

Factors Driving Solid Waste Management Payments in African Markets: Understanding Determinants and Overcoming Challenges

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ABSTRACT

Waste management has become an issue of interest across global today due to its impact on the public health and efforts to achieve the global sustainable development goals. Despite the influence and necessity of the waste management practices yet there is little understanding in the factors influencing households' willingness to comply and hence pay for such services mostly in developing countries including Tanzania. Therefore, the current study explores determinants of solid waste management in Arusha region by studying behaviors of the vendors in three markets places of Kilomebro, Tengeru, and Samunge using cross-sectional research design of which as sample of 150 vendors were included in the study. The results of the study reveal that socioeconomic factors such as age ($p < 0.01$), working experience ($p < 0.01$), and income ($p < 0.01$) are significant determinants enhancing vendors' decision to pay for the waste management. On the other hand, amount of waste generated by vendors, and their awareness on the waste management practices also influence vendors willingness and decision to pay for the waste management across all three markets in Arusha region at 0.013 ($p < 0.01$) and 1.894 ($p < 0.01$). Additionally, quality of waste management services offered are also important component affecting vendors decision to be willing to pay for the waste management practices. The study recommends that in order to cultivate the waste management practices across communities it is important to prioritize in establishing educational programs that aimed at enhancing vendors' awareness and understanding of the importance of solid waste management, as well as developing income diversification strategies which will help to explore and address the significant role income plays in determining vendors' willingness to pay for solid waste management.

Keywords: Environment, Market Place, Public Health, Rural Africa, Waste

I. INTRODUCTION

The global level of the existing amount of solid waste is worrying the efforts towards achieving the global development targets for both public health, and sanitations. Moreover, it is estimated by the World Bank (WB) that the global solid waste production will be 2.02 billion tons in 2050 with most of the waste being generated in the developing countries due to poor waste management practices and technologies. For example, in 2012, the amount of waste generated in Africa was 120 billion tons, and later grew to 200 billion tons in 2020. Moreover, WB reports suggest that by 2050 more than 40% of the global waste will be obtained in Sub Saharan Africa.

On the other hand, Tanzania is among countries that is experience an increase in the waste generation yearly, as statistics show that in 2010 the amount of waste generated in Tanzania was 9.89 billion tons while in 2022 the number grew and reached to 38.98 billion tons making Tanzania one of the leading waste producer in East African region, and sub-Sahara Africa in general. Major causes of the high waste generation have been due to the increased and unregulated informal business activities, insufficient knowledge on waste management practices, increase number of shanty towns, low education, income, and inability of the large number of the population to cope with the health and sanitation requirements. While other studies acknowledge the increase in population being one of the ley reasons for the increase amount of generated waste in Tanzania, and many other developing countries, (URT, 2019; Kitole, 2023).

A number of published scholarly works have examined determinants for willingness to pay for the waste management across household in most in urban and rural areas. These studies have shown that there are greater variations in the causes and even effects on the waste management on the households signaling for the need of more works in different countries to enlighten knowledge and enhance clarity n factors that influence people to engage in the waste management. While in Botswana and Uganda, Madigele et al. (2017), and Otai (2021) found that most of the households who are willing to comply with waste management have been members in various community groups indicating that these groups are influential in enhancing knowledge transmission across communities. Contrary,

studies (Chung & Yeung, 2019; Kitole et al., 2024a, Kitole et al., 2023a) have shown that better and improved public health as the result of waste management has influence in the increase of household welfare due to the decline in number of diseases.

Moreover, in examining the intrahousehold willingness to pay for waste management practices, Sizya (2015) argued that socioeconomic and demographic characteristics has significant influence in enhancing willingness to pay for waste management practices. Therefore, as the result of the benefits associated with the implementation of wastes management that cut across public health and income, the government of Tanzania initiated several programs from the local level to the national level that all aim at enhancing the reduction of the waste generation, and proper management of the existing produced waste which also led to the development of the National environmental council with the aim of enhancing socioeconomic and industrial development as these initiatives helped the formulation of micro-waste processing industries (Kitole & Utouh, 2023; Kitole et al., 2022).

Another notable initiative taken by the government is the introduction if the user fee system in of which user of the established waste management are required to pay in order to utilize waste management services which are available from the street level, and the marketplaces. Despite usefulness of this service at the marketplace which has led to the decline in the significant proportion of waste generated at the marketplace yet there has been continuous low compliance among vendors in the marketplace which increase pressure on the local government authorities and the market administration on how waste can be managed and controlled in these areas which tend to price large amount of wastes. Studies (He and Yu, 2021; Omilani et al., 2019) have shown that the price and income of the vendor at the marketplace have been one of the key issues limiting vendors' willingness to comply and pay for the waste management. Contrary, other studied have argued that these cannot be the solely reasons for the issue rather demographic background and education (Ayenew et al., 2019; Yasin, 2021). As the result of these contradictory findings, this study establishes the reason for analyzing factors influencing willingness to pay for the waste management in marketplaces in order to get sights on the specific and contextual factors by studying behaviors of the vendors in three markets of Kilombero, Tengeru and Samunge Arusha region in Tanzania.

II. LITERATURE REVIEW

2.1 Theoretical Framework

This study uses the Hill and Kau's theory of decision making as explained by Masoud (2021). The theory advocates that when a person is under a situation where has to choose amount to pay in order to receive a particular service normally creates personal monetary thresholds that would not others to exceeds such particular threshold. The theory suggests that most of the factors affecting these thresholds are experiences, education, economic limitations, and demographic characteristics of the individual (Kitole et al., 2023c). Therefore, drawing from consumer choice models and utility theory, which use proxy market values to elicit preferences and willingness to pay, the threshold models transform binary choices into conditional logit models. These models represent discrete choices individuals or households face among various alternatives (Song et al., 2016; Anjum, 2013; Kitole et al., 2023b). Choice models accurately predict human decision-making behavior and are vital due to the dichotomous nature of decisions and the significance of the threshold concept in explaining stimulus reactions. Most decisions for paying or purchase may exhibit a threshold below which no observable response occurs (Kitole et al., 2023d).

However, weaknesses include the lack of guidance on when to transition from evidence collection to action, as models primarily focus on regression issues (Yasin, 2021). Despite criticisms, the theory's applicability to this study is evident due to the dichotomous nature of willingness to pay decisions. Willingness to pay for solid waste management in African markets will only occur beyond a critical "breaking point" in the explanatory factors, resulting in a dichotomous choice variable where individuals either express willingness to pay (coded as one) or do not (coded as zero).

2.2 Empirical review

Various researchers have explored the topic of willingness to pay for solid waste management, yielding diverse conclusions. Notable study in China by He and Yu (2021) showed that decision to pay for the waste management is the result of the identified predictors such as attitudes, subjective norms, and perceived behavioral control, alongside environmental concern, as determinants of willingness to pay. Using a contingent valuation method, the study estimated an average household willingness to pay of 49.93 USD per year, with residents expressing a positive connection between the amount to be paid and their willingness to contribute, particularly for industrial solid waste management.

Similarly, Madigele et al. (2017) examined consumer willingness to pay for plastic bag levies and acceptance of eco-friendly alternatives in Botswana. Conducting primary data collection from 367 randomly selected respondents, the study found a significant relationship between education level and willingness to pay, as well as income disparities influencing payment preferences. Moreover, another study by Ayew et al. (2019) showed that higher costs of waste management across communities makes tough for most of the people to comply and be willing to pay for the waste management practices in most of the rural areas in developing countries. Therefore, this study highlights that factors affecting individual willingness to pay for the waste management varies from the demographic to the economic and contextual. Therefore any initiatives designed to enhance waste management practices should include the specific characteristic of areas that people live and do their daily income generating activities.

2.3 Conceptual Framework

The conceptual framework (Figure 1) delineates the interplay among the independent variables: age, income, sex, education level of the vendor, the quantity of solid waste generated by the vendor, and the proposed payment amount. These variables collectively influence the dependent variable, namely, the vendor's willingness to pay.

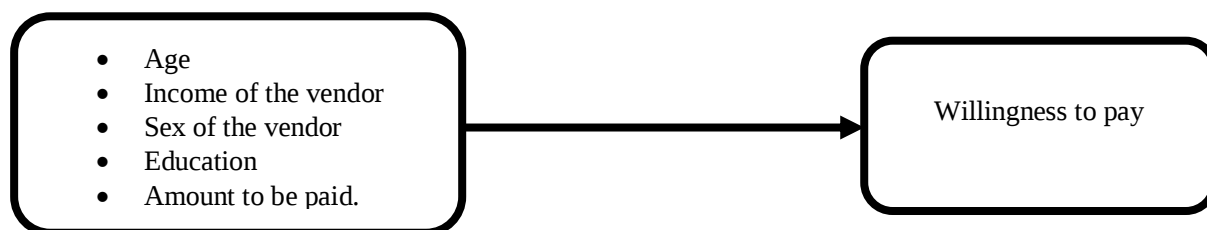


Figure 1
Conceptual Framework

2.4 Operationalization of Terms

Table 1
Description and Measurement of Variables

Variable name	What it measures	How its measured	Expected sign
Willingness to pay	Vendors' readiness to pay	Decision to pay	
Education level	The highest level of education you have achieved	It is measured in terms of the highest class of an individual has attained	+
Personal Income	Amount of money obtained by households from employment or involvement in any activity	It is measured in terms of monetary values	+
Sex of vendor	Biological difference between males and females.	It is measured by looking if vendor is a male or female. 0= male 1=female	+/-
Amount of waste produced	The total amount of materials that are landfilled, recycled, or composted is referred to as solid waste generation	Estimated Number of Kg/tones a vendor generates	+
Age	Age in number of years	Number of years of the vendors	-
Quality of service	Is a term used to describe or quantify the overall performance of a service	Focus on how consumers perceive the service	-
Amount to be paid	amount of money that when you pay someone money	It is measured on the amount of money person is paying	-
Frequency of payment in a month	measure the intervals at which the payments are to be made	Interval of payment in a month	-

III. METHODOLOGY

3.1 Research Design

This study adopts a cross-sectional design due to its ability to measure both outcomes and exposures among the study respondents simultaneously (Kitole & Sesabo, 2022; Dimoso & Andrew, 2021). This design is particularly advantageous as it allows for the collection of data at a single point in time. The primary source of data for this study is obtained directly from the field, with the main focus on vendors operating in Samunge, Kilombero, and Tengeru markets by the use of structured questionnaires.

3.2 Analytical modelling

The present study uses probit model as the result of its capability in presenting estimations on the possibilities for the events occur. The use of the model helps to utilize the maximum likelihood estimation techniques in determining willingness to pay for the waste management among vendors in three marketplaces in Arusha. Therefore, given the outcome variable of the study is binary (0 for those who are not willing to pay, and 1 for those who are willing to pay), the probit model serves as one of the best maximum likelihood estimators (Fumbwe et al., 2021). Therefore, the willingness to solid waste in marketplace is presented with the equations that:

$$y_i^* = \alpha T' + \varepsilon_i$$

Basing on this function, the probit model is delivered to analyze determinants of vendors in Arusha markets to pay for solid waste management. Since y_i^* is unobservable, what we observe is y_i which takes only two values such that:

When $y_i^* > 0, y_i = 1$ if vendors are willing to pay

When $y_i^* \leq 0, y_i = 0$ if vendors are not willing to pay

Moreover, for the probability that the vendor to pay for the waste management is greater than zero ($y^* > 0$) is given by $prob(y = 1) = prob(y_i^* > 0)$ while for that less than or equal to zero ($y^* \leq 0$), therefore this can simply be presented as;

$$prob(y = 0) = prob(y_i^* \leq 0)$$

The likelihood of vendors to pay is herein presented by unobservable factors through the dependent variable as follows:

$$Vendors\ willingness = \begin{cases} 1 & \text{if } y_i^* > 0 \\ 0 & \text{if } y_i^* \leq 0 \end{cases}$$

Therefore, the probability that vendors to pay for waste management is based on the assumption that the probability density function of e_i assumed being $f(\mu_i)$ which results in the creation of new parameter.

$$Prob(y_i = 1|x) = \int_{-\alpha}^{x'\alpha} f(\mu_i) du = F(x'_i \alpha)$$

$$Prob(y_i = 1|x) = 2\pi^{-\frac{1}{2}} \exp\left(-\frac{1}{2}(x'_i \alpha)^2\right)$$

Now, based on the variables used in this study, the Probit model is therefore presented as:

$$Y_i = \alpha_0 + \alpha_1 X_i + \alpha_2 D_i + \mu_i$$

Of which the α_0 is the constant term while α_1 and α_2 are the parameters that will be estimated in the probit equation. On the other hand, X_i are the covariates while D_i represents group of all dummy variables used in this study. Now, since the Probit model is well addressed under the marginal effects which help to explain the extent of effects of vendors willingness to pay for solid waste management, then the preferred marginal effect equation is shown as

$$\frac{dy}{dx_i} = \alpha_i \phi(\alpha_1 + \alpha_n)$$

IV. RESULTS & DISCUSSIONS

4.1 Results

The results in Table 2 present the vendors demographic characteristics which are important to be presented in this study due to the variability of the vendors behaviors that can influence their decision towards willingness to pay for the solid waste management practices. Therefore, results have shown that majority of the vendors (89) equivalent to 54% of the vendors in Arusha markets are males, while 69 (46%) are females. Moreover, results have shown that majority of the vendors in those markets are youth aged 18 to 30 years of age which makes 39% of entire vendors,

those aging between 31 to 43 makes 33% while those with 43 years and above are just 28% indicating that youths are the dominant groups in the marketplaces in the regions compared to other age groups.

Table 2*Respondents' Demographic Characteristics*

	Attributes	Number of Respondents	Percentage (%)
Sex	Female	69	46
	Male	81	54
Age	18 - 30	58	39
	31 - 43	50	33
	44+	42	28
Level of Education	Primary	55	37
	Secondary	42	28
	Tertiary	9	6
	No education	44	29

In terms of education, result shave shown that majority of vendors in Arusa markets are those with primary school education which makes about 37% of entire vendors in three markets. On the other hand, those with secondary education makes 28% of the entire vendors, while those with tertiary males only 6%. Moreover, result shave shown that despite education being an important aspect for business still 29% of the vendors in those three markets do not have any formal education background. This indicate that people with no formal education background are more inclined to start business that n those with higher education or with formal education background, this alone signal that the nature of the business in most of these markets are informal businesses.

Table 3*Different Waste Produced in Arusha Markets*

Type of waste	Frequency	Percent
Food remains	81	54.41
Livestock product	25	17.2
Woods	23	15.8
Papers	21	14.42

Results in Table 3 present different types of wastes generated by vendors in Arusha markets. Specifically results show that 54.41 percent of waste generated came from the food remains, while 17.2 percent ate the livestock products including hens, goats, and many other cattle. Moreover, results show that 15.8 percent of the generated wastes are those coming from woods, and the 14.42 percent are due to papers that are lefts behind after being used for various papers in the markets.

Table 4*Waste Storage Devices*

Type of waste	Frequency	Percent
Plastic buckets	73	49.41
Iron scrapers	77	50.81

The results in Table 4 show that most of the vendors in Arusha markets consider plastic buckets as the least waste storage device as it just comprises of 49.41 percent, while the iron scrapers were found to be the leading waste storage technique as 50.81 percent of vendors respondent to it as the one that is highly used in their marketplaces.

Moreover, results in Table 5 results reveal that two primary techniques are employed in Arisha markets for waste management: containers without covers and plastic bags. Containers without covers were the predominant waste management technique, accounting for 85.1% of the total observed methods. In contrast, the use of plastic bags was less common, constituting only 14.9% of the total waste management techniques observed.

Table 5
Technique used for Waste Management

Type of Technique	Frequency	Percent
Container without cover	128	85.1
Plastic bags	22	14.9

Additionally, the study analyzed the different ways through which waste are disposed in the three marketplaces of which most of the vendors argued that 89.3% of the solid wastes are just dumped while the remaining 10.70% responded that the wastes are burnt. This shows that dumping the most preferred or most common used practices of wastage disposal in these three markets in Arusha region.

Table 6
Ways of Waste Disposal

Way of disposal	Frequency	Percent
Dump	134	89.3
Burning	16	10.7

Table 6 presents data on the ways of waste disposal in the markets of the Arusha region, categorized by frequency and percentage. The results indicate that two primary methods are utilized for waste disposal: dumping and burning. Dumping was the most commonly employed method, accounting for 89.3% of the total observed disposal practices. In contrast, burning was less prevalent, constituting only 10.7% of the total waste disposal methods observed.

Table 7
Determinants of Vendors' Willingness to Pay for Solid Waste

	Coef.	Std. Err.	Z	P>z	[95% Conf. Interval]	
Education (years)	0.75208	0.253575	2.97	0.003**	0.24908	1.25509
Income	0.74006	0.13006	6.43	0.000***	0.34007	4.956736
Experience (years)	0.255210	0.004322	4.763	0.000***	0.346129	2.67347
Amount of waste	0.013554	0.004306	3.15	0.002**	0.005116	0.021993
Sex (Male)	1.049409	0.805751	1.3	0.193	-0.52983	2.628652
Age	1.085303	0.384345	2.82	0.005**	0.332002	1.838604
Awareness	1.894876	0.668707	2.83	0.005**	0.584234	3.205518
Amount to pay	-0.190852	0.000253	-4.29	0.002***	-0.00108	1.45005
Quality of services	2.045567	0.781821	2.62	0.009**	0.513226	3.577908
Frequency of payment	-0.15285	0.377716	-0.4	0.686	-0.89316	0.58746
_cons	-4.77112	1.71427	-2.78	0.005	-8.13102	-1.41121

***indicate p values at 1%, ** at 5%, and * at 10%

Table 7 presents results on the maximum likelihood estimation for the determinants of the vendors' willingness to pay for the solid waste management at Arusha markets. The results show that education plays significant role in enhancing vendors' attitude towards being willing to pay for solid waste management. Therefore, as a vendor's years of schooling increase, his/her willingness to pay for the solid waste management increases by 75.208% ($p < 0.01$). Moreover, results show that income is another significant factor that contributes or determines vendors' decision and willingness to pay for the solid waste management. Specifically results show that vendors with higher income are more likely to pay for the solid waste management compared to those with low income at 74.006% ($p < 0.01$). This justifies that income is a strong indicator for compliance and willingness towards solid waste management.

Another notable result was found for the amount of waste generated, as result show that those who generate large amount of solid waste are more likely to be willing to pay for the solid waste management compared to those who perceived to produce less amount of solid waste at 1.355% ($p < 0.01$). Therefore, this result implies that applying

common price of solid waste management in these markets will not be a good idea because those who produce less waste will not be willing to pay for it and will demand those who produce much amount of waste to pay more. Therefore, this calls for principles of controlling waste in most marketplaces.

Moreover, results show that the more vendors have many years of working experiences the more they are likely to pay for the solid waste management at 25.521% ($p < 0.01$), this implies that those who have been at the business for many years have been able to experience effects of the poor waste management which also affects their business. Also results show that the coefficient for sex is 1.049409 ($p > 0.1$), indicating that being male compared to female is associated with higher willingness to pay for solid waste management, although this result is not statistically significant. On the other hand, the coefficient for age is 1.085303 ($p < 0.001$), indicating that as vendors' age increases; their willingness to pay for solid waste management also increases.

Moreover, results in Table 7 further show that vendors with strong awareness on the waste management practices are more likely to be willing to pay for the waste management significantly at 1%. The significance of the variable indicates that awareness is an important factor to enhance an increase vendor's willingness to pay for the waste management across these three markets in Arusha. On the other hand, result show that the higher the amount of money required for paying for the waste management the less vendors become willing to pay for it. This implies that for an effective waste management practice there should be a considerable price for most people to engage in the waste management practices.

Furthermore, results show that the perceived belief of the quality service of the waste management across markets was found to increase the likelihood of vendors' willingness to pay for the solid waste management (2.045567, $p < 0.01$) in these markets. This implies that under *ceteris paribus*, quality waste management services attract more vendors to be willing to pay for the services while when the service is poorly given then vendors will not be likely to pay for the services in these markets. Contrary, amount of money set to pay for the solid waste was found to reduce their willingness to pay for the service, this indicate that when the amount of money for solid waste management increases the vendors willingness to pay is also decreases, this calls for the establishment of the reasonable amount of money that will be fairly across all vendors.

4.2 Discussions

The present study informs on the factors influencing vendors willingness to pay for the solid waste management across three markets in Arusha, Tanzania. The results of the study through probit regression shows that vendors' willingness to pay is influenced by the number of factors including business experiences, vendors' awareness on the waste management practices, as well as amount of waste generated by the vendors in the market.

The results of the study have shown that income is one of the significant factors determine vendors willingness to pay for the solid waste management, this findings aligns with the results of He and Ye in 2021 which suggests that people with higher likelihood of earning higher income have higher chances of being willing to pay for the waste management practices. Therefore, when vendors have higher chances of earning more from their businesses, they are more likely to give a share their part of income on the most important or basic things like complying with the waste management practices. In addition, to that Ayenew et al. (2019) argued that not only does income alone that determine willingness of people to comply and pay for the waste management but also their experiences on the income generation activities can also influence their decisions.

On the other hand, studies by Ismail (2021), and Madigele et al. (2017) in line with the findings of this study as their findings show that amount of the generated wastes influence individuals' decision to pay for the waste management as most people believe that as wastes increase it increases their pressure on the public health hence, they demand for the removal of the waste from these areas. Additionally, awareness on the availability of waste management can help to change individuals' decision on how they can participate in the waste management practices which in line with the results of Sizya (2015). Therefore, this calls for an increase of environmental conservation programs that enhance public awareness on the benefits and costs of waste management across communities, and in business areas.

While Otai (2021) argued that costs of the waste management does not play significant role in determining willingness to pay for it, this study found that amount of money required to pay for the waste management is an important aspect for consideration towards vendors decision to pay, as higher costs results to the decline in the vendors willingness to pay. Therefore, such results imply that there is a need to encourage fair costs for the waste management which will attracts more people to comply with the waste management practices and hence be willing to pay for it. Moreover, Song et al. (2016) argued that costs of waste may be more issue of consideration in most of rural



areas compared to the urban dwellers, therefore these calls for the more specific studies that considered rural-urban variations in the willingness to pay for the solid waste management.

V. CONCLUSIONS & RECOMMENDATIONS

5.1 Conclusions

The present study informs on the factors influencing vendors' willingness to pay for the solid waste management across three markets in Arusha, Tanzania. The results of the study through probit regression shows that vendors' willingness to pay is influenced by the number of factors including business experiences, vendors' awareness on the waste management practices, as well as amount of waste generated by the vendors in the market. Other socioeconomic variables that were found to be significant contributing to the vendors' decision were age and income of vendors. Moreover, the result of this study informs number of policy implication based on the necessity of the topic of waste management which includes the following;

Given the study's emphasis on the significance of income in improving waste management practices within Arusha markets, it is imperative to recommend strategies aimed at income diversification among vendors. By diversifying their income sources, vendors can not only secure adequate funds for their personal sustenance but also generate additional revenue to invest in waste management practices. This multifaceted approach to income generation not only ensures the financial stability of vendors but also fosters an environment conducive to sustainable waste management practices within the community. Thus, to achieve this, there is a need to increase or enhance vendors' access to credit or financial services. Therefore, in achieving this study also emphasize on the role of making sure financial or income generation programs initiated by the government or any other organizations also comprise components of waste management.

On the other hand, amount of the generated waste have been found to influence vendors decision to pay for the waste management which indicates that vendors who generate large amount of waste shows positive response to pay for waste management unlike those who generate less amount of waste. Low response and attitude of these vendors show that there is a need for further exploration on how attitude or behaviors of vendors can influence their decision to pay for the waste management or their engagement in the environmental conservation practices. Moreover, the study recommends that most policies formulated on waste management should take into consideration amount of waste generated by people so that there could be equal contribution or payment for waste management especially through programs such as pay as you pollute, which will enhance vendors' compliance with the waste management practices.

Additionally, there was a need to invest in the public awareness campaigns which will focus on enhancing vendors' knowledge and skills on the waste management practices. These awareness campaigns should be specific and should be based on the context of these vendors due to the variations in the geographical and vendors behaviors. Therefore, since vendors who are aware of the waste management practices are more likely to pay for it then interventions should focus on enhancing behavior changes and developing attitude that makes vendors preferring to conserve their working environment through engaging in waste management practices. On the other hand, for vendors who have been considered the waste management services are of high quality they are more likely to pay for the service compared to those who considers otherwise. This calls for the provision of quality waste management services.

5.2 Recommendations

Several key recommendations can be made to improve solid waste management practices at Arusha markets. First and foremost, it is crucial to prioritize educational initiatives aimed at enhancing vendors' awareness and understanding of the importance of solid waste management. Investing in educational programs that focus on waste reduction, recycling, and proper disposal methods can significantly improve vendors' attitudes and willingness to pay for such services. Additionally, efforts should be made to provide vocational training and workshops specifically tailored to equip vendors with the necessary skills and knowledge to effectively manage solid waste.

Furthermore, income diversification strategies should be explored to address the significant role income plays in determining vendors' willingness to pay for solid waste management. Initiatives aimed at increasing vendors' income streams, such as supporting entrepreneurship programs, facilitating access to microfinance opportunities, or promoting alternative income-generating activities, can empower vendors financially and enhance their capacity to contribute to solid waste management initiatives. Additionally, government subsidies or incentives for waste management-related expenses could be considered to alleviate financial burdens on vendors, particularly those with lower incomes.



Moreover, considering the influence of waste generation on vendors' willingness to pay, it is imperative to adopt a differentiated pricing approach for solid waste management services. Rather than applying a uniform pricing structure across all vendors, pricing mechanisms should be tailored to reflect the amount of waste generated by individual vendors. Implementing a tiered pricing system based on waste generation levels can ensure fairness and equity in cost allocation, incentivize waste reduction efforts, and promote responsible waste management practices among vendors.

Furthermore, recognizing the impact of vendors' working experience on their willingness to pay for solid waste management, targeted capacity-building programs should be developed to provide vendors with the necessary training and resources to improve waste management practices. Leveraging the expertise and insights of experienced vendors through mentorship programs or peer-to-peer learning initiatives can also facilitate knowledge sharing and foster a culture of continuous improvement in waste management practices.

Additionally, efforts to enhance awareness and perceived belief in the quality of waste management services are essential to increase vendors' willingness to pay. Public awareness campaigns highlighting the benefits of proper waste management, the environmental consequences of improper disposal, and the importance of community involvement can help change perceptions and attitudes towards waste management. Furthermore, ensuring transparency and accountability in waste management service delivery, as well as soliciting feedback from vendors to address any concerns or shortcomings, can enhance trust and confidence in the quality of waste management services provided.

Finally, in setting prices for solid waste management services, careful consideration should be given to strike a balance between affordability and cost recovery. It is crucial to establish reasonable and competitive pricing structures that reflect the true cost of service delivery while remaining affordable for vendors. Moreover, transparent pricing mechanisms and clear communication of pricing policies are essential to ensure vendors' understanding and acceptance of the pricing structure, thereby promoting compliance and participation in waste management initiatives.

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