Capacity of private garbage collecting firms: A critical component in implementation of PPPs in garbage collection and disposal

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Abstract: **This study was an assessment of whether a capacity of private companies in garbage collection and disposal affects implementation of PPP in garbage collection and disposal. The study used a census method, where fifty seven private companies involved in garbage collection and disposal in NCC, were given questionnaires to answer. The main respondents in these companies were managers or supervisors since they are well equipped with policies, strategies and general operations of these companies. This ensured a reliable source of data. Sanni, (2006) observed that a capacity of private companies undertaking a PPP project was among the key factors affecting the implementation of PPPs in different sectors of the economy. Therefore, this study aimed to establish whether capacity of private garbage collectors does affect implementation of PPPs in garbage collection and disposal in NCC. A capacity in this study was determined by three key indicators: skills of the workers to handle garbage, number of workers to collect and dispose garbage and machine and equipment to collect and dispose garbage. In determining the effects of capacity of private garbage collectors on implementation of PPPs in garbage collection the results of R^2 indicate that capacity of private sector can explain up to a total of 32.3% of the total variability in the dependent variable, implementation of PPPs in garbage collection and disposal in NCC. The results confirmed Sanni, (2006) observation that capacity of private companies undertaking a PPP project is a key determinant in implementation of PPPs. Capacity of private sector has a statistically significant positive influence on implementation of PPPs in garbage collection and disposal in NCC (p-value = .000) which is less than the level of significance of 0.05. The results indicated that a change in capacity of private companies in garbage collection would result in 0.484 times changes in the implementation of PPPs in garbage collection and disposal in NCC.**

Key words: **capacity of private companies, skills of workers, garbage collection, Public Private Partnership.**

1. INTRODUCTION

With a rapid increase in world population, the level of consumption is increasing exponentially IPA, (2014). With such an increase, the consequence is generation of a high amount of solid waste. This demands concerted efforts to set up a sustainable solid waste management (SWM) system that will reduce the pressure on environment. According to Narayana, (2009), if left unchecked, waste can have unimaginable harm to both humans and the environment. When conducting a research in India, he observed that when citizens are exposed to burning waste, they are vulnerable to dangerous toxins which can cause cancer and other health complications.

Most Municipalities in developing countries spend between 20 to 50 percent of their annual budget on SWM (Hoornweg, and Bhada-Tata (2012). This, however, doesn't translate to higher garbage collection coverage. 50 percent of the urban

populations access the services, out of whom only 40 to 70 percent of waste generated is collected. Contrary to these statistics of developing countries, high income countries spend less than 10 percent of their annual budget on SWM. However, their coverage is more than 90 percent, due to mechanized and efficient methods of garbage collection (UNEP, 2005). This disparity clearly calls for redesigning of waste collection and disposal methods in developing countries to ensure their effectiveness and efficiency. Al-khatib et al. (2009) opined that Municipalities in developing countries have always been charged with responsibilities of providing SWM services. The burden has led to lower coverage of garbage collection services. The matter has been exacerbated by increasing population, strained social institutions and technical constraints. Communities have not made the matter better. They have resorted to destructive methods of waste disposal such as open dumping and burning waste, often leading to detrimental effects to human and environmental health. (Mwanthi and Nyabola, 1997; Goett, 1998; Alavi Moghadam et al., 2009; Narayana, 2009; Al-Khatib et al., 2015; Hilburn, 2015)

In Kenya, garbage collection and disposal is one of the roles devolved to the County governments as per the fourth schedule, part two of the Constitution of Kenya 2010. As one of the forty seven counties (regional government) in Kenya, Nairobi City County (NCC) has been experiencing increased population growth that has led to pressure on available resources, increased production and consumption thus an increase in garbage. With a population of 3,138,369 people KNBS (2009), the picture painted of Nairobi in terms of garbage collection is grim. It is characterized by poor coverage, open dumping and generally inefficient solid management infrastructure. This represents the status of Kenya, since no County can be said to have streamlined its solid waste management. According to Kasozi & Von Blottnitz, (2010); JICA (2010), Nairobi city generates 4,016 tons of solid waste daily against a daily collection of approximately 33%. The situation never used to be this dire, in mid 1970s it used to collect 90% of the waste generated. Due to poor maintenance of waste collection vehicles, increased migration to the city and better standards of living more waste was generated which the authority could not cope with. By mid 1980s Nairobi city council could only collect 20% of the waste generated (Henry et al., 2006). This increase of uncollected waste attracted organized private sector companies.

Surveys show that over the years private companies have become very important participants in the city's waste collection sector (Kantai 2000). The private sector in PPP arrangement has been favoured due to their efficiency and effectiveness in implementation of projects. However, with the continued growth and dominance of the private sector in SWM in Nairobi, SWM service coverage and efficiency still remains too low. This is clearly manifested in the many illegal dumpsites all over the city. Indeed, even the Central Business District (CBD) has not been spared if the huge dumpsite off Kijabe Street and the sporadic rot next to the City Market as well as at the famous Wakulima market is anything to go by. The same can be said about most other neighbourhoods in the city especially in the eastern part (JICA, 1998). The inefficiency of private garbage collectors has been attributed to a number of factors: lack of adequate monitoring from responsible agencies, lack of support from the public/community, inadequate resources and equipment, unskilled workers and use of old technology in handling garbage

This study tries to establish whether capacity of private companies have effects on implementation of PPPs in garbage collection and disposal in NCC. To understand this, three indicators of Capacity are chosen; number of workers, skills of workers and availability of machines and equipment.

2.   LITERATURE REVIEW

Organizations are set up to achieve set objectives. The objectives can only be achieved if the right combinations of factors of production are acquired. These factors when put in the right mix, they ensure the right output have been achieved. According to Lusthaus et al., (2002) internal capacity of an organization in terms of equipment, machinery and human resource affects organization capability of doing business efficiently and effectively.

2.1 Sufficient and skilled workforce

The key factor necessary for achievement of set goals is the employees/human resource. Employees are important asset to any organization. Armstrong (2009), noted that a worker are vital to the firm in her endeavor to achieve her goals. An organization is capable of achieving unlimited output, efficiency and effectiveness if the potential of employees is unlocked. Truong, (2012) is of the view that an organization that handles its employees effectively can achieve greater results due to increased morale of employees. Organizations should therefore aspire to have sufficient workforce who have the right skills or training.

Barker and Gump (1964) noted that in organizations where there are insufficient employees, workers are called upon to do more tasks. This will require employees to expend more effort and responsibility to complete the activities. This adds on to employees' workload and may demand self-motivation to complete the assigned task. This can demotivate workers as they may fail to achieve their target as a result of overworking.

The situation of understaffing demands the staff to take any necessary steps to ensure the tasks assigned are completed on time; this may go on until new staff is hired to shoulder the extra responsibilities.

Having sufficient workforce cannot guarantee organization it will achieve its goals. The skills of employees are a significant influence on business performance (Fauzilah & Agamuthu 2011). Workers in an organization cannot have similar traits; therefore they have different working modes. Some are high achievers regardless of the incentives while others may need some occasional jump start. The inability of employees to handle a task can be enhanced through training.

Training is a key factor in organizational performance. It should however be noted that it not na end goal but rather as a mean to an end. Training assures organization of improved performance as workers' productivity increases and workers see themselves as important stakeholders in the organizational success Barney, (1991). Raja et al (2011) pointed out that training employee is basically aimed at employees but the ultimate beneficially is the organization itself.

As earlier noted, failure or success of an organization is pegged on employee performance. No wonder they are referred as non-imitable, scarce and valuable resource of an organization. Organization management should therefore invest in training programs in order to boost their employees' competency and overall performance of the organization. Training also fills the gaps that exist between the current performance and the desired one. Cole (2002) identified benefits of training as; lower cost of production, lower turnover, improve the availability and quality of staff, promotion and increased output.

Training therefore should be viewed as strategic process aimed at long term benefits of the firm and not as haphazard routine activity (Tannenbaum and Yukl 1992; Wexley and Latham 2002). Before deciding on training method to use, needs analysis for employees and organization as well as business strategies must be conducted. Training that meet the organization and employees need and that fits within the strategies of the organization are likely to be successful.

In garbage management, Hazra and Goel, (2009) noted that lack of technical skills among personnel in SWM, has led to improper handling of garbage leading to littering. According to Eggert (2005), developing countries are faced with a challenge of insufficient human resource who are experts in monitoring and evaluation, planning and general execution of waste management projects. Amechi (2010) observed that in Kampala, Uganda, execution on waste management is also a challenge due to inappropriate technology. Niringiye & Omortor, (2010) observed that Dar es Salaam also lacks managerial and technical staff due to poor training and poor conditions of service. These views are supported by Marshall & Farahbakhsh, 2013, who opined that garbage handlers manage waste without necessary skills and knowledge of how hazardous the waste they are handling is.

The role employees in garbage collection cannot be emphasized; they are pillars of their organization and are couriers of organizational goals and vision. They are strategically placed in a position where they connect the provider of the service and the receiver (Mitchelle et al 1997). Firms that provide garbage collection services accomplish these goals by using their skilled and semiskilled employees (Henry et al 2006). It is on these bases that Ramu (2005) observed that employees pose power that may affect the image and operations of the organization. Therefore, the success of goal, vision and objectives, depend on these employee's awareness and ability of these employees in executing their duties.

2.2 Equipment and machinery (Capital)

Capital is a necessary ingredient in production process. Having enough workforce who are well trained without the necessary equipment cannot yield the desired goals for the organization. According to Naharuddin and Sadegi, (2013), equipment are one of the key component necessary for the success of the employees' performance. Some employees might not be very skilled inherently or might not be super talented but when provided with the right equipment or resources needed to perform a task, their performance levels go up significantly. Stephen, (2013) noted that having equipment that uses the best and latest technology has been one of the means through which Performance can be increased.

When conducting study on effects of training on behavioural change and performance, Komaki, et al. (1980) noted that provision training alone cannot assure improved performance of the organization, but should be supported with appropriate and adequate tools and equipment. Henry et al. (2006), observed that vehicles with insufficient technologies which do not meet the set standard are a cause for littered streets.

According to Abayomi (2015), economic and industrial development influence solid waste management. He noted that enhanced economy ensures more funds for SWM, enhancing sustainable sustainability of the services. The economic base for many developing countries is weak; this renders them in a position with inadequate finances for sustainable growth for SWM. They are not in a position to produce solid waste equipment and vehicles necessitating importing expensive foreign equipment. This causes insufficient and irregular solid waste collection and disposal as break down of equipment and trucks demands importation of spare parts which halts garbage collection exercise.

Government of Canada, 2008 and USEPA, 2005 are of the view that tools for managing and transporting waste ought to be suitable whilst some places have legislation outlining specific requirements. They noted that lack of waste containers, people in developing countries result in open dumping especially in areas where collection is limited or nonexistence. While conducting studies on SWM in Palestine, Al-Khatib et al., 2009 opined that garbage service providers should optimize provision of litter bins in public places and estates as a way to contain littering. This emphasizes the importance of litterbins in control of garbage in estates and streets.

3. METHODOLOGY

The study used descriptive research design. This method was used to establish whether the independent variable capacity of private companies affects the dependent variable Implementation of PPPs in garbage collection and disposal. The study was done in Nairobi City County.

The target population was all private garbage collecting companies in NCC. The researcher used a census study because the population was only 57, thus making it easy to collect data from every unit of the population. Questionnaires were used to collect data from the supervisors and managers of private garbage collectors. The instruments were validated by researchers from Jomo Kenyatta university of Agriculture and Technology (JKUAT) and pilot tested for reliability using cronbach alpha reliability test where they attained a score of .752 which is above the acceptable threshold. The primary data collected was processed by first editing it to detect possible errors; the questions and variables were coded using the Statistical Package for Social Sciences (SPSS). Data analysis was done using the SPSS program and tables and figures were presented using the APA format of data presentation. Regression analysis was used to establish the relationship between independent variable capacity of private companies and dependent variable implementation of PPP in garbage collection and disposal i.e. $Y = a + b1X1$

4. RESULTS AND DISCUSSIONS

The researcher sought to find the descriptive statistics for capacity of private garbage collectors and its role in the implementation of Public private partnership in garbage collection and disposal in Kenya. This was informed by suggestion by Armstrong (2009), noted that employees play an important role in the performance of any organization. He added organization is capable of achieving unlimited output, efficiency and effectiveness if the potential of employees is unlocked. The findings are summarized in Table 1 below. From the findings all the respondents confirmed they have enough workers to provide the services to residents. This emphasizes the realization by the firms on the key role played by workers in achieving organizational goals. As Barker and Gump (1964) noted organizations with insufficient employees may overwork the existing ones which can lead to demotivation. 70.1% of the respondent confirmed that there workers have training in issues of garbage collection. This shows the importance these firms have placed on skills of workers. Importance of training to an organization was confirmed by Ramu (2005) who observed that employees pose power that may affect the image and operations of the organization. The results on workers skills to handle garbage indicate that 51.5% of the respondents confirmed their workers can handle garbage. Their views contradict Takahirwa et al., (2013); Marshall & Farahbakhsh, (2013), who opined that garbage handlers manage waste without necessary skills and knowledge of how hazardous the waste they are handling is. 51.6% of respondents disagree that their workers take refresher courses on garbage collection. This may explain why respondents confirmed that 40.5% lacks skills to handle garbage. Asked whether training workers on handling of garbage improves their customer relations over 80% were of the view it does.

Having enough workforce who are well trained without the necessary equipment cannot yield the desired goals for the organization. According to Naharuddin and Sadegi, (2013), equipment are one of the key components for the success of the employees' performance. This realization is shared by private firms collecting garbage in NCC as the results as results indicates that over 80% have enough equipment to handle garbage in their jurisdiction. Although 42.6% of the respondents were of the view that their trucks are of good condition, a sizeable percentage were of centrally view. 48.6% disagree that their view that their vehicles are of good condition. The results support view by Ndwiga (2016), who observed that most firms use old trucks which has been used for more than ten years. This observation was similar to Henry et al., (2006) who noted that vehicles used in transportation of waste in NCC do not meet the set standard are a cause for littered streets. UN-HABITAT, (2010) is of the view that continuous use of vehicles beyond their economic life reduces efficiency in terms of garbage collection time and financial performance in terms of fuel consumption and repairs. Similar observation was pointed out by Hazra and Goel 2009 who postulated that inadequate containers and worn-out collection vehicles contributes to illegal dumping and littering.

On the use of technology, the results indicate that 70.1% were of the view that their machines do not use recent technology in collection and transportation of waste. The results agrees with the views of Zhuang et al., (2008) who opined that use of inappropriate technologies in SWM in developing countries has resulted in operational inefficiencies. On provision to clients of garbage collection items such as liners and bins 49.1% disagreed they provide the items.

Table 1: Descriptive Statistics for Capacity of Private garbage collectors

	1	2	3	4	5
We have enough workers to provide the services to residents	52.6%	47.4%	-	-	-
Our workers have training in garbage/ waste management	29.9%	59.6%	-	10.5%	-
Our workers have enough skills to handle garbage collection and disposal	10.7%	40.8%	8 %	40.5%	-
Our workers take refresher courses yearly to improve on our services	-	46.5%	5.1%	51.6%	-
Training workers on how to handle garbage improve customer relations	40.5%	39.8%	19.7%	-	-
We have enough machines and equipment to handle garbage in our area of operation	19.3%	61.4%	19.3%	-	-
Our trucks and machines are in good condition to handle garbage in our area.	6%	36.6%	10.6%	46.8%	-
Our machines and equipment use latest technology in handling of garbage	-	29.8%	-	59.6%	10.5%
We provide our clients with necessary items such as bins, line bags and garbage containers to ensure garbage do not spill all over the place	-	29.8%	21.1%	49.1%	-

Where 1: strongly disagree, 2: Disagree, 3: Neither agree or disagree 4: Agree, 5: Strongly agree

Frequency at which workers attend refresher course

The research sought to find out the often the workers attend refresher courses in order to improve service delivery to the residents. The study findings are presented in Figure 1 below. The results shows that, a majority 45.61% of the respondents attend a refresher course yearly to improve service delivery to the residents , 40.35% attend after one year, 10.53% never attends and 3.51% semiannually.
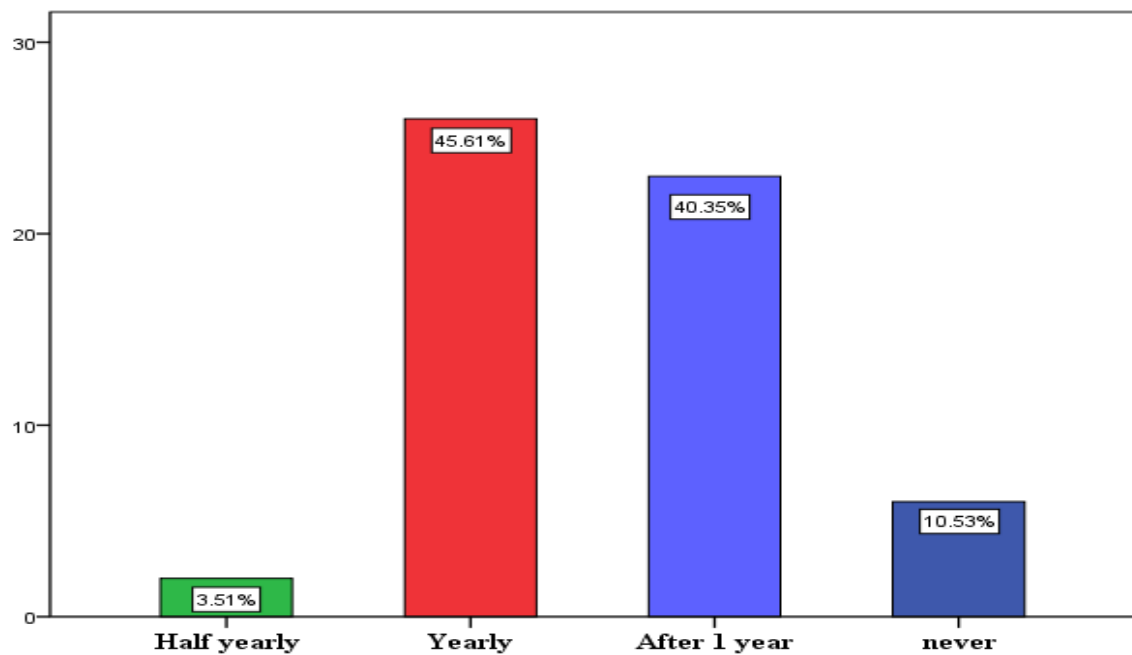
Figure 1: Frequency at which workers attend refresher course

4.1 Checking for Linear Relationship between Dependent Variable and the independent variables

Keith, (2006); Stevens, (2009); Osborne & Waters, (2002) opined that Pearson's correlation is used when working with two quantitative variables in a population. The resulting relationship can indicate a positive linear relationship or lack of relationship at all. The authors noted that Pearson's correlation coefficients indicate the extent of interdependence between two variables.

In order to establish whether there was any form of relationship between Capacity of private companies and implementation of PPPs in garbage collection and disposal in NCC, Pearson correlation was used. The findings are summarized in Table 2**.** The results indicate that, Capacity of private companies have a strong and significant (p-values less than 5% level of significance) linear relationship with implementation of PPPs in garbage collection and disposal in NCC.

Table 2: Linear Relationship between Dependent Variable and the independent variables

		Capacity	Implementation
Capacity	Pearson Correlation	1	.568[**]
	Sig. (2-tailed)		.000
	N	57	57
Implementation	Pearson Correlation	.568[**]	1
	Sig. (2-tailed)	.000	
	N	57	57

X1- Capacity of private companies

Y- Implementation of PPPs.

4.2 Regression Analysis

Linear regression is done to establish an approximation of the association between a response variable and one or more explanatory variable. Jaccard *et al*., (2006), noted that regression analysis is guided by a theoretical or conceptual model in the form of a path diagram. The diagram is the statistical criterion upon which regression is determined.

4.2.1 Regression Analysis between Capacity of private sector and implementation of PPPs in garbage collection and disposal in NCC

To evaluate the influence of Capacity of private sector on implementation of PPPs in garbage collection and disposal in NCC, a simple linear regression analysis was carried out. The findings are presented in Table 3, 4and 5. Table 3 presents an R^2 result of 32.3%, which implies that the independent variable, Capacity of the private sector can describe approximately 32.3% of the total variability in the dependent variable - implementation of PPPs in garbage collection and disposal in NCC.

Table 3: Model Summary of Capacity of private sector and implementation of PPPs in garbage collection and disposal in NCC

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.568[a]	.323	.313	.21212

ANOVA for Capacity of private sector and implementation of PPPs in garbage collection

An ANOVA test was performed to test whether the observed data was statistically significant. The results obtained were presented in Table 4, and indicate that, the model fitted on the data and was statistically significant. This is supported by an F value of $(23.61, 1, 55)$ with a p-value (.000) which is less than .05 the level of significance. This means that, Public Support does have a statistically significant influence on implementation of PPPs in garbage collection and disposal in NCC.

Table 4: ANOVA for Capacity of private sector and implementation of PPPs in garbage collection and disposal in NCC

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.231	1	.231	26.241	.000
	Residual	.495	55	.009		
	Total	.726	56			

To support the ANOVA findings on Capacity of private sector and implementation of PPPs in garbage collection and disposal in NCC, the regression coefficients were obtained and presented in Table 5. These results show that Capacity of private sector has a statistically significant positive influence on implementation of PPPs in garbage collection and disposal in NCC (p-value = .000) which is less than the level of significance of 0.05.Therefore, any change the Capacity of private sector would result in .484 times changes in the implementation of PPPs in garbage collection and disposal in NCC.

Table 5: Coefficients of Capacity of private sector and implementation of PPPs in garbage collection and disposal in NCC

	Unstandardized Coefficients		t	Sig.
	B	Std. Error		
(Constant)	1.314	.125	10.475	.000
Capacity of private sector	.484	.115	4.209	.000

Using the summary presented in Table 5, a linear regression model of the form, $y = \alpha + \beta x_i$ can be fit as follows:

Implementation of PPP = 1.314 +0.484 Capacity

5.   CONCLUSION

It can be concluded from the study that capacity of private sector affects implementation of PPPs in garbage collection and disposal. Capacity of private sector had a result of presents an R^2 result of 32.3%, which implies that the independent variable, Capacity of private sector can explain up to a total of 32.3% of the total variability in the dependent variable, implementation of PPPs in garbage collection and disposal in NCC. It also has a statistically significant positive influence

on implementation of PPPs in garbage collection and disposal in NCC (p-value = .000) which is less than the level of significance of 0.05.Therefore, any change the Capacity of private sector would result in .484 times changes in the implementation of PPPs in garbage collection and disposal in NCC. When it comes to linear relationship with the dependent variable, capacity of private sector had a Pearson correlation value of .568 indicating a moderate positive correlation with dependent variable.

REFERENCES

[1]   Abayomi, S. O. (2015). Factors explaining households' cash payment for solid waste disposal and recycling behaiviors in South Africa. Mmabatho, South Africa: North-West University Mafikeng Campus.

[2]   Alavi Moghadam, M., Mokhtarani, N. and Mokhtarani, B. (2009). Municipal solid waste management in Rasht City, Iran. Waste Management, 29(1), pp 485- 489.

[3]   Al-Khatib, I. A., Kontogianni, S., Abu Nabaa, H., Alshami, N., and Al-Sari', M. I. (2015). Public perception of hazardousness caused by current trends of municipal solid waste management. Waste Management, 3(6), pp 323-330.

[4]   Al-Khatib, I. A., Arafat, H. A., Daoud, R., and Shwahneh, H. (2009). Enhanced solid waste management by understanding the effects of gender, income, marital status, and religious convictions on attitudes and practices related to street littering in Nablus – Palestinian territory. Waste Management, 29(1), pp 449-455.

[5]   Amechi, E. (2010). Linking environmental protection and poverty reduction in Africa. An analysis of the regional legal responses to environmental protection. Law Environment Development Journal., 6, pp 112-129.

[6]   Armstrong, M, (2009) Armstrongs' Hand book of Human Resource Management Practice. London. Kogan Page ltd

[7]   Barker, R. G. & Gump P. V.,(1964). Big School, Small School: High School Size and Student Behavior. Stanford, CA: Stanford University Press.

[8]   Barney, J. (1991). Firm resources and sustained competitive advantage. Journal of Management, Vol. 17(1), pp 99-120.

[9]   Cole, G.A. (2002). Personnel and human resource management, 5th Ed. Continuum. London: York Publishers.

[10] Eggert. (2005). Evolving face of solid waste management. Waste Management and Research.

[11] Fauziah SH and Agamuthu P (2011). Challenges and issues in moving towards sustainable landfilling in a transitory country – Malaysia. Waste Management and Research 29(1): pp 13–19

[12] Goett, J. (1998). Waste and resource: Household management of solid waste on the North Coast of Honduras. Yearbook. Conference of Latin Americanist Geographers, 24, pp 111-119. https://www.jstor.org/stable/25765902?seq. April 10, 2017

[13] Government of Canada. (2008). Environmental Emergency Regulations. Canadian Environmental Protection Act, 1999. Environment Canada.

[14] Hazra, T. and Goel, S. (2009) Solid Waste Management in Kolkata, India: Practices and Challenges. Waste Management, 29, pp 470-478.

[15] Henry, R. K., Yongsheng, Z., and Jun, D. (2006). Municipal solid waste management challenges in developing countries – Kenyan case study. Waste Management, 26(1), pp 92-100.

[16] Hilburn, A. M. (2015). Participatory risk mapping of garbage-related issues in a rural Mexican municipality. Geographical Review, 105(1), pp 41 -60.

[17] Hoornweg, Daniel; Bhada-Tata, Perinaz. 2012. What a Waste: A Global Review of Solid Waste Management. Urban development series; knowledge papers no. 15. Washington, DC. © World Bank.

[18] IPA (Innovations for Poverty Action). (2014). Experiments to improve participation in a recycling program in Northern Peru. www.poverty-action.org. Retrieved July 10, 2018.

[19] Jaccard, J., Guilamo-Ramos, V., Johansson, M., & Bouris, A. (2006). Multiple regression analyses in clinical child and adolescent psychology. Journal of Clinical Child and Adolescent Psychology, 35 (3), pp 456-479.

[20] JICA, 2010. Preparatory Survey for Integrated Solid Waste management in Nairobi City in the Republic of Kenya, Final Report. http://open_jicareport.jica.go.jp/pdf/12005450_01.pdf . 24th May 2017

[21] Kantai P. (2000). The Treasure Buried in Nairobi's Dumps. The East African 18th December 2000, Nairobi.

[22] Kasozi A, von Blottnitz H (2010). Solid Waste Management in Nairobi: A Situation Analysis Technical Document accompanying the Integrated Solid Waste Management Plan, Cape Town.University of Cape Town.

[23] Keith T. (2006).Multiple Regression and Beyond. Edinburg. Pearson Education

[24] KNBS (Kenya National Bureau of Statistics), (2009). Kenya Population and Housing Census 2009.

[25] Komaki, J., Heinzmann, A. T. and Lawson, L. (1980) Effect of training and feedback: Component analysis of a behavioral safety program. Journal of Applied Psychology, 65(3), pp 261-270.

[26] Lusthaus, C., Adrien, M. H., Anderson, G., Carden, F. and Montalván, G. P. (2008). Organizational assessment: a framework for improving performance. Ottawa: International Development Research Centre.

[27] Marshall, R. E., and Farahbakhsh, K. (2013). Systems approaches to integrated solid waste management in developing countries. Waste Management, 33(4), pp 988-1003

[28] Mitchell, R. K., Agle, B. R., & Wood, D. J. (1997). Towards a theory of stakeholder identification and salience: Defining the principle of who and what really counts. Academy of Management Review, 22(4), 853-886

[29] Mwanthi, M., and Nyabola, L. (1997). Solid waste management in Nairobi City: Knowledge and attitudes. Journal of Environmental Health, 60(5), pp 23-27.

[30] Naharuddin, N. M. and Sadegi, M. (2013)Factors of Workplace Environment that Affect Employees Performance: A Case Study of Miyazu Malaysia. International Journal of Independent Research and Studies. 2(2) pp 66-78

[31] Narayana, T. (2009). Municipal solid waste management in India: From waste disposal to recovery of resources? Waste Management, 29 (3), pp 1163-1166.

[32] Ndwiga M. (2016). Determinants influencing waste management in Kenya: a case of white house residential area in Mavoko Sub-county. Retrieved from http://erepository.uonbi.ac.ke/bitstream/handle/ 11295/97174/Murugi% 20Ndwiga_Determinants%20Influencing%20Waste%20Management%20in%20Kenya.A%20Case%20of%20White house%20Residential%20Area%20in%20Mavoko%20Sub-county.pdf?sequence=4&isAllowed=y on 20th may 2017

[33] Niringiye, A., & Omortor, G. (2010). Determinants of willingness to pay for solid waste Management in Kampala City. Research Journal of Economic Theory 2(3): pp 119- 122.

[34] Osborne J. W. and Waters E. (2002). Four assumptions of multiple regression that researchers should always test. Practical Assessment, Research & Evaluation, 8(2), pp 1-5

[35] Raja, A. G. K., Furqan, A. K. and Muhammad, A. K. (2011). Impact of Training and Development on Organizational Performance. Global Journal of Management and Business Research. 11(7), pp 221-234

[36] Ramu K. (2005). Challenges affecting the integration of competency-based training at the higher levels of the Singapore Workforce Skills Qualifications – National Qualifications Framework . Singapore. Institute for Adult Learning

[37] Sanni, A. O. (2016) Factors determining the Success of Public Private Partnership Projects in Nigeria. *Construction Economics and Building, 16(2), 42-55.*

[38] Srivastava K.P., Kulshreshtha , K., Mohanty, s.c., Pushpangadan, P. & Singh, A. (2005). Stakeholder-based SWOT analysis for successful municipal solid waste management in Lucknow, India. Journal of Waste Management 25, pp 531–537.

[39] Stephens, M. (2010). Performance and Reliability-Based Maintenance Management. Washington DC: Purdue University Press.

[40] Stevens J.P (2009). Applied Multivariate Statistics for the Social Sciences, 5th Edition, New York. Routledge.

[41] Tannenbaum, S. I. and G. Yukl. 1992. Training and development in work organizations. In Annual review of psychology. CA: Annual Reviews, Inc. pp. 399-441.

[42] Truong, Cong N. (2012). The Impact of organizational factors on employees' performance in Vietnamese Companies. Ho Chi Minh. University of Economics .Ho Chi Minh City.

[43] UNEP, (2005). Solid waste management. Nairobi. UNEP.

[44] USEPA [U.S. Environmental Protection Agency] (2005). Guidelines for Carcinogen Risk Assessment. Risk Assessment Forum. Washington (DC).

[45] UN-HABITAT, (2010). Collection of Municipal Solid Waste in Developing Countries. Nairobi. UN-HABITAT

[46] Wexley, K. N. and Latham, G. P. (2002). Developing and Training Human Resources in Organizations.3rd ed . Toronto.Pearson

[47] Zhuang, Y., Wu, S., Wang, Y., Wu, W., & Chen, Y. (2008). Source separation of Household waste. A case study in China. Waste Management, 28, pp 2022- 2030.