in the various community in order to inform their design and structuring of their solution. The visit was scheduled to take three days which is from Monday 5th – Wednesday 7th October.

I took off from Takoradi to Tarkwa early Monday morning and reached Tarkwa around 9:30am. The itinerary for my field visit is shown in Table 1 below.

***Table 1: Plan for Field Visit from 5th – 11th October, 2020***

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ACTIVITY** | | **DAYS** | | | | | | | **METHODOLOGY** | **PERMISSION** | **EXPECTED OUTPUTS** |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** |
| Community Entry at Asaman Kakraba, Ackon, Banso, Tamso Estate, Tarkwa-Na Aboso, Tamso, Ahwitieso, Akyempim, New Atuabo | |  |  |  |  |  |  |  | Pay courtesy call on opinion leaders in selected areas | Letter of Introduction from iCODE | Permission to undertake survey in selected community |
| Interview with Five Waste Management Companies | |  |  |  |  |  |  |  | Scheduled interview with four companies individually | Letter of Introduction from iCODE | Willingness to enroll on service and how best to integrate their operations into user design |
| * 2nd October * Komptan | * SEES * Quansah |
| Stakeholder Engagement with Environmental Health and Sanitation Unit | |  |  |  |  |  |  |  |  | Letter of Introduction from iCODE | Protocols for waste management in the District and willingness to subscribe to service |
| Interview with 150 households | |  |  |  |  |  |  |  | Schedule interview using FormBox. | Consent from interviewee | Response to Questionnaire |
| Interview 50 facility owners | |  |  |  |  |  |  |  | Schedule interview using FormBox. | Consent from interviewee | Response to Questionnaire |
| Interview with 150 households | |  |  |  |  |  |  |  | Schedule interview using FormBox. | Consent from interviewee | Response to Questionnaire |
| Interview 50 facility owners | |  |  |  |  |  |  |  | Schedule interview using FormBox. | Consent from interviewee | Response to Questionnaire |
| Interview with 150 households | |  |  |  |  |  |  |  | Schedule interview using FormBox. | Consent from interviewee | Response to Questionnaire |
| Interview 50 facility owners | |  |  |  |  |  |  |  | Schedule interview using FormBox. | Consent from interviewee | Response to Questionnaire |
| Interview with 150 households | |  |  |  |  |  |  |  | Schedule interview using FormBox. | Consent from interviewee | Response to Questionnaire |
| Interview 50 facility owners | |  |  |  |  |  |  |  | Schedule interview using FormBox. | Consent from interviewee | Response to Questionnaire |
| Interview with 150 households | |  |  |  |  |  |  |  | Schedule interview using FormBox. | Consent from interviewee | Response to Questionnaire |
| Interview 50 facility owners | |  |  |  |  |  |  |  | Schedule interview using FormBox. | Consent from interviewee | Response to Questionnaire |

## **Major Deviation From Plan**

* The 200 households scheduled to be interviewed daily could not be attained due to unfavourable weather conditions, resource constraints and saturation of information.
* Six communities (Tamso, Ahwitieso, Akyempim, Damang, New Atuabo and out of the ten planned communities were visited and interviewed due to time constraints.
* A total of 295 responses were obtained with presented details in the next chapter.

## **Methodology**

### ***Data Collection***

Data was collected using a survey. Households were asked questions by a guided questionnaire with multiple responses and open-ended questions that allowed respondents to openly express their thought on certain issues.

Observation was also done at various collection points and disposal points. Waste characterization was also done at 10 selected houses to know the forms of wastes which are dominant in their daily waste generation. This was achieved by sorting out their wastes and weighing them with a hanging scale.

Focused Group Discussion was used to source information from the five major waste management companies in Tarkwa as well as some tricycle riders.

Key informant interview were also conducted with the Environmental Health and Sanitation Unit at the Tarkwa Nsuaem Municipal Assembly.

### ***Data Analysis***

Data was analyzed using Excel and SPSS.

### ***Data Presentation***

Data was presented in tabular, pie charts and bar charts with cross tabulations of diffent variables such as income levels and waste management services. Also triangulations were also used to understand responses from different forms of respondents. Some instances where these were used include responses from waste management companies on why they are not able to pick waste up on time as against the satisfaction level of customers and households with waste management services.

Also, some information were presented in descriptions.

# **CHAPTER TWO**

# **DATA ANALYSIS AND PRESENTATION**

## **Meeting with Environmental Health and Sanitation Unit**

The entrepreneur sought to interact with the Environmental Health and Sanitation Unit (EHSU) to understand the present situation of waste management in the District. The meeting was also to lay a precedence for the implementation of the project since the EHSU will be our strategic partner in the execution of this project. The meeting was delayed a bit because the officer was having a meeting at the Municipal Assembly.

Response from the officer was very positive as he expressed his excitement with such a project and how it could help minimize the challenge with waste management that the municipality have faced in time past. He pledged his support for this project through:

* Setting aside a jurisdiction for piloting the project
* Supporting with the provision of waste bins for interested subscribers
* Teaming up with the Spatial Planning Department to get a place where waste recovery site where waste will be sorted and transitioned to authorized recyclers.

He added that the Assembly is making plans to set up an engineered-landfill site and will hope that the pilot proves successful so that upon scaling up to other locations, waste recovery could be done instead of the landfilling. He indicated that much education must be done for the various households on waste segregation since most people might find it so difficult a task. He indicated that there will be no turning back if we are to kick-start therefore, will require that I do a deeper thinking about the whole project and call on him anytime I need technical advice whatsoever.

## **Focused Group Discussion with Waste Management Companies**

Private Waste management companies in attendance were Komptan, 2nd October and SEES. They recounted a number of challenges they face which include:

* Logistics constraints that makes it difficult to work efficiently. They complained they do not have adequate vehicles to do pickups. Once they have a breakdown, they are not able to pick waste from customers
* Piles of waste at site that make them unable to pick more waste to landfills. This normally occurs in every three month after the site has been cleared.
* Customers loss of trust in their services because they are unable to pick waste as scheduled
* Difficulty to collect monthly fees because some of their customers might have traveled or gone to work.

## **Age Sex Distribution of Household Heads**

The entrepreneur sought to understand the age and sex distribution of household heads with the project area because of the strong effect that age has on fertility and family size which has a strong bearing amount of waste generated. Also, since major decisions are made by household heads, the entrepreneur believes that the findings of gender of household heads will also help in the positioning of the solution. Table 2.1 and Figure 2.1 below gives a detail presentation of the findings.

#### **Table 2.1: Age-sex distribution of Household Heads in Tarkwa**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Age Groups | Male | Percent | Female | Percent | Total | Percent |
| 20 - 24 | 6 | 2.0% | 3 | 1.0% | 9 | 3.1% |
| 25 - 29 | 15 | 5.1% | 8 | 2.7% | 23 | 7.8% |
| 30 - 34 | 21 | 7.1% | 12 | 4.1% | 33 | 11.2% |
| 35 - 39 | 39 | 13.2% | 16 | 5.4% | 55 | 18.6% |
| 40 - 44 | 39 | 13.2% | 24 | 8.1% | 63 | 21.4% |
| 45 - 49 | 46 | 15.6% | 13 | 4.4% | 59 | 20.0% |
| 50 - 54 | 18 | 6.1% | 7 | 2.4% | 25 | 8.5% |
| 55 - 59 | 7 | 2.4% | 6 | 2.0% | 13 | 4.4% |
| 60+ | 10 | 3.4% | 5 | 1.7% | 15 | 5.1% |
| Total | 201 | 68.1% | 94 | 31.9% | 295 | 100.0% |

Source: Entrepreneur’s Market Research, October, 2020

#### **Figure 2.1: Age Sex Structure of Household heads**

Source: Entrepreneur’s Market Research, October, 2020

**Implication**

* Households were headed by males in all age cohorts. At households were females were heads, they were mostly workers who stay elsewhere but worked in Tarkwa and singles.
* Most households heads fell within the ages of 20 – 44. This is a youthful population with the propensity of increasing household sizes give a higher fertility rate.
* Males take full decisions for provision of various services and needs for their households including waste management services however females are responsible of managing household wastes.
* The service will blend much sensitization on waste management for both sexes and have women well integrated into its delivery.

## **Occupational Status and Income Level of Household Heads**

The occupational status and income level was of importance to the entrepreneur because this gives a clearer understanding of the purchasing power of customers and how best to position the cost of waste management service for them. The findings from the survey is presented in Table 2.2 and Figure 2.2 below:

#### **Table 2.2: Occupational Status and Income Levels of Household Heads**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Occupation | 100 - 300 | 301 - 500 | 501 - 700 | 701 - 1000 | 1000+ | Below 100 | Total |
| Agriculture | 14 | 21 | 25 | 16 | 10 | 1 | 87 |
| Miner | 0 | 0 | 0 | 0 | 61 | 0 | 61 |
| Commerce | 8 | 12 | 16 | 6 | 18 | 0 | 60 |
| Service | 3 | 6 | 3 | 9 | 35 | 0 | 56 |
| Unemployed | 13 | 0 | 0 | 0 | 0 | 18 | 31 |
| Total | 38 | 39 | 44 | 31 | 124 | 19 | 295 |

Source: Entrepreneur’s Market Research, October, 2020

#### Figure 2.2: Occupational Status and Income Levels of Household Heads

Source: Entrepreneur’s Market Research, October, 2020

**Implication**

* The high rate of employment in Tarkwa with fairly middle to high income occupational status of household heads will make the business thrive.
* Prices will be moderately set to afford the many people the opportunity to be engaged in the service.

## **Access to Smartphones**

The entrepreneur sought information about the type of phones that were used by the various respondents. This was to better understand whether a mobile-based app will be much suitable for customers or not. The response from various households according to their size and the number of phones available to them are presented below:

#### **Table 2.3: Access to Smartphones by households**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Household Size | | Number of People with Smartphone | | | | | | | | Total |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |  |
| 1 - 3 | Count | 22 | 18 | 2 | 0 | 0 | 0 | 0 | 0 | 42 |
| % of Total | 7.5% | 6.1% | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 14.2% |
| 4 - 6 | Count | 15 | 28 | 69 | 31 | 14 | 7 | 5 | 0 | 169 |
| % of Total | 5.1% | 9.5% | 23.4% | 10.5% | 4.7% | 2.4% | 1.7% | 0.0% | 57.3% |
| 7+ | Count | 2 | 10 | 14 | 22 | 15 | 13 | 5 | 3 | 84 |
| % of Total | 0.7% | 3.4% | 4.7% | 7.5% | 5.1% | 4.4% | 1.7% | 1.0% | 28.5% |
| Total | Count | 39 | 56 | 85 | 53 | 29 | 20 | 10 | 3 | 295 |
| % of Total | 13.2% | 19.0% | 28.8% | 18.0% | 9.8% | 6.8% | 3.4% | 1.0% | 100.0% |

Source: Entrepreneur’s Market Research, October, 2020

#### **Figure 2.3: Access to Smartphones by households**

Source: Entrepreneur’s Market Research, October, 2020

**Implication**

* Access to smartphones was very low at households with size ranging between 1 – 3 with some with having no access at all.
* Households with size above 4 had higher probabilities of a member in the household owning a smartphone.
* Access to smartphone was considerably lower as a result of the correlation that exist between income levels and access to ostentatious goods.
* The use of mobile based app will deny many households access to the service.

## **Access to Feature Phones**

The entrepreneur sought information about the type of phones that were used by the various respondents. This was to better understand whether a mobile-based app will be much suitable for customers or not. The response from various households according to their size and the number of phones available to them are presented below:

#### **Table 2.4: Access to Feature Phones by households**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Household Size | | Number of People with Feature Phone | | | | | | Total |
| 0 | 1 | 2 | 3 | 4 | 5 |  |
| 1 - 3 | Count | 11 | 26 | 5 | 0 | 0 | 0 | 42 |
| % of Total | 3.7% | 8.8% | 1.7% | 0.0% | 0.0% | 0.0% | 14.2% |
| 4 - 6 | Count | 65 | 49 | 43 | 12 | 0 | 0 | 169 |
| % of Total | 22.0% | 16.6% | 14.6% | 4.1% | 0.0% | 0.0% | 57.3% |
| 7+ | Count | 15 | 14 | 29 | 14 | 9 | 3 | 84 |
| % of Total | 5.1% | 4.7% | 9.8% | 4.7% | 3.1% | 1.0% | 28.5% |
| Total | Count | 91 | 89 | 77 | 26 | 9 | 3 | 295 |
| % of Total | 30.8% | 30.2% | 26.1% | 8.8% | 3.1% | 1.0% | 100.0% |

Source: Entrepreneur’s Market Research, October, 2020

#### **Figure 2.4: Access to Feature Phones by households**

Source: Entrepreneur’s Market Research, October, 2020

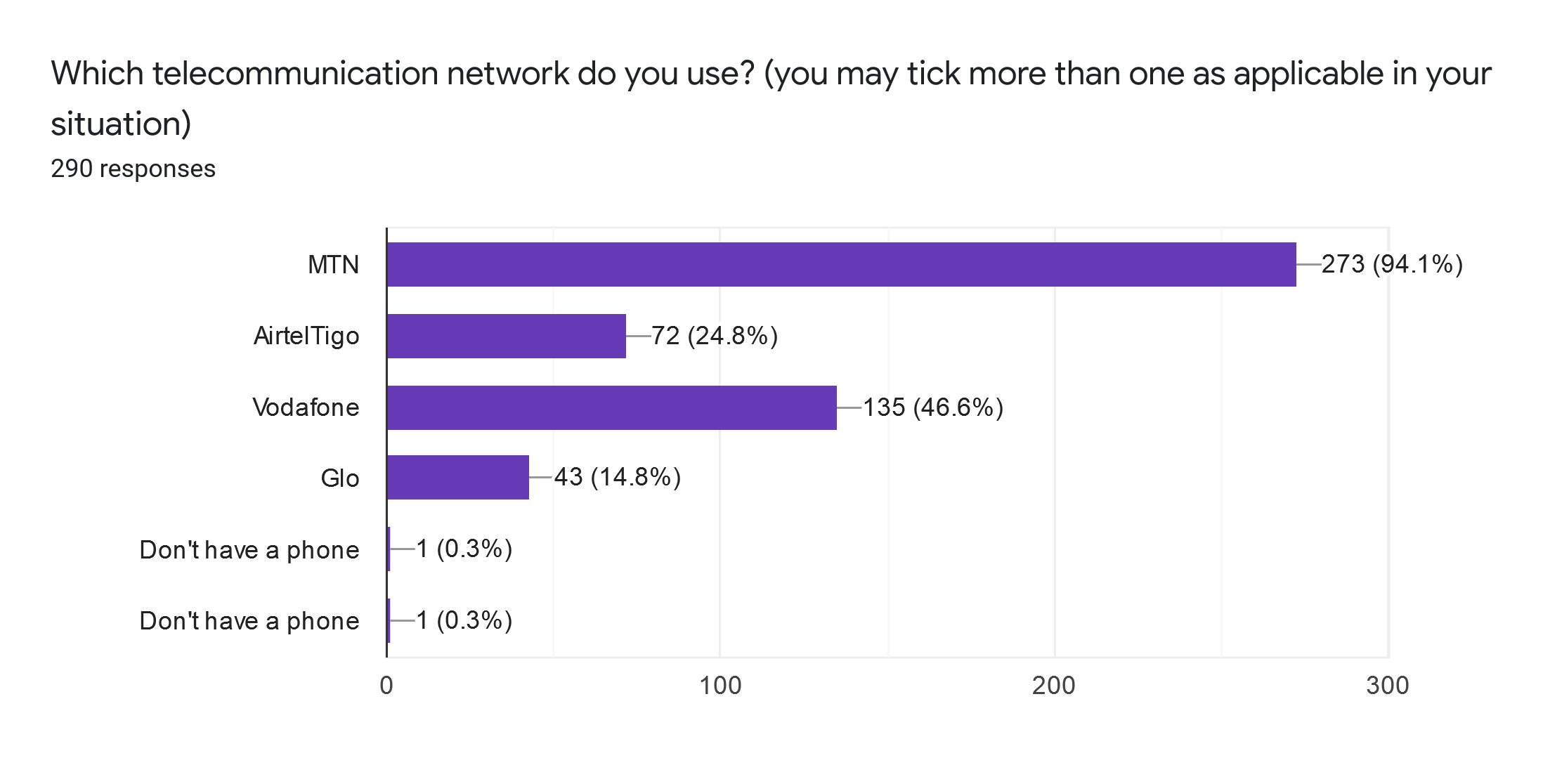
**Implication**

* Access to smartphones was very high at households with size ranging between 1 – 3 with most households with access.
* Access to feature phones was considerably higher because it is economical and strong for usage by farmers.
* The use of USSD for the service will improve access.

## **Telecommunication Network Used**

The most widely used network was MTN. However almost all users used it together with other networks such as AirtelTigo and Vodafone. They use it intermittently because they had other family and friend who used those networks and will love to reach out to them through those medium. Glo users used the network because of their very affordable internet offers. The table below shows the findings from the survey:

#### **Figure 2.5: Telecommunication Networks Used by Respondents**



Source: Entrepreneur’s Market Research, October, 2020

#### **Table 2.5: Telecommunication Networks Used by Respondents**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Network** | | **Frequency** | | **Percent** | |
| MTN | 2 | | .7 | |
| AirtelTigo, Glo | 2 | | .7 | |
| AirtelTigo, Vodafone | 5 | | 1.7 | |
| Don't have a phone | 1 | | .3 | |
| Don't have a phone | 1 | | .3 | |
| Glo | 1 | | .3 | |
| MTN | 68 | | 23.1 | |
| MTN, AirtelTigo | 50 | | 16.9 | |
| MTN, AirtelTigo, Glo | 5 | | 1.7 | |
| MTN, AirtelTigo, Vodafone | 10 | | 3.4 | |
| MTN, Glo | 28 | | 9.5 | |
| MTN, Vodafone | 108 | | 36.6 | |
| MTN, Vodafone, Glo | 7 | | 2.4 | |
| Vodafone | 7 | | 2.4 | |
| Total | 295 | | 100.0 | |

Source: Entrepreneur’s Market Research, October, 2020

**Implication**

* MTN was the most used network among respondents
* Some used MTN together with other networks especially Vodafone and AitelTigo
* MTN API will be integrated to the USSD since it is the most dominant network among households.

## **Strength of Network Coverage**

The strength of Network Coverage is most likely to affect the delivery of the service since it will mostly run on network connectivity. In this light, the entrepreneur sought to understand the strength of network coverage in the six different study areas to help him design a tailored solution that will be well beneficial to the customers. In so doing, the following results were found:

#### **Table 2.6: Strength of Network Coverage in Study Areas**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Area of Residence | | Strength of Network Coverage | | | | | Total |
| Very Bad | Bad | Good | Very Good | Excellent |  |
| Ahwitieso | Count | 0 | 3 | 22 | 25 | 0 | 50 |
| % of Total | 0.0% | 1.0% | 7.5% | 8.5% | 0.0% | 16.9% |
| Akyempim | Count | 0 | 1 | 14 | 19 | 16 | 50 |
| % of Total | 0.0% | 0.3% | 4.7% | 6.4% | 5.4% | 16.9% |
| Banso | Count | 0 | 0 | 0 | 29 | 21 | 50 |
| % of Total | 0.0% | 0.0% | 0.0% | 9.8% | 7.1% | 16.9% |
| Damang | Count | 0 | 3 | 11 | 24 | 12 | 50 |
| % of Total | 0.0% | 1.0% | 3.7% | 8.1% | 4.1% | 16.9% |
| New Atuabo | Count | 1 | 1 | 19 | 20 | 4 | 45 |
| % of Total | 0.3% | 0.3% | 6.4% | 6.8% | 1.4% | 15.3% |
| Tamso | Count | 2 | 1 | 24 | 21 | 2 | 50 |
| % of Total | 0.7% | 0.3% | 8.1% | 7.1% | 0.7% | 16.9% |
| Total | Count | 3 | 9 | 90 | 138 | 55 | 295 |
| % of Total | 1.0% | 3.1% | 30.5% | 46.8% | 18.6% | 100.0% |

Source: Entrepreneur’s Market Research, October, 2020

#### **Figure 2.6: Strength of Network Coverage in Study Areas**

Source: Entrepreneur’s Market Research, October, 2020

**Implication**

* Respondents in Tamso agreed that network is very bad especially for browsing while those in Ahwitieso said the network is sometimes bad.
* Responses from Banso, Damang and Akyempim indicated that network coverage was very good.
* The use of USSD will afford those with poor network coverage the opportunity to access the service.

## **Income Levels and Credit Used Daily**

The entrepreneur sought to understand the amount of credit that is used on the average by people in different income brackets. The findings are presented in the figure and table below:

#### **Table 2.7: Income Levels and Credit Used Daily**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Income Level | | Amount of Credit Used Daily | | | Total |
| Less than GHc1 | Between GHc1 - GHc2 | More than GHc2 |  |
| 100 - 300 | Count | 24 | 10 | 4 | 38 |
| % of Total | 8.1% | 3.4% | 1.4% | 12.9% |
| 301 - 500 | Count | 11 | 17 | 11 | 39 |
| % of Total | 3.7% | 5.8% | 3.7% | 13.2% |
| 501 - 700 | Count | 4 | 26 | 14 | 44 |
| % of Total | 1.4% | 8.8% | 4.7% | 14.9% |
| 701 - 1000 | Count | 0 | 20 | 11 | 31 |
| % of Total | 0.0% | 6.8% | 3.7% | 10.5% |
| 1000+ | Count | 6 | 45 | 73 | 124 |
| % of Total | 2.0% | 15.3% | 24.7% | 42.0% |
| Below 100 | Count | 8 | 6 | 5 | 19 |
| % of Total | 2.7% | 2.0% | 1.7% | 6.4% |
| Total | Count | 53 | 124 | 118 | 295 |
| % of Total | 18.0% | 42.0% | 40.0% | 100.0% |

Source: Entrepreneur’s Market Research, October, 2020

#### **Figure 2.7: Income Levels and Credit Used Daily**

Source: Entrepreneur’s Market Research, October, 2020

**Implication**

* Credit Usage below 2 cedis was high among all income brackets.
* Some people had smartphones but did not use it for browsing most often.
* USSD will be most affordable for users

## **Usage of Credit**

#### **Figure 2.8: Usage of Credit**

Source: Entrepreneur’s Market Research, October, 2020

**Implication**

* Credit are mostly used for calls and only few that use theirs for service subscription and SMS.
* Above GHc2 was mostly among high income earners.
* USSD will be most affordable for users

## **Amount of Waste Generated**

#### **Figure 2.9: Amount of Waste Generated**

Source: Entrepreneur’s Market Research, October, 2020

## **Type of Waste Generated**

#### **Figure 2.10: Type of Waste Generated by households**

Source: Entrepreneur’s Market Research, October, 2020

**Implication**

* Organic waste remains the most dominant waste for most households. This is enough to setup a composting unit.
* Plastic was dominant among high income households. This includes packaging bags, bottles and sachets of drinking water.
* These items are highly required as raw materials for their recycling

## **Approach to Waste Management**

#### **Table 2.8: Approach to Waste Management in Study Areas**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Area of Residence | | How do you manage the waste your household generate? | | | | Total |
| Burrying | Burning | Sent to dumping Site | Collected by a formal waste picker |
| Ahwitieso | Count | 0 | 4 | 16 | 30 | 50 |
| % within Area of Residence | 0.0% | 8.0% | 32.0% | 60.0% | 100.0% |
| Akyempim | Count | 0 | 14 | 10 | 26 | 50 |
| % within Area of Residence | 0.0% | 28.0% | 20.0% | 52.0% | 100.0% |
| Banso | Count | 1 | 4 | 44 | 1 | 50 |
| % within Area of Residence | 2.0% | 8.0% | 88.0% | 2.0% | 100.0% |
| Damang | Count | 2 | 14 | 27 | 7 | 50 |
| % within Area of Residence | 4.0% | 28.0% | 54.0% | 14.0% | 100.0% |
| New Atuabo | Count | 2 | 3 | 19 | 21 | 45 |
| % within Area of Residence | 4.4% | 6.7% | 42.2% | 46.7% | 100.0% |
| Tamso | Count | 2 | 7 | 1 | 40 | 50 |
| % within Area of Residence | 4.0% | 14.0% | 2.0% | 80.0% | 100.0% |
| Total | Count | 7 | 46 | 117 | 125 | 295 |
| % within Area of Residence | 2.4% | 15.6% | 39.7% | 42.4% | 100.0% |

Source: Entrepreneur’s Market Research, October, 2020

#### **Figure 2.11: Approach to Waste Management in Study Areas**

Source: Entrepreneur’s Market Research, October, 2020

**Implication**

* Most households in Damang and Banso sent their waste to the dumping site daily. This is much time consuming and plastics fly into the community when there is heavy rainfall or wind.
* Some houses practiced burning which cause huge environmental and health threats to people living in these areas.
* Some people living in Tamso, Ahwitieso and Akempim had a very formal collection where they are subscribed to service of a private waste picker.

## **Willingness to be enrolled on Formal Waste Collection**

#### **Table 2.9: Willingness to be enrolled on Formal Waste Collection in Study Areas**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Area of Residence | | Willingness to be enrolled on a formal waste collection service | | | Total |
| Maybe | Definitely | Never |  |
| Ahwitieso | Count | 17 | 31 | 2 | 50 |
| % within Area of Residence | 34.0% | 62.0% | 4.0% | 100.0% |
| Akyempim | Count | 13 | 33 | 4 | 50 |
| % within Area of Residence | 26.0% | 66.0% | 8.0% | 100.0% |
| Banso | Count | 24 | 21 | 5 | 50 |
| % within Area of Residence | 48.0% | 42.0% | 10.0% | 100.0% |
| Damang | Count | 7 | 35 | 8 | 50 |
| % within Area of Residence | 14.0% | 70.0% | 16.0% | 100.0% |
| New Atuabo | Count | 12 | 25 | 8 | 45 |
| % within Area of Residence | 26.7% | 55.6% | 17.8% | 100.0% |
| Tamso | Count | 13 | 37 | 0 | 50 |
| % within Area of Residence | 26.0% | 74.0% | 0.0% | 100.0% |
| Total | Count | 86 | 182 | 27 | 295 |
| % within Area of Residence | 29.2% | 61.7% | 9.2% | 100.0% |

#### **Figure 2.12: Willingness to be enrolled on Formal Waste Collection in Study Areas**

Source: Entrepreneur’s Market Research, October, 2020

**Implication**

* Most respondents indicated that they will most definitely subscribe to a formal waste collection due to the ease that will afford them.
* Others were not sure because most of the waste management companies were very unreliable when it comes to pickup.
* A highly reliable service will increase subscription when accompanied by thorough education on waste and its challenge it pose to their environment.

## **Preferred Payment Plan for Pickup**

#### **Table 2.10: Preferred Payment Plan for Pickup in Study Areas**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Area of Residence | | How frequent will you like to pay for collection? | | | | Total |
| Payment on Pickup | Weekly | Monthly | Can't afford |
| Ahwitieso | Count | 0 | 0 | 45 | 5 | 50 |
| % within Area of Residence | 0.0% | 0.0% | 90.0% | 10.0% | 100.0% |
| Akyempim | Count | 6 | 0 | 35 | 9 | 50 |
| % within Area of Residence | 12.0% | 0.0% | 70.0% | 18.0% | 100.0% |
| Banso | Count | 5 | 1 | 19 | 25 | 50 |
| % within Area of Residence | 10.0% | 2.0% | 38.0% | 50.0% | 100.0% |
| Damang | Count | 24 | 1 | 14 | 11 | 50 |
| % within Area of Residence | 48.0% | 2.0% | 28.0% | 22.0% | 100.0% |
| New Atuabo | Count | 15 | 5 | 21 | 4 | 45 |
| % within Area of Residence | 33.3% | 11.1% | 46.7% | 8.9% | 100.0% |
| Tamso | Count | 3 | 1 | 46 | 0 | 50 |
| % within Area of Residence | 6.0% | 2.0% | 92.0% | 0.0% | 100.0% |
| Total | Count | 53 | 8 | 180 | 54 | 295 |
| % within Area of Residence | 18.0% | 2.7% | 61.0% | 18.3% | 100.0% |

#### **Figure 2.13: Preferred Payment Plan for Pickup in Study Areas**

Source: Entrepreneur’s Market Research, October, 2020

**Implication**

* Respondents most preferably opted for a monthly payment option because that is what they are used to.
* Most respondents in Banso indicated that they cannot afford the service since they enjoy it freely.
* Some respondents in Damang and Atuabo also preferred a payment per pickup plan due because some collectors used to run theirs so.
* Payment should be made as flexible as possible for customers

## **Customer’s Price Expectation**

Source: Entrepreneur’s Market Research, October, 2020

**Implication**

* Customers’ willingness to pay for service in Banso was low as some indicated that they cannot pay. Others who wanted to pay indicated that they can pay between 0 – 15 which is not sustainable to run the business.
* The service may run very well at Banso

## **Customer’s Preferred Medium of Payment**

#### **Table 2.11: Customer’s Preferred Medium of Payment**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Medium of Payment | Frequency | Percent | Valid Percent | Cumulative Percent |
| Cash payment | 147 | 49.8 | 49.8 | 49.8 |
| Mobile Money | 94 | 31.9 | 31.9 | 81.7 |
| Bank Transfer | 1 | .3 | .3 | 82.0 |
| Won't pay | 53 | 18.0 | 18.0 | 100.0 |
| Total | 295 | 100.0 | 100.0 |  |

Source: Entrepreneur’s Market Research, October, 2020

#### **Figure 2.13: Customer’s Preferred Medium of Payment**

Source: Entrepreneur’s Market Research, October, 2020

**Implication**

* Most respondents preferred cash payment which still will make revenue collection very easy if customers are not available.
* Workers who are mostly out of home preferred that payment

## **Customers’ Preferred payment Arrangement**

Source: Entrepreneur’s Market Research, October, 2020

## **Customer’s Satisfaction with Waste Management Services**

#### **Table 2. 12: Customer’s Satisfaction with Waste Management Services**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Area of Residence | | Please select the most applicable answer to the questions below [I am very satisfied with my current waste collection service] | | | | |  |
| Strongly disagree | Disagree | Neutral | Agree | Strongly agree | Total |
| Ahwitieso | Count | 18 | 8 | 16 | 8 | 0 | 50 |
| % within Area of Residence | 36.0% | 16.0% | 32.0% | 16.0% | 0.0% | 100.0% |
| Akyempim | Count | 9 | 12 | 16 | 13 | 0 | 50 |
| % within Area of Residence | 18.0% | 24.0% | 32.0% | 26.0% | 0.0% | 100.0% |
| Banso | Count | 25 | 9 | 13 | 3 | 0 | 50 |
| % within Area of Residence | 50.0% | 18.0% | 26.0% | 6.0% | 0.0% | 100.0% |
| Damang | Count | 8 | 9 | 13 | 16 | 4 | 50 |
| % within Area of Residence | 16.0% | 18.0% | 26.0% | 32.0% | 8.0% | 100.0% |
| New Atuabo | Count | 7 | 9 | 15 | 13 | 1 | 45 |
| % within Area of Residence | 15.6% | 20.0% | 33.3% | 28.9% | 2.2% | 100.0% |
| Tamso | Count | 3 | 3 | 15 | 21 | 8 | 50 |
| % within Area of Residence | 6.0% | 6.0% | 30.0% | 42.0% | 16.0% | 100.0% |
| Total | Count | 70 | 50 | 88 | 74 | 13 | 295 |
| % within Area of Residence | 23.7% | 16.9% | 29.8% | 25.1% | 4.4% | 100.0% |

#### **Figure 2.14: Customer’s Satisfaction with Waste Management Services**

**Implications**

Most of the customers were not satisfied with their present waste management services and were strongly them. Those who agreed that their services were better were those who were satisfied with the flexibility their companies gave them with payment and their ability to communicate to them at any time they will not be able to come for a pickup as scheduled.

An improvement in service delivery by a competitor will swing most of the customers away to other service providers.

## **Customer Satisfaction with Waste Pickups**

#### **Table 2.13: Customer Satisfaction with Waste Pickups in Study Areas**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Area of Residence | | Please select the most applicable answer to the questions below [My current waste collection company picks on time] | | | | | Total |
| Strongly disagree | Disagree | Neutral | Agree | Strongly agree |
| Ahwitieso | Count | 17 | 13 | 18 | 2 | 0 | 50 |
| % within Area of Residence | 34.0% | 26.0% | 36.0% | 4.0% | 0.0% | 100.0% |
| Akyempim | Count | 9 | 15 | 18 | 8 | 0 | 50 |
| % within Area of Residence | 18.0% | 30.0% | 36.0% | 16.0% | 0.0% | 100.0% |
| Banso | Count | 24 | 13 | 11 | 2 | 0 | 50 |
| % within Area of Residence | 48.0% | 26.0% | 22.0% | 4.0% | 0.0% | 100.0% |
| Damang | Count | 11 | 11 | 13 | 10 | 5 | 50 |
| % within Area of Residence | 22.0% | 22.0% | 26.0% | 20.0% | 10.0% | 100.0% |
| New Atuabo | Count | 10 | 9 | 18 | 8 | 0 | 45 |
| % within Area of Residence | 22.2% | 20.0% | 40.0% | 17.8% | 0.0% | 100.0% |
| Tamso | Count | 5 | 5 | 25 | 14 | 1 | 50 |
| % within Area of Residence | 10.0% | 10.0% | 50.0% | 28.0% | 2.0% | 100.0% |
| Total | Count | 76 | 66 | 103 | 44 | 6 | 295 |
| % within Area of Residence | 25.8% | 22.4% | 34.9% | 14.9% | 2.0% | 100.0% |

#### **Figure 2.15: Customer Satisfaction with Waste Pickups in Study Areas**

# **CHAPTER THREE**

# **CONCLUSION**

It is seen that the income levels of households in Tarkwa are fairly high as majority of respondents from the survey are willing to enroll on a formal waste collection since they deem it as a necessary and basic service. The solution will work much well with more education on proper waste management, waste segregation and how the platform will help address the challenges the District face.

It is worth noting that the District has much interest in the project and has pledged their support both in material and expertise to realize the goal of the project. Following this keen interest, a formal document will be tabled before the district clearly outlining the support the business will need from them and the mutual benefit our business will have with them. This will follow the signing of a legal document (MoU) between both parties to prevent any breach of agreement going forward.

As highlighted that the waste management sector is eluded with the needed logistics such as vehicles to convey the waste, our business shall draw on key partnerships and sign up more tricycle operators who will be paid on an agreed rate and time. As a startup, this will save us the huge cost of maintaining vehicles since that risk will be shifted on these private tricycle operators. A better terms of agreement will be tabled before them to retain their interest in doing business with us.

As revealed in the survey on the number of people who use smartphone, the amount of credit they spend as well as the strength of network coverage in the various study areas, the findings clearly indicates that the USSD will afford customers the ease of access whether through smartphones or feature phones and will be very much economical for them to use. However, the mobile app will be only used by the waste collectors to optimize route of requests placed as well as collect revenues from the customers. With MTN being the most dominant network in the study areas, the MTN API will be the first point of start for revenue collection using the Mobile Money service. Going forward, should there be the need to integrate other network payment options as requested by the customers that will be factored into it.