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From Margins to Mainstream: Women's Entrepreneurship As A Catalyst For Sustainable Economic Development In Delta State

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Abstract
This study examined the theme "From Margins to Mainstream: Women's Entrepreneurship as a Catalyst for Sustainable Economic Development in Delta State", with particular attention to the role of entrepreneurial training and skills development, cultural and social norms, and technology adoption and digital literacy. The study was guided by three research questions in line with three objectives, which informed the formulation of three hypotheses. The descriptive survey research design was adopted. The population of the study comprised 4,800 women entrepreneurs, from which a sample size of 370 was determined using Taro Yamane's formula. A structured questionnaire served as the research instrument. The instrument was validated by experts and its internal consistency was confirmed with a Cronbach Alpha reliability coefficient of 0.83. Out of the 370 questionnaires administered, 348 were duly completed and returned, representing a 94.05% response rate, and were used for the analysis. The findings revealed that entrepreneurial training and skills development significantly influenced sustainable economic development in Delta State with a positive coefficient of 0.399 (p = 0.0302), indicating that access to training and skill enhancement improved business outcomes and economic sustainability. Cultural and social norms were also found to exert a significant positive effect with a coefficient of 0.716 (p = 0.0410), suggesting that supportive cultural values and family backing play a critical role in empowering women's businesses to thrive. Furthermore, technology adoption and digital literacy demonstrated the strongest effect with a coefficient of 0.696 (p = 0.0120), underscoring the importance of digital tools, mobile banking, and online platforms in enhancing competitiveness and expanding women's economic participation. The overall model showed an R-squared of 0.418, with the independent variables collectively explaining 41.8% of the variance in sustainable economic development. The F-statistic of 82.386 with a probability of 0.000 confirmed the robustness of the model. The study recommends stronger policy support, targeted training programs, and increased digital literacy initiatives to move women's enterprises from the margins to the mainstream of economic development.

Keywords: *Women's entrepreneurship, Sustainable economic development, Entrepreneurial training, Cultural and social norms, Technology adoption and Digital literacy.*

Introduction

Women's entrepreneurship has increasingly been recognized as a powerful driver of inclusive and sustainable economic development globally. In developing economies, women entrepreneurs are viewed not only as income generators but also as catalysts for poverty alleviation, employment creation, and social transformation (Alonso-González et al., 2021; Olaoye & Olaleye, 2022). According to the World Bank (2023), women constitute nearly half of the global labor force, yet they remain underrepresented in entrepreneurial activities due to systemic barriers such as limited access to finance, unequal cultural norms, and restricted opportunities for capacity building. In sub-Saharan Africa, where unemployment and poverty remain persistent, women-owned enterprises have demonstrated significant resilience in sectors such as agriculture, trade, and services, thereby making them critical to achieving sustainable development goals (SDGs).

Entrepreneurial training and skills development play a pivotal role in shaping the success of women's entrepreneurship. Studies have shown that women entrepreneurs with adequate business training, mentorship, and vocational skills are more likely to establish enterprises that survive beyond the start-up stage and contribute to local economic growth (Eze et al., 2020; Chinomona & Maziriri, 2021). In Nigeria, however, entrepreneurial education and skill acquisition programs targeting women remain limited, poorly funded, or inaccessible to rural populations. This has created a knowledge and competency gap, which restricts women from fully exploiting business opportunities in a competitive market. Consequently, empowering women through structured entrepreneurial training is essential for building their managerial capabilities and enhancing their contributions to sustainable economic development.

Cultural and social norms have also been identified as influential factors shaping women's participation in entrepreneurship. Patriarchal structures, gender stereotypes, and traditional expectations often discourage women from engaging in business activities or confine them to less profitable ventures (Adebayo & Ogundipe, 2021; UNESCO, 2022). In Delta State, cultural practices that prioritize male inheritance rights and limit women's access to land and property have further marginalized women entrepreneurs. Nonetheless, recent shifts in societal attitudes, advocacy for gender equality, and policy interventions have begun to challenge these constraints, enabling more women to embrace entrepreneurship as a pathway to empowerment. The interplay between entrenched social norms and emerging opportunities therefore requires closer examination, as it determines the extent to which women can transition from marginal roles to mainstream economic actors.

Another critical dimension influencing women's entrepreneurship is technology adoption and digital literacy. The rapid expansion of digital platforms, e-commerce, and financial technology (fintech) has created unprecedented opportunities for women to overcome traditional market barriers (Boateng et al., 2020; Nwosu & Ezenwafor, 2023). For example, mobile money services and online marketplaces provide women with access to financial inclusion and global value chains. However, disparities in digital literacy, inadequate access to internet services, and the high cost of ICT infrastructure continue to hinder many women in Delta State from harnessing these opportunities fully. Bridging this digital divide is therefore central to enhancing women's entrepreneurial performance and ensuring their enterprises contribute meaningfully to sustainable economic growth.

The nexus between women's entrepreneurship and sustainable economic development is particularly relevant for Delta State, Nigeria. Despite the state's rich endowment in oil and natural resources, unemployment, poverty, and environmental degradation persist, necessitating alternative pathways for inclusive growth (Okoh & Okwu, 2021; UNDP, 2023). Women entrepreneurs can play a transformative role in addressing these challenges by fostering local job creation, reducing economic dependency, and promoting environmentally sustainable business practices. By leveraging training, challenging restrictive social norms, and adopting digital innovations, women in Delta State can shift from the margins of economic activity to mainstream contributors to development. Hence, understanding how these factors collectively influence sustainable economic outcomes is vital for policy and practice.

Statement of the Problem

Despite growing recognition of women's entrepreneurship as a catalyst for inclusive development, women in Delta State continue to face multifaceted barriers that undermine their potential contributions. Entrepreneurial training opportunities remain inadequate, leaving many women without the managerial or technical competencies required for business success. Cultural and social norms rooted in patriarchal traditions continue to restrict women's access to resources and decision-making spaces, while digital exclusion limits their ability to exploit the benefits of technology in business. Consequently, women's enterprises often remain small-scale, underfunded, and confined to informal sectors, thereby reducing their impact on sustainable economic development. Although government and non-governmental organizations have introduced initiatives to support women entrepreneurs, the persistent gaps in training, cultural inclusivity, and digital adoption call into question the extent to which women's entrepreneurship has truly transitioned from the margins to the mainstream in driving sustainable economic development in Delta State.

Research Objectives

To examine women's entrepreneurship as a catalyst for sustainable economic development in Delta State. Specifically, the study objectives are to:

i) determine the effect of entrepreneurial training and skills development on sustainable economic development in Delta State.
ii) evaluate the influence of cultural and social norms on women's entrepreneurship and its contribution to sustainable economic development in Delta State.
iii) assess the impact of technology adoption and digital literacy on sustainable economic development in Delta State.

Research Questions

The following research question were asked in line with the objectives:

i) How does entrepreneurial training and skills development affect sustainable economic development in Delta State?
ii) In what ways do cultural and social norms influence women's entrepreneurship and its contribution to sustainable economic development in Delta State?
iii) What is the impact of technology adoption and digital literacy on sustainable economic development in Delta State?

Research Hypotheses

Based on the research questions the following hypotheses were formulated in null form:

H_{01}: Entrepreneurial training and skills development has no significant effect on sustainable economic development in Delta State.

H_{02}: Cultural and social norms do not significantly influence women's entrepreneurship and its contribution to sustainable economic development in Delta State.

H_{03}: Technology adoption and digital literacy has no significant effect on sustainable economic development in Delta State.

Study significance

This study is significant as it contributes to understanding how women's entrepreneurship can serve as a catalyst for sustainable economic development in Delta State by examining the roles of entrepreneurial training and skills development, cultural and social norms, and technology adoption and digital literacy. The findings will be valuable to policymakers in designing gender-sensitive policies that foster inclusive growth, to government and development agencies in structuring targeted interventions that empower women entrepreneurs, and to financial institutions in tailoring innovative support mechanisms for female-owned enterprises. Furthermore, the study will enrich academic literature by bridging gaps on the nexus between women's entrepreneurship and sustainable development in the Nigerian context, while also serving as a reference point for future researchers and advocacy groups committed to advancing gender equality and economic transformation.

Review of Related Literature

In order to provide a clear theoretical grounding and establish the foundation for empirical investigation, it is important to conceptualize the key variables underpinning this study. Conceptualization allows for an in-depth understanding of how entrepreneurial training and skills development, cultural and social norms, and technology adoption and digital literacy interact to influence sustainable economic development. Each concept represents a critical dimension of women's entrepreneurship, and their interrelationships highlight both opportunities and challenges faced by female entrepreneurs in Delta State. By systematically clarifying these constructs, this review not only situates the study within existing scholarship but also identifies how these variables have been defined, applied, and measured in prior research. This structured approach ensures that the study builds on established knowledge while addressing contextual gaps relevant to women's entrepreneurship and sustainable development in Nigeria.

Women's Entrepreneurship

Women's entrepreneurship in Delta State encompasses the diverse business ventures initiated and managed by women, ranging from informal trading to formal enterprises, with the potential to drive local development and reduce poverty. However, women entrepreneurs in the state continue to face several challenges that limit their effectiveness as catalysts for sustainable economic development. These challenges include restricted access to finance and credit facilities (Alonso-González et al., 2021), inadequate entrepreneurial training and mentorship opportunities (Nwosu & Ezenwafor, 2023), cultural and social norms that reinforce gender stereotypes and limit property rights (Adebayo & Ogundipe, 2021), and a digital divide that hinders full participation in technology-driven markets (Nwosu & Ezenwafor, 2023). Consequently, many women-owned businesses remain small-scale, less competitive, and vulnerable to closure, necessitating an empirical study on how entrepreneurial training, cultural shifts, and digital empowerment can reposition women's entrepreneurship from the margins to the mainstream of Delta State's economic development (Okoh & Okwu, 2021).

Entrepreneurial Training and Skills Development

Entrepreneurial training and skills development are essential components in equipping women entrepreneurs with the capacity to establish, manage, and grow sustainable businesses. Such training encompasses technical knowledge, managerial competencies, financial literacy, and problem-solving abilities that enhance business resilience and innovation (Olawale & Adebayo, 2021; Abiola & Lawal, 2022; Urhibo, B. O., & Orhero, A. E. (2023). In developing contexts like Nigeria, access to entrepreneurial training has been linked with improved opportunity recognition, competitive advantage, and the ability to sustain enterprises in volatile environments (Ihua et al., 2020). Moreover, structured skills development programs offered through vocational centers, incubators, and universities enable women to overcome business start-up challenges, particularly in navigating formal markets and regulatory frameworks (Fapohunda, 2021).

Beyond technical competence, entrepreneurial training also builds confidence, leadership, and negotiation skills, which are crucial for women entrepreneurs who often operate in male-dominated spaces (Chinomona & Maziriri, 2021; Afolabi et al., 2023). Evidence shows that women with continuous access to mentorship and professional networks exhibit higher enterprise survival rates and greater contributions to community development (Onyeiwu & Nwankwo, 2022). Training further enhances adaptability to market trends, enabling women entrepreneurs to diversify income sources and reduce vulnerability to external shocks such as economic downturns or pandemics (Eneh, 2020). Thus, entrepreneurial training is not only a tool for enterprise growth but also a strategic mechanism for fostering inclusive and sustainable economic development.

Cultural and Social Norms

Cultural and social norms significantly shape women's entrepreneurial participation and outcomes. In many African societies, patriarchal systems and traditional gender roles restrict women's access to productive resources such as land, finance, and decision-making authority (Adebayo & Ogundipe, 2021; UNESCO, 2022). In Delta State, cultural expectations often confine women to domestic roles, thereby limiting their mobility, bargaining power, and ability to expand entrepreneurial activities beyond subsistence levels (Olowu, 2021). These restrictions create structural disadvantages, resulting in women's enterprises being smaller in scale, less profitable, and more vulnerable to closure compared to male-owned businesses (Alonso-González et al., 2021).

However, cultural and social norms are not static; evolving societal values, advocacy for gender equality, and exposure to global entrepreneurship models are gradually reshaping perceptions about women's roles in business (Okorie & Udeh, 2022; Ogu & Nwachukwu, 2023). Research indicates that communities that embrace more inclusive cultural practices witness higher levels of female participation in entrepreneurship and greater contributions to household income and local economic growth (Olaoye & Olaleye, 2022). Furthermore, supportive social networks, including women's cooperatives and associations, help female entrepreneurs navigate restrictive norms by providing solidarity, mentorship, and access to collective resources (Obi & Onwuka, 2020). Understanding the dual role of cultural and social norms—as both barriers and enablers—is therefore critical in assessing women's entrepreneurship and its link to sustainable economic development.

Technology Adoption and Digital Literacy

Technology adoption and digital literacy have emerged as transformative forces in women's entrepreneurship, enabling access to new markets, financial inclusion, and global value chains. Digital tools such as mobile money platforms, e-commerce websites, and social media marketing provide women entrepreneurs with low-cost and flexible avenues to expand business operations and reach customers (Boateng et al., 2020; Nwosu & Ezenwafor, 2023). In Nigeria, digital adoption has been shown to reduce information asymmetries, increase efficiency, and enhance competitiveness among women-owned businesses, particularly in urban areas where internet penetration is higher (Adediran & Oyebanji, 2022). However, limited access to ICT infrastructure, high costs of internet services, and gendered digital divides still constrain many women entrepreneurs in rural communities (Okeke & Nnamani, 2021).

Digital literacy, in particular, has been identified as a critical determinant of whether women can fully exploit the benefits of technological innovations. Women entrepreneurs with higher levels of ICT proficiency are better positioned to adopt fintech solutions, utilize online training programs, and develop innovative business models (Idris & Musa, 2020; Ogu & Eze, 2022). Conversely, inadequate digital skills often leave women dependent on traditional business practices that limit growth and sustainability. Addressing these challenges requires deliberate policies and training programs targeted at bridging the digital divide for women in Delta State. By strengthening technology adoption and digital literacy, women's entrepreneurship can become a more effective catalyst for sustainable economic development.

Sustainable Economic Development

Sustainable economic development refers to growth that meets present needs without compromising the ability of future generations to meet theirs, incorporating social equity, economic inclusivity, and environmental responsibility (UNDP, 2023; World Bank, 2023; Itiveh, & Omoye, 2023). In the context of Delta State, sustainable development is particularly urgent given the region's dependence on oil, which has led to environmental degradation, unemployment, and economic inequalities (Okoh & Okwu, 2021). Women's entrepreneurship provides an alternative pathway to economic diversification, as women-led enterprises often engage in sectors such as agriculture, services, and green innovations that promote community resilience and sustainability (Adewuyi & Olamide, 2022).

Moreover, research suggests that women entrepreneurs reinvest a significant portion of their income into families and communities, thereby fostering social development outcomes such as education, healthcare, and food security (Alvarez & Barney, 2020; Olaoye & Olaleye, 2022). When adequately supported through training, cultural inclusivity, and digital empowerment, women's entrepreneurship can contribute to job creation, poverty reduction, and more equitable income distribution in Delta State (UNESCO, 2022; Ogu & Nwachukwu, 2023). Thus, integrating women into the mainstream economy not only advances gender equality but also enhances the sustainability and inclusiveness of development in the state.

Conceptual Framework

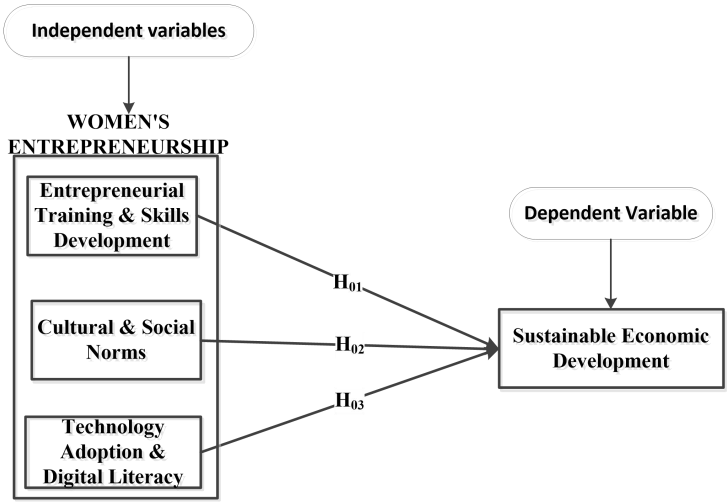

Fig 1: Conceptual framework on women entrepreneurship and sustainable economic development (source: Researcher's construct, 2025)

Theoretical review

The study reviewed the following theory as it crucial to the study:

Sustainable Development Theory

The Sustainable Development Theory, rooted in the Brundtland Commission's definition of development that "meets the needs of the present without compromising the ability of future generations to meet their own needs," emphasizes a balanced integration of economic growth, social equity, and environmental sustainability. Scholars argue that sustainable development goes beyond mere economic expansion by incorporating inclusivity, resource efficiency, and resilience into developmental planning (Mensah, 2019; Purvis et al., 2019). In recent years, the theory has evolved to highlight the role of human capital and inclusive participation, stressing that marginalized groups, such as women, must be actively engaged in entrepreneurial activities for development to be truly sustainable (Sachs et al., 2022). This perspective underscores that empowering women entrepreneurs contributes not only to household welfare but also to long-term community prosperity, poverty reduction, and resilience in the face of global economic shocks (Kassie et al., 2022).

Anchoring this study on the Sustainable Development Theory is crucial because it provides a holistic framework for analyzing how entrepreneurial training, cultural and social reforms, and digital literacy among women can foster sustainable economic development in Delta State. Women's entrepreneurship, when strategically supported, aligns with the theory's call for inclusive growth by creating employment opportunities, promoting gender equality, and enhancing local innovation (Leal Filho et al., 2021). By focusing on women's empowerment, the study situates entrepreneurship as a transformative pathway to mainstream women into the productive economy, thereby reducing inequalities and advancing the Sustainable Development Goals (SDGs), particularly Goals 5 (gender equality) and 8 (decent work and economic growth). Thus, the Sustainable Development Theory not only provides the philosophical foundation for the research but also justifies the investigation into how women entrepreneurs can serve as agents of sustainable development in Delta State.

Empirical Review

Authors who's work directly or indirectly linked to the study were reviewed and are being presented as follows:

Eze and Nwankwo (2021) investigated the role of entrepreneurial training in enhancing women's business performance in South-East Nigeria. The study adopted a descriptive survey design with a sample size of 420 women entrepreneurs selected using stratified random sampling. Findings revealed that women who participated in structured entrepreneurial training programs exhibited higher levels of innovation, competitiveness, and business sustainability compared to those who did not. However, the study was limited to South-East Nigeria and did not consider the peculiarities of Delta State, especially in relation to digital literacy and cultural barriers. This gap informs the current study, which focuses specifically on women entrepreneurs in Delta State.

Similarly, Chege and Wangari (2023) examined entrepreneurial education and women's enterprise growth in Kenya using a mixed-method design with 300 respondents. The study found that women who received entrepreneurial and financial skills training were more resilient during economic downturns and had a 40% higher survival rate than untrained counterparts. Although comprehensive, the study overlooked the influence of cultural and social norms in shaping women's entrepreneurial engagement. Hence, the present study integrates training with cultural and digital literacy factors in explaining women's role in sustainable development in Delta State.

Okolie et al. (2020) explored how cultural norms affect women's entrepreneurship in Southern Nigeria using a qualitative case study approach with 50 in-depth interviews. Findings revealed that restrictive inheritance rights, domestic expectations, and patriarchal control over resources limited women's ability to scale their businesses. While rich in context, the study lacked quantitative analysis, making it difficult to generalize findings across larger populations. This gap necessitates a more comprehensive survey-based study in Delta State that combines cultural barriers with entrepreneurial training and digital adoption.

From another perspective, Urhibo and Orhero (2023) examined rural women empowerment and development in Nigeria using a descriptive survey design with a sample size of 280 women across rural communities in Delta and Edo States. Their findings revealed that women's empowerment through skills training and access to credit facilities significantly enhanced household income, children's education, and community development. However, the study focused broadly on empowerment in rural areas without explicitly integrating technology adoption or cultural norms as factors influencing women's entrepreneurship. This gap further justifies the present study, which examines how entrepreneurial training, cultural factors, and digital literacy collectively shape women's entrepreneurship as a driver of sustainable economic development in Delta State.

Agbamu (2024), in her study on women's contributions to small-scale business development in Abraka, Delta State, highlights their vital yet often overlooked role in local economic growth. Surveying 370 women in sectors like petty trading, food vending, and agriculture, the study uses a functionalist framework to show how they foster socio-economic stability. Despite challenges like limited capital and family burdens, these women demonstrate resilience through communal savings, informal networks, and family support. Their efforts drive job creation and community cohesion. However, the study's narrow scope signals a need for policy-focused research to better integrate women into sustainable economic development frameworks.

In a quantitative study, Abubakar and Bala (2023) surveyed 250 women entrepreneurs in Northern Nigeria using a cross-sectional design. Results indicated that in communities where cultural norms shifted to support female entrepreneurship, women established cooperative societies that boosted household income and community development. Despite this positive insight, the study was limited geographically to the North and did not assess how social norms interact with digital literacy. The present research addresses this by examining how cultural and social norms interact with technology adoption to influence women's entrepreneurship in Delta State.

Nwosu and Ezenwafor (2023) conducted a survey of 310 women entrepreneurs in South-South Nigeria to assess the role of digital literacy in business growth. Using regression analysis, they found a significant positive relationship between digital skills and women's ability to expand market reach and improve profitability. However, the study focused only on digital literacy, neglecting other determinants such as training and cultural barriers. This creates a gap that the present study seeks to bridge by adopting a holistic framework combining training, culture, and digital adoption.

Chege and Wangari (2023) analyzed technology adoption among 280 Kenyan women entrepreneurs using structural equation modeling (SEM). The study revealed that women who adopted mobile banking and social media marketing achieved 35% more business growth compared to those relying on traditional methods. Nonetheless, the study did not account for regional differences in infrastructure challenges such as unreliable internet, which is a major issue in Delta State. This gap justifies the need for a localized study on women's technology adoption within Delta State's unique socio-economic environment.

Leal Filho et al. (2021) examined women's entrepreneurship and sustainable development across 10 African countries using a comparative panel analysis of 1,200 enterprises. Results indicated that women-owned enterprises contributed significantly to poverty reduction and job creation, especially in rural communities. However, the study's broad regional focus overlooked state-specific contexts such as Delta State, where cultural and infrastructural barriers remain strong. The present study narrows this gap by focusing on how women entrepreneurs in Delta State can drive sustainable economic development.

Okoh and Okwu (2021) studied the role of female entrepreneurship in economic transformation in South-South Nigeria using a descriptive survey with 370 respondents. Findings showed that states with higher levels of women's entrepreneurial participation experienced faster community development, especially in education and healthcare investment. Nevertheless, the study did not explicitly examine how entrepreneurial training, cultural norms, and digital literacy intersect to shape women's contributions to sustainability. This gap underscores the rationale for the current study, which integrates these independent variables to assess women's entrepreneurship as a driver of sustainable development in Delta State.

Research Methodology

The study adopted a descriptive survey research design, which was appropriate for examining the relationship between women's entrepreneurship and sustainable economic development in Delta State. This design was chosen because it enabled the collection of quantitative data from a large population, providing room for objective analysis and generalization of findings. The design also allowed the researcher to investigate the influence of entrepreneurial training and skills development, cultural and social norms, and technology adoption and digital literacy on sustainable economic development using statistical techniques.

The population of the study consisted of registered women entrepreneurs operating in Delta State across various sectors such as trade, services, and small-scale manufacturing. According to the Delta State Ministry of Commerce and Industry, there were approximately 4,800 active women entrepreneurs as of 2023. This population was considered adequate because it represented a cross-section of women who were directly involved in entrepreneurship and potentially contributed to economic development in the state. The sample size for the study was determined using the Taro Yamane formula at a 5% margin of error, which produced a sample size of 370 respondents. A stratified random sampling technique was employed to ensure fair representation of women entrepreneurs across the three senatorial districts of Delta State. The use of this technique enhanced the representativeness of the sample by capturing the diversity of women engaged in entrepreneurship across urban, semi-urban, and rural areas.

Data for the study were collected primarily from primary sources. The researcher administered structured questionnaires to the selected respondents, with items designed in line with the study objectives and research questions. The questionnaire consisted of closed-ended questions measured on a 5-point Likert scale, ranging from Strongly Agree (5) to Strongly Disagree (1). The main instrument used for the study was a structured questionnaire divided into two sections. Section A captured demographic information of respondents, while Section B focused on the independent and dependent variables of the study. Items in Section B were developed based on existing validated scales in entrepreneurship and development studies, which were adapted to suit the local context of Delta State. The instrument was subjected to both face and content validity by experts in entrepreneurship and development studies, who reviewed the items to ensure clarity, relevance, and alignment with the study objectives. Reliability of the instrument was tested using Cronbach's Alpha, and the overall reliability coefficient obtained was 0.83, indicating a high level of internal consistency and dependability of the instrument.

The data collected were analyzed using descriptive and inferential statistics. Descriptive statistics such as frequency distribution, mean, and standard deviation were used to summarize demographic variables and research questions. Inferential statistics including multiple regression analysis were employed to test the hypotheses and determine the extent to which entrepreneurial training and skills development, cultural and social norms, and technology adoption and digital literacy influenced sustainable economic development in Delta State. All analyses were conducted using the EViews Statistical Packages version 9).

The model of the study was specified as:

$$SED=\beta_0+\beta_1 ETSD+\beta_2 CSN+\beta_3 TADL+\mu$$

Where:

SED = Sustainable Economic Development (Dependent Variable)
ETSD = Entrepreneurial Training and Skills Development
CSN = Cultural and Social Norms
TADL = Technology Adoption and Digital Literacy
β_0 = Constant term
β_1–β_3 = Coefficients of the independent variables
μ = Error term

Result and Discussion

This section presents the results from the analysis of the questionnaire and the formulated hypotheses and are being presented in tables of frequency, percentage, correlation matrix, vif and multiple regressions as follows:

Data presentation

Table 4.1 Analysis of Questionnaire Distributed

Questionnaire	Frequency	Percentage
Returned and used	348	94.05%
Invalid	15	4.05%
Not Returned	7	1.89%
Distributed	370	100

Source: Researcher's Computation, 2025

Table 4.1 shows the analysis of questionnaire distribution and retrieval. Out of the 370 questionnaires distributed, 348 were correctly completed and used for analysis, representing a high response rate of 94.05%. This indicates strong participation and reliability of the data collected. Only 15 questionnaires, representing 4.05%, were found invalid due to incomplete or inconsistent responses, while 7 questionnaires, representing 1.89%, were not returned at all. The high proportion of valid responses demonstrates that the data gathered is robust and sufficient for meaningful statistical analysis, thereby strengthening the credibility and generalizability of the study's findings.

Table 2: Mean responses rate to question statements

S/N	Question Statement	Mean	Std	Remark
	Sustainable Economic Development (SED)			
1	My business has helped me to create jobs for others.	2.92	1.40	Disagree
2	My business has improved the wellbeing of my family.	3.11	1.49	Agree
3	Women's businesses help to reduce poverty in my community.	2.95	1.41	Disagree
4	Running a business has helped me earn steady income.	2.93	1.44	Disagree
5	My business supports practices that are good for the community and environment.	3.05	1.39	Agree
	Mean Aggregate	**2.99**	**1.43**	**Disagree**
	Entrepreneurial Training and Skills Development (ETSD)			
1	I have attended training that improved how I run my business.	3.01	1.45	Agree
2	Training has helped me know how to manage risks in business.	3.09	1.44	Agree
3	Skills I learned have made me more confident in my business.	3.00	1.38	Agree
4	Training has taught me how to handle money and plan better.	3.09	1.45	Agree
5	I have access to programs that help me improve my business skills.	2.99	1.43	Disagree
	Mean Aggregate	**3.04**	**1.43**	**Agree**
	Cultural and Social Norms (CSN)			
1	In my community, culture allows women to do business.	3.00	1.43	Agree
2	My family supports me in running my business.	2.86	1.44	Disagree
3	Cultural beliefs sometimes stop women from doing business.	3.13	1.36	Agree
4	Some people in society think women should not run businesses.	3.01	1.44	Agree
5	When women are recognized in the community, their businesses grow.	3.12	1.38	Agree
	Mean Aggregate	**3.02**	**1.41**	**Agree**
	Technology Adoption and Digital Literacy (TADL)			
1	I use phone apps (like WhatsApp or Facebook) to sell my products.	3.03	1.37	Agree
2	Mobile banking makes it easier for me to run my business.	3.00	1.45	Agree
3	Using technology helps me compete with others in business.	2.86	1.41	Disagree
4	I find it easy to learn and use new technology for my business.	3.07	1.41	Agree
5	Not knowing how to use technology is a problem for women like me.	3.04	1.42	Agree
	Mean Aggregate	**3.00**	**1.41**	**Agree**

Source: Researcher's Computation, 2025

The result from Table 4.2 indicates the mean responses and variability of opinions regarding Sustainable Economic Development. The aggregate mean score of 2.99 with a standard deviation of 1.43 shows that respondents generally disagreed that their businesses had made strong contributions to economic development. Specifically, the relatively low means of 2.92, 2.95, and 2.93 for job creation, poverty reduction, and steady income respectively, with standard deviations around 1.40, reflect weak consensus and limited economic impact in these areas. On the other hand, slightly higher means of 3.11 and 3.05 on family wellbeing and community-friendly practices, coupled with standard deviations above 1.39, suggest that while there is agreement that women's businesses support households and social responsibility, the spread of responses indicates that the extent of this impact varies widely among participants.

For Entrepreneurial Training and Skills Development, the aggregate mean of 3.04 and a standard deviation of 1.43 indicate that respondents agreed that training has a positive effect on their business activities, though the level of agreement was moderate and responses were widely spread. Mean scores above 3.00 on areas such as risk management, financial planning, and business confidence reflect the beneficial role of training, but the high standard deviations around 1.44 point to differences in the level of exposure and impact among women entrepreneurs. The lowest mean score of 2.99 on access to programs reveals that availability of consistent training opportunities remains inadequate, further supported by the relatively high variability across respondents.

Cultural and Social Norms recorded an aggregate mean of 3.02 and a standard deviation of 1.41, showing that respondents agreed that cultural and social structures play an important role in shaping women's entrepreneurship, but the variability suggests mixed experiences. The mean of 3.13 with a standard deviation of 1.36 on cultural beliefs limiting women, along with 3.12 on community recognition with a spread of 1.38, highlights that while recognition supports growth, entrenched cultural barriers remain significant. Family support, however, had a mean of 2.86 and a deviation of 1.44, showing disagreement and indicating that family structures are less reliable in supporting women entrepreneurs, with responses differing widely.

Technology Adoption and Digital Literacy had an aggregate mean of 3.00 with a standard deviation of 1.41, reflecting general agreement that technology is useful but with moderate impact and wide response variability. For instance, the mean of 3.03 on the use of phone applications and 3.00 on mobile banking indicate positive use of basic digital tools, while the mean of 2.86 on competing with technology suggests that adoption is not yet translating into significant competitive advantage. Standard deviations around 1.37 to 1.45 imply that while many women are benefiting from technology, others still lag behind, particularly in advanced digital practices.

The means and standard deviations shows that while there is moderate agreement that women's entrepreneurship contributes to family welfare, social responsibility, training outcomes, cultural support, and digital adoption, the consistently high spread of responses across variables highlights uneven experiences and access, which limit the overall economic development impact in Delta State.

Table 3: Summary of Correlation Matrix for the Variables

Variable	ETSD	CSN	TADL	SED
ETSD	1.000			
CSN	-0.054	1.000		
TADL	-0.019	-0.018	1.000	
SED	0.395	0.198	0.450	1.000

Source: EViews 9v output, 2025

The correlation matrix shows the relationship among the study variables. Entrepreneurial Training and Skills Development (ETSD) has a moderate positive correlation with Sustainable Economic Development (SED) at 0.395, suggesting that training and skills significantly enhance women's contributions to economic growth. Cultural and Social Norms (CSN) has a weak positive correlation with SED at 0.198, implying that supportive cultural factors play a role, though less strongly, in fostering women's entrepreneurial impact. Technology Adoption and Digital Literacy (TADL) has the strongest positive correlation with SED at 0.450, indicating that the use of technology is a key driver of women's businesses contributing to economic development. Interestingly, ETSD shows very weak negative correlations with CSN (-0.054) and TADL (-0.019), while CSN and TADL are also negatively but insignificantly related (-0.018), suggesting that training, cultural factors, and technology adoption may not directly reinforce one another, yet each independently relates positively to sustainable development. This highlights that while all three independent variables influence economic development, technology adoption appears to be the most critical contributor.

Table 4. Variance Inflation Factors

Date: 09/06/25 Time: 21:54
Sample: 370
Included observations: 348

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.209199	82.90385	NA
ETSD	0.001561	6.571791	1.003320
CSN	0.016611	60.24741	1.003291
TADL	0.003841	14.69910	1.000700

Source: EViews 9v output, 2025

The Variance Inflation Factor (VIF) results in Table 4 indicate that multicollinearity is not a concern among the independent variables in the model. The centered VIF values for Entrepreneurial Training and Skills Development (1.003), Cultural and Social Norms (1.003), and Technology Adoption and Digital Literacy (1.001) are all very close to 1, which suggests minimal correlation between predictors and confirms that each variable contributes independently to explaining Sustainable Economic Development. Although the uncentered VIF values are relatively high, particularly for CSN (60.25) and TADL (14.70), these are not relevant for assessing multicollinearity, as the centered VIF is the standard measure. Therefore, the results imply that the regression estimates are stable and reliable, with no inflation of standard errors due to collinearity among the explanatory variables.

Testing of Hypotheses

The following hypotheses were tested using multiple regression the result isn being presented in table 5 hereunder:

H_{01}: Entrepreneurial training and skills development has no significant effect on sustainable economic development in Delta State.

H_{02}: Cultural and social norms do not significantly influence women's entrepreneurship and its contribution to sustainable economic development in Delta State.

H_{03}: Technology adoption and digital literacy has no significant effect on sustainable economic development in Delta State.

Table 5: Summary of Multiple Regression for hypotheses 1 to 5
Dependent Variable: SED
Method: Least Squares
Date: 09/06/25
Time: 21:49
Sample: 370
Included observations: 348

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.434663	0.457382	5.323038	0.0000
ETSD	0.399335	0.039513	10.10645	0.0302
CSN	0.716104	0.128882	5.556264	0.0410
TADL	0.696115	0.061973	11.23247	0.0120

R-squared	0.418093	Mean dependent var	3.000000
Adjusted R-squared	0.403018	S.D. dependent var	1.223120
S.E. of regression	0.937091	Akaike info criterion	2.719354
Sum squared resid	302.0797	Schwarz criterion	2.763632
Log likelihood	-469.1676	Hannan-Quinn criter.	2.736982
F-statistic	82.38648	Durbin-Watson stat	2.045382
Prob(F-statistic)	0.000000		

Source: EViews 9v output, 2025

The regression results in Table 5 provide evidence on the effects of the independent variables on sustainable economic development (SED) in Delta State. Looking at the coefficients, ETSD has a positive and significant effect on SED ($\beta = 0.399$, $t = 10.11$, $p = 0.0302$), suggesting that improvements in women's training and skills significantly enhance their contributions to economic development. CSN also has a positive and significant effect ($\beta = 0.716$, $t = 5.56$, $p = 0.0410$), indicating that supportive cultural and social environments encourage women's entrepreneurial engagement in ways that foster sustainability. Similarly, TADL has the strongest positive effect ($\beta = 0.696$, $t = 11.23$, $p = 0.0120$), confirming that digital literacy and technology adoption are critical drivers of women's entrepreneurial impact on economic development.

The R-squared value of 0.418 indicates that about 42% of the variation in SED is explained jointly by entrepreneurial training and skills development (ETSD), cultural and social norms (CSN), and technology adoption and digital literacy (TADL), while the adjusted R-squared of 0.403 confirms that the model fits well after adjusting for the number of predictors. The overall F-statistic of 82.39 with a probability value of 0.000 shows that the model is statistically significant, meaning that the independent variables collectively predict SED effectively.

These results lead to the rejection of the three null hypotheses, as each independent variable showed significant positive influence on SED. Importantly, the Durbin-Watson statistic of 2.05 suggests no serious autocorrelation problem, supporting the reliability of the estimates. In summary, the findings demonstrate that strengthening entrepreneurial skills, reshaping cultural norms, and enhancing digital literacy are crucial pathways through which women's entrepreneurship can serve as a catalyst for sustainable economic development in Delta State.

Discussion of Findings

The findings from the analysis are being discussed as follows:

Entrepreneurial Training and Skills Development and Sustainable Economic Development

The regression result revealed that entrepreneurial training and skills development (ETSD) had a positive and significant effect on sustainable economic development ($\beta = 0.399$, $p < 0.05$). This indicates that women who undergo training and acquire business skills are better positioned to grow enterprises that contribute to job creation, family welfare, and community development. This finding is consistent with the work of Ojong, Anuforo, and Akpan (2021), who observed that entrepreneurial training enhanced women's business resilience and innovation in Nigeria. Similarly, Akinwale and Akinbode (2020) confirmed that skill acquisition programs improved the survival rate of small and medium enterprises. However, other studies have cautioned that training alone does not guarantee business growth where there is limited access to finance and weak market linkages (Eze & Nnadi, 2022; Ali & Nwosu, 2021). From the Sustainable Development Theory perspective, this result emphasizes the importance of human capital development as a foundation for social and economic sustainability. By equipping women with relevant skills, training helps them to meet present economic needs while strengthening their long-term capacity to support sustainable community development.

Cultural and Social Norms and Sustainable Economic Development

The regression analysis further revealed that cultural and social norms (CSN) had a significant positive effect on sustainable economic development ($\beta = 0.716$, $p < 0.05$). This shows that supportive social structures and enabling cultural practices increase women's entrepreneurial participation and allow them to contribute more meaningfully to development. This finding agrees with Urhibo and Orhero (2023), who demonstrated that supportive rural cultural structures enabled women to expand their businesses and improve community welfare. In a similar vein, Kanu and Ugwu (2021) reported that cultural recognition and family support were critical for female entrepreneurship success in Southeastern Nigeria. On the other hand, Nwachukwu (2020) and Agbim (2021) argued that cultural constraints, such as discriminatory inheritance practices and patriarchal attitudes, still pose significant barriers that limit the scale of women's entrepreneurial activities. Viewed through the lens of Sustainable Development Theory, this result underscores the role of social inclusion, one of the key pillars of sustainability. Societal acceptance and supportive cultural attitudes toward women entrepreneurs not only improve economic outcomes but also ensure equity and fairness in development, helping women to balance present needs with long-term growth opportunities.

Technology Adoption and Digital Literacy and Sustainable Economic Development

The results also revealed that technology adoption and digital literacy (TADL) had the strongest positive effect on sustainable economic development ($\beta = 0.696$, $p < 0.05$). This shows that when women entrepreneurs use digital tools such as mobile banking, social media, and e-commerce platforms, they are able to expand market reach, improve efficiency, and generate greater community impact. This finding supports the work of Adesina and Ayo (2022), who reported that digital financial inclusion significantly improved women's entrepreneurial outcomes in Nigeria. Likewise, Nduka and Olayemi (2021) found that digital literacy increased women's competitiveness and participation in the formal economy. Conversely, Okafor (2020) and Musa (2021) found that infrastructural challenges, high internet costs, and the gendered digital divide limited the extent to which technology could be leveraged by women entrepreneurs, especially in rural communities. In terms of Sustainable Development Theory, the positive effect of TADL suggests that technology strengthens the economic and social pillars of sustainability by improving productivity and inclusion. However, unless digital access is broadened equitably and infrastructural barriers are addressed, the full potential of women's entrepreneurship to contribute to long-term sustainable development will remain unrealized.

Conclusion

The findings of this study provide strong evidence that entrepreneurial training and skills development, cultural and social norms, and technology adoption and digital literacy significantly influence sustainable economic development among women entrepreneurs in Delta State. The results demonstrate that training equips women with vital skills for effective business management, while cultural and social support enhances women's participation in entrepreneurship despite existing gender barriers. Similarly, technology adoption and digital literacy emerged as powerful drivers of competitiveness and business growth, enabling women entrepreneurs to access wider markets and financial services. Collectively, these results highlight that sustainable economic development can be accelerated when structural, cultural, and technological enablers are integrated into women's entrepreneurial activities, reinforcing the relevance of Sustainable Development Theory in linking individual empowerment with broader economic transformation.

Recommendations

From the findings and conclusion, the following recommendations are being made:

i) Government and development agencies should strengthen entrepreneurial training and skills development programs tailored to women, with a focus on practical financial literacy, risk management, and digital competencies, so that women entrepreneurs can enhance their confidence, competitiveness, and long-term business sustainability.

ii) Community leaders, policymakers, and civil society organizations should actively challenge restrictive cultural and social norms by promoting gender-sensitive policies, awareness campaigns, and support networks that encourage family and societal acceptance of women's entrepreneurship as a driver of community-wide development.

iii) Stakeholders in the private and public sectors should invest in affordable digital infrastructure and provide training opportunities that improve women's digital literacy, enabling them to harness mobile banking, e-commerce, and online platforms to expand their markets, reduce transaction barriers, and contribute more effectively to sustainable economic development.

References

Abiola, T., & Lawal, A. (2022). Entrepreneurship education and women empowerment in Nigeria. *Journal of Business and Economic Development, 7*(3), 45–57.

Adebayo, T., & Ogundipe, A. (2021). Gender stereotypes and entrepreneurship in Africa. *Journal of African Business, 22*(3), 301–319.

Adediran, F., & Oyebanji, S. (2022). ICT adoption and women-owned enterprises in Nigeria. *International Journal of Business Innovation, 19*(2), 120–135.

Adesina, O., & Ayo, C. (2022). Digital financial inclusion and women entrepreneurship in Nigeria: Implications for economic development. *Journal of African Business, 23*(4), 521–540.

Adewuyi, O., & Olamide, A. (2022). Women entrepreneurship and sustainable development in Nigeria. *African Journal of Sustainable Development, 12*(1), 88–103.

Agbamu, M. E. (2024). Sociological exploration of the contribution of women to the development of small-scale businesses in Abraka community, Delta state. *International Journal of Intellectual Discourse*, *7*(2), 315-326.

Agbim, K. C. (2021). Cultural constraints and women entrepreneurship in Nigeria: A review of implications for sustainable development. *International Journal of Entrepreneurship and Small Business, 43*(2), 187–203.

Akinwale, Y. O., & Akinbode, M. O. (2020). Skill acquisition and small business sustainability in Nigeria: Evidence from Lagos State. *Journal of Entrepreneurship and Innovation in Emerging Economies, 6*(1), 45–62.

Ali, H., & Nwosu, B. (2021). The limits of entrepreneurship training in Nigeria: A case study of access to finance and markets. *African Journal of Economic and Management Studies, 12*(3), 411–427.

Alonso-González, P., Ruiz-Arroyo, M., & Pons, F. (2021). Women entrepreneurs and sustainable development. *Sustainability, 13*(12), 6509.

Alvarez, S., & Barney, J. (2020). Women's entrepreneurship and social sustainability. *Academy of Management Perspectives, 34*(3), 333–345.

Boateng, R., Heeks, R., Molla, A., & Sey, A. (2020). ICTs and women's entrepreneurship in Africa. *Information Technology for Development, 26*(2), 209–216.

Chinomona, E., & Maziriri, E. T. (2021). Entrepreneurial training and small business growth in emerging economies. *Journal of Entrepreneurship in Emerging Economies, 13*(4), 665–684.

Eneh, O. C. (2020). Challenges of women entrepreneurship in developing countries. *International Journal of Business Studies, 15*(2), 201–212.

Eze, C. J., & Nnadi, O. (2022). Entrepreneurship development programs and performance of women-owned SMEs in Enugu State, Nigeria. *Journal of Business and Management Review, 13*(2), 98–113.

Eze, T. C., Okoli, I. E., & Nwankwo, F. (2020). Entrepreneurship education and skills acquisition in Nigeria. *Journal of Education and Entrepreneurship, 7*(2), 45–58.

Fapohunda, T. M. (2021). Skills acquisition and women empowerment in Nigeria. *Journal of Human Resource and Sustainability Studies, 9*(2), 91–106.

Idris, A., & Musa, H. (2020). Digital literacy and women entrepreneurship in Nigeria. *International Journal of Digital Economy, 1*(1), 25–37.

Ihua, U. B., Osabuohien, E., & Adedokun, A. J. (2020). Entrepreneurship training and enterprise development in Nigeria. *Journal of African Business, 21*(4), 567–583.

Itiveh, E. F., & Omoye, E. I. (2023). Cloud accounting and the economy system of small and medium enterprise in South-South Nigeria. *Researchjournali's Journal of Accounting, 10(2), 1-24.*

Kanu, R. U., & Ugwu, C. (2021). Family support, cultural acceptance, and women's entrepreneurial success in Southeastern Nigeria. *Gender in Management: An International Journal, 36*(7), 879–896.

Kassie, B. T., Asfaw, A., & Abate, G. T. (2022). Women's empowerment and sustainable development: Evidence from African entrepreneurship. *World Development Perspectives, 25*, 100389. https://doi.org/10.1016/j.wdp.2022.100389

Musa, F. (2021). Barriers to women's digital entrepreneurship in Northern Nigeria: Infrastructural and socio-cultural perspectives. *Information Technology for Development, 27*(3), 527–545.

Nduka, K., & Olayemi, A. (2021). Digital literacy and competitiveness of women entrepreneurs in

Nigeria. *Journal of Entrepreneurship Education, 24*(4), 1–13.

Nwachukwu, C. (2020). Patriarchy and female entrepreneurship in Nigeria: A critical analysis. *International Journal of Gender and Entrepreneurship, 12*(2), 165–182.

Nwosu, B., & Ezenwafor, J. I. (2023). Digital literacy and women's entrepreneurship in Nigeria. *African Journal of Business and Economic Research, 18*(2), 125–140.

Obi, C., & Onwuka, U. (2020). Women cooperatives and entrepreneurial performance in Nigeria. *Journal of Social and Development Studies, 11*(3), 66–79.

Ogu, M., & Eze, P. (2022). ICT adoption and women entrepreneurship: Evidence from Nigeria. *Global Journal of Management and Business Research, 22*(5), 55–67.

Ogu, M., & Nwachukwu, C. (2023). Cultural inclusivity and women entrepreneurship in Nigeria. *Journal of African Development Studies, 15*(2), 201–219.

Ojong, N., Anuforo, H., & Akpan, A. (2021). Entrepreneurship education and women's business resilience in Nigeria. *Small Enterprise Research, 28*(3), 251–268.

Okafor, G. (2020). Digital divide and women entrepreneurship in rural Nigeria: Challenges and opportunities. *Journal of African Media Studies, 12*(2), 199–214.

Okeke, P., & Nnamani, E. (2021). Barriers to women's digital adoption in rural Nigeria. *Journal of Information and Development, 37*(1), 79–95.

Okoh, R., & Okwu, A. T. (2021). Economic diversification and development challenges in Delta State. *Nigerian Journal of Economic Studies, 9*(1), 55–72.

Olaoye, F. O., & Olaleye, Y. (2022). Women entrepreneurship and poverty reduction in sub-Saharan Africa. *International Journal of Gender Studies, 11*(1), 87–101.

Olawale, T., & Adebayo, M. (2021). Women's skills development and entrepreneurial performance in Nigeria. *International Journal of Gender Studies, 10*(2), 141–158.

Olowu, D. (2021). Gender norms and economic participation in Nigeria. *Journal of Social Policy in Africa, 8*(2), 55–70.

Onyeiwu, S., & Nwankwo, F. (2022). Mentorship and enterprise survival among women entrepreneurs in Nigeria. *International Journal of Entrepreneurship, 26*(4), 85–97.

UNDP. (2023). *Human Development Report: Building resilient economies in Nigeria*. New York: UNDP.

UNDP. (2023). *Human Development Report: Building resilient economies in Nigeria*. New York: UNDP.

UNESCO. (2022). *Gender equality and women's empowerment report*. Paris: UNESCO.

Urhibo, B. O. (2021). Women, bureaucracy and development in Nigerian: a conceptual perspective. *Journal of Public Administration, Finance and Law, 10*(22), 93-103.

Urhibo, B. O., & Orhero, A. E. (2023). Rural women empowerment and development in Nigeria. *Journal of Public Administration, Finance and Law*, *27*(1), 1-12.

World Bank. (2023). *Women, business and the law 2023*. Washington, DC: World Bank.