

**SOCIAL MEDIA MARKETING STRATEGY AND WASTE  
DISCARDING BEHAVIOUR IN STUDENTS HOSTELS OF  
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**Abstract**

*This study is an investigation of the impact of social media marketing campaign on students waste disposal behaviour in Federal Polytechnics in the North-Eastern Nigeria. The study sampled three out of a population of six Federal Polytechnics located in the six states of the region. The study adopted an experimental design on the dataset which has a panel structure. The Polytechnic hostels were grouped into male and female categories for the purpose of the experiment; and the experiment continued for a period of 10 days in the three Polytechnics Students Waste disposal behaviour data were collected and measured before and after social media marketing campaign using Camry digital electronic weighing scale. The study deployed the panel data regression framework for the analysis to quantify the effectiveness of the marketing campaign strategy as it affect waste disposal behaviour within the students' hostels. The study found that social media campaign does not considerably impact waste disposal actions around students' hostels, and then concluded that the campaign has tendency to aggravate waste littering but do not specifically impact students waste disposal behaviour without effective hostel management and supervision.*

**Keywords:** *It was recommended that School management should not adopt social media marketing campaign to address students' indiscriminate waste disposal but by including a blend of effective management and supervision.*

**Introduction.** When students leave their homes for the Polytechnic, their hostels ought to become their next home. These students are expected to acquire some virtues on hygiene (Ardita & Rabije, 2016) that they couldn't obtain in their homes of origin. This could later ensure a healthier school, homes and society. The polytechnic managements have had to contend with getting students to disposing waste from hostels using provided facilities at approved points or location within the premises of polytechnics. Such facilities include the use of incinerators, waste bin, or designated location, among others. Chief among the problems faced by the polytechnics in waste management is the discarding of waste indiscriminately among the students. This happens in their classrooms, schools premises, hostel rooms and most often around the hostel premises where they reside. On the part of the school management, several efforts have been adopted to get students to comply with certain standards like waste disposal. Such efforts include student orientation programme in form of word of mouth campaign and the use of circulars on notice boards in form of

passive marketing campaign. Chief among this campaign is the use of WhatsApp and Facebook which comes as social media campaign.

Osharive (2015) found how often students rely on social media as means of getting updates on school related matters. The students do not need to go to a particular location to read or attend any meeting to be kept abreast of happenings in the school premises. Other researchers describe ability of social media to promote ease of access to information within the shortest period. Such ease enables key messages to be passed among students by the polytechnic community (J'Niyi, Oluwakemisola, Owolabi & Adenike 2022; Owusu-Acheaw & Larson, 2015; Kelvin, 2013). However, if the polytechnic management is not sure of the efficacy of the use of social media, how will they adopt it to influence positively, students waste discarding behaviour within their hostel premises?

### **Problem Statement**

Social media campaign can be adopted to get hostel students to use the school provided waste bin. Such campaigns could be mounted via the use of Facebook, WhatsApp, email, among others. The adoption of social media campaign to prevent indiscriminate waste disposal might be increased if there is enough evidence on the extent it could go at affecting students' readiness to dispose waste using the provided facilities. This study will address the problem of uncertainty as to the extent the use of social media campaign affects students waste disposal practices.

### **Objective**

1. To investigate the effect of Social media campaign on students waste disposal practices in hostels of selected Federal Polytechnics in North Eastern Nigeria.

### **Research Question**

The following research question was asked as guide to the study:

1. What impact has Social media campaign on students waste disposal practices in hostels of selected Federal Polytechnics in North Eastern Nigeria?

### **Research Hypothesis**

The following hypothesis was formulated to be tested in the study:

1. There is no significant impact between social media campaign and students waste disposal practices in North Eastern Nigeria.

### **Literature Review**

#### **Social Media Marketing Campaign**

Through innovativeness marketers have realised the need to engage customers, especially youths on social media which has been deployed in the recent times through shared interaction made using manageable and measurable broadcasting systems (Dobre et al, 2009). Social media came with its many to many dialogues to challenge the one to many monologues of the television and radio (Arya, 2011). The viral nature of social media makes the person who reads a posts to be able to spread it further within his own network, allowing information to reach many people within the shortest period of time (Weinberg, 2009) Important aspects of the social media are Whatsapp and Facebook. Both of them allow for person to person dialogue. In this study the Whatsapp has been adopted as social media for marketing campaign. This is prompted by the proliferation of the use of it among Nigeria Tertiary institution students as observed by (Akintola et al., 2016).

Khoe and Huynh (2023) studied the influence of social media marketing activities on customer loyalty: as a study done on e-commerce industry. The study sought to find out whether or not electronic consumer loyalty and online trust are enhanced by social media marketing. The survey design study involved 596 individual respondents based on purposive sampling method, as the researchers could not provide the sampling frame. The researchers found that social media marketing aspect had a positive impact on online trust and electronic loyalty. The study concluded that interacting with consumers through social media has improved due to technical development. They also concluded that aside from luring in new buyers, businesses use social media to retain customers. The researchers went forward to recommend that companies should remain competitive by providing their services around the clock through the internet.

### **Waste Disposal Behaviour in Schools' Hostels**

Unorganised waste management could prompt higher cost of maintenance, loss of sales or patronage and unhealthy society (Yukalang et al, 2017). Wastes are usually seen on campuses of tertiary institutions in Nigeria. If Nigeria has to be clean now or in the future, the process of achieving this might begin as school practice. Dirty schools could cause teachers and students to become sick and be absent from schools. Also Nigeria students' attitude to waste regulations guide in their schools has left so much to be desired (Olayiwola, & Oyewale, 2019). Nwosu et al., (2022) and Nnamdi (2016) noted that overseas study trips has been on the increase among the Nigerian youths. Most schools in the Western countries offer cleaner environments than those of their counterparts in Africa. Also the failure of most students to comply with school management waste disposal regulations has brought about increase in waste generation in tertiary institutions (Nwosu et al., 2022), thus reducing the ability of these schools to gain competitive edge among similar institutions

### **Research Methodology**

#### ***Research Design***

This study adopts experimental design to assess the effect of social media marketing campaign on students waste throwing away round their hostel premises. The dataset has a panel structure which is obtained via controlled experiment in three Federal Polytechnic obtained through ballot from a population of six Federal Polytechnics. These polytechnics are Federal Polytechnics Kaltungo, Mubi and Bauchi. Which are designated as P, Q, R for the sake of privacy. For the three Polytechnics, the experiment lasted for 10 days and the discarded waste were collected before and after a deliberate social marketing campaign done through the students WhatsApp platform. The wastes were then weighed using a Digital Camry Weighing Scale. Panel data regression framework was employed to carry out the empirical analysis to ascertain the effect of the social media campaign on students waste discarding behavior around the polytechnic hostel.

#### ***Variables and Measurement***

**Waste Discarding Behaviour (WDB):** This variable is proxied by waste disposed and measured using the Camry Electronic Weighing Scale.

**Social Media Marketing Campaign (SMMC):** This is a dummy variable coded 0 for pre-campaign observations and 1 for post campaign observations.

**Gender (Gender):** This is a dummy variable coded 1 if the observation belongs to male hostels and zero if the observation belongs to female hostels.

**Model Specification**

The impact of Social media marketing strategy on waste discarding behaviour around students' hostels, was analysed using the model below:

$$WDB_{it} = \beta_0 + \theta_i + \beta_1 SMMS + \beta_2 Gender + \epsilon_{it}$$

Where  $\beta_0$  is the regression intercept;  $\beta_2$  is the slope parameter that respectively capture the Social media marketing campaign impact on waste discarding behaviour of the students and the impact of gender on students waste discarding behaviour. Further, the  $\theta_i$  is the heterogeneity parameter capturing the unobserved school-specific factors such as hostel management and waste disposal supervision that may directly affect waste discarding behaviour around students' hostels.

The above empirical models can be estimated using different panel regression methods depending on the behaviour of  $\theta_i$  in the model. The pooled regression method treats  $\theta_i$  as zero with the assumption that there are no significant unobserved differences across the three Polytechnics in terms of management style and waste disposal supervision. On the contrary, the fixed effects regression method assumes that  $\theta_i$  is not only a significant explanatory factor for waste disposal practices, but it also correlates with social media marketing campaign strategy in the waste-discarding model.

The Likelihood Ratio test was deployed to ascertain the method that suits our research data. This test is implemented under the premise that supports the pooled regression assumption: that is,  $\theta_i$  does not count in the above models. Hence, the significance of the Likelihood Ratio test would lead to the rejection of the pooled regression method in support of the fixed effects method.

**Data Analysis****Descriptive and Classification Analysis****Classification of the Waste Discarding Behaviour Data for SMMC**

Table 1 shows the descriptive classification of the waste disposal data by social media marketing campaign. The upper panel shows the distributional properties such as mean, standard deviation, skewness, and kurtosis of the pooled data, while the lower panel shows the t-test results for the two categories. Figures 7 and 8 show the classification of the pooled data by polytechnic and hostel type respectively.

**Table 1: Descriptive Classification of the WDB for SMMC**

CATEGORY	WDB	STD. DEV.	SKEW.	KURT.	OBS.
<b>TREATMENT</b>					
PRE-SMMC	15.892	5.866	-0.343	2.387	60
POST-SMMC	15.270	5.497	-0.449	2.687	60
ALL	15.581	5.669	-0.379	2.534	120
<b>T-test</b>					
Statistic	0.5992				
P-value	0.5502				

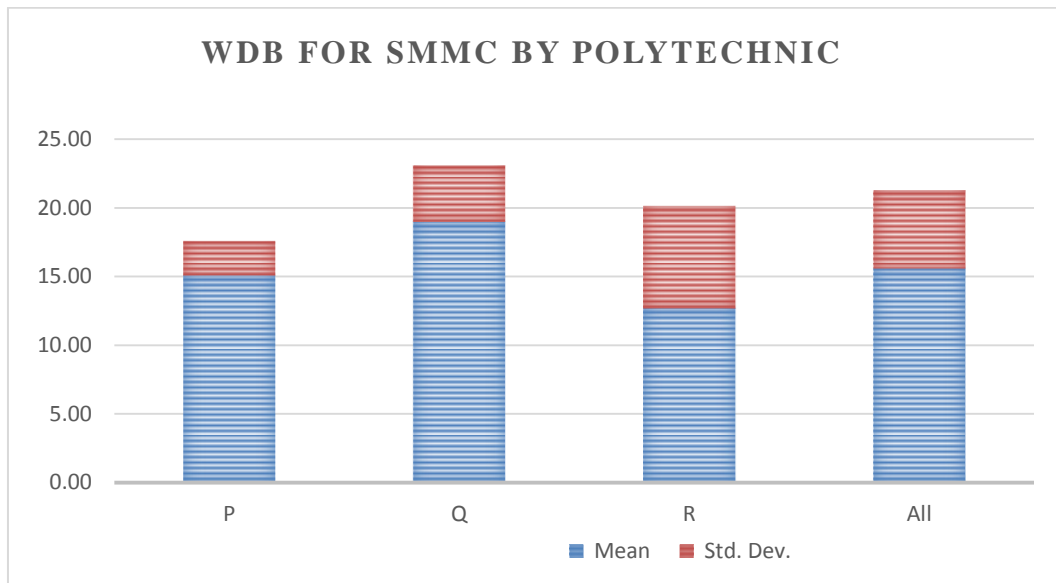


Figure 1: Classification of the WDB Data for SMMC by Polytechnic

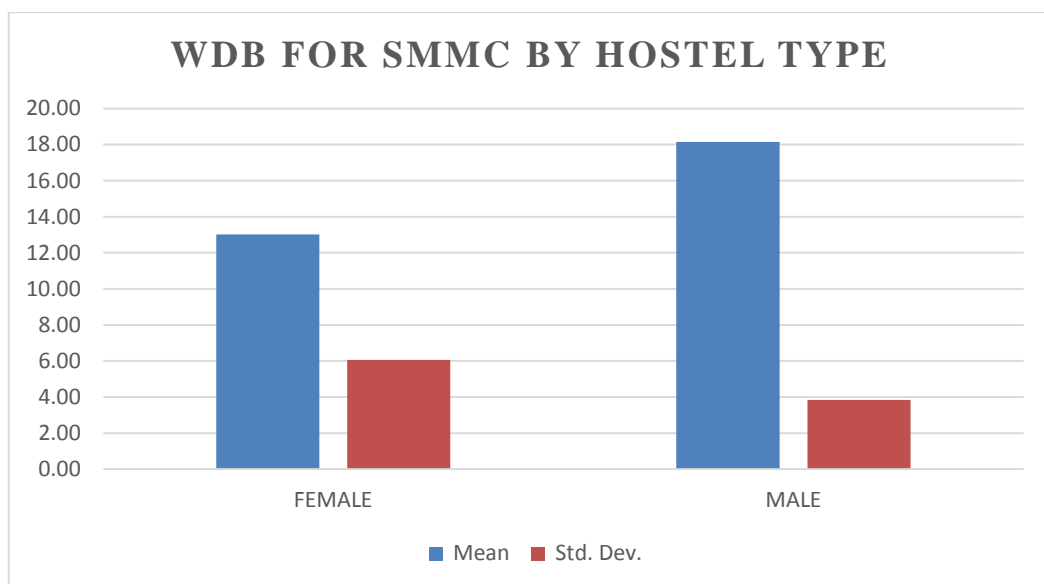


Figure 2: Classification of the WDB Data for SMMC by Hostel Type

From Table 1, the mean scale for pre-SMMC campaign sample is higher than that of the post campaign sample, indicating a decrease in indiscriminate waste littering around students’ hostels after social media marketing campaign. However, for all samples, the skewness coefficient is negative while the kurtosis coefficient is lower than 3, indicating that the distribution of the data deviates from the theoretical normal distribution. Hence, our empirical analysis would be based on log-transformed data for robust and dependable results.

The t-test (p-value = 0.5502) in the lower panel of Table 3 is positive but not statistically significant, and thereby fails to reject the hypothesis of no significant difference in waste littering between the two treatment categories. This shows that the social media marketing campaign exerts no significant impact on indiscriminate waste disposal around students’ hostels.

From Figure 1, we can observe the differences in mean waste littering scale across the three sampled polytechnics, with Polytechnic Q having the highest waste littering around students' hostels, followed by Polytechnic P, while Polytechnic R has the lowest waste littering.

As shown in Figure 2, gender seems to play a significant role in indiscriminate waste disposal around student's hostels, with male hostels having higher mean scale and lower standard deviation than female hostels.

### Panel Data Analysis

#### Estimation and Analysis of the Model (Waste Disposal Behaviour Data for SMMC)

Table 2 shows the pooled OLS regression and fixed effects estimation results for the waste disposal data for social media marketing campaign. Panel A displays the estimated model parameters, while Panel B shows the goodness of fit and model selection test statistics.

**Table 2: Panel Regression Results for WDB Data for SMMC**

Variable	PANEL REGRESSION	
	POOLED OLS	FIXED EFFECTS
<b>Panel A: Model Estimates</b>		
Intercept	2.4541 (0.0000)	–
SMMC	-0.0392 (0.6083)	-0.0392 (0.5366)
GENDER	0.4416 (0.0000)	0.4416 (0.0000)
P	–	2.4983 (0.0000)
Q	–	2.7174 (0.0000)
R	–	2.1467 (0.0000)
<b>Panel B: Goodness of Fit</b>		
$R^2$	0.2238	0.4755
$\bar{R}^2$	0.2105	0.4572
F-statistic	16.871 (0.0000)	26.067 (0.0000)
DW	0.3581	0.5299
Likelihood Ratio test	–	47.035 (0.0000)

From Panel B, like the three previous cases, the performance of the fixed effects method in estimating our panel regression model surpasses that of the pooled regression method, although both methods meet the requirement for a non-spurious analysis ( $DW > \bar{R}^2$ ). The  $\bar{R}^2$  shows that the proportion of the model variance accounted for by the explanatory variables is approximately 21% for the pooled regression method, while it is approximately 46% for the fixed effects method. The Likelihood Ratio statistic is statistically significant at the 1% level and hence strongly rejects

the pooled regression results in favour of those of the fixed effects. Again, this reinforces our earlier findings that unobserved school-specific effects such as hostel leadership and management styles are important explanatory factors for indiscriminate waste disposal around students' hostels.

Focusing on the fixed effects results in Panel A, the coefficient on SMMC, which has an estimated value of -0.0392, is not statistically significant, indicating that social media marketing campaign has no significant effect on indiscriminate waste disposal around students' hostels. However, like both the word-of-mouth and passive marketing campaign strategies, the negative sign attached to this coefficient reveals the potential of social media marketing campaign to worsen indiscriminate waste disposal around students' hostels. The coefficient on GENDER is estimated at 0.4416 with a zero p-value, indicating that gender has a positive and highly statistically significant effect on waste littering. Hence, like the two previous cases, the estimated coefficient can be interpreted as suggesting that indiscriminate waste disposal around male hostels is much higher in scale than that around female hostels. Also, the estimated coefficients on P, Q, and R all are positively signed and highly statistically significant, showing that the unobserved school-specific effects contribute significantly to waste littering around students' hostels. This further supports the view that indiscriminate waste disposal around students' hostels is fueled by weak hostel management or ineffective management supervision.

### **Discussion**

The research question of this study sought to ascertain the effect of social media campaigns on students waste discarding behaviour in hostels of selected Federal Polytechnics in North Eastern Nigeria. Based on the findings of this study, the social media campaign generally reduces students waste discarding. However the t-test showed no significant impact of the marketing campaign on students refuse discarding actions. This refutes the views Khoe and Huynh (2023) that Marketing campaigns significantly impact on target audience behaviour. However, in this study, gender played much role on the level of waste disposal in favour of the male gender. Furthermore, this study has found that unobserved school-specific effects contribute greatly to waste littering around students' hostels, supporting the view that indiscriminate waste disposal around students' hostels is fueled either by weak hostel management or ineffective management supervision or both

### **Conclusion**

Based on the findings of this study, social media marketing campaigns have tendency reduce but do not expressively impact students waste disposal practices in the absence of effective hostel management and supervision. The study also concludes that male students have the tendency to litter waste more than the female students.

### **Recommendation**

Based on the conclusion of this study, the following recommendations are made:

1. School management can adopt social media marketing campaigns to address students' indiscriminate waste disposal practices with a good blend of effective management and supervision.
2. Where a school has male and female hostels, more effort in terms of social media campaigns alongside adequate management and supervision should be concentrated on the male hostels since the male gender has the tendency to litter waste.

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