



EFFECT OF ELECTRICITY ON PROFITABILITY OF THE HOTEL INDUSTRY IN PLATEAU STATE

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Abstract: This study examines the effect of electricity on the profitability of hotels in Plateau State. It explores how electricity reliability, cost and accessibility affect hotel Profitability. The study employs survey design that is cross-sectional to permit for the collection of quantitative data. The simple random sampling method was employed and 70 respondents were sampled. Primary method of data collection in line with World business environment survey questions, developed by World Bank was adapted and regression analysis was used to analyse the data. The paper is guided by the system theory, emphasizing how environmental factors affect business performance. Findings from the study reveal that electricity affect the profitability of the hotel industry in Plateau State, thereby increasing operational costs, disrupting services, and limiting business expansion. The dependence on generators and the rising cost of fuel and diesel further erode profit margins. Reliable and affordable electricity is critical for the survival and growth of the hospitality industry. The study recommended that the hotels should diversify energy sources through renewable energy. Government should increase investment in renewable energy and also promote policy incentives for energy efficiency which enhances profitability.

Keywords: *Electricity, Profitability, Hotels.*

1. Introduction

The hotel industry is an important industry in Nigeria which contributes to employment generation, wealth creation and revenue through taxes. The indirect impacts occur due to the effect of tourism activities on other economic sectors such as hotels purchasing goods from retailers (Lemma, 2014). The history of success or otherwise of any tourism destination will be incomplete without the role of hospitality industry especially hotels which is an important component of tourism. Plateau State, known as the “Home of Peace and Tourism,” possesses



significant natural and cultural assets that attract both domestic and international visitors. However, despite these advantages, hotel profitability in the state remains relatively low. The hotel business in Plateau State, operates in a dynamic environment, faced with electricity constraint which affects its profitability. Electricity is central to the operational success of hotels. From lighting and air conditioning to food preservation and guest comfort, energy availability directly affects service quality and customer satisfaction. In Nigeria, the irregular supply of electricity has been a long-standing challenge to businesses. Hotels, as energy-intensive enterprises, are among the worst hit, as unreliable power supply escalates costs, limits operational hours, and reduces profit margins. The hotel industry in Plateau State operates in an environment characterized by frequent power outages, fluctuating tariffs, and increasing fuel costs for alternative generation. Electricity supply has been identified as a fundamental investment climate variable that influences firm performance (World Bank, 2016). Frederick and Selase (2014) found that power fluctuations reduce profitability and competitiveness among Ghanaian SMEs. Similarly, Igwe et al. (2018) noted that power outages cause Nigerian firms to lose up to 11.2% of sales annually. In the hospitality sector, electricity drives most hotel operations. Deloitte (2018) reported that Nigeria's infrastructure stock, especially in power accounts for only 35% of GDP, well below the global average. Consequently, many hotels rely on self-generation through diesel-powered generators, which constitute a substantial portion of operating costs. The result is a direct erosion of profit margins and restricted growth potential.

Government invests into renewable energy to enhance the efficiency of the energy sector and alternate the crude oil production. For example, renewable energies are; solar energy, wind, hydro power and biomass fuel. The improvement of the electricity industry by promoting the installation of prepaid meter which enhances accountability and transparency, promote increase investment in electricity sector and collaborate with private investor to provide efficiency supply. Power Africa Nigeria Power Sector Program (PA-NPSP), five years' program plan from was established with Nigeria and in collaboration with the U.S government. The aim is to promote investment in the energy sector thereby increase availability, reliability, and access to electricity in Nigeria. Despite government interventions, Nigeria's underdeveloped power sector is a challenge because businesses incur more cost and generate significant portion of their electricity.



Profitability is one of the primary goals of most commercial businesses and an essential financial value in decision making process. It measures viability and efficiency of the business and provides an indicator for shareholders to ascertain their return on investment (Okwoli, 2008). Study has showed that profitability is relevant in ascertaining returns on investor's investment. Return on investments, assists investors in decision making, prioritizing resources allocation, identifying areas for improvement, measuring performance and luring investors. Return On Investment (ROI) is used to measure the ability of businesses to generate profits to close the accounting system for the investment costs already incurred (TediSetiadi & Akhmad, 2018). Previous research studied profitability as dependent variable. Studies found that external environmental factors were used to test the following profitability indicators: gross profit, total organizational assets, revenue growth, earnings per share, return on investment, (Machuki et al, 2011). Profit is a major objective of hotel businesses. In this study the testable variable used for hypothesis formulation are electricity variables which represent the independent variable while for profitability is return on investment which represent the dependent variable. ROI offers a precise gauge of the effectiveness and success of an investment. As against return on asset (ROA) which is focused on the return on asset of the owner. Return on Equity (ROE) which is focus on shareholders' return for listed company.

Unfavourable electricity supply is a major challenge, causing lack of profitability faced by the hotels in Plateau State. The situation ultimately affects survival of the industry, growth of the industry, revenue to government (taxation), employment enhancement and social responsibility projects. Studies revealed that profitability can be affected by the negative effect of poor electricity supply such that, unreliable electricity supply causes businesses to use generators with high cost of operation (Dollar, 2003). The literature indicates that most studies focus on SMES, Manufacturing firms or Miro- enterprises (for example, Igwe et al., 2018, Fredick & Selease, 2014; Adekanbi, 2024). Less attention is paid to how environmental factors such as electricity affect profitability especially as it concerns hotels in Plateau State. There is therefore dearth of literature in this direction particularly in Plateau State. This study is set to fill the knowledge gap by examining the effect of electricity on profitability of hotels in Plateau State.



2. Literature review

Conceptual, Empirical Review and Theoretical Framework

Profitability refers to the ability of a business to generate returns from its operations. Nishanthini and Nimalathasan (2013) define profitability as the relative measure of a firm's earning capacity. In hotel businesses, profitability is often measured through indicators such as Return on Investment (ROI), Return on Assets (ROA), and Net Profit Margin. ROI is especially relevant for hotels as it reflects the efficiency of investment. Profitability is essential for business survival and growth.

The flow of electrical charges is of importance to businesses ranging from Lightening, cooling and heating (Rahman, 2016). The rapid growth of the population required government to invest in infrastructure to promote economic development. Currently, Nigerian complained for the increases in electricity tariff and fuel prices which the government through it regulatory body National Electricity Regulatory Commission (NERC) examine the different Electricity Distribution company (DISCOs) and the different tariff. This added to the cost of production and affects the profitability of the industry. Currently the fuel price is on an increase, business using generators incur more cost in the purchase of fuels. The issue of unreliable power supply has been the main problem to the large-scale productivity for industries in Nigeria. The first major consideration in any feasible studies for any multinational hotel company to invest in developing country is the assurance of a sufficient and reliable power supply.

Electricity consumption in Nigeria have a long history date back 1896 in Lagos marina and was devoted to generate light for residential consumption in addition serving to light up the street around the government quarters. The Nigerian Electricity Supply Corporation (NESCO) was established in 1929 relies on thermal power. In 1950 the Electricity Corporation of Nigeria (ECN) was established for electricity, for generating electricity and distribution until 1961 when the Niger Dan Authority (NDA) saddled with the responsibility for developing hydroelectric potential of the river Niger. The ECN and NDA jointly constructed the kanji Dam. In 1972 the both bodies merged together to form the National Electric Power Authority (NEPA) which relies on hydro and thermal power. Some problem has been with NEPA include infrequent supply of gas to thermal power stations, often times low level of water at hydro power stations, poor distribution network (Anyawu et al, 1997).



The lack of enabling infrastructure investment has led to infrastructure bottlenecks, which in turn have hindered diversification efforts in Nigeria. The value of Nigeria's total infrastructure stock (road, rail, power, airports, water, telecoms, and seaports) represents only 35% of GDP, significantly below that of South Africa (87% of GDP), and the emerging economy average of 70%. The Economic Recovery and Growth Plan (ERGP) recognize the need to address the inadequate infrastructure, and sets a development plan for the government to invest US\$30bn in infrastructure between 2017 and 2020, ultimately attracting infrastructure investment of US\$3trn by 2030. To attain target, fixed capital formation (government spending on infrastructure) must exceed the analysts' forecasts and the government should insert qualities management capacity to manage the huge investment (Deloitte, 2018).

The electricity generation the due to the lack of sufficient and reliable electricity supply, many Nigerians rely on generators for their daily electricity demands. Government implemented reforms that restructured the energy sector in 2005. These reforms are the reduction of subsidies and the privatization of the national energy company. The Energy generation improve but utilization remains low. It was approximated that only 5000 megawatts of the country's 12500 megawatt installed capacity are utilized. Due to the situation, only 45% of Nigeria's population has access to power via the grid. Caused to the unreliability of the national grid, about 42% of Nigerian businesses have a secondary source of power (generators), to enhance their activities and to reduce the negative impact of power failures across the public power grid. The Nigeria electricity tariff hike of 300% has raises concern, prompts call for renewable (Ajala, 2024). The situation has leads to increased production cost resulting in higher prices for goods and services.

Government provided an avenue where private investors are now the distributors, while the Nigerian government is not a stakeholder in the distribution market. The 2015 National Renewable Energy and Energy Efficiency Policy (NREEEP) stated the government's aim to increase renewable energy production in Nigeria from 10% in 2015 to 18% in 2020. Government offers feed-in tariffs (FIT) to promote renewable energy investment, which ensure stable price for renewable energy production for a fixed duration and the risk of the project is reduce since return on investment for renewable energy projects is guaranteed by the government (Deloitte, 2018). The Electricity Act 2023, which repeals the electric power sectors reforms Act. No. 6, 2005, consolidate the laws relating to Nigeria electricity supply industry, provide a electricity comprehensive legal and institutional framework for the power in Nigeria



in the areas of electricity generation, transmission and obligation, provide for a holistic integrated resource plan and policy that recognises all sources for generation, transmission and distribution of electricity, including the integration of renewable energy in Nigeria's energy mix, and attract investment.

Electricity has been a long-time problem in Nigeria till this very present day. The Nigeria power system National Electrical Power Authority (NEPA) is marked by the following challenges : Inadequate of supply to meet the demand of a rapidly growing economy, frequent power failure, load shedding resulting in heavy economic losses, excessive reliance on large-scale hydro power, limited spare capacity and high transmission losses, overloaded distribution facilities, adequate maintenance of facilities, shortage of skilled man power in rural electrification process, Irrational policies switches, poor planning among others (Okongwu, 1986). These factors are still constraint in the power sector in Nigeria.

Electricity is one of the important factors that is required in production industries. Examining the factors that affects the Nigeria economy, Power supply is the most constraint of industrial performance in Nigeria (Bakare, 2013). Study found that electricity constraints limit country's growth causes firms to operate in industries with fewer productivity-enhancing opportunities. Exogenous increase in electricity price, firms switch to less electricity-intensive production processes within narrowly defined industries, reduce their machine intensity, and have lower output and productivity growth rates (Ama, 2017).

The power supply problems due to power outages have cause value lost on sales with 11.2% in 2014 in Nigeria and constitute the second major obstacles affecting business with 27.2% (Igwe et.al., 2018). Business has to source for other means of power, which may negatively affect profit and causes additional cost of doing business. Saini (2011) opined that 64.44 % firms of Punjab and 73.33 % firms of Haryana incurred worth less than 10 percent of the expenses on purchase of power out of their total cost. Electricity is the main bottlenecks affecting Kenyan firms. Close to 80 percent of firms in Kenya experience losses because of power interruptions. 70% of firms have generators, which create additional cost to obtain and operate. Power disruption costs Kenyan firms approximately 7 percent of sales (Iarossi, 2009).

Frederick and Selase (2014) analysed the effect of electric power fluctuations on the profitability and competitiveness of SMEs, using SMEs operating within the Accra business district of Ghana as a case study. The research is a cross-sectional survey; it adopted a mixed



method approach and sample of 70 Ghanaian SMEs was selected using a systematic sampling approach. Data for the study was collected with an interviewer-administered structured questionnaire and SPSS statistical package. The study founded that without reliable energy supply, SMEs are unable to produce an increased quantities and quality of product leading to poor sales hence low levels of profitability. It is established that low profitability negatively affects Return on Assets (ROA) and Return on Investment (ROI) of SMEs. The result shows, if the level of profitability is high, it is expected that ROA and ROI will be high and vice versa. Meaning with high profits, SMEs increase their competitiveness.

Shehu et al., (2019) examined the hotel energy application practices in Abuja Nigeria. The study administered questionnaires to hoteliers in Abuja Nigeria. Data collected was analyzed using descriptive technique. The results indicate hotels in the study area are of divergent physical and operational characteristics implying varying energy consumption and efficiency positions. The respondents aggregated mean ranking on hotel service provision shows all identified services as excellently or very well provided, except for electricity warmed pools which was ranked neutral. Predominantly three types of energy resources were utilized by hotels in the study area which includes grid supplied electricity, diesel and cooking gas respectively. The study recommends the adoption of Demand side management approach to checkmate guest and staff inefficient behaviors' in addition to regular energy audits and employing renewable resources to straighten the track of the hotel's energy consumption towards sustainability.

Owusu et al., (2022) examined "Electricity energy access and profitability of Micro and Small Enterprises in Ghana", In this quantitative survey design research, two-stage stratified and convenience sampling techniques were used to sample 50 owner-managers of micro and small enterprises in Kaneshie, Accra. Descriptive and inferential statistics were used to analyse the field results. The study found that the national grid electricity supply for the operations of small businesses in Accra is inadequate. An alternative source of electric energy significantly reduces the profit of businesses. The article, therefore, concludes a positive significant relationship between electric access and profitability of small and micro enterprises in Ghana.

Xu et al., (2022) examined "Energy crisis, firm profitability, and productivity: An emerging economy perspective". Energy shortage has a significant effect on businesses in developing countries. To overcome energy crises, such countries are adopting different strategies in their



industrial sectors. This study contributes to the existing literature by analyzing the impact of energy crises on the profitability and productivity of 424 non-financial listed companies in Pakistan over the period 2001–2017. The fixed effect (FE) is used as a basic regression technique, while generalized method of moments (GMM) is used for the robust analysis. Seven measures, in which four measures of electricity shortfall (i.e., neutral period (NP), increasing shortfall (IS), worst shortfall (WS), decreasing shortfall (DS), energy consumption (EC), energy price (EP), and access to electricity (ATE)) were applied to examine their impact on profitability, that is, return on asset (ROA), return on equity (ROE), and productivity, that is, asset turnover ratio (ATO). The results confirmed the negative impact of energy crises on business profitability, where IS, WS, and DS significantly reduce profitability by 39%, 36%, and 33%, respectively. In addition, NP exerts a significantly positive impact on profitability, where a 1% increase in NP increases profitability by 33%.

Adekanbi (2024) examined “The impact of electric power outages on the profitability of small businesses in Nigeria”, using 50 randomly selected small businesses in Gwagwalada town as a case study. Findings from the estimated Logit model showed that electric power outages had a negative impact on the profitability of small businesses in Gwagwalada town, while small businesses' expenses on alternative electricity power supplies had a positive impact on profitability. However, both electric power outages and small businesses' expenses on alternative electricity power supplies in Gwagwalada town had an insignificant impact on the profitability of the small businesses.

Orebiyi et al., (2025) examined the effects of electricity tariff increase on Ibom hotel and Golf Resort's business profitability in Nigeria. Data for the study was mostly secondary extracted from the company's annual reports and the company's engineering department for the periods (2010 – 2023). We applied transcendental logarithmic function to analyze our data and found that, a 10% increase in electricity tariff in Nigeria will dipped Ibom Hotel's profitability by 41% approximately and highly statistically significant at an instance and that continued increase in electricity tariff in Nigeria will have a reducing spiral effect of approximately 21% continually in Ibom hotel's profit and statistically significance at one percentage level. Electricity supply is very important to the hotel industry as it improve productivity and faced with electricity challenges is the major constraints to business performance. When hotels experience electricity problem, it affects the quality-of-service render to customers thereby reducing patronage, which leads to decrease in profit making. In this study, it is assumed that,



the hotel businesses in Plateau State operate in an environment characterised by infrastructural deficit. This is likely to have a serious effect on the profitability of tourism industry especially the hotels that must need power to light up and cool their food substances. Based on the above empirical evidence, hypothesize thus:

Ho: There is no significant effect of electricity on profitability of the hotel industry in Plateau State.

Hi: There is significant effect of electricity on profitability of the hotel industry in Plateau State.

Theoretical Framework

The theory was proposed in the 1950's by the biologist Ludwig von Bertalanffy. System theory is used to examine interaction between social systems (organizations) and the environment. A fundamental belief of systems theory is that it focuses on interactions. Another core tenet of this theory is the distinction between open, closed and isolated systems. In open systems there are exchanges of resources and information between the organization and the external environment. This focus reflects on organizations' ability to adapt to changes in environmental conditions. The theory assumes that organizations such as those in the hotel industry operate in an environment and interact with the elements that define the environment.

Electricity supply, as an external environmental variable affect business operations, such that inadequate electricity supply and increase in electricity tariffs affects hotel performance and sustainability. Studies found that businesses have an open and active adaptive relationship with their external environment and that businesses are environment dependent and for managers to manage this businesses-environment interface and appropriate technique is important (Mbithi, et al., 2017).

3. Methodology

The study employs survey design that is cross-sectional to permit for the collection of quantitative data. The study population comprises of all the eight five (85) business units, comprises of listed hotels, motels, resorts and suites collected from registered hotels in the Plateau state tourism corporation. This study draws it sample form the hotels listed in Plateau state tourism corporation. Simple random Sampling method was employed. The study employs sampling method using Taro Yamane Method (1967) and got the sample size of 70. The World business environment survey instrument, developed by World Bank (Batra et al, 2003) was adapted and modified to suit the context of the hotel industry in Plateau State. The study used



the regression analysis to test the relationship between the independent variable and the dependent variable. In this study, the dependent variable is profitability (Return on Investment) while the independent variable used is electricity supply.

Model Specification

The regression model specified for the study is represented as follows:

$$PRO_i = \beta_1 + \beta_2 x_i + u_i$$

Where:

PRO_i = Profitability

x_i = Electricity

β_1 , = Constant term

β_2 , = coefficient of independent

u_i = error term.

4. Result and Discussion

Computation of Regression result: Electricity and Profitability

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.208	.326		6.773	.000
ELEC	.222	.097	.268	2.295	.025

a. Dependent Variable: PRO

Source: SPSS 23.0

Interpretation

The hypothesis is stated which state that:

Ho: There is no significant effect of electricity on profitability of the hotel industry in Plateau State.

Hi: There is significant effect of electricity on profitability of the hotel industry in Plateau State.

Decision Rule: Reject Ho if $P < 0.05$

Accept Ho if $P > 0.05$

The decision rule is that if the p-value is less than the level of significance of 0.05, the study fails to accept null hypothesis and fails to reject alternate hypothesis. But if the p-value is greater than the level of 0.05 then, the study failed to reject the null hypothesis and fail to accept the alternate.

The Table shows the standardized regression result for Electricity (ELEC) on Profitability (PRO) is 0.222. This means that Electricity (ELEC) has a positive and significant influence on Profitability (PRO). It implies that increase in Electricity (ELEC), will lead to increases in the level of Profitability (PRO). A 1% increase in the level of Electricity (ELEC) will bring about a 22.2% increase in Profitability (PRO).



Given that the p-value 0.025 is less than the significance level of 0.05, we fail to accept the null hypothesis and fail to reject the alternate hypothesis which states that Electricity has significant effect on the profitability of hotels in Plateau state. In this hypothesis, the study fails to accept the null hypothesis and the alternate hypothesis which states that electricity has significant effect on the profitability of hotels in Plateau state was accepted. This result is consistent with the study Owusu, et al (2022) found that electricity energy access has positive significant relationship with profitability of micro and small enterprises. Also, the result supports the outcome of Frederick et al. (2014) who found that electricity affect profitability of businesses. This result of the study supports the System theory which assumes that for the organizations to achieve their objective such as profit maximization; they must pay attention to changes in the external environment.

The implication of the result is that the flow of electric is of importance to businesses ranging from Lightening, cooling and heating and the hotels will not operate well due to shortage of electricity, this will not attract guest and therefore reduces profitability. Also, Unreliable and costly electricity supply significantly reduces hotel profitability by increasing operational costs, disrupting services, and limiting business expansion. The rapid growth of the population requires government to invest in infrastructure to promote economic development. Inadequate supply to meet the demand of a rapidly growing economy, frequent power failure, load shedding resulting in heavy economic losses, excessive reliance on large-scale hydro power, limited spare capacity and high transmission losses, overloaded distribution facilities, adequate maintenance of facilities, shortage of skilled man power in rural electrification process, Irrational policies switches, poor planning among others should be addressed by government.

5. Conclusion and Recommendations

Conclusion

The main objective of this study is to examine the effect of electricity on the profitability of hotels in Plateau state. From the findings and discussions, it was concluded that electricity has effect on profitability of the tourism industry in Plateau state. Unfavorable electricity, increase operational costs and reduce business sustainability. Conversely, a favorable electricity condition enhances profitability and support long-term growth of the hotel industry.

Recommendations

Based on the findings of this study, the following recommendations were made:



Electricity has significant effect on the profitability of hotels in Plateau state. This means that, electricity is a necessary variable in the determination of the profits of hotels in plateau state. Therefore, it is recommended that the federal government should grant electricity subsidy to all hoteliers and tourism related firms so as to improve the profit level and also promoting policy incentives for energy efficiency which enhances profitability. This will result to increase in revenue for the government through tax remittance of the tourism industry especially hotels. Government should also invest more in renewable energy and upgrade electricity infrastructure. Hotel Stakeholders should explore other alternative electricity such as renewable energy. Hotels should used energy saving measures such as using Light Emitting Diode, smart system which automate lighting and heating, ventilation and air condition controls. Hotel appliances should be turn off when rooms are empty and guest education that provides “green” options in rooms should be encouraged.

Contributions to Knowledge

It has been established that electricity has a significant effect on the profitability of hotels in Plateau state, this means the problem of electricity; frequent power failure, Low voltage, high-rate electricity tariff, high cost of using private generating engine, high transmission losses, overloaded distribution facilities, inadequate maintenance of facilities and shortage of skilled man power in electrification process affects the hotel businesses in Plateau State.

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