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The Examination of Solid Waste Paradigm on the Stimulation of Environmental Sanitation and Economic Livelihood in Bida, Niger State

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ABSTRACT

The indiscriminate dumping of refuse, improper disposal of solid waste is a significant environmental sanitation menace and with attendance on economic livelihood thus propel this research to unveil how the waste paradigm can gainfully stimulates environmental sanitation and economic livelihood of Bida residents, Niger State. Therefore, it is highly imperative to thoroughly understand the waste types, the community perception and existing solid waste disposal practice in order to establish paradigm that shall be environmentally friendly and economically beneficial. A survey research that accommodates 285 households' questionnaire administration and adoption of statistical packages in analyzing data via convenient and stratification techniques and thus garnished with researcher's observation. Purposive sampling was used to select 6 wards from 14 available wards for the study in order to collect the predicted data. Finding revealed open and carefree dumping that resulted in potential risk to the environment, livelihood loss and economic vulnerability that urgently required waste to wealth synergy as solid waste disposal paradigm shows positive significant influence on path coefficient 0.85, livelihoods impact 0.52 and that of healthy environment shows a very high significant level of 0.79 thus establishes a strong correlation was found between poor waste disposal practices that cumulated to environmental hazards and economic livelihood sustenance as a result of improper awareness, inadequate waste collection services, and insufficient waste management infrastructure. The study concluded that it is only through the combined elements of human capital, prompt governmental efforts, and change in attitudinal behaviour, proper sanitation sensitization and monitoring are substantial sustainable paradigm to stimulate environmental sanitation and improve economic livelihood

Keywords: Disposal Paradigm, livelihood, Residents, Sanitation, Solid Waste

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1. INTRODUCTION

The generation of solid waste in urban localities has been growing in geometric progression due to economic buoyancy, population increment and urbanization and thus projected that the disposal of this waste to rise to around 6.1 million tons on daily basis 2030 (Teshome, et al,

2022; Ojo,2024; Padmanabhan & Barik, 2019). The significant and negative impact shall be on the groundwater, stream, boreholes, dug wells and sewage system has the increase rate of solid waste generated shall have adverse effect on it purities (Odonkor et al., 2020). To combat this imminent catastrophes, a sustainable, flexible and effective pragmatic approach on urban solid waste required as orchestrated by population increment. (Kenny & Prayadarshin, 2021; Saadeh et al, 2022). The societal variables, such as population growth and rapid socio-economic global development has contributed to the rapid expansion in supply and demand for goods and products over few decades which eventually led to the increased waste generation (Ojo, 2024; Coracero, et al, 2023; & Chew, et al, 2023). For effective waste disposal, new strategies are required to develop varied and flexible urban models. Urbanization is currently one of the major contributors to solid waste output in most parts of the world (Kenny & Prayadarshin, 2021; Adobe Stock, 2023). Hence, the added number via population increase into the area ought to have re-shaped and increased the efforts geared toward proper disposal of waste but reverse is the case as heaps of waste are at increase on daily basis.

Combating waste disposal menace in any urban localities has been perceived to be too cumbersome and demanding (khudyakova & Lyaskovaskaya, 2021 & William, et al, 2023) hence requires thorough diagnostic and sustainable approach to combat therefore, this studies requires a strong endeavour to work with the scavengers, the residents, and Agwal (Compound Leaders), whose means of livelihood are being threatening, exposure to health hazard, filthy environment, sanitation negligence and its adverse trends. The area (Bida) is currently experiencing adverse effect of carefree dumping of solid waste without a noticeable disposal system proactively. Hence, the local community is now looking up to a proactive Solid Waste Disposal approaches to help tackle waste carefree dumping syndrome amongst the local residents in a timely and sustainable manner (Ojo, 2024).

The community perception towards ameliorating this problem of Solid Waste Disposal practices as exemplified in the studies of Asare, et al, ((2020); Fadhullah, et al, (2022); , Debrahh, et al, (2021) and Ehtasham, et al (2022) with a revelation that the resident perception on waste generation and disposal required holistic approach therefore, this researcher shall anchor on how these wastes can be metamorphous to needed materials that shall improve economic viabilities, demand and helps improve livelihood sustenance without jeopardizing the environmental liveability and sanitation, therefore, requires a systemic approach to correct this dastard act so as to avert the consequences Inevitably, Bida residents seem unable to properly maintain and manage their solid waste and its disposing paradigm. Hence, the central thread of this research is the utilization, incorporation or the adoption of viable paradigm to checkmate the crises. Therefore, this research work examines solid waste paradigm as a workable indices for the stimulation of environmental sanitation and economic livelihood in Bida, Niger State

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Locale and Population

Bida as the Headquarter of Nupe kingdom, which lies between longitude 6.25'E and 9.02'E and latitude 6.0'N and 9.06'N and bounded by Gbako Local Government in the North, South by Lavun local government bounded while to the Western part it is bounded by Katcha local government. The population of Bida is a heterogeneous type consisting of different tribes from all over the Nation. According to the 2006 National Population Census, Bida was 185,553 (NPC), it was projected to 2030 to give the present population to be 397,627 persons. The figure 1, 2 and 3 below shows Map of Nigeria showing Niger State, Map of Niger State with all its Local Government Areas and finally the map of Bida Local Government showing all the wards respectively.

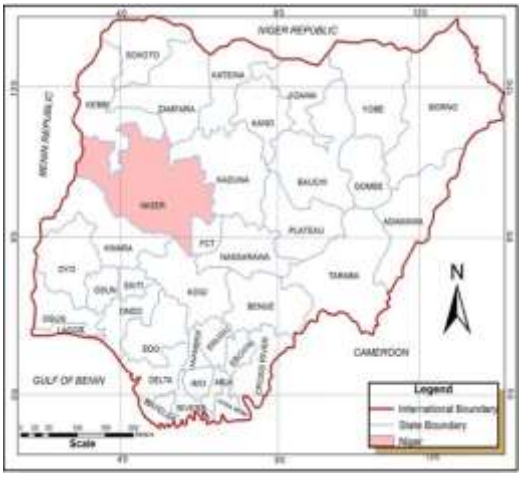

Fig. 1: Map of Nigeria showing Niger State Geographic Position
Source: Niger State Ministry of Lands & Housing. (2025)

Fig. 2: Map of Niger State showing all the Local Government Areas
Source: Niger State Ministry of Lands & Housing. (2025)

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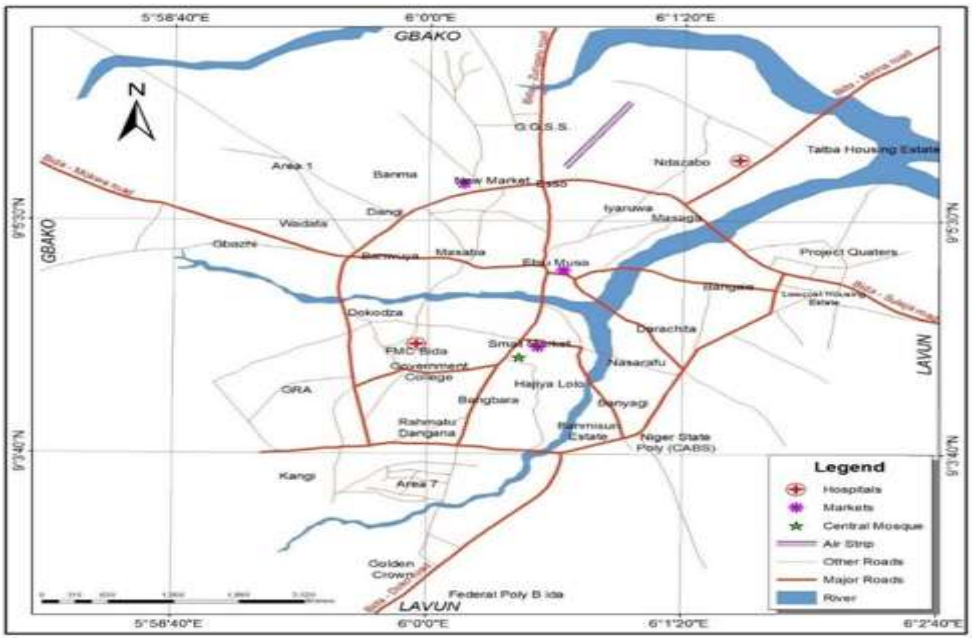

Figure 3: Map of Bida Local Government Area showing all the wards
Source: Niger State Ministry of Lands & Housing. (2025)

2. LITERATURE REVIEW

Literature affirmed that waste is typically categorized based on its composition, source , impact on environment and human health Debrah et al. (2021); Adobe stock, 2023 . Their classification includes: the physical states (solid waste, liquid waste and gaseous waste (Bagui, et al 2021; Ehtasham, 2022); Source of production Lagman, 2020; Asare, et.al 2020; Fadhullah et al, 2022); Biodegradability (Babaee, 2021; Chew et al, 2023).

Solid Waste

Waste is tantamount to unwanted residues that connotes negative value which usually resulted from material consumption through human activities though there tends to be variation based on consumption, product, or resources that dictates the fraction that is wasted during use and the fraction that only becomes waste upon system redundancy (Adobe stock, 2023 & Ibrahim, et al, 2021). About one hundred and fifty years ago, waste management was the sole onus of the inhabitant as a consumer though this trends has been changed as there exist an establishment of waste management, saddled with management of all forms of waste (Odonkor, et al, 2022 & Ibrahim, et al, 2021).

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Solid Waste Disposal

The solid waste disposal today is a situation which needed general attention such that its generation and collection shall not be out of proper monitoring either by government or various individual. Over the years, waste must be disposed as population increases (Teshome, et al. 2022; Godswill, et al, 2022). Since then it has come a long way to organized a workable means of disposing various waste with less harmful to the public using various strategies depending on the types of solid waste being generated and level of technology involved. Waste clarification entails a) Non-hazardous that pose no immediate threat to human health and the environment. b) Household garbage is included into this category though hazardous wastes are of two types: those that have common hazardous properties such as ignitability or reactivity and those that contain leachable toxic components.

The last type of waste is entitled Special Wastes and is very specific in nature which thus regulated with specific guidelines e.g. radioactive wastes and medical wastes while landfill accounted for more than 90 percent of the nation's municipal refuse disposal (Godswill, et al, 2022). The cost of Refuse burned seems manageable than Pyrolysis, a process of chemical decomposition, produces a variety of gases and inert ash that have severe negative effects (Ong, Fearnley & Chai, 2021). While Composting and land farming (Shittestock, 2023; Zhou, et al, 2020; Hasan, et al, 2023), in which materials are spread out over a large land area so that microbes can decompose them, are examples of biological treatment of hazardous waste.

Solid Waste Management

SWM comprises with their range of activities to enhance recycling, reduction, segregation etc. (Godswill, et al, 2022; Teshome et al, 2022; Ibrahim, et al, 2021; Alyssa et al, 2022) geared towards proper waste management. In general terms the constituents of SW can be grouped into: Non-biodegradable inorganic matter; and Biodegradable natural organic matter; Off specification and fire- and water-damaged chemicals of unknown composition and characteristics; Toxic organic compounds; Metals, metalloids and their derivatives; partially biodegradable natural organic matter (Ibrahim, et al, 2021; Godswill, et al., 2022;).

Biodegradability conceived as property that environmental conditions influences and the nature of appropriate consortia of microbes. the categories includes Construction industry and demolition waste;, Energy-generation waste; Municipal solid waste (domestic, market and trade wastes); Fuel production and Food, beverage and agro-industry waste; Amenity area and garden waste; Slurries from Intensive animal husbandry (animal manures); Slaughterhouse solid waste (including specified materials), catering industry waste; Forestry and forest product industry waste; and diseased carcasses (Saadh, et al, 2022; Adobe Stock, 2023); The major feature of any solid waste that makes it suitable for treatment is that it is either biodegradable or combustible, thereby dictating that such waste fractions must be organic in nature.

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3. METHODOLOGY

The socio-demographic characteristics of the resident of Bida in relation to socio economic strata local economy, consumption and attitude of the residents towards waste generation were taking into consideration for data collection. The application Geographical Information System (GIS) tool through various programmed - based software's have been employed in locating the major dumping sites on the map at various locations within the study area.

Statistical packages was used in analysing data based on the questionnaire administered with the adoption of convenient and stratification techniques while purposive sampling was used to select 6wards from 14 available wards for the study in order to collect the predicted data. This is because the wards have higher population density, commercial activities and other locational advantages like presence of institutions; Markets and light industries that generates waste on daily basis. The table below show a total number of (17) waste dump sites in the 6 selected wards within Bida.

Table 1: Table for 17 Dump Sites that fall within the Selected Wards

NUMBER	NAME OF WARDS	NUMBER OF DUMP SITES	PERCENTAGE OF NUMBER OF DUMPSITES (%)
1	Masaba A	4	23.53
2	Efuturi	4	23.53.
3	Masaba B	3	17.66
4	Fogun	2	11.76
5	Umaru Majigi	2	11.76
6	Wadata	2	11.76
Total		17	100.00

Source: Author's Field Survey (2024).

In all 350 copies of questionnaire were distributed, 25 copies were not retrieved accounting for 7.14% while another 40 questionnaires were wrongly filled, mal-handed, tore, dirty and filled not up to 50% of the total listed questions (11.43) thus, 285 copies of correctly administered and filled questionnaires were used for the analysis totally 81.43% of the total questionnaires administered. Therefore, the study recorded 285 as correctly filled answered questionnaire and thus supported by Krejcie and Morgan, (1970) (see table 2 Questionnaire distributions in the study area).

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Table 2: Questionnaire Distributions in the Study Area

Wards	House Numbers	Pilot Survey Sample & Retrieved	Main Survey Sampled	No of QSN Retrieved & Filled Correctly	Total % of QSN Retrieved
Masaba A	344	28	69	54	78.2
Efuturi	321	25	64	53	82.8
Masaba B	294	22	59	49	83.0
Fogun	269	19	54	47	87.0
Umaru Majigi	261	18	52	44	84.6
Wadata	261	18	52	38	73.00
Total	**1750**	**130**	**350**	**285**	**81.43**

Source: Field Survey, 2024

The itemized predicting indicators of variables that measures Solid Waste Disposal in Bida Community and Socio-economic Strata was based on the administered survey questionnaire that led to the formulation of hypothesis and variable to variable test. Therefore, for the quantitative method as applied, structural equation model (SEM) was used for the validation of this research. To authenticate this, the measuring indicator were done via confirmatory factor analysis and validation test (Jöreskog and Sörbom, 1996 in Ojo, 2015) in tandem with two stage process involved in applying SEM i.e. the internal consistent reliability to text un-dimensionality assessed by Cronbach alpha. Any value above 0.7 is tagged acceptable threshold according to (Raykov and Marcoulides, 2010; Ojo, 2015) while the second stage process is refers to as convergent validity that was assessed based on factor loading, average variance extracted, KMO and component matrix.

For this study KMO value of 0.7 were appropriately accepted for a sample size adequacy. However, the sample size of this study has KMO value of 0.902 that signifies reliable and valid survey sampling derived from the application of SPSS 18. The selection of sample size did not concentrate on number but it involved sampling size of specific resident with the aid of sampling techniques. The selected sampling techniques (convenient and stratification) were done quantitatively to enhance the equality of respondents and their potential knows- how to answer the questions and provide rich and relevant information for analysis and interpretation.

Hypothesis formulation and Hypothesized Path

Waste generation and its disposal has been affirmed to be part of human activities on hourly, daily and weekly basis which has effect on the environment and it can also serve essential ingredient in stimulating resident economic livelihoods and development. Therefore, it is on this platform that, the study hypothesizes the solid waste paradigm have significant impact on the stimulation of environmental sanitation and economic livelihood hence expected to significantly resulted into stimulation of resident's economic livelihoods and improvement. Base on this, the confirmatory analysis model was developed (figure 4) and it was hypotheses in table 3 that:

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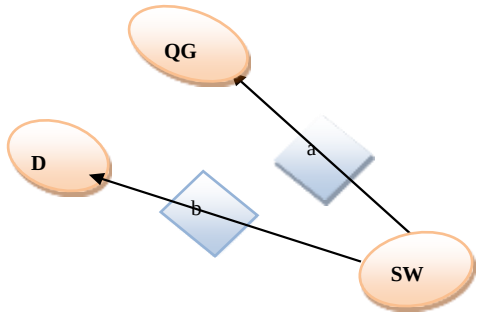
Table 3: Showing Hypothesis and Hypothesized Path based on Solid Waste disposal

Hypothesis	Hypothesized Path
Main Hypothesis	Solid waste Paradigm do have significant impact on the stimulation of environmental sanitation and economic livelihood
Sub hypothesis a	Solid waste Paradigm is significant to Quantities Generated
b	Solid waste Paradigm is significant to Disposal System



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Note

SW = Solid Waste Paradigm
QG = Quantities Generated
DS = Disposal Methods

Figure 4: Proposed Confirmatory Analysis Model of Solid Waste Paradigm in stimulating environmental sanitation.

4. ANALYSIS AND RESULTS

Figure 4 shows the measurement model constructs that were analysed via confirmatory factor analysis (CFA) as recommended by Anderson and Gerbing, (1992). All the factor loadings exceeded 0.5 at the significance level of 0.001. In Figure 4 and Table 5, the observed normalized χ^2 for the measuring model was 3.290 ($\chi 2/df = 3.290$; where df = 21), which was greater than 3.0, a good value as recommended by (Chau and Hu, 2001; Browne et al., 1993). The goodness of fit index (GFI)in table 4 was 0.946 and the adjusted goodness of fit index (AGFI) was 0.907, both exceeding the marginal acceptable recommended value of 0.8 Chau and Hu, (2001). The comparative fit index (CFI) was 0.974 and it exceeded the minimum recommended value of 0.9 Chau and Hu, (2001).

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Table 4: Measurement Variance Analysis &Reliability: Solid Waste

Variables & Indicators	Standardized Regression weight Estimate	T-Value	Cronbach Alpha	Average variance Extracted	Composite Reliability	KMO	Component Matrix
Quantity Generated			0.902	0.648	0.888	0.832	
SV1	0.822						0.871
SV2	0.877	21.698					0.896
SV3	0.833	19.479					0.882
SV4	0.777						0.869
Disposal System			0.935	0.685	0.899	0.852	
HRV1	0.920						0.933
HRV2	0.892	27.009					0.911
HRV3	0.852	23.554					0.893
HRV4	0.905						0.922

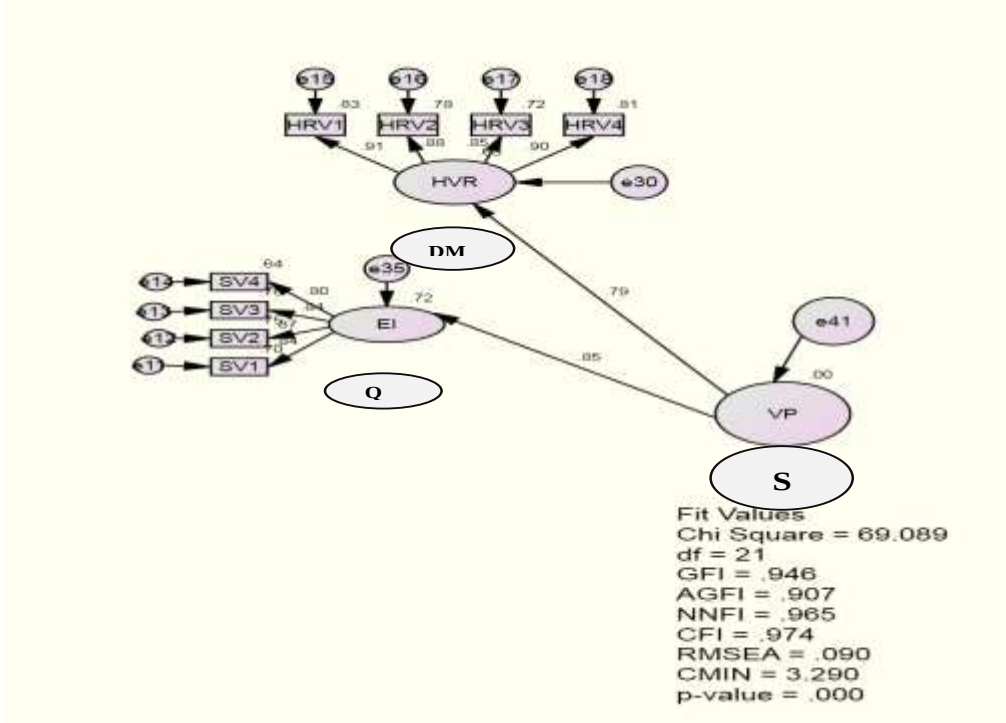

Figure 5: Result of the Confirmatory Analysis Model of Solid Waste Paradigm
Note: SW =Solid Waste; QG = Quantity Generated; DS = Disposal System

The RMSEA (root mean square error of approximation) was above the maximum cut-off level of 0.9 but not up to 1, therefore, recommended as a fit Ojo, 2015 &Browne et al., (1993), at 0.051. The collective output of this result indicates that the measurement model exhibited a good degree of acceptability and provides support for the validity of the structural model. Figure 5 depicts the analysis of this result while the path loadings are further presented in Table 5 below

Table 5: Solid Waste Paradigm Model Fit Indices.

Measures	Fit index	Scores	Recommended value	Literature
Absolute fit measures	X2/df.	3.290	$\leq 2^{xx}$, $\leq 3^{x}$, $\leq 5^{x}$	Chua & Hu, (2001) (Ojo,2014)
	GFI	0.946	$\geq 0.9^{xx}$, $\geq 0.80^{x}$	
	RMSEA	0.90	$\leq 0.05^{xx}$, $\leq 0.08^{x}$	
Incremental fit measure	NFI	0.965	$\geq 0.90^{xx}$	
	AGFI	0.907	$\geq 0.90^{xx}$, $\geq 0.80^{x}$	(Browne et al., 1993)
	CFI	0.946	$\geq 0.90^{xx}$	

Acceptability: Acceptable: ^{xx}, marginal: ^{x}

5. DISCUSSION ON TESTED HYPOTHESIS

The hypotheses examine is H_2 and the sub-hypothesis (a) and (b) as presented in table 3. Path loadings of approximately 0.2 and above are considered as practically significant loadings as recommended by (Cohen, 1988; Cohen, 1992a; Cohen, 1992b). This model demonstrated strong path loadings as all the measurement constructs exhibited loadings 0.85 based on Quantity Generated and Disposal system accounted for 0.79 those signify highly significant for the sub variables.

The increased population buttressed by the outcome of this analysis as the sub hypothesis loading QG_{1-4} and DS_{1-4} are able to clearly measured Solid Waste Paradigm. Therefore, the results in Table 6 reflects the significant of Solid Waste Paradigm as they collectively exhibited 2nd highest path loadings of 0.52 coefficient. This result supported the earlier findings in Figure 5 that indicates a significant impact of IR variables on Solid Waste Paradigm.

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Table 6: Summary of Structural Model Results (Hypothesis 2)

Hypothesis	Hypothesized Path	Path coefficient	Ranking of the Main Hypotheses	Results
Main HYPO 2	Solid waste Paradigm do have significant impact on the stimulation of resident economy livelihood	0.52	Moderately Significant	Supported
Sub hypo 2a	Solid waste Paradigm is significant to quantity generated	0.85	Very Highly Significant	Supported
Sub hypo 2b	Solid waste Paradigm is significant to Disposal system	0.79	Highly Significant	Supported

The measure variable and their indicators were examined for convergent and discriminant validity. Table 4 shows composite reliability and AVE was used for measuring convergent validity Fornell and Larcker, (1981). The composite reliability of the variable measured are 0.888 for economic impact and 0.899 for services indicating reliable values of above 0.7 benchmark Raykov and Marcoulides, (2010). The AVE are 0.648 and 0.685 respectively, standard regression weight estimate for variables ranges from 0.777 to 0.920 while their KMO was valued at 0.832 and 0.852 respectively Bagozzi and Yi, (1988) thus showed adequate convergent reliability. To test the entire measurement model CFA was appropriately used according to Anderson and Gerbing, (1992). The factor loading were found to be significant at 0.001, indicating a good loading as supported by Bagozzi and Yi, (1988)

6. CONCLUSION

The examination of solid waste paradigm on the stimulation of environmental sanitation and economic livelihood centres on the notion of transforming waste products to wealth will not only manage waste in a sustainable manner, but makes waste a profitable business and also drives bida into becoming waste-wise and waste-free cities hence improves their economic livelihoods with adequate consideration to environmental sustainability. It is therefore important for individuals, households, communities, neighbourhood's cities around Bida at large to adopt sustainable solid waste practices and create wealth for themselves. Conclusively, prompt governmental efforts, change in attitudinal behaviour and proper sanitation, sensitization and monitoring are seen as substantial model to stimulate waste disposal practice

7. RECOMMENDATION

- The policy implementers as recommended' shall saddle with the responsibilities of assessing the health risks associated with waste disposal methods further emphasize the importance of effective waste disposal practices that prioritize environmental protection and safety for everyone. As society advances, the need to harmonize waste disposal practices with the preservation of environment and improved economic livelihoods.

- Promotion of Source Reduction: Put source reduction methods as a top priority to reduce waste production at the source. Encourage businesses to use environmentally friendly manufacturing techniques, make products that last a long time, and reduce packaging stuffs.
- Enhance Recycling and Reuse: Support and incentivize recycling initiatives that promote the recovery of valuable materials from waste streams. Encourage communities to embrace reuse practices and foster a culture of resource conservation.
- Maximize Waste-to-Energy Potential by exploring opportunities to harness waste-to-energy technologies that reduce landfill waste and contribute to renewable energy generation.
- At the household-level proper segregation of waste has to be done and it should be ensured that all organic matter is kept aside for composting, which is undoubtedly the best method for the correct disposal of this segment of the waste. In fact, the organic part of the waste that is generated are more easily, attracts insects and causes disease. Organic waste can be composited and then used as a fertilizer

Declaration

i) Authors Contribution: The research based on the authors' perspective as contributed to the body of literature and knowledge on that the resident perception on waste is perceived to be waste as majority the generator has myopic knowledge about waste recycle, conversion and re usage. Again, the work was able to unveil how solid waste paradigm can stimulate environmental sanitation and economic livelihood in the study area and this can be tested on another area to authenticate the variables adopted. In addition, the author scrutiny revealed that waste segregation can be done but care must be taken regarding the toxic waste so as not to attract air borne diseases that are highly contagious and detrimental to the surrounding environment

ii) Funding : Not Applicable

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REFERENCES

Adobe Stock (2023). Reduce reuse recycle. https://stock.adobe.com/ng/search?k=reduce+re use recycle. (Accessed 6th May 2024)

Alyssa R. Pfadt-Trilling, Timothy A. Volk, & Marie-Odile P. (2022) Climate Change Impacts of Electricity Generated at a Waste-to-Energy Facility. Fortier Environmental Science & Technology. 55 (3), 1436-1445.

Anderson, J. C. and Gerbing, D. W. (1992). Assumptions of the two-step approach to latent variable modeling. Sociological Methods and Research. 20 (3), 321-33.

Asare, W., Kwarteg, S.O., Donkor, E.A., & Rockson, M.A.D. (2020). Recovery of Municipal Solid Waste Recyclables under Different Incentive Schemes in Tamale, Ghana. Sustainability, 12, 9869.

Babae T.E.B & Aydın NS (2021). A sustainable medical waste collection and transportation model for pandemics. Waste Management Research. 39(1_suppl):34–44

Bagozzi, R. P. and Yi, Y. (1988). On the evaluation of structural equation models. Journal of the academy of marketing science. 16 (1), 74-94.

Bagui, B.E., & Arellano, L. R. A. C. (2021). Zero Waste Store: A Way to Promote Environment Friendly Living. International Journal of Qualitative Research, 1(2), 150-155.

Browne, M. W., Cudeck, R., Bollen, K. A. and Long, J. S. (1993). Alternative ways of assessing model fit. Sage Focus Editions. 154, 136-136.

Chau, P. Y. K. and Hu, P. J. H. (2001). "Information technology acceptance by individual professional: A model comparison approach",. Journal of Decision Sciences,. 32 (4), 699-719.

Chew, X., Khaw, K.W. & Alnoor, A. (2023). Circular economy of medical waste: novel intelligent medical waste management framework based on extension linear Diophantine fuzzy FDOSM and neural network approach. Environmental Science Pollution Research. 30, 60473–60499.

Cohen, J. (1988). Statistical power analysis for the behavioral sciences, Psychology Press.

Cohen, J. (1992a). A power prime,155–159,DOI:10.1037/0033-2909.112.1.155, retrieved 10 July 2012. Psychological Bulletin. 112 (1).

Cohen, J. (1992b). "Statistical power analysis", Current Directions in Psychological Science1 (3), retrieved 10 July 2012 JSTOR link.

Cronbach, L. J. and Shavelson, R. J. (2004). My current thoughts on coefficient alpha and successor procedures. Educational and psychological measurement. 64 (3), 391-418.

Debrah, J.K.; Vidal, D.G. & Dinis, M.A.P. (2021). Raising Awareness on Solid Waste Management through Formal Education for Sustainability: A Developing Countries Evidence Review. Recycling, 6, 6.

Ehtasham, L. (2022). An Overview of Municipal Solid Waste Collection in Singapore, Mongolia, and Nepal. Indonesian Journal of Social and Environmental Issues (IJSEI), 3(2), 122-127.

Fadhullah, W., Imran, N.I.N., & Ismail, S.N.S. (2022). Household solid waste management practices and perceptions among residents in the East Coast of Malaysia. BMC Public Health 22, 1.

Fornell, C. and Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. Journal of Marketing Research (JMR). 18 (1).

Field, A. (2009). Discovering statistics using SPSS, Sage publications.

Godswill U. M; Adeogun A.S; Aisha J. & Raheem W M (2022) Innovative Means of Transforming Waste to Wealth in Nigeria: An Overview Planning and Management of Sustainable Infrastructure Development in Nigeria, 373 – 390, Ladoke Akintola University of Technology Press, Ogbomoso Nigeria

Ibrahim, I.D., Hamam, Y., Alayiamiru, T., Sodiku, E.R., Kupolati, W.K., Ndambuki, J.M., and Eze, A.A. (2021). A review on Africa energy supply through renewable energy production: Nigeria, Cameroon, Ghana, and South Africa as a case study. Energy Strategy Reviews. 38, 100740

Jöreskog, K. G. and Sörbom, D. (1996). LISREL 8 user's reference guide, Scientific Software International.

Kenny, C.; Priyadarshini, A. (2021). Review of Current Healthcare Waste Management Methods and Their Effect on Global Health. Healthcare 2021, 9, 284.

Khudyakova T. and Lyaskovskaya E. (2021). Improving the Sustainability of Regional Development in the Context of Waste Management. Sustainability. 13(4):1755.

Krejcie, R. V. and Morgan, D. W. (1970). Determining sample size for research activities. Educational and Psychological Measurement. 30 (3), 607-610.

Lagman-Bautista, J. (2020). Crafting a Theoretical Framework on Waste Management: A Case for Sustainable Cities. International Journal of GEOMATE, Special Issue on Science, Engineering and Environment. 18(68), 80- 86.

Niger sate Ministry of Land and Housing Gazette, (2023); a publication of Niger State Government bureau of information Department, 2023

Ojo K.A. (2015) Community Perception towards Voluntourism as an Alternative Paradigm for Rural Revitalization in Nigeria: a Ph.D. Thesis (Urban & Regional Planning), Universiti Teknologi, Malaysia

Ojo, K.A (2024) Assessment of Solid Waste Disposal Practice in Bida Local Government. B-Tech, Dissertation of Bells University of technology, Ota, Ogun State

Opoku, L., Gyimah, A.G., & Addai, B. (2022). Harnessing waste-to-energy potential in developing countries: a case study of rural Ghana. Environmental Science and Pollution Research. 29:58011–58021.

Omang, D. I., John, G. E., Inah, S. A., & Bisong, J. O. (2021). Public health implication of solid waste generated by households in Bekwarra Local Government area. African Health Sciences, 21(3), 1467–1473.

Saadeh, D., Al-Khatib, I. A., & Anayah, F. M. (2022). Evaluating strategies for sustainable recovery and recycling of plastic waste in the West Bank of Palestine: The perspectives of plastic companies. Environmental Monitoring and Assessment, 195(1), 233.

Shtterstock (2023). Compost. https://www.shutterstock.com/search/compost. (Accessed 6th May 2024)

Teshome, Z.T., Ayele, Z.T., and Abib, M.I. (2022). Assessment of solid waste management practices in Kebridehar city Somali regional state, Ethiopia. Heliyon, 9(8), e10451.

Williams, P.A.; Narra, S.; Antwi, E.; Quaye, W.; Hagan, E.; Asare, R.; Owusu-Arthur, J.; & Ekanthalu, V.S. (2023). Review of Barriers to Effective Implementation of Waste and Energy Management Policies in Ghana: Implications for the Promotion of Waste-to Energy Technologies. Waste, 1, 313-332.

Zhou X, Yang J, Xu S, Wang J, Zhou Q, Li Y, . (2020). Rapid in-situ composting of household food waste. Process Safe Environmental Prot; 141:259–66