



Acceptability and Integration of Dustbins for Waste Collection and Management in the Ho Municipality of Ghana

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ABSTRACT: One of the major tenacious environmental problems is the management of various household waste components. Hence, the objective of this paper was to evaluate the attitude and behavioural intention of households towards acceptability and integration of dustbin for domestic waste collection and management in Ho Municipality, Volta Region, and Ghana in general, using appropriate standard methods. Data obtained and analyzed reveals that most respondents agreed that it is important to accept and integrate dustbin for waste management ($M = 4.89$; $SD = 1.181$) and that it is good to accept and integrate dustbin for waste management ($M = 4.84$; $SD = 1.220$). They also believed that the benefits of accepting and integrating dustbin for waste management outweigh the associated risks ($M = 4.69$; $SD = 1.223$). Overall, most respondents indicated their attitude towards the acceptability and integration of dustbin for waste management, which is positive ($M = 4.80$; $SD = 1.217$). Indeed, it was found that the households have high positive attitude and intentions towards the dustbin integration and acceptance for domestic waste collection.

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The management of various waste components is a pressing issue that countries worldwide are currently facing, as highlighted in recent studies (Issahaku *et al.*, 2014; Adekola *et al.*, 2021). Waste management constitutes a crucial aspect of the duties assigned to local authorities in developed regions such as Europe and the United States. As such, various systems and strategies have been developed and implemented to

mitigate the impact of waste challenges on both human life and the environment. Mechanisms such as plastics for money as practiced in Germany and other western countries have been celebrated. In the regions above, appropriate receptacles and advanced technology are utilised to effectively manage the storage, transportation, treatment, and disposal of non-treatable waste in an ecologically sustainable manner. Contrary

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to the foregoing, in developing regions such as Africa, there is a dearth of robust systems and control protocols to effectively manage the substantial quantities of waste produced daily. The surge in population in Ghana, coupled with inadequate investment in waste management has exacerbated the issue, raised concerns and sparked investigations into the potential consequences of the health of Ghanaians and the environment. Waste is any material or substance that is deemed unnecessary or unwanted and is disposed of after it has fulfilled its intended purpose (Muljaningsih and Galuh, 2018). Waste management encompasses various activities such as storage, collection, transportation, treatment, and disposal of waste materials (Harman; Yenikalayci, 2022). Furthermore, it includes measures aimed at preventing waste generation through strategies such as recovery, reuse, recycling, and reduction (Mudu *et al.*, 2021). Waste is classified into diverse constituents, encompassing organic matter, paper, metal, glass, plastics, and other materials. Waste materials are also categorised based on their point of origin. As a result, there exist multiple types of waste including; municipal solid wastes, hazardous wastes, industrial wastes, agricultural wastes, bio-medical wastes, and E-waste. The high generation of waste can be attributed to the increase in population as mentioned in the preceding paragraph. Especially, if they are not tackled with urgency can be very problematic to the citizens and a threat to their livelihood as well. According to Kyere *et al.* (2019), there is an anticipated increase in the proportion of individuals residing in urbanized areas in Africa from 40 per cent in 2010 to 57 per cent by 2050 which will further intensify the challenges related to waste management due to increased population density and urban consumption. Also, concerning industrialization, without a form of waste management, what is largely a blessing with economic prosperity could be an opportunity cost to the health of the people. Rapid urbanization and population growth, lack of waste transportation systems, lack of waste bins, lack of public knowledge of the negative health effects of improper waste management, and lax enforcement of environmental laws are the main obstacles to Ghana's effective solid waste management. To tackle the challenges of waste management, governments in Ghana have implemented diverse initiatives and legislations to control and supervise the process, to mitigate associated issues. The decentralisation movement of the late 1980s aimed to alleviate the central government's burden of addressing economic, social, and political demands. As a result, waste management responsibilities were also transferred to local authorities through the enactment of Act 462 by parliament. Subsequently, the National Sanitation

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Policy was enacted in 1999 and underwent a review in 2008/9 after a decade of implementation as a way of intensifying the government's efforts. The central government's focus on environmental and sanitation issues is also reflected through various departments and agencies, in addition to the metropolitan, municipal, and district assemblies. The Ministry of Local Government and Rural Development (MLGRD) and the Ministry of Sanitation and Water Resources Development have been actively involved in the course. The efforts of these sectors are supported by several legal frameworks and institutions such as the Criminal Code of Ghana, specifically 1960 (Act 29), which provides clear guidelines on the legal violation of the inappropriate management of waste; National Building Regulations of 1996 (LI 1630), which mandates individuals, groups, and institutions to possess or utilise a regulated dustbin that has been authorised by the Assembly to store waste until it is collected and disposed of at the final site (1996, LI 1630:35); Environmental Protection Authority; Assembly By-laws; Public Procurement Authority; and other established practises to govern the waste management industry. Despite the existence of various laws, regulations, and policies that impose legal obligations on individuals and institutions to assume full responsibility for the waste they generate by utilising an approved and standardised dustbin or receptacle, environmental littering persists among citizens. Ghanaians appear to be unfamiliar with the practice of disposing of litter in a receptacle, indicating a cultural tendency towards littering. This pertains solely to a segment of the population that employs either public communal receptacles or household waste bins to discard their refuse. According to the Ghana Standards Living Survey (GLSS), a mere 29.1 per cent of solid waste is collected, with a majority of households opting to dispose off their refuse in public refuse dumps, accounting for 47.8 per cent. According to the Ghana Statistical Service (2019), approximately 19.5% and 10.8% of Ghanaians engage in the practices of burning and indiscriminate dumping, respectively.

It is indicated from the above that the collection of waste in Ghana presents a significant challenge within the waste management cycle, as noted by (Lissah *et al.*, 2021). The collection of waste is a crucial stage in the waste management process, as it serves as the foundation for a circular economy and enables the reuse, recycling, and recovery of waste materials. Though studies have been conducted on waste management practices (Fagariba and Song, 2016; Adekola *et al.*, 2021; Chen, 2018; Cheng *et al.*, 2022), the social and behavioural drivers of waste collection systems and the acceptance of waste bins sanitation programmes at the households level have not been

studied in depth, calling for a comprehensive investigation regarding the social and behavioural factors and their degree of impact on waste management systems in general, as well as the viability of sanitation campaigns aimed at promoting the use of waste bins at the household level. The various roles private individuals can play by investing into waste management complimenting the various contributions the government invest into minimizing the adverse effect of improper waste management. Furthermore, the sole investigation into waste bin sanitation initiatives is Deafeamekpor's (2019) examination of the one household-one-bin intervention in the Abokobi community. Thus, research on dustbin integration and acceptance for domestic waste collection in Ghana has not extensively explored the impact of social, economic, and behavioural determinants. Hence, the objective of this paper was to evaluate the attitude and behavioural intention of households towards acceptability and integration of dustbins for domestic waste collection and management in Ho Municipality at the Volta Region of Ghana.

MATERIALS AND METHODS

Study Setting: Our study was conducted in the Ho Municipality. The selection of the study area took into consideration proximity, scarce financial and logistic resources on the part of the researchers and convenience of accessing respondents in addition to the purpose and context of the study. The selection of this area was also influenced by a report by the Ghana Statistical Service in 2019, which indicated that the Volta Region exhibits a mere 2.7% disposal rate of household solid waste through a refuse collection management system. According to the Ghana Statistical Service (2019), the region in question ranks

as the second lowest-performing administrative area concerning waste collection in Ghana. The low household solid waste disposal rate in the Volta Region as highlighted by the Ghana Statistical Service in 2019, influenced the selection of Ho Municipality, an influential Municipality in the Region for researching the acceptability and integration of dustbins for improved waste collection and management in that specific area. The Municipality was established by a Legislative Instrument: L.I 2074 of 2012 after the split of the Ho West District Assembly in 2012. The municipality, which is also the capital city of the Volta Region, is situated between latitudes 6° 20' N and 6° 55' N and longitudes 0° 12' E and 0° 53' E. The Municipality imparts limits to Adaklu and Agotime-Ziope Districts toward the South, Ho West District toward the North and West and the Republic of Togo toward the East. Its aggregate land territory is 2,361 square kilometres subsequently 11.5 percent of the region's aggregate land area (Ghana Statistical Service, 2010). The municipality's industrial sector is weaker than the residential and service ones. That is, the level of development of the industrial sector within the municipality is comparatively low. At present, the municipality lacks significant industrial conglomerates. Small firms are the norm in the industry, which today employs just approximately 8% of the workforce. Cal-Tech Ventures at Hodzo is one of the numerous agribusinesses now in operation. They make ethanol, starch, and other cassava products. Twenty-two per cent of the local workforce are employed in the service and commercial industry. The public sector hires 9% of the labour force, and the private sector engages the outstanding 91% (Ghana Statistical Services, 2014). Figure 1 shows the Map of Ho Municipality.

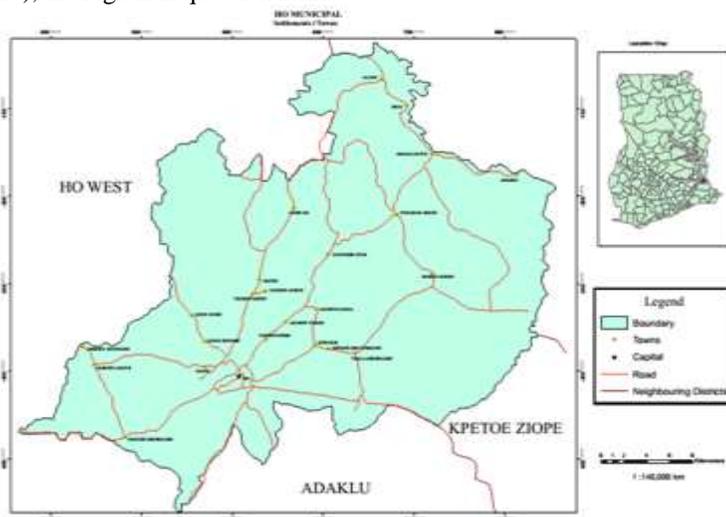


Fig 1: Map of Ho Municipality
Source: (Ho Municipal Assembly, 2023)

Study Population and Design: This study employed a quantitative research approach and a positivist research philosophy. Leavy (2017) explains that in quantitative studies, researchers seek to explain observable phenomena by categorising characteristics or variables, quantifying them, and building statistical models. Furthermore, the positivist principles posit that only data collected by rigorous scientific procedures like observation and measurement may be trusted (Bryman and Bell, 2015). As such, the researchers settled on this method to ensure a more objective and deliver more trustworthy conclusions via the synthesis of data. The research also employed explanatory research and a case study design aimed at understanding waste management practices and establishing the factors that influence dustbin integration and acceptance of domestic waste collection among the people of Ho Municipality. Research populations are defined as the groups of interest in a study (Bryman, 2012). This study's population was made up of households in the Ho Municipality. Thus, this study was interested in the households' perceptions of acceptability and integration of dustbins. The municipality has a total population of 180,420 which consists of 84,843 males and 95,577 females (Ghana Statistical Service, 2010). Though current statistics of the number of households in the municipality are yet to be released from the 2021 census, the 2010 census report indicated there are about 49,826 households with an average size of about 4 persons per household in the municipality.

Recruitment and Sampling Procedure: Researchers select a subset of the population for a specific study to generalise and draw conclusions about the greater population (Sekaran, 2000; Newman, 2014). This study employed a convenience sampling technique for this course. Thus, the researchers conveniently selected households that were available and willing to offer the necessary information to answer the research questions (Ackom-Wilson, 2015). For this study, 400 households were invited to participate in the study. According to Krejcie and Morgan (1970), the adequate sample size for a population equal to or greater than 1,000,000 is 384. Thus, using the sample size determination table by Krejcie and Morgan (1970), the researchers were convinced that a sample size of 400 is representative and adequate for a population of 49,826 households for this study.

Data Collection: The study predominantly used primary data which was collected from respondents by using questionnaires. This was influenced by the study's design and approach as well as the argument that the use of questionnaires is one of the most widely used research tools (Bosomtwe, 2015), and

inexpensive to administer (Creswell, 2014; Saunders *et al.*, 2016). In addition, data collected via a self-administered questionnaire also enables the efficient collection of data from a large number of respondents (Efiong, 2013). The questionnaire was structured in two parts. Part one covered the biographical information of the respondents which aided in describing the sample. The second part focused on the perceived benefits/usefulness of using dustbins, the perceived financial cost of using dustbins, subjective norms, attitude towards acceptability and integration of dustbins and intention to accept and integrate dustbins. These constructs were measured using questionnaire items adapted from Croy *et al.* (2010), Muthusamy (2011), Efiong (2013), Noh *et al.* (2013), Shin (2013), and Hajli *et al.* (2015) measured on a five-point scale.

Data Analysis: The purpose of any data analysis is to derive useful insights and information from the chaos of raw data amassed during an investigation of a problem (Makasa, 2013). Quantitative data was used in this investigation because it made it possible to have meaningful conversations based on numerical information; the data was collected consistently and was standardised; and the numerical data was simple to understand because the results were presented using graphical representations. Thus, only quantitative methods were employed to analyse the data in this study. For this investigation, descriptive and inferential statistics were used to do data analysis. Descriptive statistics are used to examine and evaluate the sample and variables statistically. Descriptive statistics include measures such as percentages, means, and standard deviations; inferential statistics, on the other hand, are used to draw inferences about a broader population from data gathered on a sample of that population. It is the purpose of inferential statistics to provide statistical findings that will allow the researcher to make conclusions from the data collected. Predictions and inferences about a population may be made using inferential statistics, which focus on concluding the study of a statistically significant subset of the population (Owuoth and Mwangangi, 2015). The analysis was performed using SPSS 25 and SmartPLS 4.

Ethical Approval: Research ethics are a set of guidelines for how researchers should act when gathering and analysing data (Brough, 2019; Saunders *et al.*, 2019). Since this research involved human subjects, great care was taken to ensure that it was performed responsibly and lawfully. The confidentiality of the study's participants was strictly protected. The participants were briefed about the study's goals, including its academic merit and its

contribution to the body of literature on waste management. In addition, they were told that filling out the survey is entirely optional and that they may stop at any time if they so choose. Ultimately, the study received approval from the Committee on Human Research Publication and Ethics (CHRPE) at Kwame Nkrumah University of Science and Technology (KNUST) in Ghana.

RESULTS AND DISCUSSION

This section presents the results from the data collected and analysed via the descriptive and inferential statistical methods. The descriptive statistics cover the demographic profile of the respondents. Hereafter, the study examined the validity and reliability of the measures and hypotheses assessments.

Socio demographic Characteristics of the Participants: The profile of the respondents is reported in this section. The result covers the personal characteristics of the respondents including age, gender, monthly income, education, and marital status. The results are presented in Table 1

Table 1: Respondents' Profile

Profile	Count	%
Age	Below 20 years	41 10.4%
	20-25 years	43 10.9%
	26-30 years	64 16.2%
	31-35 years	63 15.9%
	36-40 years	138 34.8%
	Above 40 years	47 11.9%
Total	396	100.0%
Gender	Female	222 56.1%
	Male	174 43.9%
	Total	396 100.0%
Monthly Income	GH¢1 - 499	19 4.8%
	GH¢500	-
	GH¢999	107 27.0%
	GH¢1000	-
	GH¢2,999	205 51.8%
	GH¢3,000	-
	GH¢4,999	40 10.1%
	GH¢5,000 and above	25 6.3%
Total	396	100.0%
Education	Basic/primary level	57 14.4%
	Secondary/High school	85 21.5%
	Tertiary level	236 59.6%
	No-formal education	18 4.5%
	Total	396 100.0%
Marital Status	Divorced	87 22.0%
	Married	196 49.5%
	Separated	15 3.8%
	Single	98 24.7%
	Total	396 100.0%

As presented in Table 1, most respondents (34.8%) were within 36 to 40 years age bracket, followed by 26 to 30 years representing 16.2%, and 31 to 35 years representing 15.9%. Also, most respondents (56.1%) were females while males represented 43.9%. Regarding monthly income, 51.8% gained monthly income of GH¢ 1,000 to GH¢ 2,999, 27% were within GH¢ 500 to GH¢ 999 income brackets, 10.1% within the GH¢ 3,000 to GH¢ 4,999 bracket and 6.3% were making monthly income of GH¢ 5,000 and above. The remaining 4.8% were making less than GH¢500. Further, not all the respondents had formal education in that 59.6% had tertiary education, 21.5% had secondary education, 14.4% reached basic level of education while 4.5% had no formal education. Finally, analysis on the marital status reveals 49.5% of the respondents were married while 24.7% were single. Others were divorced (22%) and separated (3.8%). These demographic insights are crucial for understanding the attitudes of the people towards waste management as well as tailoring waste management interventions to the community's specific characteristics, addressing potential gender dynamics, educational backgrounds, and income disparities.

Attitude and Behavioural Intentions of Various Households toward the Acceptability and Integration of Dustbin for Domestic Waste Collection: The part presents the findings on the attitude and behavioural intention of various households towards the dustbin integration and acceptance for domestic waste collection in the Ho Municipality. Table 2 shows the results. As revealed in Table 2, most respondents agreed that it is important to accept and integrate dustbin for waste management ($M = 4.89$; $SD = 1.181$) and that it is good to accept and integrate dustbin for waste management ($M = 4.84$; $SD = 1.220$). They also believed that the benefits of accepting and integrating dustbin for waste management outweigh the associated risks ($M = 4.69$; $SD = 1.223$). Overall, most respondents indicate their attitude towards the acceptability and integration of dustbin for waste management is positive ($M = 4.80$; $SD = 1.217$). Summarily, the households' attitude towards the acceptability and integration of dustbin for waste management was positively high ($M = 4.81$; $SD = 1.210$).

Similarly, most households intend to develop a new habit for accepting and integrating dustbin waste management ($M = 4.59$; $SD = 0.636$) and that they have planned to use dustbin for waste management regularly ($M = 4.74$; $SD = 1.289$). Also, most households indicate the possibility to use dustbin for waste management for the next time ($M = 4.73$; $SD = 1.269$) or six months ($M = 4.63$; $SD = 1.411$).

Summarily, the households' intention to accept and integrate dustbin was positively high ($M = 4.71$; $SD = 1.355$) in that the households asserted to use the dustbins provided by waste management companies like Zoomlion ($M = 4.88$; $SD = 1.331$).

Table 2 Attitude and Behavioural Intention of Various Households towards the Acceptability and Integration of Dustbin for Domestic Waste Collection and Management

Items	Mean	Std. Deviation
Attitude towards Acceptability and Integration of Dustbin		
I think it is good to accept and integrate dustbin for waste management.	4.84	1.220
I believe that the benefits of accepting and integrating dustbin for waste management outweigh the associated risks.	4.69	1.223
I feel that accepting and integrating dustbin for waste management is important.	4.89	1.181
Overall, my attitude towards the acceptability and integration of dustbin for waste management is positive.	4.80	1.217
Overall Attitude	4.81	1.210
Intention to Accept and Integrate Dustbin		
I would need to develop a new habit for accepting and integrating dustbin waste management.	4.59	1.474
I have planned to use dustbin for waste management regularly.	4.74	1.289
I am likely to use dustbin in the next six months.	4.63	1.411
I am likely to use dustbin for waste management for the next time.	4.73	1.269
I will use the dustbins provided by waste management companies like Zoomlion.	4.88	1.331
Overall Intention	4.71	1.355

Source: Field Data, 2022

Factors that Facilitate the Acceptability and Integration of Dustbin for Domestic Waste Collection and Management: This section focuses on the psychological factors that facilitate dustbin integration and acceptance for domestic waste collection. Thus, the research framework as depicted in Figure 2 was tested to examine the six research hypotheses. The results from the analysis are presented in Table 3. As presented in Table 3, the standardised path coefficient ($\beta = 0.278$; $CI [0.152, 0.396]$; $t = 4.486$; $p < 0.001$) indicates a strong positive link between perceived benefits and usefulness and attitude towards the acceptability and integration of dustbin for domestic waste collection; supporting hypothesis 1_a. Also, the standardised path coefficient ($\beta = 0.259$; $CI [0.167, 0.353]$; $t = 5.502$; $p < 0.001$) signifies a strong positive nexus between perceived benefits/usefulness and intention to accept and integrate dustbin for domestic waste collection; supporting hypothesis 1_b. These suggest that a one standardised unit increase in perceived benefits/usefulness will result in 0.278 and

0.259 unit increase in attitude and intention towards the acceptability and integration of dustbin for domestic waste collection, respectively.

Similarly, the standardised path coefficient ($\beta = 0.383$; $CI [0.274, 0.495]$; $t = 6.837$; $p < 0.001$) indicates a strong positive link between subjective norm and attitude towards the acceptability and integration of dustbin for domestic waste collection. This suggests that a one standardised unit increase in subjective norm will result in 0.383 unit increase in attitude towards the acceptability and integration of dustbin for domestic waste collection. Thus, supportive of hypothesis H₂. Furthermore, perceived financial cost had significant negative influence on attitude ($\beta = -0.243$; $CI [-0.305, -0.178]$; $t = 7.445$; $p < 0.001$) and intention ($\beta = -0.184$; $CI [-0.271, -0.099]$; $t = 4.183$; $p < 0.001$) towards the acceptability and integration of dustbin for domestic waste collection; supporting hypothesis 3_a and hypothesis 3_b. These suggest that a one standardised unit increase in perceived financial cost will result in 0.243 and 0.184 unit decrease in attitude and intention to use auditing services, respectively.

Also, the results indicate a strong positive link between attitude and intention towards the acceptability and integration of dustbin for domestic waste collection ($\beta = 0.502$; $CI [0.381, 0.618]$; $t = 8.283$; $p < 0.001$). This suggests that a one standardised unit increase in attitude towards the acceptability and integration of dustbin for domestic waste collection will result in 0.282 unit increase in intention to accept and integrate dustbin for domestic waste collection. Thus, supporting hypothesis H₄.

Further analysis as depicted in Figure 2 shows that perceived benefits and usefulness, subjective norm and perceived financial cost significantly account for 61% of variation in attitude towards dustbin integration and acceptance for domestic waste collection. Also, the overall model explained 70% of variance in households' intention towards dustbin integration and acceptance for domestic waste collection. In addition, attitude mediated the influence of perceived benefits and usefulness, subjective norm, and perceived financial cost on intention towards the acceptability and integration of dustbin for domestic waste collection.

Influence of Socio-Demographic Factors on Waste Management: This section presents the findings on the impact of socio-demographic factors on individuals' attitudes and motivations towards engaging in waste bin initiatives for managing domestic waste. Multi linear regression analysis was conducted to assess

whether socio-demographic factors significantly predicted attitudes and motivations among individuals with respect to their participation in waste bin

initiatives for domestic waste management. The results are depicted in Tables 4.

Table 3 Predictors of Acceptability and Integration of Dustbin for Domestic Waste Collection

Path	β	SE	t-value	p-value	Confidence Interval (CI)	
					2.5%	97.5%
Direct effects						
PB_U -> ATT	0.278	0.062	4.486	0.000	0.152	0.396
PB_U -> INT	0.259	0.047	5.502	0.000	0.167	0.353
SN -> ATT	0.383	0.056	6.837	0.000	0.274	0.495
PFC -> ATT	-0.243	0.033	7.445	0.000	-0.305	-0.178
ATT -> INT	0.502	0.061	8.283	0.000	0.381	0.618
Indirect Effects (Mediating Effects of ATT)						
PB_U -> ATT -> INT	0.139	0.031	4.556	0.000	0.084	0.204
SN -> ATT -> INT	0.192	0.038	5.014	0.000	0.125	0.276
PFC -> ATT -> INT	-0.122	0.027	4.501	0.000	-0.180	-0.074

Source: Field Data, 2022

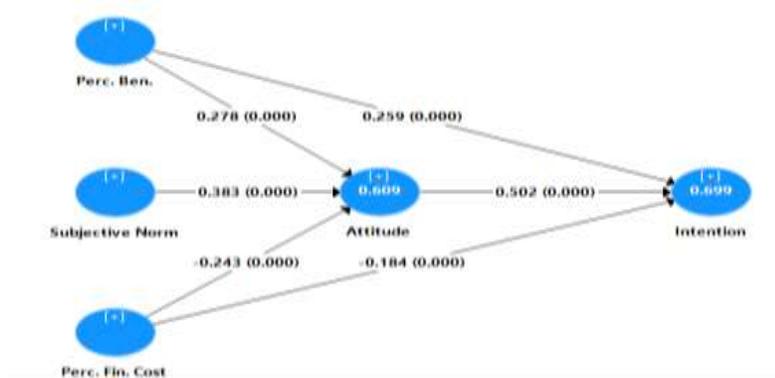


Fig 2: Full model results

Source: SmartPLS Output based on Field Data, 2022

Table 4 Regression Analysis on the Influence of Socio-demographic Factors on Attitude towards Wastebin Initiatives for Domestic Waste Management

Dependent Variable	Attitude				
Independent Variables	Socio-demographic factors				
Multiple R	.572				
R ²	.328				
Adjusted R ²	.319				
Standard Error	.886				
F	38.006				
N	396				
Sig.	0.000				
Independent Variables	B	Std. Error	Beta	t	Sig
(Constant)	2.674	0.226		11.856	0.000
Age	0.103	0.033	0.147	3.118	0.002
Gender	-0.393	0.095	-0.182	-4.140	0.000
Monthly Income	0.140	0.056	0.116	2.494	0.013
Education	0.376	0.066	0.278	5.694	0.000
Marital Status	0.406	0.044	0.406	9.213	0.000

Source: Field Data, 2022

A regression analysis was performed to find out how much variation in attitude towards waste bin initiatives for domestic waste management can be explained by socio-demographic factors (Table 4.8). The regression is a fair fit ($R^2_{adj} = 31.9\%$), and the overall relationships were significant ($F = 38.006, p = 0.000$). Collectively, 31.9% variation in attitude towards waste bin initiatives for domestic waste management is explained by the socio-demographic factors. Thus,

age ($B = 0.103; t = 3.118; p = 0.002$), gender ($B = -0.393; t = 4.140; p = 0.000$), monthly income ($B = 0.140; t = 2.494; p = 0.013$), education ($B = 0.376; t = 5.694; p = 0.000$), and marital status ($B = 0.406; t = 9.213; p = 0.000$) were found to be significant predictors of attitude towards waste bin initiatives for domestic waste management. The implication is that socio-demographic factors facilitate attitude towards waste bin initiatives for domestic waste management.

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Table 5 Regression Analysis on the Influence of Socio-demographic Factors on Intentions Towards Wastebin Initiatives for Domestic Waste Management

Dependent Variable	Intention				
Independent Variables	Socio-demographic factors				
Multiple R	.555				
R ²	.308				
Adjusted R ²	.299				
Standard Error	.991				
F	34.713				
N	396				
Sig.	0.000				
Independent Variables	B	Std. Error	Beta	t	Sig
(Constant)	2.388	0.252		9.465	0.000
Age	0.027	0.037	0.034	0.718	0.473
Gender	-0.353	0.106	-0.148	-3.320	0.001
Monthly Income	0.155	0.063	0.117	2.474	0.014
Education	0.542	0.074	0.363	7.335	0.000
Marital Status	0.392	0.049	0.355	7.943	0.000

Source: Field Data, 2022

A regression analysis was performed to find out how much variation in intentions towards waste bin initiatives for domestic waste management can be explained by socio-demographic factors (Table 4.9). The regression is a reasonable fit ($R^2_{adj} = 29.9\%$), and the overall relationships were significant ($F = 34.713$, $p = 0.000$). Collectively, 29.9% variation in intentions towards waste bin initiatives for domestic waste management is explained by the socio-demographic factors. Thus, socio-demographic variables including gender ($B = -0.353$; $t = 3.320$; $p = 0.001$), monthly income ($B = 0.155$; $t = 2.474$; $p = 0.014$), education ($B = 0.542$; $t = 7.335$; $p = 0.000$), and marital status ($B = 0.392$; $t = 7.943$; $p = 0.000$) were found to be significant predictors of intentions towards waste bin initiatives for domestic waste management. The inference is that socio-demographic factors enable intentions towards waste bin initiatives for domestic waste management.

Our study has presented the empirical data gathered from households in the Ho Municipality through questionnaires. The empirical data presented above, provides insights on the attitudes and behavioural intention of households towards the acceptability and integration of dustbin for domestic waste collection and management, factors that facilitate the acceptability and integration of dustbins for domestic waste collection and management as well as the influence of socio-demographic factors on waste management. This section discusses the findings presented above.

Generally, it was found that the households have high positive attitude towards dustbin integration and acceptance for domestic waste collection and Management. The results also indicate a high positive

behavioural intention of the households towards the dustbin integration and acceptance for domestic waste collection.

The study further revealed that perceived benefits/usefulness of dustbins positively influence households' attitude and intention towards the dustbin integration and acceptance for domestic waste collection. That is, the more beneficial or useful the households perceived the use of dustbins, the more positive their attitude and intention towards the acceptability and integration of dustbin for domestic waste collection and management. Furthermore, the perceived financial cost was found to negatively influence the households' attitude and intention to accept and integrate dustbins for waste collection. Thus, perceived financial cost emerges as a significant and negative precursor of households' attitude and intention towards the dustbin integration and acceptance for domestic waste collection in that the higher the perceived financial cost, the less the households' intention to use dustbins and the more negative attitude towards dustbins acceptability and integration. It is important to note that the observation of the various households burn the waste that they produce which is seen as more convenient as well cost effective that the possible dustbin integration strategy that will cost some amount of money. Lastly, attitude was found to influence the households' intention to accept and integrate dustbins significantly and positively. In other words, the attitude of households is a substantial and positive influential factor of intention towards the acceptability and integration of dustbin for domestic waste collection.

The above findings support previous findings. For instance, Quaddus and Hofmeyer (2007) investigated

the factors influencing the adoption of business-to-business trading exchanges in a random sample of 1000 small businesses in Western Australia. The results confirmed that perceived benefits significantly affected the positive attitude towards B2B trading exchanges in small businesses. Likewise, attitude toward using chatbots for shopping was most significantly influenced by perceived enjoyment (Kasilingam, 2020). Luarn and Lin (2005) found that PFC adversely affect the behavioural use of mobile services. This assertion was confirmed in a study by Muthusamy (2011) which found that the PFC of a system negatively influenced the intention to use FAS among SMEs in Malaysia. Bortoleto *et al.*, (2012) found that waste prevention behaviour among households in São Paulo, Brazil was impacted by their moral obligation perceptions.

Socio-demographic factors were found to influence attitudes and people's motivation to take part in waste bin initiatives for household waste management. Specifically, age, gender, monthly income, education and marital status were found to be significant predictors of attitude towards waste bin initiatives for domestic waste management. Also, in the exception of age, gender, monthly income, education, and marital status significantly predicted intentions towards waste bin initiatives for domestic waste management.

These findings support the existing literature that suggests that attitude and intention depend upon socio-demographic factors (Dzawanda and Moyo, 2022; Fikadu *et al.*, 2022; Ismail *et al.*, 2022). Thus, the diversity of families play a role in developing an effective waste management strategy. In other words, socio-demography including level of education and income influence the attitudes and people's motivation to take part in waste bin initiatives for household waste management. An effective waste management strategy involves sensitization of the various households and through the National Commission for Civic Education or partnerships with Non – governmental organizations can be employed to make households understand waste management and provide ways of giving value to the cost they may incur.

Limitations and Strength: It might not be appropriate for this study to claim that the findings are valid to all households in Ghana as data collection was limited to the Ho Municipality. Thus, expanding the research to cover a more representative sample of the households from various regions of Ghana may give a better ground for generalisation of the findings. Applying mixed method (both quantitative and qualitative research) will further provide valuable understanding of the attitude and behavioural intention towards the

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acceptability and integration of dustbins for waste management in Ghana and the predictors thereof. Notwithstanding the above, our research has provided valuable insights on attitude and behavioural intention towards the acceptability and integration of dustbins for waste management in a community in Ghana.

Conclusion: This study explored the determinants for the dustbin integration and acceptance for domestic waste collection among the people of Ho Municipality. Specifically, the study covered the attitude and behavioural intention of households towards the acceptability and integration of dustbin for domestic waste collection as well as the predictive role of psychological factors and socio-demographic factors on the attitude and the intention towards the dustbin integration and acceptance for domestic waste collection and management among households within Ho Municipality in the Volta Region of Ghana. Generally, it was found that the households have high positive attitude and intentions towards the dustbin integration and acceptance for domestic waste collection.

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Data Availability Statement: Data are available upon request from the corresponding author.

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