

## **PERCEIVED INNOVATION CHARACTERISTICS AS PREDICTORS OF GREEN PRACTICE ADOPTION IN THE NIGERIAN HOTEL INDUSTRY**

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### **ABSTRACT**

Green practice has frequently been acknowledged as an essential and common concept, which businesses implement to achieve some business superiority over competitors. However, studies on environmental practices are seldom conducted in Nigeria. The objective of this paper is to examine the influence of perceived innovation characteristics on the adoption of green practices in the hotel. Samples were collected using proportionate stratified random sampling. Data were collected using 80 questionnaires from the 100 distributed, and then analyzed using statistical package for social sciences (SPSS). Founded on theory of diffusion, this study evaluated three measurements of perceived innovation characteristics influencing the likely adoption of green practices from the perspectives of general managers in the four and five star rated hotels in Kaduna. The study model proposes that hotels' intention to embrace green practices is influenced by the three dimensions of innovation characteristics: perceived compatibility, perceived complexity and the apparent relative advantage. A multiple regression performed indicates perceived compatibility and relative advantage relating positively to likelihood of adoption. The outcomes of this paper may offer valuable understandings of green practices. The findings of this study are practically useful for general managers when developing and implementing organizational innovative policies to ensure sustainable operations.

**Keywords:** Green practice, Adoption of Green Practice, Hotels, Nigeria

### **1.0 INTRODUCTION**

Green practice is a tool that hotels explore to implement strategies that reduces harmful impacts on the environment (Ann, Zailani & Wahid, 2006). The practice, if adopted can provide hotels

with a systematized method of protecting the environment. Hotels in many developed countries are supporting green practices. These hotels have the prospects of lowering their negative environmental practices. Hotels consider the natural resources as precious asset for conducting business; therefore have a responsibility to safeguard the environment for which it depends upon for survival (Kasim, 2009). Enormous amounts of energy, water, are consumed in hotels, with a resultant amounts of huge waste generated in their daily operations (Kuuder, Bagson, Prempeh, Mumuni, Adongo & Amoako, 2013). Because resources are limited and customers' needs are unlimited, it becomes important to utilize these resources wisely. Consequently, green practice is inevitable. Green practices are implemented by businesses to distinguish themselves from other competitors (Ustad et al., 2010), to save operating costs (Bohdanowicz, 2005; Ayuso, 2006; Kasim, 2007), and improve their environmental image (Ayuso, 2006; Park, 2009; Nicholls & Kang, 2012). This paper resolves to examine the effect of perceived innovation characteristics towards the adoption of green practice in the Nigerian hotel industry by applying Rogers's diffusion of innovation theory as an underlying theory.

## **2.0 LITERATURE REVIEW**

### **2.1 Green Practices in Hotels**

The idea of environmentally friendly practices is traced back to the conception of sustainable development. It then becomes imperative for businesses to take responsibilities for their action and contribute towards sustainable environment. Diverse definition of green practice has been offered by the literature, Manaktola and Jauhari (2007) refer to green practice as actions employed (such as energy efficiencies, water conservation practices, and decreasing the quantity of waste disposed) by organizations to reduce harmful impacts on the environment. Other scholars further classified green practice as those practices involving the installation of water and energy saving devices, use of ecologically cleaning detergents, and availability of green menu (Wang, 2012). With these structures, businesses can achieve an edge over competitors by becoming greener.

This study centers on likelihood of adoption of green practices in Nigerian hotels because many outside Nigeria are responding to the demands of environmentally conscious stakeholders, and the threats of litigation and the desire to sustain cost-effectiveness and market growth (Freeman, Pierce, & Dodd, 2000). Being green improves corporate brand image and improvement on economic benefits, subsequently contributing positively towards the financial sustainability of the resident community and increasing their financial rewards (Álvarez et al., 2001), having fulfilled guests and reducing harmful emissions (Bohdanowicz, 2009).

The literature identified green practices implemented by hotels in developed countries. These days, lodgers want more than the linen/towel reuse programs by hotels, and would appreciate practices that are environmentally friendly such as appropriate and efficient disposal of waste, efficient use of water and energy (Wolff, 2008). Numerous green practices adopted in some of these hotels include usage of energy and water-efficient equipment in the kitchen, restaurant, and the housekeeping department. In the accommodation section, environmentally friendly cleaning detergents used reduces chemical disposal expelled into the atmosphere. Reutilizing and composting of wastes - cardboard, plastic, metal, aluminium and glass are green practices implemented which consequently reduced the volume of waste.

## **2.2 The Hotel Industry**

Founded in 1913, Kaduna became the headquarter of the then northern region in 1917 (Fletcher & Cruickshank, 1996) and now the capital city of Kaduna State in northern Nigeria. The name Kaduna is derived from river Kaduna, the river that harbours many crocodiles. In 1907, the British founded Kaduna, and made it their military headquarters. The city swiftly became the hub for industrialized and political activities for the region. Many important institutions cited in Kaduna, include the famous Kaduna Polytechnic, and many others. Its economy centres mainly on the textile and automobile manufacturing industries. The emergence of hotels in Nigeria dates back to the 1942 when government began offering accommodation to colonial government officials (Whiteman, 2012). The development continued with more hospitality outlets launched up in several cities in the country. Besides the increasing number of new branded hotels springing up, several substandard ones are also obtainable. Kaduna has numerous comfortable hotels that accommodate tourists and has many tourist locations. Modern parks and gardens including the Nok Culture, the Matsirga Water falls, the renowned Lord Lugard Bridge, the Kufena Hills and the Emir's Palace in Zaria are sites that interest tourists. Kaduna is the second largest city located in the north-central region of Nigeria. It is the industrial hub of the northern Nigeria, a major trade centre in the north, loved for its availability of fun, tourism and vacation spots.

## **2.3 Theoretical Background**

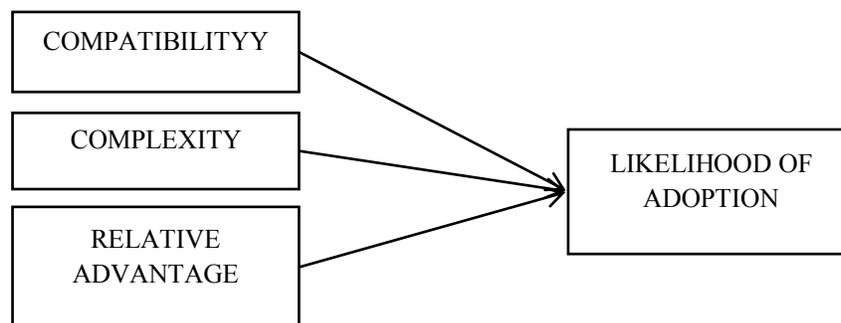
Rogers's diffusion of innovation (DOI) theory (1995) serves as the theoretical basis for this study. The theory takes some general sets of factors to predict likelihood of adoption. The diffusion theory is practically about how innovation diffuses within a community. The theory is use in a wide-ranging diffusion studies. Innovation studies undertaken in the hospitality industry include examination of innovation as a competitive tool (Jacob et al., 2010); documentation of determinants of innovation (González & León, 2001; Le, 2005; Pulido et al., 2011; Smereccnik & Andersen, 2011); exploration of correlation between hotel characteristics and Internet

adoption (Hashim et al., 2010). For this reason, it is used for this study. The theory proposes that innovations adoption is influenced by characteristics of innovation. The chances for adoption are determined by compatibility of the innovation with existing standards, simplicity of the innovation and relative advantage (benefits) (Tornatzky & Fleischer, 1990). Innovation may be discussed as any practice, equipment, products and policies that is new to establishment, (Weng & Lin, 2011).

A few factors proposed as influential in the adoption of innovations include the organizational background of the establishment (Kimberly & Evanisko, 1981). Others may include the accessibility of resources and knowledge of the new product, process or technology (Tornatzky & Fleischer, 1990). Past research revealed that, the determinants for adoption might differ based on individuals' preferences or unit of adoption. Diffusion theory of Rogers (1995) is used for most innovation adoption studies (Lin & Ho's, 2011; Weng & Lin, 2011; Smerecnik & Andersen, 2010; Le, Hollenhorst & Triplett, 2005; Chou, Chen & Wang, 2012). These studies are established to have significantly affected the implementation of green practices. Therefore, it is anticipated that, the entire features of innovation will absolutely affect the likelihood of adoption.

## 2.4 Research Model

Evidences of contributing factors of green practices are established in proceeding studies (Bansal & Roth, 2000), to date, few systematic and complete analyses of the motives of green innovation have been performed in emerging countries like Nigeria. Therefore, it becomes imperative to obtain a complete view of how the features of innovation can influence the adoption of green practices. Hollenhorst, Harris, McLaughlin and Shook (2006) used DOI to study the effect of perceived innovation characteristics, environmental characteristics, and organizational characteristics on the likelihood of hotels adopting environmentally friendly practices. Lin and Ho (2010) developed a diffusion model and found "relative advantage and compatibility of green practices having significant positive relation with adoption of green practices. Figure 1 elucidates the PIC model for this research.



**Figure 1: Research Model of Determinants of Green Practice Adoption  
among Hotels in Kaduna, Nigeria**

**Measurement Items**

**2.4.1 Dependent Variable**

Five items measured determinants for adoption. The first item measuring adoption is savings in operating cost; the second item was improvement on hotel profitability; the third item decrease in the consumption of resources; and the final is on reduction of harmful impacts on the environment.

**2.4.2 Independent Variables**

Compatibility: The variable was measured by requesting respondents whether green practice is harmonious with the hotel's operating procedures; harmonious with the hotel's existing operations; consistent with existing values of the hotel; whether it is easy to integrate green practices with existing system.

Complexity: To measure this construct, the respondents were requested to answer whether understanding green practices require many mental efforts; whether learning green practice is difficult; whether using green practice requires technical skills; whether it is time consuming to implement.

Relative advantage: This construct was measured by asking respondents about their perception towards green practice, whether it will reduce the company's overall operating cost; increase hotels' sales and revenues; enhance hotels' reputation; improve hotels' quality of work.

**2.5 Perceived Innovation Characteristics (PIC)**

Innovation is described as a new practice, processes or policies that can be adopted (Rogers, 1995). As an emerging trend in the Nigerian hotel industry, green practice adoption can be observed as an innovation. The prospect of adopting an innovation largely depends on its features. The following features of innovation are measured in this paper:

**Compatibility**

Compatibility is the point at which an innovation is observed as being reliable or fits easily with existing values, experience, and the requirements of prospective adopters, to a new product, process or practice" (Rogers, 2003). Similarly, Tornatzky & Klein, (1982) revealed that

innovation (green practice) would probably be adopted when compatible with adopters' standards; it has consistently been established to influence adoption (Weng & Lin, 2011; Le, Hollenhorst, Harris, McLaughlin & Steve Shook, 2006; Lin & Ho, 2010). Furthermore, compatibility bares the appropriateness of an innovation, i.e. consistent with existing features and procedures of the business (Rogers, 1995). Therefore, compatibility with current processes would be reflected as relevant in influencing the greening of hotels.

### **Complexity**

Complexity is defined as “the point to which an idea is observed as challenging (Rogers, 1995). Rogers stated that adopting a new complex idea is challenging because of the ambiguity associated with it. Study shows complex innovation adopted at lesser rate than inventions that are easily understood and manipulated (Tornatzky & Klein, 1982). Furthermore, another study showed that, complicated innovations require technical skills and operational efforts to intensify likelihoods of adoption (Frambach, Barkema, Nooteboom & Wedel, 1998). Evidence showed complexity as a significant component of adoption (Le, Steven & Triplett, 2005). It is a fact that, innovations professed as simple to operate are more expected to be accepted (Agarwal & Prasad, 1997). However, it was discovered that limited resources to participate and knowledge of the new idea becomes a challenge for organizations to adopt these innovations. For example, in United Kingdom, many felt knowledge of the new technology, information and education hinders their participation (Scupola, 2001).

### **Relative Advantage**

Relative advantage is the level to which an innovative idea is acknowledged as more effective than the one it would replace (Rogers, 1995). Tornatzky and Klein (1982) stated that perceive advantage could shape the basis for the adoption of a new product, practice or system. Relative advantage becomes the yardstick from which advantages would be expanded from adoption of green practice, compares to previous methods used. If adoption supersedes that, which it is meant to substitute, then, those adopting the new idea, product or service will be more. Reward for adoption could influence the rate of acceptance of a new product, if, for example, a 20% savings in operating expenses could trigger more adoption. Best and Thapa (2011) found relative advantage to be a dominant factor in the dissemination of environmental practices. Smerecnik and Andersen (2010) utilized Rogers' dissemination theory to assess the acceptance of innovative ideas in the ski resorts in America.

Outcome of their study revealed apparent benefits of innovations as the utmost correlated dimension with implementation of innovations (Yen Le, Steven & Triplett, 2005). Consequently, perceive benefits can be studied as an important variable that could motivate acceptance of green practice. Therefore, hotels embracing green practices stand the chance of benefiting and gaining over competitors. Figure 1 is the research model that summarizes the variables discussed above.

### 3.0 RESEARCH QUESTION AND HYPOTHESES

Based on Rogers' diffusion theory, three features of innovation are studied. Therefore, the following research question is enquired - "What features of innovation would influence the probabilities of adoption of green practices by hotels in Kaduna?" It is hypothesize that positive perception of an idea or a product will likely impact adoption. The measurement instrument has fourteen items representing the three variables. Built on the proposed study model the succeeding hypotheses were formulated, as portrayed in Table 1.

**Table 1: Hypotheses**

Name	Variables	Hypothesis
H1	Compatibility	The probability of adopting green practice will positively relate to compatibility of green practice.
H2	Complexity	The probability of adopting green practice will inversely relate to perceived complexity of practicing green.
H3	Relative Advantage	The probability of adopting green practice will positively relate to perceived advantage of practicing green.

### 3.1 Data Collection and Sampling

The study was conducted in four and five star hotels in Kaduna. Data was collected through the survey questionnaire. The measurement items adopted from previous similar studies were administered to managers of hotels to fill. One hundred (100) questionnaires were distributed, 80 were retrieved indicating 80% response rate. The average range of the respondents' ages was between 41-50 (71%). The respondents included 62 men and 18 women (77.5% for men and 22.5% for women). The most frequent educational level was HND (Higher National Diploma) which accounted for 90%. For the firm characteristics, 75 were four-star hotels (93.8%) and five were five star hotels (6.3%).

Relative advantage: This construct was measured by asking respondents about their perception towards green practice, whether it will reduce the company's overall operating cost; increase hotels' sales and revenues; enhance hotels' reputation; improve hotels' quality of work.

### 4.0 DATA ANALYSIS AND RESULT

According to Sekaran and Bougie (2010), reliability and validity tests are conducted to examine the goodness of measure. The reliability of inter-item consistency among variables can be

assesses by observing the Cronbach's Alpha (Nunnally, 1978). Statistical Package for the Social Sciences (SPSS) software was used in studying the quantitative data. Multiple regressions was used to test the hypothesis of the study which allowed the researcher to assess the correlation between several independent variables (complexity, compatibility, relative advantage) and a dependent variable (likely adoption of green practice) (Hair et al., 2010; Pallant, 2007). Several studies had used this method in testing relationship between independent and dependent variable (Lee et al., 2011; Ryu et al., 2010).

#### **4.1 Validity and Reliability of Scales**

The items were adapted from the literature and subjected to pilot testing. Consequently, the measures are believed to have sufficient content validity. To ensure consistency and reliability, definition of green practice was detailed in the questionnaire. Internal consistency and measurement reliability of the items was confirmed by calculating the Cronbach alpha. Nunnally (1978) recommended a minimum alpha of 0.6 as suitable for early stages of research. The 14 items of perceived characteristics comprised of four items for compatibility, five items each of complexity and relative advantage. The Cronbach alpha values for relative advantage scale were 0.712, for compatibility scale was 0.852, for complexity scale was 0.943. As all values were much higher than 0.6, the constructs for that reason, were deemed to have adequate consistency. The adapted survey (Weng & Lin, 2011; Le & Hollenhorst, 2005) items measured on a scale of 1 to 5 (Strongly Disagree to Neutral to Strongly Agree) were evaluated using SPSS. Result of reliability analysis is presented on Table 2, establishing satisfactory reliabilities above 0.70.

**Table 2: Reliability of Variables**

<b>Construct</b>	<b>No. of Items</b>	<b>Reliability</b>
Compatibility	4	0.852
Complexity	5	0.943
Relative Advantage	5	0.712

#### **4.2 Multiple Regression Analysis**

The standard multiple regression tests conducted representing the linear relationship is illustrated in tale 3. The test assessed the influence of features of innovation on likely implementation of green practice in the hotel. In the test, R square explains the fitness of the model, which should not be lesser than 30%. The model summary explains the variance in the dependent variable. The significance value of the regression model is .495. Taking a 5 % significance level (1-tailed), the model explains 49.5% variance on likelihood of adoption by the collective independent variables

and significant correlation with the dependent variable, which is likelihood of adoption. This result is acceptable when compared to those obtained from journals (Tabachnick & Fidell, 2006). Compatibility and Relative advantage are statistically significant; the beta weight indicated them as the strong predictors of adoption. The smallest beta weight was found for complexity. In the research model, likelihood of adoption is set as the criterion, and compatibility, complexity and relative advantage as the predictors. The result displays two influential predictors of adoption (compatibility and relative advantage) having a positive correlation with likelihood of adoption because they all have a significance value below .05. The largest beta coefficient in this study is  $\beta = 0.500$ ,  $t(80) = 5.486$ ,  $p < 0.000$ ) of adoption. This implies that compatibility makes the strongest contribution to likely adoption of green practices in the hotels in Kaduna. The beta coefficient for the next significant contribution is relative advantage  $\beta = 0.326$ ,  $t(80) = 3.552$ ,  $p < 0.000$ ; and the least contributor is complexity  $\beta = -0.027$ ,  $t(80) = -0.327$ ,  $p < 0.745$ . This reflects the two variables proposed as determinants for the adoption positively and significantly influence green practice adoption by Nigerian hotels in Kaduna. If significance value is less than 0.05, then the variable is making a significant contribution to the prediction of the dependent variable (Tabachnick & Fidel, 2006).

**Table 3: Individual Contribution towards predicting adoption**

Model	Beta	Sig	VIF
COM	.500	.000	1.251
CPX	-.027	.745	1.049
RAD	.326	.001	1.270
CONSTANT		.000	
Note: R= .704 <sup>a</sup> , R Square = .495, F= 24.838 p< .001			

**Table 4: Summary of hypotheses testing**

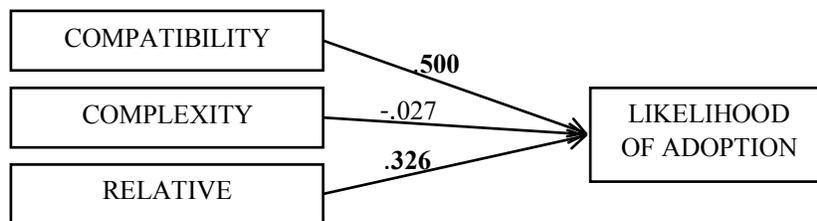
Hypotheses	Relationship	Beta	Std. Error	Decision
H1	ADP->COM	<b>.500</b>	.035	<b>Supported</b>
H2	ADP->CPX	-.027	.035	Not Supported
H3	ADP->RAD	<b>.326</b>	.035	<b>Supported</b>

**4.5 Summary of hypotheses testing**

The model suggests that compatibility and relative advantage significantly affected likelihood of adoption, thus supporting hypotheses 1 and 3, whereas complexity lacks adequate evidence to support the statement in H2; hence, it is reasonable to reject the hypothesis.

### 5.0 DISCUSSIONS

This paper aims to use PIC dimensions to assess the green practice model. Relationships between features of innovation and likely acceptance of green practices by hotels are established through multiple regressions. The standardized results indicate hypotheses H1 and H3 as significant in predicting likelihood of adoption of green practices and are therefore supported, while hypothesis H2 is insignificant and not supported. The significant result suggests that perceived compatibility and perceived benefits would affect adoption. Hotels that perceive its benefits and compatibility of the new idea will rightly adopt green practice. This information will be helpful towards reducing the perceived complexity of green practices, thus, allowing hotels to adjust their operations towards environmentally friendly practices. Hotels will now be able to select practices that are more consistent with their current scheme.



**Figure 2: Result of Model Analysis**

Compatibility (H1) is found to have a significant effect on likelihood of adoption in hotels. The perception of the compatibility of green practices with by hotels’ current standards was established as correlating significantly with likelihood of adoption of green practices. This result is consistent with findings by Rogers (2003); Lin (2011); Weng and Lin, (2011); Le, Hollenhorst and Triplett (2005).

Complexity has an insignificant effect on green practice adoption, thus not supporting H2. This Result is consistent with Lin and Ho (2003); Weng and Lin (2011) findings, which reveal absence of significant influence of complexity on intention to adopt environmentally friendly practices. It could be assume that since majority of hotels are unaware of green practices, it is possible that they perceive its implementation as difficult to learn; and thus complexity has impact on their decision to adopt green practice.

Relative advantage (H3) shown as an important predictor of adoption is supported. The perception of the relative advantage of green practices by hotels was somewhat established as correlating moderately with likelihood of adoption of green practices. This result is consistent with and supports prior studies related to green practices (Best & Thapa, 2011; Smerecnik & Andersen, 2010). This implies that those hotels who find green practice useful and convenient way in managing their operations efficiently and effectively will tend to adopt it. The result indicates relative advantage significantly correlating with likelihood of adoption. Hotel Managers are likely to adopt green practices due to perceive economic rewards.

### **5.1 Value of the Study**

The conception of green practice is relatively new in the country, thus making this study important and extending the knowledge of the practice in the field of tourism and hospitality. Furthermore, the research will function as a model for further studies and provide future studies with facts for comparing. Therefore, it is believe that the findings of this study will enhance green practice policies and enable eco-friendly activities by hotels. Benefits derived from practicing green are explore to inspire other hotels into practicing green and understand the reason for do so and have an edge over their competitors.

### **5.2 Conclusions**

This study of green practice adoption examined how perceived innovation characteristics influence the likely adoption. The research was conducted based on dissemination of innovation theoretical framework. The correlational analysis showed compatibility and perceived relative advantage as a valuable predictors. The proposed model and findings may be applicable to other hospitality outlets. Policies promoting the benefits of practicing green be identified, and managers of hotels can incorporate it into strategies to increase the level of adoption. This could ultimately give rise to the number of adopters (hotels) and increase diffusion rate for green practices.

The study contributed theoretically by providing empirical evidences on features of innovation affecting the adoption of green practices. The diffusion theory is appropriate for this study by providing some features that relate to environmentally friendly practices. Findings contributed practically by enlightening hotels and government agencies in charge of monitoring hotels' activities. Furthermore, this study would allow adopters (hotels) to reinvent goods and services to enhance customers' satisfaction and save costs. The research also contributes to the literature on green practice adoption by verifying the impact of perceived innovation characteristics on adoption intentions.

Limitations encountered in this study include difficulty in obtaining information from managers of hotels due to their concern on the imminent use of the survey, as most of the hotels are privately driven. Future studies are essential since green practice is now evolving rapidly and could affect vast people with interest in the business. Future studies can try to evaluate awareness level of owners and managers of hotels.

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