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Measuring Quality Service Delivery in Residential Apartments by private Sector involvement in Solid Waste Sanitation

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Abstract

Solid waste management has been insurmountable with its challenges in urban and regional capitals in Ghana. The private waste management companies combined with district assemblies has provided some relieved solution. The objective for the study is measuring quality service delivery by solid waste management companies in regional capitals and cities in Ghana. A descriptive cross sectional survey design mixed method using structured interviews and questionnaires for data collection. The researcher initially did a qualitative study where the sampled respondents indicated their preference for the perception of measuring quality service delivery from solid waste management companies. The tangibility, intangibility, reliability, responsiveness, assurance and empathy were considered. The sampled interview results replicated into structured questionnaire for easy interpretation. The study engaged 1,620 residential households that demands services from solid waste management companies throughout the country representing 89.5% valid data collected using purposive sampling. The findings indicate that distribution of solid waste companies varies from regions with most service providers in the regional capitals. From the survey, 90.6% sampled population uses door-to-door service provider for waste disposal lifted by compassion trucks or tricycles. 58.6% had signed service level agreement (SLA) with their service provider. 88.8% were satisfied with the work from private service providers and collection of their solid waste. The satisfaction factors were regular and timely lifting of refuse 70.9%, moderate fee charges 24.6% and prompt feedback 4.5% respectively in order. The study recommends district assemblies to monitor and evaluate performance of all solid waste service providers. This will solve waste management challenges and creates more jobs for the youth of Ghana.

Keywords: *Quality of Service, Service Providers, Solid Waste Management*

1.0 INTRODUCTION

Residential areas need to dispose of their solids waste properly to protect the environment and avoid outbreak of communicable diseases in their communities. Managing solid waste by private investors, through public private partnership has improved significantly in Ghana over a decade ago. The waste management service provider's collects or picks human generated solid waste from residential houses or apartments and takes them to waste landfills sites (Christensen, T. (Ed.). 2011; Oteng-Ababio, M., Arguello, J. E. M., &Gabbay, O. 2013; Araujo, M. 2018). This was the responsibilities of district assemblies until privatization of Ghana sanitation projects-engagement with private sector as partners. Under the privatization projects, the polluter pays for the waste produce instead of the district or government financing refuse collection (Boateng, K. S., Agyei-Baffour, P., Boateng, D., Rockson, G. N. K., Mensah, K. A., &Edusei, A. K. 2019; Oduro-Appiah, K., Afful, A., Kotey, V., & de Vries, N. 2019; Saadeh, D., Al-Khatib, I. A., & Kontogianni, S. 2019). The private waste management companies are appointed by district assemblies to lifts solid refuse from residents (Fobil, J. N., Armah, N. A., Hogarh, J. N., & Carboo, D. 2008; Obirih-Opareh, N., & Post, J. 2002; Amoah, S. T., &Kosoe, E. A. 2014; Lohri, C. R., Camenzind, E. J., &Zurbrügg, C. 2014). They are to provide residents with dustbins, which is not free. Residents are to pay for the collection of waste (Mariwah, S. 2012; Akaateba, M. A., &Yakubu, I. 2013; Akhtar, S., Ahmad, A. S., Qureshi, M. I., &Shahraz, S. 2017; Hurd, J., Hennink, M., Robb, K., Null, C., Peprah, D., Wellington, N., & Moe, C. L. 2017; Mahamah, R. A. 2019).

There has been an improvement in waste management handling through public private partnership arrangement for outsourcing waste management. The improvement has been the participation of private waste management services, collection of solid waste from households (Suleman, D., Simon, M., & Agyapong, R. 2015; Sibanda, L. K., Obange, N., & Awuor, F. O. 2017). The service providers engage the residential dwellers and pick up the refuse generated from houses (Yescombe, E. R. 2018). With significant improvement in managing waste collection in Ghana, there is still filth due to loitering as persons migrate to cities and regional capitals in search for non-existing jobs and generate waste indiscriminately. This solid waste continues to heap in some parts of residential apartments especially uncompleted buildings and some ceremonial streets in Ghana (Achankeng, E. 2003; Puopiel, F. 2010; Oteng-Ababio, M., Arguello, J. E. M., & Gabbay, O. 2013; Kien, A. H. 2018; Salvaire, C. 2019; Tompkins, R. 2019).

2.0 METHODOLOGY

The task of defining the research problem becomes the preparation towards the design of the research work. Research design involves the arrangement of conditions for the collection and analysis from the data. This is done in a manner that aims to combine the relevance from the research objectives. The research design is also the conceptual framework within which the research was conducted. It also constitutes the blue print for collection, measurement and the analysis of data. The design could also include an outline of what the researcher will be doing from the initial writing of the hypothesis and its operational implications to the final analysis of the data (Kothari, C. R., 2004; Edmonds, W. A., & Kennedy, T. D. 2016).

The study is a descriptive cross sectional research with the intent of describing the characteristics of all household or residential apartments in the provision of quality waste management services. The reason for choosing this approach was to; measure service quality among the respondents, and the willingness to pay for quality service delivery from the waste management service providers (Bryman, A. 2016; Bell, E., Bryman, A., & Harley, B. 2018). Guided interviews and questionnaires conducted throughout the country on households that use the services of waste collectors. The researcher explains to the selected households the details of the questions for clarity before answering. The statistical tool for the analysis is the use of SPSS as a measurement tool (Blaikie, N., & Priest, J. 2019).

2.1 Sources of Data

The sources from the data are to provide the necessary input for the analysis to arrive at an outcome for the research. Two sources of data used in this research work were the primary data and secondary data. The primary data was from the fieldwork specifically from respondents on the topic: quality service delivery in solid waste management companies in Ghana (Padgett, D. K. 2016; Bryman, A. 2017; Creswell, J. W., & Clark, V. L. P. 2017; Bell, E., Bryman, A., & Harley, B. 2018; Flick, U. 2018).

Data collection through administering the questionnaires distributed to households or apartments in the regional capitals and some selected district assemblies in Ghana. Secondary data is information sourced from other alternatives by the researcher. For this study, the secondary data obtained is from various publications by authors who have written on the topic under consideration. These publications include periodic journals, textbooks, various government reports, company websites and online data sources. All cited materials are duly acknowledged in the references (Mertler, C. A., & Reinhart, R. V. 2016; Sekaran, U., & Bougie, R. 2016; Yin, R. K. 2017; Morris, T. P., White, I. R., & Crowther, M. J. 2019).

2.2 Target Population

The target population for this study consists of all regional capitals, cities, and some selected residential apartments or a household that uses the services from solid waste management companies in Ghana. 1820 questionnaires were distributed throughout the country.

2.3 Sampling Technique

The sampling method for this research work was the probability simple random method. This method is to find out the probability reaching to users from the services provided by the waste management companies. This is to give chances to each one of the possible selected households or apartment (Nardi, P. M. 2018; Kumar, Ranjit 2019).

2.4 Samples

A sample is a portion of a population or universe (Tailor, 2005), and a population does not necessarily mean a number of people (Walliman, 2011). Sampling size is a function of the nature of the population, type of data

to be use, type of analysis and availability of funds for the study (Saunders et al, 2009). The study will use simple random sampling techniques for the selection of respondents (Iacus, S. M., King, G., & Porro, G. 2019).

2.5 Questionnaires

The instrument used was a research questionnaire. This was design to provide anonymity and encourage respondents to give honest answers. The questions focused on knowledge relating to measuring quality service in delivery in solid waste management companies in Ghana (Mertler, C. A., & Reinhart, R. V. 2016; Kumar, Ranjit 2019).

2.6 Interviews

The respondents for the questionnaires were identify based on their convenience and availability to answer. The purposes of this research and the questionnaires were explained in detail to the respondents so they would not doubt the researcher and to answer correctly. It was also to ensure safe responses and prompt a healthy understanding between the researcher and respondents (Creswell, J. W., & Creswell, J. D.2017; Bell, E., Bryman, A., & Harley, B. 2018; Flick, U. 2018).The period for the distribution and collection of the questionnaires and for conducting interviews was for a period of twelve (12) months. By the end of the period, the researcher was able to recover 1620 out of the 1810 of the questionnaires distributed representing 89.5% valid respondents (Yin, R. K. 2017; Nardi, P. M. 2018; Blaikie, N., & Priest, J. 2019).

2.7 Data Analysis and Detestation

Analysis of the data is by using the Statistical Packages for Science and Solution (SPSS version 17) and Microsoft Excel 2016. The data obtained grouped, coded and fed into the software to generate the analysis and produce the results. Statistical frequency distribution tables and charts used to present the findings for easy interpretation and easy identification of the patterns and relationships between variables (Dawson, C. 2019; Fink, A. 2019; Iacus, S. M., King, G., & Porro, G. 2019; Morris, T. P., White, I. R., & Crowther, M. J. 2019).

3.0 DATA ANALYSIS

The research question one sought to determine the mode and frequency of the solid waste collection and disposal. First, respondents asked to indicate how they dispose of their refuse and the details of their responses as provided in Table 1.

Table 1: Disposing off Residential Refuse from Respondents

Waste disposal	Frequency	Percent
Door collection from a contractor	1155	72.6
Tricycles collectors	318	20.0
District assemblies containers	42	2.6
Sharing with my neighbours dustbin	75	4.7
Total	1590	100

Source: Field survey, 2019.

The data in Table 1 reveals that 1155 (72.6%) of the respondents dispose of their refuse through door collection from a contractor, 318 (20.0%) through tricycles collectors and 42 (2.6%) dispose their refuse by using the district assembly's containers. The remaining 75 (4.7%) of the respondents indicated that they dispose of their refuse by sharing with their neighbours dustbin. It can be deduced that majority of the respondents 92.6 % dispose of their refuse through door collection from a contractor. This assured the researcher that the targeted population for the research was achieved. The finding supports the work of Oduro-Kwarteng (2011) and Oduro-Appiah, K., Afful, A., Kotey, V., & de Vries, N. (2019), who concluded that the most residents use door-to-door mode collection service from contractors to dispose of their refuse.

The follow up questions was if the respondents have signed any contract with the service providers who come for their refuse. The reason was to determine the agreed or perceive measurement of service quality level agreements use to determine performance. Key Performance indicators should be agreeable and to prevent biasness on each other. It serves as a check against performance and empathy. The details of their responses as presented in Table 2.

Table 2: Respondents View on Signing Contract with Service Providers

Response	Frequency	Percent
Yes	949	58.6
No	671	41.4
Total	1620	100

Source: Field survey, 2019.

The data in Table 2 reveals that as many as 949 (58.6%) of the respondents claimed they have signed contracts with waste management companies to dispose of their refuse. The remaining 671 (41.4%) responded in the negative. A deduction from the above is that the majority of the respondents have signed contracts with their service providers to dispose refuse. This indicates that performance measurement can be check for the terms and condition. It also confirms similar research findings by Adam, M. N. (2018) who research work was on comparative Study of Waste Management and Building Permit in the Accra Metropolitan Assembly (AMA) as his (Doctoral dissertation, University of Ghana).

Moreover, 1315 (81.2%) of the respondents are satisfied with the services from the waste management service collector whilst 305 (18.8%) disagreed. It can be concluded that majority of the respondents are satisfied with the services of their refuse waste collectors (Guerrini, A., Carvalho, P., Romano, G., Marques, R. C., &Lardini, C. 2017; Lupo, T., &Cusumano, M. 2018; Yescombe, E. R. 2018; Spoann, V., Fujiwara, T., Seng, B., Lay, C., &Yim, M. 2019).

Respondents who indicated that they are satisfied with their service providers' services were asked to rate perception satisfaction as a measure of service quality delivered. The details of their responses as represented in Table 3.

Table 3: Satisfaction Level of Service Delivered

Satisfaction Rate	Frequency	Percent
Slightly satisfied	144	11.2
Moderately satisfied	666	51.7
Very satisfied	452	35.1
Extremely satisfied	26	2.0
Total	1288	100

Source: Field survey, 2019.

It is clear from Table 3 that, out of the total respondents who were satisfied with their service providers, 144 (11.2%) stated that they are slightly satisfied while 666 (51.7%) of the respondents were moderately satisfied. Moreover, 452 (35.1%) of them were very satisfied with the services of their waste collectors whilst 26 (2.0%) of them stated that they are extremely satisfied. By implication, majority of the respondents are moderately satisfied with the services of their waste collectors.

In all 88.8%, of the selected population are satisfied with the work performance of the waste management companies. Their expression of satisfaction includes reliability, responsiveness, and assurance from their clients to customer satisfaction hence no need changing their service provider. This confirms findings from similar research work by Boateng, K. S., Agyei-Baffour, P., Boateng, D., Rockson, G. N. K., Mensah, K. A., &Edusei, A. K. (2019), and Edusei, A. K. (2019), on household willingness to pay for improved solid waste management services in four major metropolitan cities in Ghana because of satisfaction.

Again, respondents asked to indicate which aspect of the services they like about their waste collectors. The details of the responses as represented in Table 4.

Table 4: Aspect of Service you like About Your Solid Waste Collectors

Satisfaction Rate	Frequency	Percent
Regular and timely lifting	885	70.9
Prompt feedback	56	4.5
Moderate fee charging	307	24.6
Total	1248	100

Source: Field survey, 2019.

It could be seen from Table 4 that 885 (70.9%) of the respondents revealed that their solid waste collectors are regular and timely lifting and 56 (4.5%) of the respondents indicated that their solid waste collectors provide

prompt feedback. The remaining 307 (24.6%) of the respondents indicated that they like their solid waste collectors because of their moderate charges. It can be concluded that majority of the respondents are very confident in the waste management service providers as prove of similar findings from Akhtar, S., Ahmad, A. S., Qureshi, M. I., &Shahraz, S. 2017; Guibrunet L. 2019; Almazán-Casali S., Alfaro J.F., Sikra S. 2019. The selected respondents were asked how often their solid waste collectors pick their refuse for disposal. Table 5 shows the outcome that emerged from their responses.

Table 5: Frequency of Waste Collection

Frequency	Frequency	Percent %
Once a week	1086	67.0
Twice in a month	5	0.3
Twice in a week	434	26.8
Whenever I call	4	0.2
Once in a month	76	4.7
Daily	4	0.2
	4	0.2
Once in two weeks		
Not consistent	4	0.2
	2	0.1
Not specific	1	0.1
One or more days		
Total	1620	100

Source: Field survey, 2019.

The data in Table 5 reveals 1086 (67.0%) respondents stated that the waste management companies collected their solid wastes for disposal once in a week. A good sign of clean environmental management practice (Annepu, R., & Themelis, N. J. 2013; Francis Xavier, M. K., Millar, D., &Tanguo, J. 2018). Again, 5 (0.3%) of respondent's waste was collected for disposal twice in a month. Still from the table, about 434 (26.8%) indicated that their waste was collected for disposal twice in a week. Also, 4 (0.2%) had their waste collected whenever they call them, daily, once in two weeks and not consistent respectively. About 76 (4.7%) of the respondents said their waste was collected for disposal once in a month.

It implies their waste will overflow, get rotten and produce bad scent and this affirms Abraham, E. M., Martin, A. M., & Cofie, O. (2018), statement that in such situations solid waste are indiscriminately dumped into gutters, drains and roadside. Only 2 (0.1%) had their waste collected for disposal at irregular intervals. Definitely, 1 (0.1%) of the respondents indicated that their waste collectors collect their waste for disposal for one or more days. In all more than two thirds of the respondents, prefer their waste to lift once in a week, which confirms the followed up questions and the research work by Abraham, E. M., Martin, A. M., &Cofie, O. (2018) and Francis Xavier, M. K., Millar, D., &Tanguo, J. (2018).

4.0 CONCLUSIONS

The research findings prove that majority of occupants in residential areas in the country are satisfy with the services provided by private waste management companies. The study concludes that educational level, number of dependents, gender of household, income, and the location of residents influence household satisfaction from waste management companies. These factors also influence the willingness to pay for the service.

5.0 FURTHER STUDY AND RESEARCH

With the government of Ghana and the district assemblies being a major player in the country waste and sanitation systems, the government or other donor agencies could sponsor such research to cover low-income areas. Other researchers can research to investigate on risk and challenges of financing solid waste management in Ghana. Similar research study can be done on developing key performance indicators and measuring tools for assessing waste management companies.

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