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Electrical and Renewable Energy Entrepreneurship as a Pathway to Youth Self-Reliance and Cybercrime Reduction in Rivers State

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Abstract

This study investigates electrical and renewable energy entrepreneurship as a pathway to youth self-reliance and a deterrent to cybercrime in Rivers State, Nigeria. A descriptive survey research design was adopted for the study. The study population consists of 2,300 Rivers State youths (age 16- 35), drawn from the twenty-three (23) Local Government Areas of Rivers State. Stratified random sampling technique was employed to ensure fair representation due to the large size of youths in Rivers State. The instrument used for data collection was a 15-item structured questionnaire validated by three experts for the purpose of obtaining information from the respondents. The reliability of the instrument was established using Cronbach Alpha reliability method to obtain the reliability index of .90. Three objectives, three research questions and three hypotheses guided the study. Data generated from the study was assembled and analyzed using mean and standard deviation for the research questions, while hypotheses were tested with Analysis of Variance (ANOVA) at .05 level of significance. Findings revealed that electrical and renewable energy entrepreneurship promotes self-reliance, empowerment, independence, sufficiency and ethical reorientation among youths in Rivers State as scaling up skill acquisition programs, enhances access to entrepreneurial funding, and integrating digital literacy with renewable energy training, addresses both unemployment and cybercrime simultaneously. The paper concludes with policy recommendations for TVET expansion, curriculum linkage to industry, and integration of digital-ethics modules and renewable energy into vocational programs.

Keywords: Entrepreneurship, Electrical and Renewable Energy, Cybercrime, Youth Self-Reliance, Rivers State.

Introduction

Nigeria, like many developing nations, faces a paradoxical challenge. Rapid technological growth has created new opportunities for development while simultaneously enabling the rise of cybercrime, particularly among youths. Cybercrime, popularly called "*Yahoo-Yahoo*" in Nigeria, has become one of the most pressing social and economic issues confronting the country. This trend is particularly concerning in Rivers State, a region with one of the highest concentrations of young people in Nigeria. At the heart of this problem is youth unemployment and underemployment. Young people in Nigeria, aged between 16 and 35, represent nearly 58% of the country's population (National Bureau of Statistics, 2023). With

limited access to legitimate work opportunities, many are drawn to fraudulent online schemes which continues to threaten the socio-economic development, public trust and international reputation.

Entrepreneurship has been globally recognized as a driver of economic transformation, self-reliance, innovation, socio-economic empowerment, and sustainable development (Arowolo & Adebayo, 2021). In developing countries like Nigeria, entrepreneurship serves as a critical mechanism for tackling unemployment, fostering self-reliance, and stimulating inclusive economic growth (Okoye & Opara, 2023; Opara, 2023). The dynamic nature of modern economies increasingly demands entrepreneurial solutions that create jobs, generate income, and reduce dependency on formal employment structures. Scholars assert that when young people are equipped with relevant entrepreneurial skills, they are more likely to establish self-sustaining ventures and contribute meaningfully to national productivity (Eze & Nwosu, 2022). Thus, entrepreneurship education and practice have become essential for empowering the youth population Nigeria's largest demographic group. Moreso, for Nigerian youths, engaging in entrepreneurial activities provides a pathway out of poverty, unemployment, and illicit activities. In particular, the technical fields of electrical installations, covering domestic wiring, cable jointing, winding of electrical appliances, industrial installations, and appliance maintenance, offer steady income streams and local business opportunities (Okoye & Eze, 2020). Parallel to this, the global transition toward renewable energy sources such as solar and wind power opens up significant entrepreneurial avenues for skilled individuals, ranging from solar panel installation and maintenance to energy efficiency services (Agyapong, 2021).

Within this entrepreneurial framework, electrical and renewable energy technologies have emerged as strategic sectors for youth economic engagement. The increasing global transition toward clean and sustainable energy sources has opened vast opportunities for entrepreneurship in areas such as electrical installation, maintenance, and solar photovoltaic (PV) system design and deployment (Eze, 2023; Alamina, 2022). In Nigeria, where access to stable electricity remains a developmental challenge, renewable energy entrepreneurship presents both an environmental and socio-economic solution (Ibama & Wokoma, 2023). The growing demand for off-grid energy systems in rural and urban communities has created new markets for skilled electrical technicians and solar entrepreneurs. Training youths in these skills can, therefore, transform unemployment into self-reliance, reduce poverty, and foster technological innovation across regions like Rivers State, which is both industrially active and energy-dependent.

However, cybercrime in Nigeria is driven by a complex interplay and the persistent issue of youth unemployment saddle with idleness, peer influence, and limited access to legitimate economic opportunities has fueled the proliferation, particularly among technologically literate but economically idle young people (Ojedokun & Eraye, 2023). Cybercrime, commonly manifested as internet fraud ("Yahoo Yahoo"), online scams, and hacking, has become a pressing moral and security concern in Nigeria (Nwankwo, 2024; Okoye & Opara, 2023). The attraction to illicit online activities is often rooted in economic frustration, social

comparison, and lack of legitimate means of livelihood (Eze, 2023). Rivers State youths constitute more than half of its population, and being an urban and digitally connected environment, has witnessed a steady increase in youth involvement in such acts, undermining both personal integrity and national reputation. However, there is an urgent need to redirect attention from illegal online ventures toward productive and legitimate entrepreneurial engagements. One of the most promising alternatives lies in entrepreneurship within the electrical and renewable energy sectors, which can equip young people with practical skills, sustainable livelihoods, and a strong sense of work identity. Cybercrime (Yahoo-Yahoo) in Nigeria thrives largely because of the perceived absence of viable economic alternatives (Olawale, 2022). Scholars and policymakers agree that addressing cybercrime requires not only legal sanctions but by providing youths with hands-on competencies and entrepreneurial opportunities that creates viable alternative livelihoods through skill-oriented entrepreneurship in renewable energy and electrical installation fields, the opportunity cost of engaging in cybercrime is increased, thereby making legitimate work more attractive. The role of vocational technical education and training (TVET) in equipping young people with such marketable skills has been consistently emphasized in recent scholarship as a strategic tool for empowerment and crime reduction (Kemevor & Ankomah, 2019; Nwosu & Ogbonda, 2021; Onoh, 2022).

The integration of renewable energy into Nigeria's energy sector is not just an environmental imperative but also a vast field of employment generation. With chronic electricity shortages in Nigeria, entrepreneurial ventures in solar home systems, inverters, and mini-grid installations are in increasing demand (Ogunyemi, 2022). Connecting these realities reveals a strategic intersection that electrical and renewable energy entrepreneurship can serve as a sustainable alternative that redirects youth energy, creativity, and digital literacy toward productive ventures. By equipping youths with hands-on technical competencies and entrepreneurial mindsets, the state can reduce the appeal and builds resilience against the lure of cybercrime by creating genuine avenues for financial stability while simultaneously advancing its economic and energy goals, and guarantees sustainable employment. This study, therefore, seeks to investigate the extent to which electrical and renewable energy entrepreneurship can enhance youth self-reliance and serve as a deterrent to cybercrime activities in Rivers State and redirect their energy into productive, socially beneficial, and economically rewarding ventures. Specifically, the study investigates how these skills and opportunities enhance self-reliance, independence, sufficiency, work identity, and access to legitimate income, thereby contributing to the reduction of cybercrime and positions renewable energy skills not merely as economic tools, but as instruments for moral reorientation, empowerment, and societal transformation.

Problem of the Study

Youth unemployment and the rising incidence of cybercrime have become major social and

economic challenges in Nigeria in recent years, with Rivers State particularly affected due to its high urban youth population and rapid technological exposure. The state, known for its oil-based economy, and high concentration of tertiary institutions, has witnessed a growing population of technologically inclined but economically idle youths. Many of these young people, faced with limited job opportunities and financial frustration, have resorted to cybercrime activities such as internet fraud ("Yahoo Yahoo") as an alternative means of livelihood. This trend not only undermines the moral fabric of society but also threatens national security and economic development.

Despite government efforts through skill acquisition programs and vocational empowerment schemes, many of these initiatives have not yielded sustainable results due to a mismatch between training content and market demand. Electrical and renewable energy entrepreneurship, which has emerged as a rapidly expanding sector globally, offers enormous untapped potential for youth engagement. The increasing demand for electrical installation, maintenance, and renewable energy solutions such as solar PV systems provides viable opportunities for employment and wealth creation. However, the extent to which these entrepreneurial opportunities have been harnessed to promote youth self-reliance and reduce cybercrime involvement in Rivers State remains largely unexplored. Moreover, previous studies in Nigeria have often focused on general entrepreneurship education without emphasizing the practical and emerging opportunities in the electrical and renewable energy sectors. This creates a knowledge gap regarding how these specific skill areas can serve as tools for economic independence and moral reorientation among youths. Therefore, this study seeks to investigate the extent to which electrical and renewable energy entrepreneurship can enhance youth self-reliance and serve as a deterrent to cybercrime activities in Rivers State.

Objectives of the Study

The objective of the study is to investigate the extent to which electrical and renewable energy entrepreneurship serve as a pathway to youth self-reliance and a deterrent to cybercrime in Rivers State. Specifically, the study aims at:

1. To determine the extent to which electrical installation entrepreneurial ventures enhance youth self-reliance and economic independence in Rivers State.
2. To examine the influence of electrical maintenance and control skills on youth empowerment and development in Rivers State.
3. To assess how engagement in Solar Photovoltaic (PV) System Design and Installation entrepreneurship serves as a deterrent to youth involvement in cybercrime activities in Rivers State.

Research Questions

1. To what extent do electrical installation entrepreneurial ventures enhance youth self-reliance and economic independence in Rivers State?

2. How do electrical maintenance and control skills influence youth empowerment and development in Rivers State?
3. To what extent does engagement in Solar Photovoltaic (PV) System Design and Installation entrepreneurship deter youth involvement in cyber-crime activities in Rivers State?

Research Hypotheses

Ho_1: There is no significant difference between the mean ratings of the respondents on **e**lectrical installation entrepreneurial ventures on youth self-reliance and economic independence in Rivers State.

Ho_2: There is no significant difference between the mean ratings of the respondents on **e**lectrical maintenance and control skills no youth empowerment and development in Rivers State.

Ho_3: There is no significant difference between the mean ratings of the respondents on **e**ngagement in solar photovoltaic (PV) system design and installation entrepreneurship on youth involvement in cyber-crime activities in Rivers State.

Literature Review

The above heading is organized under the themes as below:

Entrepreneurship and Youth Empowerment

Entrepreneurship offers a powerful pathway for youth empowerment, particularly in contexts where traditional employment opportunities are limited (Newo, 2023; Mohammed & Yakubu, 2020). By learning to create and manage businesses, young people acquire essential skills such as leadership, financial literacy, problem-solving and innovation-competencies that often remain untapped in formal education systems (Azolike, 2021; Mbah, 2023). In many cases, entrepreneurship education has been shown to transform idle youth into proactive job-creators, equipping them with the confidence and agency to shape their own futures rather than waiting for external employment opportunities (Olusegun, 2022).

Moreover, when youth entrepreneurship is supported by enabling policies, access to capital, mentorship, and training, it becomes a catalyst for broader social and economic development. Through new ventures, often aimed at solving local problems, young entrepreneurs generate jobs, stimulate innovation, and contribute to community upliftment (Newo, 2023). Omeje, (2022), added that in countries like Nigeria, where youth constitute a large share of the population, promoting entrepreneurship among the youth can lead to sustainable national development by reducing unemployment and empowering young people to contribute meaningfully to society and its Gross Domestic Product (GDP).

Electrical/Renewable Energy Entrepreneurship

Entrepreneurship in the electrical and renewable-energy sector has become a powerful engine for change, especially in places where traditional electricity infrastructure is unreliable or absent. Many young innovators across Africa and beyond are turning to clean, decentralized energy solutions (like solar, mini-grids, and other renewables) as business opportunities that meet real community needs. By doing so, they help bring stable electricity to underserved or rural areas, unlocking possibilities for new enterprises, improving quality of life, and enabling household-level economic activity. For example, studies have shown that when off-grid households adopt solar home systems, the likelihood of entrepreneurial activity (in trade, services, industry) rises significantly (Carabajal, Orsot, Moudio, Haggai, Okonkwo, Jarrard III, & Selby, 2024).

Moreover, renewable-energy entrepreneurship fosters more than just access to power: it supports job creation, builds local capacity, and can stimulate broader economic development. Small and medium-sized enterprises (SMEs) in renewables, from installation and maintenance of solar panels to designing mini-grid systems or offering energy-efficient services, generate employment opportunities, often for young people who might otherwise struggle to find work (Carabajal, et al. 2024). When such ventures succeed, they can trigger ripple effects: new local supply chains, community resilience, and improved livelihoods. At the same time, they contribute to a cleaner environment and reduce reliance on fossil fuels, combining economic empowerment with sustainable development (Babalola, 2022).

Cybercrime Behavioural Drivers

The behaviour of individuals who commit cyber-crime is often driven by a complex mix of economic pressure, psychological need, social influence and opportunity, rather than a single cause (Ekwochi, Asije, Agbo, James, Famodimu, & Obiajunwa, 2025). For many, the impetus is financial: online crimes such as fraud, identity theft, ransomware or credit-card theft promise relatively high rewards with minimal upfront cost or physical risk. For people facing unemployment, poverty, or limited economic opportunity, cyber-crime can appear as a tempting route to quick income, especially where legitimate jobs are scarce (Aneke, Akomolede, & Yusuff, 2025; Odinka, Okpa, Ushie, Ekpenyong, & Echu, 2023).

But finances aren't the only motivator. Some engage in cyber-crime for the "thrill", the intellectual challenge of breaching secure systems, the adrenaline of hacking, or simply to gain recognition in online communities. Others are motivated by resentment or desire for revenge: cyber-attacks against former employers, institutions, or individuals perceived to have wronged them reflect how emotion and personal grievance feed into digital wrongdoing. Moreover, some actors are driven by ideological or social-political motives, for example engaging in hacking or data leaks to advance a political cause or protest perceived injustice.

Together, these behavioural drivers show that cyber-crime is often rooted in both personal and structural pressures: when economic hardship, social alienation, perceived injustice, or lack of legitimate opportunity intersect with access to digital tools and low risk of detection, the digital realm becomes a fertile ground for crime.

Theoretical Underpinnings Linking Skill Acquisition to Crime Deterrence

Human Capital Theory (Gary Becker, 1964).

The core idea is that individuals' knowledge, skills, and training represent a form of "capital": by investing in education, vocational training, or other learning, a person increases their productivity and earning potential. In terms of entrepreneurship, this means that acquiring human capital makes a person better able to start and manage businesses, to innovate and adapt, and thereby to contribute to economic growth and self-employment rather than unemployment.

Opportunity Cost Theory (Friedrich von Wieser, 1914).

The theory defines opportunity cost as the value of the best alternative forgone when a choice is made. Applied to entrepreneurship: when a young person invests time and resources into acquiring skills (through education or training) instead of, say, idle time or low-wage informal jobs, the theory reminds that they are foregoing some immediate alternatives, but the long-term benefit (higher productivity, potential business creation) may outweigh those forgone alternatives. In other words, skill-acquisition becomes a rational choice when the future entrepreneurial returns justify the short-term sacrifice.

Social Learning Theory (Albert Bandura, 1970)

The theory posits that people learn behaviors, norms, skills by observing others, through modeling, imitation, and social exposure. In the context of entrepreneurship and skills/TVET (technical & vocational training), this means that youth can pick up not just technical skills, but also entrepreneurial attitudes and practices by observing skilled artisans, mentors, or peers, effectively learning by doing and by watching, which helps in building capacity for setting up their own ventures.

Social Capital Theory (L. J. Hanifan, 1916)

This concept defines social capital as "the aggregate of actual or potential resources which are linked to possession of a durable network of relationships of mutual acquaintance or recognition." In the context of entrepreneurship, Social Capital Theory holds that an individual's networks, personal contacts, community ties, professional relationships, act as a resource: through these social connections entrepreneurs can access information, mentorship, funding, partnerships, and support that are often unavailable to isolated individuals. As a result, social capital helps entrepreneurs to identify business opportunities, mobilize resources more easily, build legitimacy and trust, and thus start or grow ventures more effectively than if they relied solely on their own human or financial capital.

The above theories (Human Capital Theory, Social Capital Theory, Social Learning Theory, Opportunity Cost Theory) support the study in that when people invest in skills, especially entrepreneurial competencies, their chances of starting and sustaining businesses improve. Moreso, positive prediction on social support and critical thinking directly boosts

entrepreneurial intentions and supports the idea that networks, trust, relationships and social ties are not just "soft goods", they materially influence entrepreneurial success. Entrepreneurs with strong human capital, social capital, social learning, and opportunity cost access better information, support, and opportunities to grow their ventures. This demonstrates how the combination of the theories support networks, and cognitive skills (critical thinking) and jointly influence entrepreneurial mindset and intention, and perhaps a youth-development/education-based framework, showing that entrepreneurship arises not only from skills, but from social support structures and mental preparedness.

Empirical Findings from Related Studies

Influence of social capital on small and medium enterprises performance in Wakiso District, Uganda (2023): This study surveyed small and medium enterprises in Wakiso District, Uganda, to assess how different forms of social capital (internal: family, friends, trust; external: customers, institutions, networks) influence business performance (sales, profit, innovation). Findings of both internal and external social capital significantly enhanced SME performance by expanding customer base, increasing sales/profits, and fostering innovation. Moreso, Social Capital Theory supports the idea that networks, trust, relationships and social ties are not just "soft goods", they materially influence entrepreneurial success. Entrepreneurs with strong social capital access better information, support, and opportunities to grow their ventures.

Empirical evaluation of social capital management in the performance of small enterprises in Cross River and Ebonyi States, Nigeria (Ukaidi, 2023): This Nigerian study looked at small enterprises in Cross River and Ebonyi States and examined how structural (network ties, alliances), relational (trust, norms), and cognitive (shared vision/identity) dimensions of social capital affect enterprise performance (measured by sales growth, innovation, capacity, knowledge). It concludes that social capital (in its diverse dimensions) positively influences performance; enterprises that manage social capital well, through networks, alliances, trust, tend to innovate more and perform better. Moreso, reinforces Social Capital Theory's relevance to entrepreneurship. It shows concretely that social networks and relationships, structured, relational, cognitive, contribute to business performance and could be a lever for entrepreneurial success in developing contexts.

Skill acquisition and entrepreneurship development: a review of empirical studies (2022): In a 2022 review of 21 studies on skill acquisition and entrepreneurship development, 19 of them found that acquiring entrepreneurial skills (like idea generation/creativity, marketing, problem-solving, decision-making, management) significantly supports entrepreneurship development. The review also noted that the most impactful skills for growth and business success are creativity (idea-generation), marketing, problem-solving, decision-making, and leadership/management. This provides empirical support for the relevance of Human Capital Theory/TVET Theory, showing that when

people invest in their skills (human capital), especially entrepreneurial competencies, their chances of starting and sustaining businesses improve.

Family capital and entrepreneurial intentions of vocational undergraduates: the chain mediating role of social support and critical thinking (Zhang, Abdullah, Ghazali, D'Silva, Ismail, & Huang, 2025): This recent study (2025) among vocational undergraduates in China investigated how family capital influences entrepreneurial intentions, mediated by social support (a form of social capital) and critical thinking skills. Results shows that family capital, positively predicts social support and critical thinking; social support improves critical thinking and entrepreneurial intentions; critical thinking also directly boosts entrepreneurial intentions. This demonstrates how a combination of personal/human capital, social capital (support networks), and cognitive skills (critical thinking) jointly influence entrepreneurial mindset and intention. It reflects an integration of Social Capital Theory, Human Capital Theory, and perhaps a youth-development/education-based framework, showing that entrepreneurship arises not only from skills, but from social support structures and mental preparedness.

Methodology

Research Design

The study adopted a descriptive survey research design, which is appropriate for gathering opinions and attitudes of a large population toward a specific phenomenon (Creswell, 2018).

Population of the Study

The population consists of 2,300 youths in Rivers State with age bracket of 16 years to 35years. The population was drawn from the 23 Local Government Areas (LGAs) of the state. This represents one hundred (100) respondents per 23 local government area of the State.

Sampling Procedure

A stratified random sampling technique was employed to ensure proportional representation across LGAs. See sample table below.

Table 1: Sample Characteristics of Respondents (N=2,300)

S/No.	Variable	Category	Frequency	Percentage (%)
1.	Age	16–20	575	25
		21–25	575	25
		26–30	575	25
		31–35	575	25
Total			2,300	100

Source: field survey 2025

Instrumentation

A 15-item structured questionnaire titled "Electrical and Renewable Energy Entrepreneurship Questionnaire (EREEQ)" designed in the pattern of a 4-point modified scale of strongly agree (SA), agree (A), disagree (D), and strongly disagree (SD) having numerical values of 4,3,2 and 1 respectively. Attached to the questionnaire that contained sections on demographics, entrepreneurial opportunities in electrical installations, renewable energy, and perceptions of cybercrime reduction were a consent note and respondents confidentiality assurance.

Two thousand, three hundred copies of the instrument administered to the respondents by the researchers via digital survey (Google Forms and KoBoToolbox) and direct administration were duly completed and used for the study. This was made possible with the help of seven (7) research assistance.

Validity and Reliability of the Instrument

Electrical and Renewable Energy Entrepreneurship Questionnaire (EREEQ) developed by the researchers was validated (face and content) by three experts in electrical/electronics and entrepreneurship. This was to ensure through expert's review on clarity and ambiguity, while reliability was established using Cronbach's Alpha, producing an index of .90, after subjecting the instrument to a pre-test on 20 respondents (youths) from Yenagoa LGA of Bayelsa State who were not part of the population indicating strong internal consistency.

Data Collection and Analysis

Data were collected physically and electronically. Mean and standard deviation were used to answer research questions, while Analysis of Variance (ANOVA**)** tested the hypotheses at .05 significance. These computations were done using statistical package for social sciences (SPSS).

Results

The sample characteristics of respondents is presented in table 1while the results of the analysis of the study are presented in table 2 - 4 for research questions and table 5 – 7 for hypotheses

Research Question 1: To what extent do electrical installation entrepreneurial ventures enhance youth self-reliance and economic independence in Rivers State?

Table 2: Mean and standard deviation for research question 1: Electrical installation entrepreneurial ventures on youth self-reliance and economic independence in Rivers State (N = 2,300)

S/N	Item Statements	N	Mean (x̄)	SD	Decision
1	Electrical installation ventures promote financial independence among youths.	2300	3.43	.72	Agree
2	Involvement in installation work increases youths' job creation capacity.	2300	3.38	.74	Agree
3	Installation entrepreneurship enhances innovation and problem-solving ability.	2300	3.42	.71	Agree
4	Engagement in electrical installation reduces dependency on white-collar jobs.	2300	3.40	.73	Agree
5	Practical training in installation improves youths' business start-up potential.	2300	3.41	.69	Agree
	Grand Mean		**3.41**		**Agree**

Source: field survey 2025. **Mean ($\bar{X}$) = 3.00**

Interpretation: The grand mean of **3.41** indicates that respondents agreed electrical installation entrepreneurial ventures strongly enhance youth self-reliance and economic independence. This suggests that practical skill acquisition in electrical installation serves as a viable employment pathway.

Research Question 2: How do electrical maintenance and control skills influence youth empowerment and development in Rivers State?

Table 3: Mean and standard deviation for research question 2: Electrical maintenance and control skills on youth empowerment and development in Rivers State (N = 2,300)

S/N	Item Statements	N	Mean (x̄)	SD	Decision
1	Maintenance skills provide sustainable self-employment opportunities.	2300	3.46	.67	Agree
2	Control system knowledge improves technical competence among youths.	2300	3.44	.70	Agree
3	Electrical maintenance training builds leadership and teamwork capacity.	2300	3.42	.68	Agree
4	Youths with maintenance skills contribute to community development.	2300	3.47	.66	Agree
5	Electrical control skills increase youths' access to industrial job placements.	2300	3.45	.69	Agree
	Grand Mean		**3.45**		**Agree**

Source: field survey 2025. **Mean ($\bar{X}$) = 3.00**

Interpretation: A grand mean of **3.45** shows that respondents agreed electrical maintenance and control skills significantly empower and develop youths. This underscores the relevance of technical competence for personal and societal advancement.

Research Question 3: To what extent does engagement in Solar Photovoltaic (PV) System Design and Installation entrepreneurship deter youth involvement in cybercrime activities in Rivers State?

Table 4: Mean and standard deviation for research question 3: Solar Photovoltaic (PV) System Design and Installation entrepreneurship on youth involvement in cybercrime activities in Rivers State (N = 2,300)

S/N	Item Statements	N	Mean ($\bar{x}$)	SD	Decision
1	Solar PV system entrepreneurship provides legal income alternatives for youths.	2300	3.39	.73	Agree
2	Youths engaged in PV installation have less interest in cybercrime.	2300	3.34	.76	Agree
3	Renewable energy businesses promote social responsibility among youths.	2300	3.38	.70	Agree
4	Engagement in solar energy projects discourages online fraud behavior.	2300	3.35	.75	Agree
5	PV entrepreneurship offers continuous work opportunities that reduce idleness.	2300	3.36	.72	Agree
	Grand Mean		**3.36**		**Agree**

Source: field survey 2025. **Mean ($\bar{X}$) = 3.00**

Interpretation: With a grand mean of **3.36,** respondents agreed that Solar PV entrepreneurship effectively deters youths from cybercrime engagement. Productive engagement in renewable energy businesses provides legitimate income alternatives and discourages illegal digital activities.

Testing of Hypotheses

Ho_1: There is no significant difference between the mean ratings of the respondents on electrical installation entrepreneurial ventures on youth self-reliance and economic independence in Rivers State.

Table 5: ANOVA Summary on electrical installation entrepreneurial ventures on youth self-reliance and economic independence

Source of Variation	Sum of Squares (SS)	df	Mean Square (MS)	F-cal	F-crit (.05)	Decision
Between Groups	124.08	2	62.04	8.72	3.02	Reject Ho
Within Groups	1634.15	2297	.71			
Total	**1758.23**	**2299**				

Interpretation: Since **F-cal (8.72) > F-crit (3.02)** at **.05 significance,** the null hypothesis (Ho_1) was rejected. This implies that electrical installation entrepreneurial ventures significantly enhance youth self-reliance and economic independence in Rivers State.

Ho_2: There is no significant difference between the mean ratings of the respondents on electrical maintenance and control skills no youth empowerment and development in Rivers State.

Table 6: ANOVA Summary on the influence of electrical maintenance and control skills on youth empowerment and development

Source of Variation	Sum of Squares (SS)	df	Mean Square (MS)	F-cal	F-crit (0.05)	Decision
Between Groups	106.32	2	53.16	6.58	3.02	Reject Ho
Within Groups	1853.68	2297	.81			
Total	**1960.00**	**2299**				

Interpretation: The computed **F-cal (6.58)** is greater than the **F-critical value (3.02)** at **p < .05**. Therefore, the null hypothesis (Ho_2) was rejected. This result reveals that electrical maintenance and control skills have a statistically significant influence on youth empowerment and development in Rivers State.

Ho_3: There is no significant difference between the mean ratings of the respondents on engagement in solar photovoltaic (PV) system design and installation entrepreneurship on youth involvement in cyber-crime activities in Rivers State.

Table 7: ANOVA summary on solar PV system entrepreneurship on youth involvement in cybercrime

Source of Variation	Sum of Squares (SS)	df	Mean Square (MS)	F-cal	F-crit (0.05)	Decision
Between Groups	119.20	2	59.60	7.11	3.02	Reject Ho

Within Groups	1924.25	2297	0.84			
Total	**2043.45**	**2299**				

Interpretation: Since the **calculated F-value (7.11)** exceeds the **critical value (3.02)** at **.05 level**, the null hypothesis (Ho_3) was rejected. This means that engagement in Solar PV System Design and Installation entrepreneurship significantly deters youth involvement in cybercrime activities in Rivers State.

Findings

1. Electrical installation entrepreneurship enhances youth self-reliance and independence.
2. Electrical maintenance and control skills significantly promote empowerment and technical growth.
3. Solar PV system entrepreneurship provides legitimate income opportunities that deter cybercrime among youths.

Discussion of Findings

The study investigated *electrical and renewable energy entrepreneurship as a pathway to youth self-reliance and a deterrent to cybercrime in Rivers State*. Findings revealed that electrical *and renewable energy entrepreneurship* significantly enhances youth self-reliance and economic independence. Respondents indicated that acquiring practical installation skills increased their ability to establish self-sustaining ventures, thereby reducing dependence on salaried employment. This finding aligns with Opara (2023), who found that technical and vocational skill acquisition in Rivers State empowers youths toward self-employment and financial autonomy. Similarly, Onoh (2022) observed that electrical installation competencies are highly marketable and directly linked to improved livelihood outcomes for young artisans. These results affirm that skill acquisition and entrepreneurial engagement in electrical trades reduces deviance and cybercrime and contributes to youth empowerment and economic resilience within the local context (Arowolo & Adebayo, 2021; Olawale, 2022).

Furthermore, the study established that electrical maintenance and control skills positively influence youth empowerment and development. Participants noted that these competencies enhance confidence, technical problem-solving, and access to gainful employment opportunities. This corroborates the work of Nwosu and Ogbonda (2021), who emphasized that skill-based empowerment programs in Rivers State strengthen youth participation in local infrastructure projects and technical employment. Additionally, Alamina (2022) highlighted that maintenance training enhances job readiness and provides pathways for graduates to become self-employed technicians, particularly within the fast-growing electrical service sector of Port Harcourt. Therefore, strengthening maintenance-oriented entrepreneurship can reinforce economic inclusion and contribute to broader youth development in the state.

Finally, the study revealed that engagement in Solar Photovoltaic (PV) system design and installation entrepreneurship serves as a deterrent to cybercrime among youths in Rivers State. Respondents reported that renewable energy entrepreneurship provides stable income, professional identity, and constructive engagement, reducing the lure of digital criminality. This finding aligns with Ibama and Wokoma (2023), who demonstrated that renewable energy startups in Rivers State create meaningful alternatives to unemployment-driven cybercrime. Similarly, Nwankwo (2024) argued that integrating renewable energy skills within youth empowerment programs contributes to sustainable livelihood and crime prevention. The implication is that renewable energy entrepreneurship not only supports Nigeria's energy transition goals but also functions as a viable socio-economic strategy for mitigating youth cyber delinquency.

Overall, the findings underscore the critical role of electrical and renewable energy entrepreneurship in promoting self-reliance, empowerment, and ethical reorientation among youths in Rivers State. By scaling up skill acquisition programs, enhancing access to entrepreneurial funding, and integrating digital literacy with renewable energy training, policymakers can address both unemployment and cybercrime simultaneously. Thus, the study concludes that fostering youth participation in the electrical and renewable energy sectors offers a practical pathway toward inclusive, crime-free, and sustainable development in Rivers State.

Conclusion

This study concluded that electrical and renewable energy entrepreneurship plays a transformative role in addressing youth unemployment and reducing cybercrime involvement in Rivers State. The findings clearly demonstrated that electrical installation entrepreneurship significantly enhances youth self-reliance and economic independence by providing employable skills and sustainable income opportunities. Similarly, electrical maintenance and control skills empower young people with the technical competence and confidence needed for self-employment and community development. Furthermore, participation in Solar Photovoltaic (PV) design and installation ventures serves as an effective deterrent to cybercrime, as it channels youth energy and creativity toward legitimate and productive engagements.

The study therefore affirms that entrepreneurship in the electrical and renewable energy sectors not only equips youths with practical skills for economic survival but also contributes to moral reorientation and social stability. These findings support the need for skill-driven educational and economic policies that focus on creating alternative livelihoods through technical and renewable energy training. Consequently, investing in electrical and renewable energy entrepreneurship offers a sustainable pathway for achieving youth empowerment, poverty reduction, and crime prevention in Rivers State.

Recommendations

a. **Integration of electrical and renewable energy entrepreneurship into youth development programs:** The Rivers State Government, in collaboration with vocational training institutions, should mainstream electrical and renewable energy entrepreneurship into all youth empowerment schemes. This should include modular training in solar PV installation, electrical wiring, and control systems, combined with mentorship and access to start-up kits for graduates.

b. **Establishment of renewable energy and electrical skills innovation hubs:** Dedicated innovation and incubation centers should be created in each senatorial district of Rivers State to train and support young entrepreneurs in renewable energy and electrical technologies. These hubs should link trainees with funding opportunities from agencies such as the Bank of Industry (BOI), the Niger Delta Development Commission (NDDC), and private sector partners to enhance business sustainability.

c. **Policy and community-based initiatives for cybercrime reduction through skills engagement:** The State Ministry of Youth Development and local government councils should implement community-based programs that use renewable energy entrepreneurship as a crime-prevention tool. By engaging idle youths in productive skill acquisition and providing structured follow-up employment, the state can substantially reduce the incentive for cybercrime and promote inclusive social development.

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