

Evaluation of Awareness and Adoption of Green Computing in the Banking Sector of Kaduna State, Nigeria

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Abstract

Green computing is a new Information Technology (IT) innovation aimed at protecting the environment and health while utilising computing devices. Related works reviewed in this study exposed that there is insufficient information on green computing among computer users. This study determines the level of awareness and implementation of green computing practices in the banking industry in Kaduna state, Nigeria. Four research questions and four null hypotheses were constructed to guide the study. Quantitative research methodology was used in this study. The population of the study; which is 361 was chosen using purposive sampling and simple random sampling was used to select the sample of 186 bankers. Data were collected from the respondents using a closed-ended questionnaire. The two research questions formed were answered using mean and standard deviation based on the decision mean of 2.50 and the null hypotheses were tested with the One Sample t-test statistics at 0.05 alpha level of significance. The findings of this study revealed that awareness and implementation levels of bankers on green computing practices are appreciably high with cumulative means of 2.77 and 3.13 respectively. Also, the levels of awareness and implementation are both significant as all the null hypotheses were rejected with p values less than 0.05. Therefore, it is concluded that the banking industry in Kaduna state makes a lot of contributions in promoting a greener environment that is eco-friendly, sustainable and responsible through effective implementation of green computing practices.

Keywords: Awareness, Banking, Environment, Green Computing, Implementation

INTRODUCTION

Globally, computing devices are integral to daily life in homes, schools, higher institutions, and various organizations, including banks. While these devices enhance efficiency, they also contribute to environmental harm through CO₂ emissions, waste, heat generation, and high energy consumption, increasing operational costs. Yero (2018) emphasized the importance of shutting down or putting devices in sleep mode to save energy.

According to Paul (2023) Green Computing, or Green Technology, involves using computing devices in energy-efficient and eco-friendly ways. Embracing green computing, particularly in the banking sector, is crucial for environmental protection and energy efficiency (Anna et al., 2021). In India, Bahl (2012) suggested that promoting Green Banking awareness through internal and external communication can create a sustainable environment. Sivasangari & Ahmad (2015) found that while awareness of green computing among Malaysian students is moderate, actual practice is low. Similarly, Batlegang (2012) observed that college students have limited knowledge and practice of green computing, despite awareness efforts.

Neyati (2015) identified inadequate awareness as a barrier to green technology adoption in the banking sector, with public banks more proactive than private ones. In the UK, Courtney (2008) revealed that only a minority of IT decision-makers prioritize green design, highlighting a lack of green computing education. Sudhalakshmi & Chinnadorai (2014) noted that Indian banks lag in green technology adoption, suggesting the need for regulatory enforcement. Yero (2018) revealed that students, lecturers and technologists in North Central Nigeria have greater level of readiness and adoption of Green Computing practices with no significant difference among them.

Meena (2013) outlined benefits of green banking, including promoting sustainability campaigns, offering favorable loans, and reducing operational costs. Overall, studies indicate a global deficit in green computing awareness and education, with Nigeria also lacking in modern green technology research despite benefiting from green banking initiatives.

METHODOLOGY

A Quantitative research methodology was adopted in this research work which was also used by Yero (2018) in his research. Two (2) research questions were formulated for this research work; (1) What is the level of bankers' green computing awareness in Kaduna state, Nigeria? (2) What is the level of bankers' implementation of green computing in Kaduna state, Nigeria? Also, two (2) null hypotheses were formulated; (1) The level of bankers' awareness of green computing in Kaduna state, Nigeria is not significant. (2) The level of bankers' implementation of green computing practices in Kaduna state, Nigeria is not significant.

A closed-ended questionnaire was used to collect data from the 186 respondents (Sample Size) from the population of the study, which is 361 as depicted in Table 1 and Table 2 respectively below. The sample size of 186 was determined using the standard formula for sample size,

that is $s = \frac{x^2 N P (1 - P)}{d^2 (N - 1) + x^2 P (1 - P)}$, where;

s = required sample

x^2 = the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841)

N = the population size

P = the population proportion (assumed to be .50 since this would provide the maximum sample size)

d = the degree of accuracy expressed as a proportion (.05)

The data collected for this research were analysed using descriptive and inferential statistical analyses with SPSS statistical package version 25. The research questions were answered using the item frequency of response of each of the four (4) options and their mean computations, the cumulative mean was computed and compared with a decision mean of 2.50. The null hypotheses were tested with the One Sample t-test statistics at 0.05 alpha level of significance to determine the level of significance of the variables.

Table 1: Population of the study

Sno	Bank	Population	Percentage (%)
1.	First	35	9.7
2.	GT	20	5.5
3.	UBA	36	10.0
4.	Keystone	24	6.6
5.	Wema	16	4.4
6.	Zenith	26	7.2
7.	Jaiz	28	7.8
8.	Access	30	8.3
9.	FCMB	40	11.1
10.	Unity	24	6.9
11.	Palaris	62	17.2
12.	Union	20	5.5
Total		361	

Note. Data collected by author.

Table 2: Sample Size

Sno	Bank	Population	Sample Size
1.	First	35	18
2.	GT	20	10
3.	UBA	36	19
4.	Keystone	24	12
5.	Wema	16	8
6.	Zenith	26	13
7.	Jaiz	28	14
8.	Access	30	15
9.	FCMB	40	21
10.	Unity	24	12
11.	Palaris	62	32
12.	Union	20	10
Total		361	186

Note. Data collected by author.

RESULTS AND DISCUSSION

RESULTS

Table 3 reveals that the level of Awareness of green computing among bankers is appreciably high because the cumulative mean response of 2.77 is above the 2.50 decision mean. Specifically, most of the bankers asserted that they are aware that green computing practices are fundamental and a major concern of the modern world as this view attracted the highest mean response agreement level of 3.15 as a total of 87 said fully aware, while 31 were aware as against 15 that were rarely aware and the remaining 29 were not aware.

Table 3: Bankers' Green Computing Awareness in Kaduna State, Nigeria.

S/No	Item	FA	AW	PA	NA	Mean	Std	Rank
1	I am aware that practicing green computing reduces energy consumption	87	31	15	29	3.09	1.160	3
2	I am aware that green computing practices are fundamental concern of the modern world	86	36	18	22	3.15	1.082	1
3	I am aware that green computing is an eco-friendly computing practice aimed at reducing heat and carbon dioxide emission	50	60	23	29	2.81	1.066	7
4	I am aware that green computing practices make environment more responsible and healthier	53	64	16	29	2.87	1.064	5

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5	I am aware that recycling computer hardware help to protect the environment	46	68	21	27	2.82	1.027	6
6	I am aware that ENERGY STAR is an energy-efficient product labeling system	25	34	61	42	2.26	1.013	9
7	I am aware that Using Google’s Blackle search engine is faster and saves energy	35	31	59	37	2.40	1.065	8
8	I am aware that green manufacturing helps in reducing wastage	70	41	24	27	2.95	1.119	4
9	I am aware that 17inch monitors use more energy than 14inch	29	21	66	46	2.20	1.046	10
10	I am aware that offing the PC saves more energy than putting it on sleep mode	92	27	14	29	3.12	1.168	2
CUMULATIVE MEAN						2.77		
DECISION MEAN = 2.50								

The level of bankers’ green computing implementation in Kaduna state, Nigeria is quite high and appreciable as presented in Table 4 below because the cumulative mean value of 3.13 is greater than the 2.50 decision mean. Specifically, the majority of the bankers asserted that they turn off their computers when not in use for a long break, as this view had the highest mean of 3.54 with details showing that a total of 117 said always, while 25 said sometimes.

Table 4: Bankers’ Green Computing Implementation in Kaduna State, Nigeria

S/No	Item	A	S	R	N	Mean	Std	Rank
1	I practise green computing	109	31	6	16	3.44	0.975	3
2	I turn off my computer when not in use for a long break	117	25	11	9	3.54	0.850	1
3	I use screen saver function on my computer	69	59	18	16	3.12	0.961	7
4	I use sleep mode function on my computer	49	47	23	43	2.63	1.174	11
5	I print on both sides of the paper	73	65	12	12	3.23	0.880	6
6	I print on paper only when necessary	115	29	5	13	3.52	0.893	2
7	I save document on disk rather than print them on paper	64	36	49	13	2.93	1.010	10
8	I use of multi-page printing	68	44	34	16	3.01	1.015	8
9	I re-use printed papers for testing printers	90	45	14	13	3.31	0.934	5
10	I use rewritable storage media	31	61	19	51	2.44	1.126	12
11	I recycle unwanted computer equipment	76	34	20	32	2.95	1.178	9
12	I use more environmentally friendly devices	102	41	8	11	3.44	0.870	4
CUMULATIVE MEAN						3.13		
DECISION MEAN = 2.50								

Table 5: One Sample t-test statistics on awareness level of green computing among the bankers is not significant

	N	Mean	Std. Deviation	Mean difference	df	T	P-value
Awareness_of_green_Computing	10	2.7670	.35553	2.76700	9	24.611	0.00

Calculated p = 0.00 < 0.05, computed t = 24.611 > 1.96 at df 9

The results of the data analysis in Table 5 above revealed that the awareness level of green computing among bankers is significant. It is significant because the computed p-value of 0.00 is below the 0.05 alpha level of significance. Therefore, the null hypothesis which states that awareness level of green computing among bankers is not significant is hereby rejected

Table 6: One Sample t-test statistics on implementation level of green computing among the bankers is significant

	N	Mean	Std. Deviation	Mean difference	df	T	P-value
Implementation_of_green_Computing	12	3.1306	.35200	3.13058	11	30.809	0.00

Calculated p = 0.00 < 0.05, computed t = 30.809 > 1.96 at df 11

The results in Table 4.7 above showed that the implementation level of green computing among bankers is significant. It is significant because the computed p-value of 0.00 is below the 0.05 alpha level of significance. So, the null hypothesis which states that the implementation awareness level of green computing among bankers is not significant, is hereby rejected.

DISCUSSION

The result of this research showed that the level of awareness of green computing practices among bankers is very high and satisfactory. This contradicted the findings of Sivasangari & Ahmad (2015) who revealed that that students have an average level of awareness about green computing. The finding also opposed the finding of Batlegang (2012) who found that most students have little or no knowledge of green technology concepts and consume a high rate of energy with their gadgets. The finding of this research is not in line with the finding of Courtney (2008) in his research conducted in the UK to assess green computing knowledge of one hundred and twenty (120) Information Technology decision-makers. His findings showed many of them lack the knowledge of green technology. The result of this study showed that the level of implementation of green computing practices among bankers in Nigeria is very high and satisfactory. This is not in line with the findings of Sudhalakshmi & Chinnadorai (2014) who found that the status of Indian Banks is left behind in the world of green technology. Our result supported the finding of Yero (2018) who revealed that most students, lecturers and technologists in North Central Nigeria have adopted many green computing practices and are ever ready to accept and implement any new green computing practice.

CONCLUSION

In conclusion, the levels of awareness and implementation of green computing in Kaduna State, Nigeria, are quite high and appreciable, reflecting a significant commitment to environmental sustainability. This indicates that the banking industry in the region is making substantial contributions to promoting a greener environment. Through the effective implementation of green computing practices, banks are playing a crucial role in fostering eco-friendly, sustainable, and responsible operations. Their efforts not only help in reducing carbon footprints and energy consumption but also set a positive example for other sectors to follow in adopting green technologies and practices. This proactive approach demonstrates

the industry's dedication to environmental stewardship and its potential to drive broader societal change towards sustainability.

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