

## **Improving Environmental Health Hazards Emanating from Indiscriminate Dumping of Solid Waste through Leadership Approach: A Case of Benin City, Nigeria<sup>1</sup>**

**<sup>1</sup>Okorie, Victor Nnannaya and <sup>2</sup>Olanrewaju, Oludolapo Ibrahim**

<sup>1,2</sup>Department of Quantity Surveying, University of Benin, Edo State, Nigeria

<sup>2</sup>Dollahills Research Consult, Lagos State, Nigeria

<sup>2</sup>Dollasoft Technologies, Lagos State, Nigeria

### **ABSTRACT**

*Causes of environmental health hazards have been exclusively focused on the inadequacies of environmental laws, regulations and poor policies with less attention given to leadership and leaders' behaviour. This study seeks to examine the relevance of leadership and leaders' behaviour in improving environmental health hazards in Benin City. Questionnaire survey was structured from literature and administered to managers, workers and truck drivers of Edo State Waste Management Board (ESWMB). IBM SPSS version 23 and Microsoft Excel were used for data analysis while Microsoft Visio was used to design the models. The study revealed that there is a link between effective leadership and worker performance in term of regular collection and disposal of solid waste from the illegal dumpsites to recycling sites. Kindness with mean score value of 4.057 was ranked highest among the leadership qualities that could motivate workers for exceptional performance. The paper concludes that with visible and transparent leadership, diseases associated with indiscriminate dumping of solid waste in Edo State will be reduced leading to improved public health. The study therefore recommends that selection and appointment of Chief Executives to ESWMB should be on leadership skills not on political allegiance.*

**Keyword:** Dumpsite, Environmental, hazard, health, leadership, solid waste

### **1.0 INTRODUCTION**

Causes of environmental health hazards have been exclusively focused on the inadequacies of environmental laws, regulations and poor policies with less attention given to leadership and leaders behaviour. According to Yukl (2011) leadership and leaders' behaviour have been linked to organisational success. Naoum (2011) contends that organisational exceptional performance including productivity and profitability depends on the quality of leadership. Achua and Lussier (2010) confirmed the link between high performance and leadership in the United States by developing a leadership model where the leaders' traits/charismas were found to give rise to

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influence, inspiration and motivation, leading to exceptionally high commitment and willingness to achieve organisational goals/ tasks.

It could be argued that one of the reasons why World conventions and summits on environmental issues since 1952 have not achieved significant improvement in the areas of public health is not absence of laws and policies but poor leadership. On this note, Taylor (2011) stated that there is a high demand for leadership rather than managers to manage environmental issues. According to Ogbuigwe (2015) legislation, laws and regulations alone cannot bring about healthy environment; it is only committed and visible leadership that can bring about improvement public health emanating from indiscriminate dumping of solid waste in Nigerian urban cities. Thus, there is a paradigm shift from management to leadership to keep pace with today competitive business world. In support of the paradigm shift from management to leadership, Lees and Austin (2011) maintain that success of any organisation is dependent upon the quality of leadership not by voluminous rules and regulations that do fail.

However, there is natural tendency for people to believe that enacting a law automatically leads to rectification of the problem it was meant to address. Nonetheless, in sub-Saharan Africa countries, this seen contrast because of low levels of education and cultural differences. Even so, Ogbuigwe (2015) argues that no matter how good the laws and regulations may be, it cannot work by itself, that it needs committed leaders to direct the affairs of the organisation.

Much have been researched in the areas of environmental management and pollution in Nigeria such as challenges of effective environmental enforcement (Edo, 2010), environmental pollution in Nigeria (Hyavyar and Tyav, 2010), waste dumps and their management (Aderogba and Afelumo, 2012) and effective solid waste management (Ikemike, 2015). However, there is little or no research in the area of leadership and environmental health hazards emanating from indiscriminate dumping of solid waste in Nigeria. Therefore, this paper tends to fill in this gap by examining the relevance of leadership and leaders' behaviour relative to environmental health hazards in Nigeria.

## **2.0 LITERATURE REVIEW**

### **2.1 Concept of leadership**

Leadership has no single definition as it cuts across different disciplines. This means that the term 'leadership' is defined according to situation and context. To Western (2008) 'leadership' is the art of motivating a group of people to act towards achieving a common goal. While, Northouse (2010) describes leadership as personality traits, behaviour, power and influence. To Yukl (2010) 'leadership' in an organization is used to describe a certain type of social interaction between people, while the term leader is used to denote a person who has influence over others.

Tracy and Chee (2013) argued that leadership is action not position. Our concern of leadership in this context is to relate leadership action in a corporate body like Edo State Waste Management Board. This corporate entity called Edo State Waste Management Board is responsible for collection and disposal of solid waste generated within Benin Urban City. Therefore, the person whose actions are to bring about effective or ineffective in meeting the company's needs is called the leader. Arguably, prevention of health hazards and diseases emanating from indiscriminating

dumping of solid waste in Nigerian major urban cities like Benin City could be improved through committed and visible leadership.

## **2.2 Leadership and Environmental health management**

Leadership and leaders behaviour revolve around directing and guiding people, influencing their thoughts and behaviour, motivating and controlling them to work towards goals that are regarded by the group and organisation as desirable and achievable (Naoum, 2011). Improve health hazards and diseases emanating from indiscriminate dumping of solid/industrial wastes in Nigerian urban cities falls within the ambit of what leaders can do. Leadership in the area of environmental management is relatively new. Perhaps, not until the 1988 Koko toxic waste dumping saga that forced the Federal government of Nigeria to establish the Federal Environmental Protection Agency (FEPA), Federal Ministry of Environment and other relevant agencies to control and manage all environmentally related issues in the country (Ikemike, 2015).

Regrettably, these institutional legal frameworks and other mitigating measures by Nigerian governments have not yielded enough positive results. For instance, in all major roads in Nigerian urban cities there will be over 1000 illegal dumpsite. The most pertinent question now, is it the lack of intuitional and legal framework that are responsible for the indiscriminate dumping of solid waste along all major roads in our urban cities?

The obvious answer to the posed questions is poor leadership not absence of rules, regulations and policies. In addition, low level of education and culture could be another factor contributing to indiscriminate and reckless dumping of solid waste in Nigerian major roads, towns and communities. The decomposed wastes endanger public health through the spread of odors and diseases.

Therefore, effective control and management of our environment is dependent upon the quality of leadership not by volumes of laws and regulations. In support of the argument, Ogbuigwe (2015) states that sustainability of our environment lies upon simple human values 'leadership' not on laws and regulations that do fail.

## **2.3 Effects of poor leadership on indiscriminate dumping of solid waste**

Over the last three decades there have been increasing global concern over the negative impacts of indiscriminate dumping of solid waste, particularly in sub-Sahara Africa countries like Nigeria. The World Health Organization [WHO] (2011) estimated that about a quarter of the diseases confronting most developing countries could be attributed to environmental pollution resulting from both indiscriminate dumping of solid and industrial wastes. Perhaps, there are laws, regulations and policies put in place to regulate and monitor the ugly situations but in Nigeria poor leadership in all areas of governance is prevalent (Gurdian, 2016).

Research conducted by (Hyavyar and Tyav, 2010) pointed out that poor environmental management in Nigeria poses a great challenge to public health and well-being of her people, particularly those living around or adjacent to dumpsites due to its potential to pollute water, food sources, land, air and vegetation. A Recent research conducted by Ikemike (2015) in Baylesa State, South-South Geopolitical zone of Nigeria to determine the impact of pollutions on public health identifies the following effects: infant mortality, respiratory disorders, allergy,

malignancies, cardiovascular disorders, and increase in stress oxidative, endothelial dysfunction, mental disorders, and various other harmful effects. Several researches conducted in Nigeria have shown that environmental pollutants have serious adverse health effects on the people. Chukwuemaka *et al.* (2012) linked environmental pollutants to Nigerian common diseases such as organ disturbances, cancers, and other chronic diseases.

Effects of environmental pollutants to people living near or adjacent to dump site sites such as early life mortality, and non-communicable diseases were also identified by study of Hyavyar and Tyav (2010). Therefore, it is time to look inward, beside the normal legislation, rules, regulations and policies that can fail and have failed to improve environmental health hazards resulting from environmental pollutions, indiscriminate dumping of solid and industrial wastes in Nigerian urban cities.

By the word of Tracy and Chee (2013) that leadership is action not position. It is only through the leaders' action which is a demonstration of commitment in all matters concerning environmental issues in the Edo State Waste Management Board (ESWMB) could bring about the desired improvement in public health resulting from indiscriminate disposal of solid waste in the State. Figure 1 below illustrates a typical illegal dumpsite of solid waste in one of the major roads in Benin Urban City, Nigeria.



**Figure 1: Illustrates an illegal solid waste dumpsite on one of Nigeria's major roads**

**Source:** Researcher's Survey (2018)

#### **2.4 The need for effective leadership in monitoring of indiscriminate dumping of solid waste**

Achieving the goal of disease prevention and healthy environment in Nigeria urban cities, not only requires well written legislation, and policies, but committed and transparent leaders who can navigate the organisations through unthinkable and turbulence time, influence and motivate workers for exceptionally performance.

Leadership attributes like kindness, knowledge, transparency, inspiration, motivation, humility, honesty, and creativity that are examples of leadership qualities. These leadership attributes or qualities when employed by ESWMB leaders could create high morale among the workforce leading to efficiency and higher productivity, which manifest through regular collections and disposal of solid waste. Taylor (2011) states that no country wishing to achieve a remarkable success in her environmental pollution problems can afford to ignore the importance of leadership. In addition, leadership attributes like assertiveness, knowledge, rewards and competency could be effectively employed by ESWMB leaders to effectively monitor and enforce rules and regulations in the organisation. When workers are given rewards in form of incentives, there will be high morale and loyalty. It has been proved that visible leadership is linked to organisational success including environmental issues. Drawing from this, Edo State Waste Management Board could improve on the effects of environment health hazards emanating from indiscriminating dumping of solid wastes within Benin Urban City through visible and transparent leadership.

### **3.0 RESEARCH METHOD**

As indicated in Figure 2, the research process for this study is divided into four distinctive processes namely; literature survey, questionnaire design and distribution, questionnaire collection and data analysis, and presentation of result. To achieve the objectives of this study, a literature survey was conducted on leadership, environmental management, and environmental hazards both internationally and locally. Quantitative research approach was adopted for this study. Furthermore, the review of relevant literature resulted in formulation of a structured questionnaire based on 5-point Likert-scale measurement. Collins (2010) maintains that Likert scales are effective to elicit participants' opinions on various statements.

Questionnaires were administered to the managers, workers and truck drivers of the Edo State Waste Environmental Management Board. The main purpose of the questionnaire was to determine the relevance of leadership and leaders behaviour in improving environmental health hazards in Benin City. One hundred and twenty (120) questionnaires were distributed, eighty-seven (87) were completed and returned, and this resulted in a response rate of 73%. The response rate achieved in this survey provides reasonable data for analysis (Collins, 2010).

IBM SPSS version 23 and Microsoft Excel were used for data analysis while Microsoft Visio was used to design the models. The study adopted descriptive and inferential statistics to analyse data obtained from respondents. Reliability test was carried out for all the identified leadership qualities and environmental health hazards. When using Likert scales, it is imperative to calculate and report Cronbach's *alpha* coefficients as well as the internal consistency and reliability (Maree, 2016). Maree and Pietersen (2016) suggest that the following guidelines for the interpretation of Cronbach's *alpha* coefficient: 0.90 – high reliability; 0.80 – moderate reliability, and 0.70 – low reliability. The mean response of each leadership qualities and environmental health hazards was calculated and ranked accordingly. Previous social science studies that adopt this method include Olanrewaju (2017); Olanrewaju, Idiake, Oyewobi, and Akanmu (2018); and Olanrewaju (2018). Factor analysis was used to categorise the qualities of leaders' behaviour into five components. Lastly, correlation analysis was carried out between leadership and environmental health hazards to determine the relationship between the variables.



**Figure 2: Research Process**

Source: Researcher’s Survey (2018)

## 4.0 ANALYSIS AND DISCUSSION OF RESULTS

### 4.1 Demographic Information

Reliability test was carried out for the leadership qualities and environmental health hazards. The Cronbach’s *alpha* coefficient ranges between 0.701 and 0.758 for leadership qualities while the Cronbach’s *alpha* coefficient for environmental hazards ranges between 0.705 and 0.720. Table 1 shows the demographic information of the respondents. Majority of the respondents have Bachelor degrees (46%), while 21% have National diploma. Next were respondents with Master degrees (15%), Higher national diploma (14%), and Senior Secondary School Certificate (5%) with least number of respondents. This inferred that the respondents were knowledgeable enough to give reliable response.

For age, majority of the respondents were between the age ranges of 26 – 30 years (33%), followed by the age ranges of 31 – 35 years (28%), next were respondents in age ranges of 36 – 40 years and 19 – 25 years with 16% and 17% respectively. Very few of the respondents are above 40 years (6%). This indicates that every age group were represented with the most functional age of (26 – 30 years) dominating the respondents. For marital status, majority of the respondents were married (62%) while 24% were single, 9% were divorced, and 5% were widowed.

**Table 1: Demographic Information of Respondents**

Description	F	%	Description	F	%
<b>Academic Qualification</b>			<b>Age</b>		
Senior Secondary School Certificate	4	5	19-25	14	16
National Diploma	18	21	26-30	29	33
Higher National Diploma	12	14	31-35	24	28
Bachelor Degree	40	46	36-40	15	17
Master Degree	13	15	Above 40	5	6
<b>Total</b>	<b>87</b>	<b>100</b>	<b>Total</b>	<b>87</b>	<b>100</b>
<b>Marital Status</b>			<b>Years of Experience</b>		
Single	21	24	Less than 5 years	17	20
Married	54	62	5-10 years	44	51
Divorced	8	9	11-15 years	21	24
Widowed	4	5	16-20 years	5	6
<b>Total</b>	<b>87</b>	<b>100</b>	<b>Total</b>	<b>87</b>	<b>100</b>

F = Frequency; % = Percentage

Source: Researcher's Data Analysis (2018)

This shows that the respondents are well mature to provide meaningful information for this research. For years of experience, 51% of the respondents have between 5 – 10 years’ experience, followed by 24% with years of experience between 11 – 15 years, next were respondents with less than 5 years’ work experience (20%) while 6% have between 16-20 years of experience.

#### 4.2 Mean Ranking

Table 2 shows twenty – eight (28) leadership qualities which were ranked by respondents. Twenty – eight (28) important leadership qualities were identified with mean ranging score between 1.126 and 4.057. These important leadership qualities ranged from kindness which is the highest ranked (Mean = 4.057; SD = .957;  $\alpha$  = .758) to competency which is the least ranked (Mean = 1.126; SD = .334;  $\alpha$  = .716). To get the most significant leadership qualities, a mean score threshold of 3.50 was set. As a result, only nine (9) leadership qualities were above 3.50 and considered significant. These leadership qualities are: kindness (Mean = 4.057; SD = 0.957;  $\alpha$  = .758), transparency (Mean = 3.908; SD = 1.168;  $\alpha$  = .732), knowledge (Mean = 3.885; SD = 1.135;  $\alpha$  = .736), vision (Mean = 3.851; SD = 1.225;  $\alpha$  = .733), energy (Mean = 3.724; SD = 1.053;  $\alpha$  = .746), inspiration (Mean = 3.690; SD = 0.980;  $\alpha$  = .731), forward-Looking (Mean = 3.644; SD = 1.372;  $\alpha$  = .735), magnanimity (Mean = 3.644; SD = 1.303;  $\alpha$  = .732), and motivation (Mean = 3.529; SD = 1.170;  $\alpha$  = .742).

Table 3 shows nine (9) environmental health hazards which was ranked by respondents. Nine (9) hazards were identified here with mean score ranging between 2.793 and 3.345. These hazards ranged from allergy which is the highest ranked (Mean = 3.345; SD = 1.055;  $\alpha$  = .718) to organ disturbances which is the least ranked (Mean = 2.793; SD = 1.080;  $\alpha$  = .720). To get the most significant environmental health hazards, a mean score threshold of 3.00 was set. As a result, only six (6) hazards were above 3.00 and considered significant. These hazards are: allergy (Mean = 3.345; SD = 1.055;  $\alpha$  = .718), infant mortality (Mean = 3.333; SD = 1.042;  $\alpha$  = .716), stress oxidative (Mean = 3.126; SD = 1.189;  $\alpha$  = .709), cardiovascular disorders (Mean = 3.103; SD = 1.211;  $\alpha$  = .708), mental disorders (Mean = 3.103; SD = 1.111;  $\alpha$  = .705), and respiratory disorders (Mean = 3.057; SD = 1.082;  $\alpha$  = .711).

**Table 2: Qualities of Good Leadership**

Qualities	Mean	SD	$\alpha$	R	Qualities	Mean	SD	$\alpha$	R
Kindness	4.057	0.957	.758	<b>1</b>	Intuition	3.138	1.025	.701	<b>15</b>
Transparency	3.908	1.168	.732	<b>2</b>	Decision	2.943	1.195	.716	<b>16</b>
Knowledge	3.885	1.135	.736	<b>3</b>	Courage	2.713	0.975	.710	<b>17</b>
Vision	3.851	1.225	.733	<b>4</b>	Focus	2.586	1.126	.724	<b>18</b>
Energy	3.724	1.053	.746	<b>5</b>	Gentle	2.552	1.336	.736	<b>19</b>
Inspiration	3.690	0.980	.731	<b>6</b>	Delegation	2.540	0.860	.733	<b>20</b>
Forward-Looking	3.644	1.372	.735	<b>7</b>	Fairness	2.437	1.008	.715	<b>21</b>
Magnanimity	3.644	1.303	.732	<b>8</b>	Accountability	1.885	1.393	.718	<b>22</b>
Motivation	3.529	1.170	.742	<b>9</b>	Communication	1.782	0.958	.720	<b>23</b>
Creativity	3.483	1.275	.736	<b>10</b>	Commitment	1.575	0.858	.724	<b>24</b>
Honesty	3.402	1.474	.736	<b>11</b>	Assertiveness	1.552	0.500	.731	<b>25</b>
Humility	3.379	1.305	.730	<b>12</b>	Confidence	1.264	0.538	.735	<b>26</b>

Optimism	3.379	0.918	.723	13	Balance	1.230	0.623	.716	27
Sense of Humor	3.287	0.987	.724	14	Competency	1.126	0.334	.716	28

SD = Standard Deviation;  $\alpha$  = Cronbach's Alpha; R = Rank

Source: Researcher's Data Analysis (2018)

**Table 3: Identified Environmental Health Hazards**

Hazards	Mean	SD	$\alpha$	R
Allergy	3.345	1.055	.718	1
Infant mortality	3.333	1.042	.716	2
Stress oxidative	3.126	1.189	.709	3
Cardiovascular disorders	3.103	1.211	.708	4
Mental disorders	3.103	1.111	.705	5
Respiratory disorders	3.057	1.082	.711	6
Cancer	2.989	0.909	.712	7
Endothelial dysfunction	2.851	1.062	.711	8
Organ disturbances	2.793	1.080	.720	9

SD = Standard Deviation;  $\alpha$  = Cronbach's Alpha; R = Rank

Source: Researcher's Data Analysis (2018)

### 4.3 Factor Analysis

To test the appropriateness of the data on leadership qualities of a good leader for further analysis, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (MSA) and Bartlett test of sphericity (BTS) was conducted for the data on barriers as shown in Table 4. These two tests provide the minimum standard that the data should meet to be considered adequate for further analysis. The value of the KMO can vary between 0 and 1, with .50 suggested as a minimum (Hair *et al.*, 2010; Field, 2013). The Bartlett test indicates whether the correlation matrix is significantly different from the identity matrix (i.e. matrix in which all of the diagonal elements are 1 and other elements are 0). The Bartlett test indicates the strength of the relationship among variables and the significant level of the Bartlett's test is a requirement for the data to be considered suitable for analysis (Field, 2013). The KMO value was .445 which is below .50 and BTS value was found to be significant at  $p = 0.000$ . The KMO value of .445 is less than the recommended value of .6 (Kaiser 1970, 1974) and Bartlett's Test of Sphericity (Bartlett 1954) reached statistical significance, supporting the factorability of the data.

**Table 4: Test of the Appropriateness of Leadership Qualities Data For Factor Analysis (KMO and Bartlett's Test)**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.445
Bartlett's Test of Sphericity	Approx. Chi-Square	1134.554
	df	378
	Sig.	.000

Source: Researcher's Analysis (2018)

Table 5 shows the summary of Rotated Factor Matrix for the leadership qualities of a good leader. Factor analysis was performed following Principal Component Solution with a Varimax Rotation

(Kaiser, 1958). The data fed into Factor analysis consisted of the data obtained from respondents (87). Five (5) components were extracted from the 28 variables. These component factors were further rotated by Varimax solution. Principal Component Analysis (PCA) was the method of extraction used and rotation converged in 7 iterations. The discussion of the result was based on the Varimax rotated factor matrix. For the purpose of discussing the result of factor matrix the factor loading of .50 or above are considered to be significant.

Factor loadings are simply the correlation coefficient between an original variable and an extracted factor. However, the factor loading (except those less than 0.5) of the leadership qualities of a good leader are categorized based on components. Component 1 consists of four significant qualities with factor loadings ranging from .788 to .876, Component 2 consists of five significant qualities with factor loadings ranging from .545 to -.680, Component 3 consists of three significant qualities with factor loadings ranging from .593 to .700, Component 4 consists of two significant qualities with factor loadings ranging .840 to .884, and Component 5 consists of three significant qualities with factor loadings ranging from -.535 to -.717.

Component 1 consists of four significant qualities which includes; Kindness, Transparency, Vision, and Knowledge. Majority of these qualities seems to relate to kindness, knowledge and care; as such this component may be named as “**Kindness and Knowledge**”. Furthermore, Component 2 consists of five significant qualities (Accountability, Energy, Confidence, Balance, and Forward-Looking) and it is clearly visible that these qualities relates to strength, accountability, and truthfulness, as such, this component may be named as “**Accountability and Energy**”. Also, Component 3 consists of four significant qualities (Gentle, Honesty, Focus, and Fairness) and these qualities relate to personal attributes, as such, this component may be named as “**Honesty and Fairness**”. Component 4 consists of two significant qualities (Intuition and Sense of Humor) and these qualities relate to friendliness and cognitive thinking, as such, this component may be named as “**Intuition and Sense of Humour**”. Lastly, Component 5 consists of three significant qualities (Inspiration, Humility, and Optimism) and these qualities relate to respect and innovation, as such, this component may be named as “**Inspiration and Humility**”.

Figure 3 shows the KAHII Model for qualities of a good leader and environmental health hazards. It can be seen that indirect relationships exist between the qualities of a good leader. Also, it can be seen that effective leadership will lead to decrease in rate of environmental health hazards followed by improved public health. The five components may therefore be represented with an acronym “**KAHII**” based on the first letter of the component name.

**K** - Kindness and Knowledge

**A** - Accountability and Energy

**H** - Honesty and Fairness

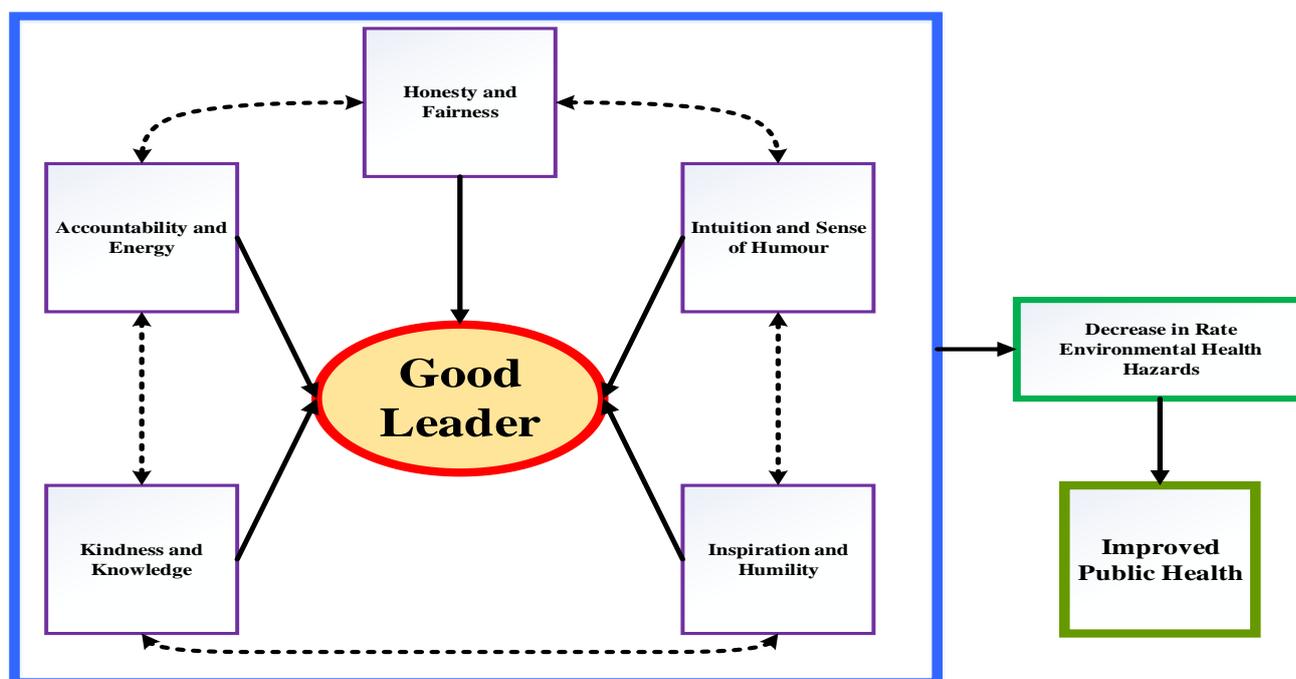
**I** - Intuition and Sense of Humour

**I** - Inspiration and Humility

**Table 5: Rotated Component Matrix for Qualities of a Good Leader**

Category	Qualities	Code	Component				
			1	2	3	4	5
<b>Kindness and Knowledge</b>	Kindness	QU21	.876				
	Transparency	QU27	.871				
	Vision	QU28	.798				
	Knowledge	QU22	.788				
<b>Accountability and Energy</b>	Accountability	QU1		-.680			
	Energy	QU12		.677			
	Confidence	QU7		-.597			
	Balance	QU3		-.574			
	Forward-Looking	QU15		.545			
<b>Honesty and Fairness</b>	Gentle	QU16			.700		
	Honesty	QU17			.638		
	Focus	QU14			.623		
	Fairness	QU13			.593		
<b>Intuition and Sense of Humour</b>	Intuition	QU20				.884	
	Sense of Humor	QU26				.840	
<b>Inspiration and Humility</b>	Inspiration	QU19					-.717
	Humility	QU18					.624
	Optimism	QU25					-.535

Source: Researcher's Data Analysis (2018)



**Figure 3: KAHII Model for Qualities of a Good Leader and Environmental Health Hazards**

Source: Researcher's Survey (2018)

### 4.3 Correlation Analysis

Correlation analysis was used to show the relationship between leadership and environmental health hazards as shown in Table 6.

From Table 6 which shows the correlation matrix of the relationship between leadership and some selected independent variables (environmental health hazards) using correlation, it was found that most of the environmental health hazards were weakly correlated with poor leadership. The environmental hazard with the strongest correlation coefficient and significant at 0.05 level of significance was Mental disorders ( $r = .205$ ;  $p = .028$ ). Other environmental health hazards that were found to be insignificant and weakly correlated to leadership are: allergy ( $r = .056$ ,  $p = .303$ ); infant mortality ( $r = .045$ ,  $p = .338$ ); stress oxidative ( $r = .155$ ,  $p = .076$ ); cardiovascular disorders ( $r = .112$ ,  $p = .152$ ); respiratory disorders ( $r = .156$ ,  $p = .074$ ); cancer ( $r = .143$ ,  $p = .093$ ); endothelial dysfunction ( $r = .139$ ,  $p = .099$ ); and organ disturbances ( $r = .036$ ,  $p = .371$ ). As depicted in Table 6 and Figure 4, it can be inferred from the analysis that poor leadership have greater impact on mental disorders than other identified hazards. This is because the attitude of leaders have serious impact on the mental health of the people. The findings further supported Northouse (2010) and Yukl (2010) where leadership was described as an influence and social interaction between people.

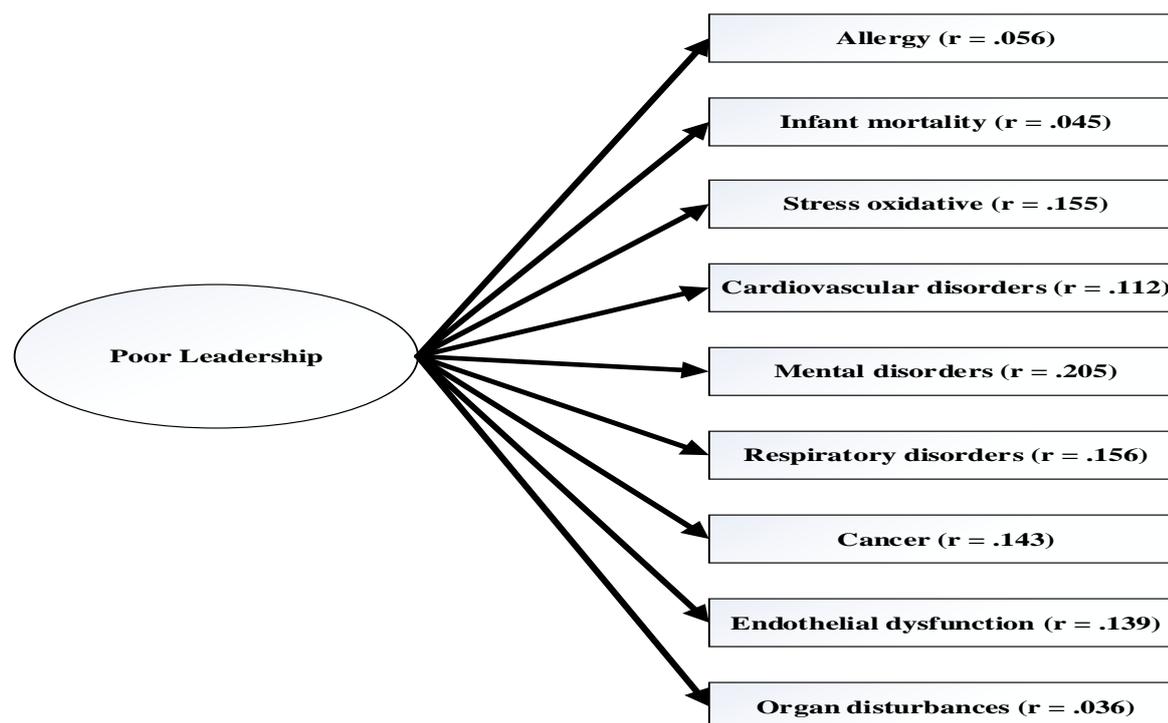
**Table 6: Correlation Matrix of Relationship between Leadership and Environmental Health Hazards**

	1	2	3	4	5	6	7	8	9	10	11
Poor Leadership	1										
Allergy	.056	1									
Infant mortality	.045	.540**	1								
Stress oxidative	.155	.405**	.390**	.469**	1						
Cardiovascular disorders	.112	.323**	.537**	.600**	.621**	1					
Mental disorders	.205*	.341**	.518**	.447**	.455**	.548**	1				
Respiratory disorders	.156	.193*	.301**	.316**	.439**	.573**	.613**	1			
Cancer	.143	.312**	.247*	.456**	.373**	.424**	.369**	.388**	1		
Endothelial dysfunction	.139	.289**	.398**	.411**	.388**	.461**	.492**	.520**	.503**	1	
Organ disturbances	.036	.336**	.178*	.380**	.301**	.297**	.335**	.360**	.520**	.531**	1

\*. Correlation is significant at the 0.05 level (1-tailed).

\*\*. Correlation is significant at the 0.01 level (1-tailed).

**Source:** Researcher's Data Analysis (2018)



**Figure 4: Model of Poor Leadership Influence on Environmental Health Hazards**  
**Source:** Researcher's Survey (2018)

## 5.0 CONCLUSIONS AND RECOMMENDATIONS

Leadership and leaders behaviour are central to organisational success and also critical for environmental sustainability. Findings from reviewed literature and results of the empirical study corroborated the link between effective leadership and organisational success, improved public health inclusive. Leadership qualities like kindness, transparency, inspiration, motivation, humility, and honesty were found to be these leadership qualities that could influence and create high morale among the workforce leading to efficiency and higher productivity, manifesting through regular collections and disposal of solid waste. Assertiveness, knowledge, rewards and competency are also good leadership qualities. When workers are given rewards in form of incentives, they will be motivated and become more loyal to the management, the resultant effect could be more dedication to their duties. The KAHII model for qualities of a good leader and environmental health hazards illustrates that effective leadership will lead to improved public health and decrease in rate of environmental health hazards while the model of poor leadership influence on environmental health hazards shows how poor leadership impacts negatively on environmental health hazards. The study therefore recommends that selection and appointment of Chief Executive to ESWMB should be on leadership skills not on political allegiance. Future research can be carried out to explore the impact of different leadership styles on environmental health hazards.

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## About the Authors



### **Dr. Victor Nnannaya Okorie**

University of Benin Ugbowo  
Edo State, Nigeria



**Dr. Victor Nnannaya Okorie** is a Senior Lecturer and currently serving as the Assistant Dean of Faculty of Environmental Sciences, University of Benin. He holds a Doctor of Philosophy Degree in Construction Management from the Nelson Mandela Metropolitan University, Port Elizabeth, South Africa in 2014. His research interest is on construction health and safety (H&S) with focus on culture, behaviour and leadership in relation to construction health and safety performance. Dr Victor can be contacted on [victor.okorie@uniben.edu](mailto:victor.okorie@uniben.edu), [v.okorie@yahoo.com](mailto:v.okorie@yahoo.com).



### **Oludolapo Ibrahim Olanrewaju**

University of Benin Ugbowo, Edo State, Nigeria.  
Dollahills Research Consult, Lagos, Nigeria.  
Dollasoft Technologies, Lagos, Nigeria.



**Oludolapo Ibrahim Olanrewaju** is a young multitalented Quantity surveyor, researcher and programmer. He attended Federal University of Technology, Minna where he studied Bachelor of Technology in Quantity surveying and graduated in 2017. He graduated with a First Class and emerged the best graduating student in department of Quantity surveying for 2017 set. Oludolapo has a strong passion for ICT and he has been involved in series of software projects like DOLLAQUESS (Quantity surveying software he designed), decision support systems, inventory manager and others. He works with Dollasoft Technologies as a Freelance Software Developer and Dollahills Research Consult as a Freelance Data analyst and Researcher, and he is currently observing his one-year mandatory National Youth Service Corp (NYSC) at Department of Quantity surveying, Univeristy of Benin, Edo State. His research interests are on environmental health, building information modelling, construction informatics, construction health and safety (H&S), construction management, construction emissions, green construction, etc. Oludolapo can be contacted on [oludolapoolanrewaju2012@gmail.com](mailto:oludolapoolanrewaju2012@gmail.com), [dollahills@gmail.com](mailto:dollahills@gmail.com).