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Sustaning Women Economic Empowerment: A Gender Perspective Source Of Electricity Generation

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ABSTRACT (10PT)

Women require vocational skills for economic stability and alternative income. Despite attempts to empower women in low and middle-income nations, they still face obstacles, notably with energy supply, a critical component for their productivity and the subject of this study. Five (5) research questions were raised. The study adopted the descriptive survey research design. The entire population of 309 female artisans in Edo South, Central and North Senatorial Districts was used as sample. The questionnaire was analysed using Mean and Standard Deviation. The decision rule was based on 3.0 such that any calculated mean equal or greater than 3.0 was regarded as agreed while less than 3.0 as disagreed. The study found that women had challenges with the conventional alternative source of power generating set and recommended among others that experts should consider a gender perspective in design and construction in order to alleviate the sufferings of female artisans.

Introduction

Women are particularly described as disadvantaged and vulnerable and because women experience more restricted access to resources and opportunities, they have fewer coping mechanisms in a low-income economy. The economic participation of women is vital not only in reducing poverty among the women, but also an important step towards raising household income and encouraging economic development in the country as a whole (Stevenson, 2018). Women's economic participation and empowerment are fundamental to strengthening women's rights and enabling women to have control over their lives and exert influence in society. While economic empowerment does not guarantee gender equality, it does provide an important mechanism for women to negotiate improvements in their well-being. In the post-Beijing era, in the context of women and poverty and as an emerging issue, much effort is being made in the bid to empower women economically. Ozigbo (2014) stated that the concept of women economic empowerment has promoted entrepreneurial and vocational skills programmes and proves to be helping women

with access to income via small scale businesses and artisanship. Women empowerment plays an imperative role in the growth and development of any society. It has birthed numerous entrepreneurs among the female folks. According to Akande (2014), entrepreneurial skills are essential for industrialization and for alleviation of mass unemployment and poverty. Through innovation, entrepreneurs create new competitive markets and businesses which lead to job creation and have a multiplying effect on the economy.

Despite all the efforts put in place to empower women, they still encounter a number of challenges especially with electricity. Electricity plays a very important role in the socio-economic and technological development of every nation. The electricity demand in Nigeria far outstrips the supply which in its self is epileptic in nature affecting the productivity of artisans and in some instances, has ended many businesses. The low electricity generation capacity of the country has led to the increase in the use of alternative sources for electricity in homes and offices in Nigeria. Access to a reliable electricity supply is widely considered to be vital to the operations of most small and medium-scale businesses. In countries where electricity reliability is very low, electricity-reliant businesses have to invest in diesel generators if they want to sustain regular business operations (Attigah and Mayer-Tasch, 2013). Foster and Steinbuks (2008) in their Surveys suggest that, in middle and lower income countries, consider access to electricity to be one of the biggest constraints to their business. Inadequate electricity services can constrain business operations because a supply of electricity may simply be unavailable and, if it is available, securing a connection may be difficult and the supply unreliable, even before its cost is considered. High quality and accessible infrastructure encourage productivity, business growth and investment, but when it is poor and unreliable, businesses' productivity and growth suffer. An unreliable electricity supply can affect several aspects of business operations. According to Dockel & Ligthelon (2015), the most significant impacts to productivity can be due to forced and unexpected halts in manufacturing processes, including running assembly lines, using machine tools, or producing textiles. Communications, delivery times, lighting and refrigeration are also affected by poor electricity supply, with consequences for the routine operation of businesses and their ability to ensure delivery times. Many small and medium-scale enterprises invest in their own stand-by generators to ensure an electricity supply, but these are often expensive compared to electricity from the grid. Generators also require some technical expertise as well as reliable supplies of fuel and spare parts (Olateju,A.O., Danmola, R.H., Aminu, A.W. (2020).

The conventional generating set, which is the main alternative source of electricity generation in the country, is under criticism and scrutiny due to the hazardous environmental threats emanating from its usage. Gas emission from these sources has become a major air pollution problem across the country (Ariyo, 2015). Generator fumes contain poisonous gases like carbon dioxide, CO2 and carbon monoxide, CO. These two gases are colourless and odourless hence, when

in a room containing unsafe levels of these gases the occupant has no way of identifying its presence (Anyagafu and Eribake, 2014). Ownership of electricity generator is a common denominator in Nigeria. Everyone seems to have one, whether poor or rich. At least 60 million Nigerians own a generator set and more than N3.5 trillion is spent annually on fuelling these sets (Osasona, 2017). The conventional generating set required by most of the artisans for their kind of businesses are usually very heavy for them to carry. On the average, men are physically stronger than women. According to Anyagafu and Eribake, (2014), their study in the Journal of Applied Physiology found that men had an average of 12 kilograms more skeletal muscle mass than women. Women also exhibited about 40 percent less upper-body strength and 33 percent less low-body strength, on average, the study also found. Hence, it is easier for the men to move or carry generator sets around which will not be too convenient for women. The construction of the fuel-less generator from the gender perspective is a huge step in the right direction to alleviating the sufferings of these female artisans. The gender perspective to the solution lays emphasis on details female artisans identify as challenges with the conventional generating set already available in the market and utilized by them. The challenges highlighted include: weight, noise pollution and cost of fuelling and maintenance.

Statement of the Problem

Women have been taking increasing interest in income generating activities, artisanship and entrepreneurship. Sadly, despite all the efforts put in place to empower women economically, they still encounter a number of challenges that threatens the sustenance of their businesses. The focus of this study is on the challenge of electricity supply which is a vital component for productivity. The electricity demand in Nigeria far outstrips the supply which in itself is epileptic in nature affecting the productivity of artisans and some instances have ended businesses. The outcry for women economic empowerment has moved from the level of promoting awareness and vocational skills, to sustaining these empowerment opportunities. Hence the need for experts to consider gender perspective in design and construction in order to improve on the challenges of the

conventional power generating set is a huge step in the right direction to alleviating the sufferings of business ventures owned by women.

Purpose of the Study

1. To find out the effect of power supply affect the productivity of artisans?
2. To establish if the use of conventional generators poses any challenge to the end users' productivity?
3. To identify the gender perspectives to the challenges posed by the use of the conventional generators?
4. To ascertain the operational and control requirement limitations of the conventional generator?
5. To determine whether gender centred design outputs are comparable or better than the conventional user centred design?

Research Questions

1. Does the effect of power supply affect the productivity of artisans?
2. Does the use of conventional generators pose any challenge to the end users' productivity?
3. Are there gender perspectives to the challenges posed by the use of the conventional generators?
4. What are the operational and control requirement limitations of the conventional generator?
5. Are gender centred design outputs comparable or better than the conventional user centred design?.

Method

The study adopted the descriptive survey research design. The population of the study consisted of 309 female artisans in Edo South, Central and North Senatorial Districts with various skills such as fashion design, hair styling, vulcanizing, and photography. The entire population was used as sample because of its manageable size. The study made use of the questionnaire as research instrument for data collection. The questionnaire was titled "Gender Perspective to Design of Alternative Source of Electricity Generation Questionnaire" It comprised sections A and B. Section A focused on the socio-demographic data of the respondents such as location, occupation, educational background, marital status, age and religion while section B was made up of items specifically designed to address all the variables of the study and to elicit responses to the research question raised. Item for research questions four (4) required input from an expert who is a mechanical engineer. The instrumet was subjected to validity by experts and the reliability was

established by using Cronbach Alpha formulae. Data gathered for the study were analysed using Mean and Standard Deviation. The Mean and Standard deviation was used to answer the research questions. The decision rule was based on 3.0 such that any calculated mean equal or greater than 3.0 was regarded as agreed while any mean less than 3.0 was regarded as disagreed.

Result and Discussion

Research Question 1: Does the effect of power supply affect the productivity of artisans?

Table 1: Effect of power supply on the productivity of artisans.

S/N	Item	N	Mean	SD	Remarks
1	Electricity supply in my location is very stable /predictable which makes me productive and able to meet up with my work demand	309	2.46	1.44	Disagreed
2	Electricity supply in my location is not stable which affects my productivity making me unable to meet up with my work demand	309	4.11	0.97	Agreed
3	There is no electricity supply in my location and I depend on alternative source to meet up with work demand.	309	3.22	1.15	Agreed
	Cluster		3.26		Agreed

Note: SD (Standard Deviation), N (Sample Size) **Decision Point = 3.0**

In response to research question one, Table 1 shows that the respondents rated item one as disagreed with mean rating of 2.46, items two and three as agreed with a mean rating of 3.22 and 4.11 respectively while the standard deviation also ranges from .98 to 1.44. With these results, the above mean score shows that power supply affects the productivity of artisans.

Research Question 2*: Does the use of conventional generators pose any challenge to the end users' productivity?*

Table 2: Challenge of conventional generators to the end users' productivity

S/N	Item	N	Mean	SD	Remarks
1	The fume from the conventional generator is a challenge to my neighbours and myself which affects my productivity restricting when I can use it.	309	3.83	1.12	Agreed
2	The frequent break down and cost of maintenance of the conventional generator affects my productivity	309	4.08	0.89	Agreed
3	The overall cost of production is not customer friendly	309	4.13	0.86	Agreed
4	The high cost of fuelling the conventional generator affects my productivity	309	4.32	0.80	Agreed
5	The conventional generator cannot power some of my work appliances necessary for my productivity	309	3.94	1.12	Agreed

6	The conventional generator cannot power all my work appliances at the same time necessary to meet up with my work demand	309	4.08	1.09	Agreed
	Cluster		4.06		Agreed

Note: SD (Standard Deviation), N (Sample Size) **Decision Point = 3.0**

The data analysis presented in Table 2 indicates that the respondents rated item one to six as agreed with a mean rating ranging from 3.83 to 4.32. With these results, the above mean score shows that conventional generators pose challenges to the end users' productivity.

Research Question 3: Are there gender perspectives to the challenges posed by the use of the conventional generators?

Table 3: Gender perspectives to the challenges posed by the use of the conventional generators.

S/N	Item	N	Mean	SD	Remarks
1	The weight of the conventional generator is too heavy for me	309	4.22	0.91	Agreed
2	The use of the conventional generator is against my traditional beliefs	309	1.74	1.10	Disagreed
3	The use of the conventional generator has an effect on me as a person	309	3.27	1.50	Agreed
4	The operation of the conventional generator is difficult for me.	309	3.85	0.99	Agreed
	Cluster	309	3.27		Agreed

Note: SD (Standard Deviation), N (Sample Size) **Decision Point = 3.0**

The data analysis in Table 3 depicts that the respondents rated item one, three and four as agreed with a mean rating of 4.22, 3.27 and 3.85 respectively while item two was rated as disagreed with a mean of 1.74. The standard deviation also ranges from .91 to 1.50. With these results, the above mean score shows that there are gender perspectives to the challenges posed by the use of the conventional generators.

Research Question 4: What are the operational and control requirement limitations of the conventional generator?

Table 4: Operational and control requirement limitations of the conventional generator.

S/N	Item	N	Mean	SD	Remarks
1	There are no operational and control issues with the conventional generator	309	2.86	1.21	Disagreed
2	The method of switching on the generator is a major issue	309	3.86	1.00	Agreed

3	The operation and control of the conventional generator does not have any effect on me	309	2.96	1.20	Disagreed
4	Making changes to these operational issues will improve my use of the generating set	309	4.30	0.72	Agreed
	Cluster		3.50		Agreed

Note: SD (Standard Deviation), N (Sample Size) **Decision Point = 3.0**

The data analysis presented in Table 4 indicates that the respondents rated items two and four as agreed with a mean rating of 3.86 and 4.30 respectively while items one and three were rated as disagreed with a mean of 2.86 and 2.96. The standard deviation also ranges from 0.72 to 1.21. With these results, the above mean score shows that there are operational and control requirement limitations of the conventional generator.

Research Question 5: Are gender centred design outputs comparable or better than the conventional user centred design?

Table 5: Gender centred design outputs comparable or better than the conventional user centred design

S/N	Item	N	Mean	SD	Remarks
1	The research will be a step in the right direction in addressing gender bias to previous work	309	4.44	0.59	Agreed
2	The research will develop a gender friendly generating set	309	4.53	2.89	Agreed
3	A female artisan will be comfortable operating and using this device	309	4.51	0.62	Agreed
4	Gendered centre design will receive a boost in product design especially in Nigeria	309	4.44	0.69	Agreed
	Cluster		4.48		Agreed

Note: SD (Standard Deviation), N (Sample Size) **Decision Point = 3.0**

In response to research question five, data analysis presented in Table 5 shows that the respondents rated item one to four as agreed with a mean rating ranging from 4.44 to 4.53 while the standard deviation also ranges from .59 to 2.89. With these results, the above mean score shows that gender centred design outputs are better than the conventional user centred design.

Discussion of findings

The statistical analysis undertaken for this study supports empirical findings that electricity insecurity tends to negatively affect the total factor productivity and labour productivity of manufacturing small and medium enterprises. This is consistent with the findings of previous research (Dockel & Ligthelon 2015). How electricity insecurity is measured has a material bearing on the assessment of its productivity effect. The analysis shows that using the duration of outages as the measure of electricity insecurity shows a greater impact than simply the experience of outages. This finding is consistent with previous studies (Attigah and Mayer-Tasch, 2013), and suggests that future analysis should use duration (the number of hours without power) for the measurement of electricity supply. The study also sought to find out stakeholders' perception on certain features of the conventional generating set such as size, weight, maintenance and running cost. Findings agree with Foster and Steinbuks (2008) who argue that generator ownership is greatly affected by characteristics like size, maintenance capacity of the business.

Conclusion

Empowering women through skills and entrepreneurship opportunities is not new across the globe. However, there are challenges faced by entrepreneurs in developing countries such as power supply. Entrepreneurship is to make profit and profit is possible only when business is sustained through challenges. In order to sustaining women economic empowerment, a gender perspective to alternative source of electricity generation is imperative in order to manage the poor electricity supply and as well address the challenges of the conventional generating set not convenient for women.

Recommendations

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

1. Government should improve on electricity generation and supply as incentives for the establishment of sustainable entrepreneurial businesses.
2. Experts should take into consideration feedback from stakeholders/end users on the clamour for gender perspective to the design of alternative source electricity generation that will address the challenges women face with the conventional generation set.
3. A system of networking should be created to allow end users share information in the areas of alternative power as feedback to experts

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