Distribution Planning Strategy: An Instrument for Improving Power Challenges for Sustainable Development in Port Harcourt City Local Government Area of Rivers State

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Abstract

The study examined power distribution planning strategy for improving power distribution in Rivers state using Port Harcourt City Local Government Area as case Studies. One research question and two hypotheses were raised and formulated respectively to guide the study. A descriptive survey research design was adopted. The population for the study was 137; which comprised 42 and 95 members of National Union of Electricity Employees Rivers state chapter with 0 years to 10 years of employment and 11 years and above respectively. The entire population was used for the study since it was not too large and is manageable. A 7 items structured questionnaire was used as instrument for data collection and the items were based on four – point rating scale. The instrument was validated by three experts from the department of technical education of Ignatius Ajuru University of Education Ndele campus, Rivers state. Cronbach Alpha method was used to establish the reliability of the instrument; which yielded reliability coefficient of .78. Data was analyzed using means and standard deviation for answering the research questions while hypotheses were tested using z – test at the alpha level of .05 significance. The study revealed that power distribution strategic planning such as environmental scanning, stakeholders' brainstorming, international analysis and syntheses, documentation among others were strategies for improving power distribution in Rivers state. It recommended among other things that power distribution strategic planning should be adopted for power distribution improvement.

Keywords: Strategy, planning, distribution, development, power.

Introduction

Since the installation of the first generating plant in 1896, Nigeria power sectors has witnessed several reforms as a way of proffering lasting solutions to Nigeria electricity distribution problems. By Act of Parliament in 1951, the electricity Corporation of Nigeria (ECN) was established, and in 1962, the Niger Dams Authority (NDA) was also established for the development of Hydro Electric power. However, a merger of the two was made in 1972 formed the National Electric Power Authority (NEPA) which was unbundled again in 2005 to become Power holding Company of Nigeria. (Chinwuko et al, 2011). Despite several reforms and abundance sources of energy available for power generation, the nation remains one of the lowest electric power consumptions per capita in Africa (Oyedele, 2022). According to Oyedele, the electric power consumption per capita is barely 144KWH which is

very low compared to that of South Africa, Egypt, Libya, Namibia and Botswana with electricity consumption per capita of 4,229, 1,699, 1841, 1,564, respectively.

It is an indisputable fact that Nigeria power system is in comatose. With over 222 partial and total collapse between 2010 to June 2022 (Aduloju, 2022). Nigerian cities and towns are daily wallowing in serious darkness. As at June 2022, Oyedeji (2022) posited that Nigeria has recorded 5 grid collapses as its electricity sector continues to suffer unprecedented challenges. Chinwuko (2011) identified insufficient equipment, substandard methods of transmission, poor zoning of distribution, low voltage supply, unauthorized connection and disconnection, corruption in the management, equipment vandalization and inefficient distribution planning as major factors behind electricity generation and distribution challenges in Nigeria and Port Harcourt City in particular.

Every power collapse and accomplishing black out always have resultant effect on customers, small and medium scale enterprises and of course on nation's economy. Akinloye et al (2016) mentioned that power outages cost the Nigerian nation an estimated amount of $1 billion per year; which is 2.5% of Gross Domestic Product (G.D.P). It is no doubt that one of the greatest obstacles to development of the Nigerian economy is the power generation and distribution. Oyedele (2022) abstracted that small, medium and the large – scale enterprises in Nigeria are all adversely affected by erratic power supply. The lacklustre performance of the manufacturing sector in recent times is partly attributed to this problem. Little wonder then that the critical assessment by National Bureau of Statistics indicates that about 60 million people are poor due to unreliable power supply (Oshisada (2007). Addeh (2022) opined that in Sub – Saharan Africa, every one percent increase in power outages (in terms of hours) had been associated with a 2.86 percent decrease in Gross Domestic Product (GDP). This translates to a loss of about $28 billion in GDP. The situation could be avoided if appropriate strategies such as strategic planning mapping, implementation and sustainability are adopted and implemented

Kvint (2009) defines strategy as a system of finding, formulating, and developing a doctrine that will ensure long – term success if followed faithfully. Strategy is a crystal ball of the organisation, around which all the elements of the business can focus and rally (Steven, 2014). A good strategic planning drives focus, accountability, and result (United Nations, 2022). Experts based on year of experience and gender are of divergent views on the use of strategic planning as technique in improving power distribution (Fred, 2011). The study will ascertain the opinions of electricity workers in Port Harcourt City on the issue.

Statement of the Problem

With the attending effects of epileptic power supply in Nigeria, economy is groaning and excruciating in pains and poverty level is on the increase. Despite all the reforms and frameworks, it is obvious that there is yet veritable solution to be explored. Efforts to improve power distribution in Nigeria and Port Harcourt City in particular have not yielded any positive results (Samuel, 2019). Many business and individuals have lost their sources of revenue and livelihood. This ugly trend in power distribution if not urgently checked could further lead to decay in infrastructure, more economic mess, increase in poverty level and economic mess. What then can be done to ameliorate this unpleasant situation power sector?

Therefore, this research work will investigate the use of strategic plans as technique in improving power distribution.

Purpose of the Study

The purpose of the study was to determine strategic plans needed to improve power distribution in Port Harcourt City Local Government Area of Rivers State.

Research Questions

The following research question will guide this project work:

1. What are the power distributions strategic plans to improve power distribution in Port Harcourt City Local Government Area of Rivers State?

Hypotheses

The following null hypotheses were postulated and tested at 0.05 level of significance:

1. There is no significant difference in the mean ratings of respondents on the Improvement in power distribution through strategic plans based on years of employment (0 – 10 years and 11year – above)
2. There is no significant difference in the mean ratings of respondents on the Improvement in power distribution through strategic plans based on gender (male and female)

Literature Review

United Nations Organization (2022) defined strategic planning as a process of looking into the future and identifying trends and issues against which to align organizational priorities of the Department or Office. It further explains strategy planning as understanding the challenges, trends and issues. Bryson (1988) argue strategic planning as a disciplined effort to produce fundamental decisions and actions that shape and guide what an organisation is, what it does, and why it does it, with focus on the future. In addition, it involves intentionally setting goals and developing an approach to achieving those goals; it's those fundamental decisions and actions that must be made to reach a desired future (Nnaemeka, 2022).

Steven (2014) considered strategic planning is an organisational management activity that is used to set priorities, focus energy and resources, strengthen operations, ensure that employees and other stakeholders are working toward common goals, establish agreement around intended outcomes/results, and assess and adjust the organisation's direction in response to a changing environment. Also, he further reiterates that strategic planning provides a blueprint for achieving organisation's goals. Strategic planning is a disciplined effort to produce fundamental decisions and actions that shape and guide what an organization is, what it does, and why it does it, with a focus on the future. (Bryson, 1988).

Moreover, Fred (2011) defines strategic planning as recognizable set of activities. Techniques vary with the particular author but the substantive issues are essentially the same across authors. These include:

1. Establishing and periodically confirming the organization's mission and its corporate strategy (what has been termed "the context for managing")
2. Setting strategic or enterprise-level financial and non-financial goals and objectives

3. Developing broad plans of action necessary to attain these goals and objectives

Strategic planning requires the management team to carry out an analysis of its environment. One tool which is commonly used for accessing their environment is the SWOT analysis which helps management find what their strengths and weaknesses are, identify areas where they have opportunities and prevent any threats arising from both the external and internal environments (Buzzle, 2013).

As shown in fig 2.1, the internal environment represents Strengths (helpful: organisation's competencies) and Weaknesses (harmful: areas of the organisation which need improvement). They are factors within the organisation. While, the external environment has opportunities (Helpful) and threats (Harmful: variables outside the organisation such as competition). These factors are out of the organisation but can affect performance within the Organisation. They are factors that are beyond the control of the organisation (Mulugeta, 2014). Thus, the management function of planning, involves both short term and long-term planning.

Fig. 2.1 SWOT Analysis Matrix
Sourcee: CIO

According to Fred (2011) there are techniques that drive strategic planning as follows:

1. A strategic review or audit intended to clarify factors such as mission, strategy, driving forces, future vision of the enterprise, and the concept of the business
2. A stakeholders' analysis to determine the interests and priorities of the major stakeholders in the enterprise (e.g., board of trustees, employees, suppliers, creditors, clients, and customers)
3. An assessment of external threats and opportunities as well as internal weaknesses and strengths (known variously as SWOT or TOWS), leading to the identification and prioritization of strategic issues

4. Either as part of the assessment above, or as a separate exercise, the identification of "core" or "distinctive competencies"
5. Also, as part of the assessment above, or as separate exercises, the playing out of "scenarios" and even "war games" or simulations
6. Situational and ongoing "scans" and analyses of key sectors in the business environment, including industries, markets, customers, competitors, regulators, technology, demographics, and the economy, to name some of the more prominent sectors of the environment
7. Various kinds of financial and operational performance audits intended to flag areas where improvement might yield strategic advantage.

According to Fred (2011), components of a strategic plan include the following:

1. Mission: The mission represents the view that senior managers have for the future of the organisation, it is what they want it to become or achieve.
2. Goals: This component defines the desired future positions of the organisation. They are selected on the basis of the defined mission. Sometimes goals are separated from objectives. In this case goals are broad and timeless statements of the end results that the organisation considers will achieve the mission. Objectives would then flesh out these goals with quantitative and qualitative terms since they are specific measures of the goals to achieve the mission. In some instances, goal, objectives and aim are used interchangeably.
3. Strategy: This element is the definition of the general direction in which the organisation chooses to move in order to meet goals to achieve the mission. It is constrained by the nature of the organisation including resources, capabilities, culture, structure etc. And by the environment in which it works. The strategy constructs a framework which hopes to ensure that the organisation makes the best of what it has to work with and adequately compensates for its limitations. The strategy also defines how an organisation will not achieve its aims. The strategy plan should document which strategic opportunities are deemed the most beneficial to pursue.
4. Policy Policies: provide a framework for the implementation of any major changes needed to be made. The policies should provide key measurements and key ratios that summarise the expected benefits the strategy is intended to yield so that in due course it can be judged.

Method

The study adopted a descriptive survey research design. The population for this study consists of 137 members of National Union of Electricity Employees in Port Harcourt City Local Government Area (0 – 10 years of employment = 42 and 11 years – above = 95; Male: = 97 and Female: = 47). No sampling technique was used for the study since the entire population was used for the study and is manageable. The instrument for data collection for this study was a structured questionnaire developed by the researcher titled 'Power Distribution Strategic plans' (PDSP). It has sections A and B. Section A contains two items on demographic data of respondents while Section B contains 7 items on a four-point rating scale of Strongly Agreed (SA), Agreed (A), Disagreed (D) and Strongly Disagreed (SD).

Three experts; one from Measurement and Evaluation Department of Educational Foundations and two from Industrial Technical Education Department all in Ignatius Ajuru University of Education, Rivers State validated the instrument. The reliability of the instrument was established using a pilot test involving 20 members of National Union of National Union of Electricity Employees, Bayelsa State chapter; which is outside the area of study. Data collected for the pilot study were analysed with Cronbach alpha; which yielded a reliability coefficient of 0.78. The researcher through the help of research assistants administered and retrieved 137 copies of the instrument from the respondents. The data collected for the study were analysed using the arithmetic mean and standard deviation to answer the research question and determine the closeness of the responses to the mean. The z-test statistical tool was used to test the null hypotheses at 0.05 level of significance. A null hypothesis was rejected where the calculated p-value was less than the 0.05 level of significance, it meant that there was a significant difference between mean scores. Conversely, where the calculated p-value was greater than or equal to the level of significance (0.05), it meant that there was no significant difference and the hypothesis was accepted.

Findings

Answers to Research Questions

Research Question 1: What are the power distribution strategic plans to improve power distribution in Rivers State?

Data collected in respect of research question 1 was analysed and presented in Table 1.

Table 1

Respondents mean ratings on power distribution strategic plans to improve power distribution

S/No.	Element of Strategic Plans	Mean (x̄)	SD	Remarks
1.	There is need for environmental scanning to determine suitable distribution network	3.47	0.64	A
2	There is need for stakeholders brainstorming on the appropriate distribution system.	3.42	0.74	A
3	There is need for internal analysis and syntheses of stakeholder's contributions	3.60	0.57	SA
4	There is need for documentation of agreed distribution system to be used.	3.62	0.56	SA
5	There is need to publish documented plans to drive accountable power distribution	3.18	0.45	A
6	There is need for setting timeline to track progress for improved power distribution.	3.36	0.81	A
7	There is need to trend if there is improvement or not in power distribution.	3.11	0.68	A
	Cluster Mean	**3.39**		**A**

Table 1 shows that the mean of the items ranged from 3.11 – 3.62 while the cluster mean for the group was 3.39. This means that employees agreed that strategic plans will improve power distribution in Port Harcourt City Local Government Area of Rivers State. The

standard deviations for all items for the group was within the same range indicating that the respondents were homogeneous in their views.

Test of Hypotheses

Hypothesis 1: There is no significant difference in the mean ratings of respondents on the Improvement in power distribution through strategic plans based on years of employment (0 – 10 years and 11year – above)

Data collected in respect of hypothesis 1 was analysed and presented in Table 2

Table 2: Summary of z-test comparison of the mean ratings on the improvement in power distribution through strategic plans based on years of employment

Years of Employment.	n	x̄	SD	A	Df	z-cal	p-value	decision
0 – 10 years	42	3.44	0.81	0.05	135	0.80	.071	Not Significant
11 years – Above	95	3.56	0.77					

Table 2 indicates that the p-value of .071 is greater than the alpha value of 0.05 at 135 degree of freedom. Therefore, the null hypothesis is not rejected. Hence there is no significant difference in the mean ratings of respondents on the improvement in power distribution through strategic plans based on years of employment.

Hypothesis 2: is no significant difference in the mean ratings of respondents on the Improvement in power distribution through strategic plans based on gender (male & female)

Data collected in respect of hypothesis 2 was analyzed and presented in Table 3.

Table 3: Summary of z-test comparison of the mean ratings on the improvement in power distribution through strategic plans based on gender.

Gender	n	X̄	SD	A	df	z-cal	p-value.	decision
Male	97	3.40	0.61	0.05	135	0.60.	.062	Not Significant
Female	47	3.51	0.76					

Table 3 reveals that the p-value of .062 is greater than the alpha value of 0.05 at 135 degrees of freedom. Therefore, the null hypothesis is not rejected. Hence there is no significant difference in the mean ratings of respondents on the improvement in power distribution through strategic plans based on gender.

Discussion

Findings of this study revealed that strategic planning will improve power distribution in Rivers state. The study shows that environmental scanning to determine suitable distribution network, stakeholders brainstorming on the appropriate distribution system, internal analysis and syntheses of stakeholder's contributions, documentation of agreed distribution system to

be used, publication of documented plans to drive accountable power distribution, setting timeline to track progress for improved power distribution and trending of power distribution improvement will contribute to power distribution planning among other things.

The finding of this study agrees with that of Obinna and Lucy (2018) who noted that continuous electricity supply (power distribution) problems in Nigeria are attributable to the inability of energy planners to accurately forecast the effect of the various socio – economic and physical factors that influence residential electricity consumption across the country. Hence, effective and adequate planning in this space will significantly improve power distribution.

The finding of the study is also in agreement with that of Sambo (2010) who identified planning and operations as one of the strategies to improve electricity generation and distribution in Nigeria. According to him, detailed national load demand study (trending) should be carried out and strategic role of local government should be explicitly stated (documented).

The finding of this study is in consonant with Akinloye (2016) who observed that the distribution network should be monitored (trended) such that the amount of power loss in the course of distribution will be reduced drastically. The finding of the study also agrees with that of Obehi (2017) who opined that a policy for scheduled and repeated losses evaluation (analysis) in each Customer Category of each Business Unit in its network. This should help in measuring the level achievements on loss reduction against the set targets. Thereby, bringing effective strategic planning for power distribution improvement.

Lastly, Magnus (2021) solution to technical and commercial loss of power distribution also is in consonant with this study by evaluating and minimizing energy losses from the distribution source to the consumer end, installation of automated distribution system which monitors the load flow load trending) will help in controlling the technical and non-technical losses in the distribution lines. These will have an effective and reliable power distribution supply in the system and thereby reduce complaints on constant power failure. The analysis of the hypothesis indicates that there is no significant difference in the mean ratings of respondents on the improvement in power distribution through strategic plans based on years of employment and gender.

Conclusion

On the basis of the findings of the study, it was concluded that, strategic planning is one of the techniques required for power distribution in Port Harcourt City Local Government Area of Rivers State.

Recommendations

On the basis of the findings of the study and the conclusion reached, it was recommended that:

1. Strategic plans should be carried out by power distribution company in order to improve power distribution in Port Harcourt City Local Government Area of Rivers State.
2. There is need for environmental scanning by power distribution company to determine suitable distribution network

3. There is need for stakeholders brainstorming on the appropriate distribution system.
4. There is need for documentation of agreed distribution system to be used by power distribution company
5. There is need to publish documented plans to drive accountable power distribution.

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