THE EFFECTS OF SOCIO-DEMOGRAPHIC AND INSTITUTIONAL FACTORS ON COMMUNITY PARTICIPATION IN MUNICIPAL WASTE MANAGEMENT IN SODO TOWN, ETHIOPIA

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Abstract

This research investigates how socioeconomic and institutional factors influence community participation in solid waste management. The study used a descriptive research design and a more casual one. A probability and convenient sampling procedure were exercised. One hundred sixty-four households participated. Questionnaires were used to collect the primary data, while organizational reports, policy documents, legislations and manuals, recent directives, and journals were searched for secondary data sources. SPSS version 21, which was used to analyze the information that was gathered from the respondents, was used. According to the study's findings, socioeconomic factors: age, education, religious affiliation, and income, all impede participation in community activities. In addition, the findings demonstrated that institutional factors such as integration & policy play a significant role in the outcome. According to the study's findings, the local government should establish facilities to allow the public to participate in the planning and follow-up on issues, work integrated with the community, and organize various awareness creation programs to promote the community.

Keywords: Solid Waste Management, Community Participation, Institutional Factor

INTRODUCTION

Municipal solid waste management is grasping the production, dumping, accumulation, transportation, and discarding of municipal dust. It is a material that has been discarded that results from human activities that are not free(Pariatamby et al., 2015)Both the rate of urbanization and the growth of the world's population are climbing at an alarming rate everywhere. As both population and consumption levels continue to rise, there will inevitably be a corresponding increase in the total amount of wastage. Within the challenge mentioned above, a new approach to waste administration has emerged, emphasizing the effective use of resources and reducing adverse environmental effects at every stage, from prevention to secure junking. This shift in focus comes as a response to the challenge outlined above. SWM aims to protect the public and its surroundings (Birhanu & Berisa, 2015). It produced due to activities carried out by human beings. It could be in different varieties. The way of handling and removing could threaten the environment and the citizen's health. The effective management of ever-increasing quantities of concrete dust has emerged as one of the most significant challenges facing many cities in developing nations. Garbage can be a valuable resource if appropriately utilized; however, if it is not controlled effectively, it can have nasty effects on the atmosphere and health of the people. Consequently, waste administration is an indispensable part of urban hygiene furthermore, the most critical and budget-needed activity for the municipalities. Community participation is a relatively high role for effective SWM (Tarigan et al., 2020).

A study by (Birhanu & Berisa, 2015) on determinants of recycling of SWM.This study focuses on developing countries. However, such evaluations do not ensure that a conclusion can be drawn regarding managing municipal solid waste at the family level. SW results from everyday activities carried out by humankind and needs appropriate management. Over the past few decades, it has become abundantly clear that vertical relationship to waste administration, particularly in less industrialized nations, are doomed to failure, not only attributed to the fact that there are technical and financial challenges but also to the fact that there is low involvement of communities in the service delivery. Although each individual is responsible for producing waste, they are still seen as passive customers of the services provided by municipalities. As study reports, citizens are lack of willingness to bill for the activities or engaged in other controlling activites. (Addai & Danso-Abbeam, 2014), report their observations regarding the community's involvement in providing services in Bindura Town (Zimbabwe). They recommended that policymakers focus on local communities' innovations, attitudes, and practices regarding SW controlling.

Third world countries need help with the efficient handling of their SW operations However, there are different analyses related to SWM in different countries, but results are inconsistent, and the variables they take are different. According to the World Bank (2019), developing countries spend a high budget on waste management. However, thirty to sixty percent of urban solid waste is not collected due to a lack of infrastructure, weak performance of municipalities, lack of funds, inefficient management, the low technical capability of employees, and low community engagement. These are just some of the reasons that have been cited(Pariatamby et al., 2015).

The increased quantity and composition of junk in Ethiopia indicate ineffective SW management(Tadesse et al., 2008b). Sodo town is the capital city of Wolaita Zone, and solid waste management has become a severe problem that the residents, environmental organizations, and government bodies should give the attention and consideration it deserves. Most importantly, the participation of the community in the management of solid waste in Wolaita town has yet to be studied with the necessary focus on the community's participation. Therefore, the primary aim of this survey is to inquiry the demographic and organizational components that influence waste management in Sodo, Ethiopia.

OBJECTIVES OF THE STUDY

General Objective

Factors affecting   community participation in solid waste management in the case of Wolayita soddo town

The specific objectives:

1. To examine socio demographic factors affecting the community in participations on solid waste management.

2. To determine organizational factors on community participation of solid waste management

Hypothesis

H1: Age affect community participation on municipal waste management.

H2: Education affects community participation in municipal Waste Management.

H3: Religion of the house hold affect community participation in SWM.

H4 Income level of the house hold does have a significant influence on CP in Municipal Waste management.

H5: Integration between government and community is community participation on Municipal Waste management

H6: Government policies affect community participation on municipal solid waste management

LITERATURE REVIEW

Solid waste management concept

Any waste that is either solid or does not have a watery or liquid form is referred to as "solid waste". Used plastic, bags that have been broken, leftover food or food remains, and other items that are similar to these types of items are examples of solid waste. A sizeable portion of the waste may also be the ashes, dust, and debris left over from sweeping the streets(Sabata et al., 2005). In addition, "Solid waste is defined as material that no longer has any value to its original owner and is discarded," as stated (Haghi, 2011; Pichtel, 2014). According to (Chikowore, 2020), it has been demonstrated that the community-based waste management model is effective when the local authority & private sector, help citizen initiatives. Solid waste management calls for a decentralized system that emphasizes the importance of active citizen participation rather than increasing democratic representation.

An inquiry into how domestic waste is disposed of in the Ethiopian city of Mekele was carried out (Tadesse et al., 2008b).The researchers utilized multinomial logit estimation. The researchers could identify the factors that homeowners consider when making decisions. The findings suggest that age, education, & the No. of individual living in a family don't significantly impact the choice disposition. A study on pretending variables to willingness to pay SW services in Nigeria, was conducted (Rahji & Oloruntoba, 2009). Using a multistage sampling strategy resulted in selection of a total of 552 respondents. In this study, the questionnaire & the logit model were applies. According to the findings, the aspects of education, occupation, income, and household assets substantially influence the community's ability to make payments, and this influence is in

a positive direction. On the other hand, the influence of age is detrimental to the situation. According to the findings of yet another study (In et al., 2011), the factors of income, occupation, and nature of the house were found to be more inhibiting than age when it came to community participation. In a different study on the same subject, which was carried out by (Addai & Danso-Abbeam, 2014)the researchers discovered that factors such as education, age, gender, and the number of people living in a household all had a positive effect. (SHABANI, 2015)carried out research in the Lindi Municipal council of Tanzania to investigate how the influence of genetics on community participation (willingness to pay) on SWM can be measured. The research applied random sampling to collect responses from a total of 135 spread out across three woredas participants. According to the findings, women are more likely to commit financially than men.

According to a study that was conducted in Bangkok on the variables that impede individual participation segregation and recycling, it was found that community participation in SWM is affected by age as well as promoting campaigns and training and consulting programs (Atthirawong et al., 2015).(Birhanu & Berisa, 2015) researched Jigjiga to evaluate the city's solid waste management practices and public participiation's role in those practices. Stratified sampling was utilized to select respondents from various social strata. According to the findings of the study, there is a poor efficiency due to different reasons. Lack of funds, a lack of motivation, absence of recovery strategy, lack of training and development of human resources, was substantial institutional challenges the city faced in the sector. Another challenge was unreliable service. The growth of the city's human resources was another area in which it required assistance.

According to their research findings, under the title "Barriers to Effective Municipal Solid Waste Management in a Rapidly Urbanizing Area in Thailand" (Yukalang et al., 2017). In order to collect the necessary information for the study, interviews with key informants were held with individual participants and focus groups. These key informants consisted of staff members, residents of the municipality, and communities outside of the municipality. The findings point to a lack of waste treatment and fee collection systems and the need for adequate infrastructure. The operation of landfill sites has been impacted because of the location of the landfills and the presence of areas prone to flooding. In addition, there needs to be better communication between the local municipality and the people who live in the area, and there should be a greater participation rate in programs that separate waste.

In another piece of research, community members' contributions to the sorting and recycling of waste are investigated. The findings demonstrated that the community's perceptions do not impact the SWM and the nature of solid waste(Said, Yahaya, 2018).

According to the other study on community participation in SWM, they discovered that education has significant effects on storm water management (Tarigan et al., 2020).The role of community involvement in respect of total contribution was emphasized throughout the study as well. One hundred thirty-three residents of the Libia Village gave their consent to take part in the research for this study. Questionnaires, and

structural equation modeling was employed. An investigation into the element that impact the implementation of household waste management in Zimbabwe was the subject of a research project that was carried out (Chikowore, 2020).The research was carried out in Chitungwiza. In total, 314 people were chosen to participate in the research project using random and stratified sampling techniques. In order to make sense of the survey's findings, descriptive statistics and Chi-square tests of association were applied in the analysis process. The findings indicate a significant connection between gender and willingness to pay. On the other hand, there is no connection between a person's gender, age, or level of education and the waste receptacle facilities. Research conducted by (Fakunle & Ajani, 2021) looked into the topic of household participation in the control of solid waste. Purposive sampling was the method that was employed in the research project, and it was used to select 150 respondents to participate from five different sites Questionnaires were given to a specific group of participants who volunteered to participate. The desired result was to demonstrate that improper SWM leads to health-related challenges and that this is one way in which the community and the government can participate in the appropriate management of solid waste.

(Slučiaková, 2021)carried out research t regarding SWM in Punjab. In order to survey residents of the city's households, structured questionnaires were developed based on the research variables. The municipal solid waste department officers invited to participate in the interviews and roundtable discussions include a few different people. According to the findings of this research, there are many obstacles in the way of successfully implementing the SWM program in the city. These obstacles include a variety of financial, human resource, political, and logistical constraints. The successful implementation of solid waste management is hampered by administrative constraints, such as a lack of cutting-edge technology and equipment, inadequate land for dumping and disposal, and an integrated solid waste management (ISWM) program. The factors that prevent community participation in the waste bank were investigated (Bank, 2021).The findings showed that the distance from HH to WB did not have an effect; however, factors such as age, occupation, participation in social activity, and knowledge significantly impact community motivation.

Gap of the study

Studies on the management of solid waste can be approached from various angles. Even though many studies have focused on willingness to pay, transportation, political and logical constraints, and other factors that affect SWM, the results vary. Due to that, many studies have been conducted on these topics. In light of this disparity, this paper aims to investigate the factors that have hampered solid waste management in Ethiopia, specifically.
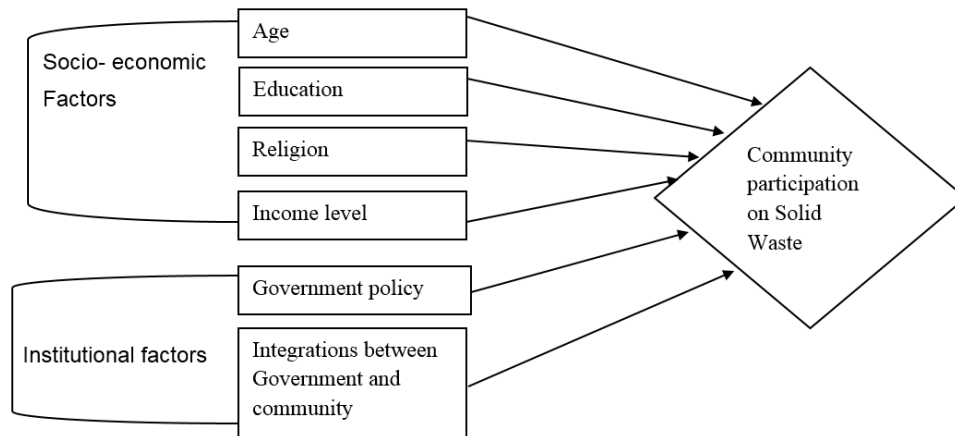
Conceptual frame work

Figure 1: conceptual frame work

METHODOLOGY

The study's goals play a significant role in the researchers' deliberations as they choose a research approach and methodology from among the myriad options currently available worldwide (Kothari, 2004). A casual research design was utilized as the method of research throughout this study. The researcher drew from a variety of primary and secondary sources when compiling their findings. In order to gather the primary data, a survey of households was carried out. Journal articles, statistical abstracts, books, policy briefs, and study reports from the Department of Sanitation, Beautification, and Parks Development were the primary sources for the secondary data that was collected. Only two of the eleven kebeles discovered in the town were randomly selected for the research. The Yamane (1967) formula was utilized to select 164 representative samples, and convenient sampling was the method of choice for the selection process. For the data analysis, the researcher employed both the multiple linear regression model and SPSS.

Model Specification

$CPSWM = β + β_1A + β_2E + β_3I + β_4R + β_5Int + β_6GP + μ$

CPSWM is the dependent variable community participation in SWM and

A –age

E- Education

I-Income

R-Religion

Int- integration b/n government and community and

GP- Government policy are the explanatory variables (repressor's)

The coefficients $\beta_1 - \beta_6$ are called the partial regression coefficients and μ is the stochastic disturbance term may well represent all those factors that affect CP but are not taken into account explicitly.

RESULTS AND DISCUSSION

Descriptive statistics

In this section the researcher describes the demographic characteristics of the respondents on table and graph.

Table 1: Age category and sex

Age Group (years)	Sex				Total	
	Male		Female			
	Count	%	Count	%	Count	%
21-30	12	7.32	31	18.90	43	26.22
31-40	21	12.80	62	37.80	83	50.61
41-50	8	4.88	18	10.98	26	15.85
51-60	3	1.83	8	4.88	11	6.71
Above 60	0	0.00	1	0.61	1	0.61
Total	44	26.83	120	73.17	164	100.00

Source: Field survey, 2013

It can be seen in Table 1 that the age range of 31 to 40 years is the one with the highest concentration of respondents (more than half). The age group from 21 to 30 contains the subsequent highest concentration of respondents. As a result, more than three-quarters of the respondents were between the ages of 21 and 40. It can be concluded that the participants had reached an appropriate level of maturity to handle the responsibility. Regarding the gender combination analysis, 120 (73%) of the respondents were female, and the rest were male. From the data from Table 1, the researcher concluded that females comprised the majority of respondents in the area.

Table 2: Educational level of the respondents

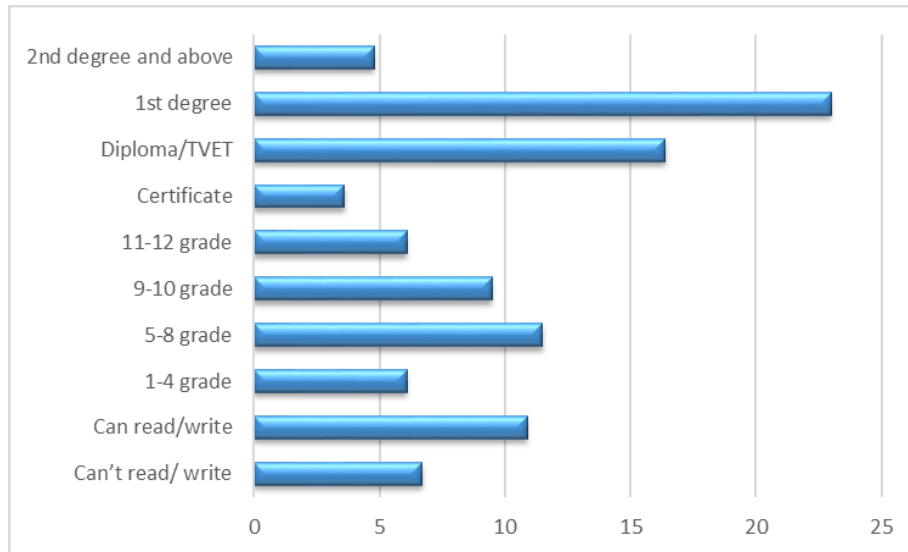| Educational Level	Frequency	Percentage
Can't read/ write	11	6.7
Can read/write	18	10.9
1-4	10	6.1
5-8	19	11.5
9-10	16	9.5
11-12	11	6.1
Certificate	6	3.6
Diploma/TVET	27	16.4
1st degree	38	23.0
2nd degree and above	8	4.8
Total	164	100

Source: SPSS out put

Figure 2: Educational back ground

According to Table 2 and Figure 2, the majority of the respondents, which constitutes 23.0%, have attained the educational level of a first degree. After this, 16.4 percent of the population has a high school diploma, and 15.6 percent have finished both 10th and 12th grade. The high level of education possessed by the sample households will contribute positively to obtaining concise and unique perceptions. It indicates that educated people have a good understanding and knowledge of their household solid waste management and related issues, and it answers the questionnaires in an easy-to-understand manner.

Inferential Statistics

The Pearson correlation coefficient was employed in this investigation to determine the nature of the partnership between the independent and dependent variables.

Assumption Test

Table 3: Coefficient analysis

	Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.423	.202		7.047	.000		
	Age	.265	.032	.276	8.373	.000	.854	1.171
	Education	.187	.040	.164	4.730	.000	.767	1.303
	Income	.182	.042	.173	4.286	.000	.569	1.758
	Religion	.108	.041	.110	2.652	.008	.542	1.846
	Integration	.249	.029	.288	8.721	.000	.852	1.174
	Government policy	.125	.033	.133	3.840	.000	.775	1.290
a. Dependent Variable: Community participation in SWM								

a. Multi collinearity

When there is multicollinearity among independent variables, statistical inferences will have lower reliability. One of the measures that can be used to determine whether or not there is multicollinearity is the VIF value. As shown in Table 3, the value of the VIF is less than 5, and there is no evidence of multicollinearity.

Table 4: Model Summary[b]

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Watson |
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.292[a]	.085	.060	.88831	.085	3.446	5	185	.005	2.048
a. Predictors: (Constant), Religion, Age, Income, Education, Integration and Government policy										
b. Dependent Variable: CPSWM										

a. Autocorrelation

In some circles, it is also called serial or lagged correlation. The Durbin-Watson Test and the Ljung–Box Q Test are the two that are available techniques to test the assumption. The former methodology recommended by (Brooks, 2010) and was used in this investigation. In light of this, the DW value for table 4 is 2. 048. The conclusion can be drawn from this is that there is no autocorrelation.

b. Normality

If the assumption of normality is broken, then the results of these tests will no longer be reliable, and we will be unable to confidently generalize our findings from the sample data to the entire population based on those findings. Because of this, it is extremely important to determine whether or not this assumption is correct. The researcher used the statistical test to check the normality based on following hypothesis.

Ho: the data is normally distributed

Table 5.Tests of Normality

| | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
	Statistic	df	Sig.	Statistic	df	Sig.
CPSWM	.065	163	.198	.980	164	.654
a. Lilliefors Significance Correction						

According to table 5 the data is normally distributed due to P value is greater than5%...

Model Summary Analysis

Table 4 revealed that the value of R2 was 0.60, which indicated that the dependent variable was explained by 60% of the total variance, and it indicates that these six obstructing variables are unable to account for forty percent of the variation in the total participation of the community in SWM. Therefore, there must be additional factors besides these that play a role.

Hypothesis Testing

In this section, the results that relate to the hypotheses formulated to achieve the Research Objectives will be presented.

According to Table 3, all of the variables positively influence the community's participation in SWM in the study area, as indicated by their positive beta values.

The value of age is the highest (.265), followed by the value of integration between the community and the government (.249), and education is the third variable that significantly affects and the beta value is.187.Other variables that affect the dependent variables are income, which has a value of .182, governmental policy, which has a value of.125; and religious affiliation, which has a value of.108.This beta value demonstrates that an increase in participation will occur if the independent variables are allowed to grow by a unit or a percentage and vice versa.

Because $p < 0.05$ and $P=0.000$ for all variables, factors such as age, education, income, religious affiliation, integration, and government policy inhibit community participation in solid waste management. Every single alternative hypothesis was recognized as valid.

The findings of this study are consistent with the findings of the study (Chikowore, 2020). Furthermore, the results found by (Rahji & Oloruntoba, 2009; Tadesse et al., 2008a) showed no consistency regarding age.

CONCLUSION AND RECOMMENDATION

According to the regression analysis findings, all of the explanatory variables that were a part of the research project had positive and statistically significant effects on the level of community participation in the management of solid waste. As a result, the dependent variable is influenced by socioeconomic and institutional factors. Moreover, factors such as age, integration, and education were major barriers

To achieve fruitful outcomes, the government participates in the community planning process and raises awareness about the issue among all members of the community.

In addition, the conditions must be established to encourage community participation in any program concerning waste management.

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