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Language and culture: Prerequisites for human capital development and enhanced household food security among vulnerable women farmers in Imo State, Nigeria

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ABSTRACT

Language and culture are critical determinants of human capital development and household food security among vulnerable women farmers. This study examined the influence of language and culture on human capital development and food security among women farmers in Imo State, Nigeria. A descriptive survey design was adopted, and 250 women farmers were selected from a population of 2,500 registered women farmers. Data were collected through structured questionnaires and oral interviews and analyzed using frequencies, percentages, means, and standard deviations. The results showed that the dominant languages used for agricultural information dissemination were standard Igbo (78.8%), local Igbo dialects (69.6%), and English language (62.0%). Language significantly enhanced understanding and learning, with Igbo improving understanding (M = 3.26), local dialects enhancing learning (M = 3.24), and translation improving learning outcomes (M = 3.28). Cultural norms restricted women's access to productive resources, including land ownership (M = 3.34), credit facilities (M = 3.22), decision-making processes (M = 3.24), and extension services (M = 3.16). Culture also constrained human capital development through limited participation in training programmes (M = 3.28), restricted access to education (M = 3.25), and reduced adoption of innovations (M = 3.29). However, culture positively contributed through the transmission of knowledge and skills (85.2%), promotion of moral values (80.0%), communication skills development (78.0%), and work ethics (75.6%). Effective strategies for improving human capital development included the use of visual aids and demonstrations (M = 3.44), translation of manuals into local languages (M = 3.42), community radio broadcasting (M = 3.41), and indigenous-language extension services (M = 3.40). The study concludes that integrating indigenous languages and culturally responsive approaches into agricultural extension and training programmes can strengthen human capital development, improve productivity, and enhance household food security among women farmers.

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INTRODUCTION

Human capital development is increasingly seen as a key force behind socioeconomic change, especially in developing nations such as Nigeria. It involves building knowledge, skills, competencies, and values that boost individual productivity and well-being. Human capital theory suggests that investing in education, training, and skill development strengthens people's ability to drive economic growth and progress (Huff, 2024). In rural Nigeria, including states like Imo, women farmers make up a large portion of the agricultural labor force and play a vital role in food production and sustaining rural economies. Research shows that women contribute significantly to agriculture across sub-Saharan Africa, yet they frequently encounter structural challenges that hinder their productivity and potential (Matthew *et al.*, 2022). These include limited access to education, land ownership, credit, agricultural extension services, and timely information.

Language and culture are crucial factors influencing access to knowledge and opportunities. Language acts as the main channel for sharing farming innovations, extension advice, and educational material. When such information is shared in languages unfamiliar to rural communities—particularly in non-local or formal languages—understanding and application suffer, especially among women with little formal schooling. Studies have found that using local or indigenous languages improves comprehension and uptake of agricultural knowledge in rural areas (Oladele, 2011, cited in Ajadi *et al.*, 2015). Culture, meanwhile, includes shared beliefs, norms, traditions, and values that shape behavior and choices. In many rural Nigerian settings, cultural practices strongly influence women's roles, their access to resources, and their involvement in economic life. Traditional norms often prevent women from owning land or participating in decision-making, which in turn limits their opportunities for human capital growth (Ajadi *et al.*, 2015).

The interaction between language and culture is therefore essential when examining human capital development among marginalized women farmers. In Imo State, where Igbo language and customs are predominant, using locally rooted communication methods and culturally appropriate strategies is critical to improving women's access to agricultural knowledge, education, and economic advancement. This study aims to explore how language and culture serve as foundational elements for human capital development among vulnerable women farmers in this region.

Language and culture play a central role in shaping how households produce, obtain, prepare, and distribute food, directly affecting food security. The Food and Agriculture Organization (FAO, 2021) defines food security as a condition in which all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and preferences for an active and healthy life. Achieving this condition, however, relies on effective communication and cultural relevance within local food systems. Clear communication in local languages is essential for disseminating agricultural guidance, extension services, and nutrition information. In rural regions—particularly across developing countries—agricultural programs are more likely to succeed when delivered in languages familiar to farmers. When instructions on improved farming techniques, pest control, or climate adaptation are provided in unfamiliar languages, they risk being misinterpreted or ignored, often resulting in lower productivity and reduced food availability (Aker, 2011). Conversely, delivering information in native languages enhances understanding, increases the adoption of beneficial practices, and strengthens food security outcomes.

Cultural values also shape key aspects of food security, including dietary habits, food taboos, gender roles, and farming customs. Ideas about which foods are acceptable or prohibited can affect nutritional quality and dietary diversity. For example, in certain communities, traditional beliefs may restrict women or children from consuming nutrient-dense foods such as eggs or fish, increasing vulnerability to

malnutrition (FAO, 2019). Additionally, cultural norms often determine who participates in farming, which controls household food and income decisions, and how resources are distributed-factors that can either support or hinder a household's ability to maintain stable access to food. Culturally rooted farming practices influence choices about crops, land use, and cultivation methods. While many traditional approaches promote environmental sustainability and resilience, others may limit yields if they resist integrating new technologies. A balanced approach-combining time-tested indigenous knowledge with appropriate modern innovations is often necessary to improve productivity and adaptability in food systems. Furthermore, language and culture affect how food is prepared and consumed within homes.

Nutritional knowledge is commonly transmitted orally through stories, daily routines, and shared customs. In communities where such knowledge is well maintained and clearly communicated, families tend to follow more balanced diets and practice safer food handling, reducing waste and supporting better health outcomes (Sen, 1981). However, language barriers or persistent cultural misunderstandings can prevent the adoption of healthier eating behaviors. Overall, language and culture are deeply embedded in the dynamics of household food security, shaping how food-related knowledge is shared, interpreted, and applied. Strengthening multilingual communication in agriculture and designing food security programs that align with local cultural contexts can lead to more effective improvements in food access, availability, utilization, and stability.

Problem statement

Despite their major contributions to agriculture in Nigeria, women farmers continue to experience low levels of human capital development. Many disadvantaged women in Imo State struggle to access vital agricultural information, education, and training due to language differences and cultural barriers. Extension services are commonly provided in English or other non-local languages, which reduces understanding and practical use among rural women. At the same time, long-standing cultural expectations and gender roles restrict women's access to key resources like land, credit, and leadership roles, limiting their ability to gain new skills, adopt modern techniques, and increase output. Evidence confirms that cultural contexts heavily affect women's resource access and economic participation, often deepening existing inequalities (Ajadi *et al.*, 2015). Moreover, development initiatives often overlook the importance of incorporating local languages and cultural realities into their designs. As a result, many programs fail to produce meaningful change, leaving cycles of poverty and underdevelopment unbroken among vulnerable female farmers. There is thus a pressing need to assess how language and culture influence human capital development among these women in Imo State, Nigeria. This study holds importance for multiple reasons. It adds to the existing body of research on human capital development by emphasizing the often-neglected influence of language and culture in development initiatives. It also offers evidence-based understanding of the difficulties encountered by marginalized women farmers in Imo State, which can guide the creation of more effective policies and targeted interventions. Strengthening human capital among women in agriculture has wider benefits, including increased agricultural output, improved food security, and enhanced rural development. Given women's key role in farming and rural economies, supporting them through approaches that respect cultural contexts and linguistic needs can lead to meaningful improvements in living standards and economic progress (Idris and Bawa, 2022).

The results of this research will serve as a valuable resource for extension workers, policymakers, development organizations, and NGOs when designing agricultural programs that are both inclusive and impactful. The general objective of the research work of the work therefore is to examine the role of language and culture as prerequisites for human capital development and food security among vulnerable women farmers in Imo State, Nigeria.

The specific objectives include to; a). Identify the dominant languages used in agricultural information dissemination among women farmers in Imo State; b). Examine the influence of language on access to agricultural knowledge and training; c). Assess the impact of cultural practices on women farmers' access to productive resources; d). Evaluate the perceived influence of language, culture, and human capital development among vulnerable women farmers, e). Examine the role of cultural practices and language in shaping agricultural productivity and food security; f). Identify strategies for improving human capital development through culturally and linguistically appropriate interventions.

MATERIALS AND METHODS

This study utilizes a descriptive survey research design, chosen for its effectiveness in systematically gathering data from a specific population to examine how language and culture affect human capital development among vulnerable women farmers. This approach is widely applied in agricultural and rural development research in Imo State, particularly when assessing respondents' views through structured questionnaires. The research is conducted in Imo State, located in southeastern Nigeria, within the geographical coordinates of 4°45′N to 7°15′N latitude and 6°50′E to 7°25′E longitude. The state is divided into three agricultural zones—Owerri, Orlu, and Okigwe—and features a tropical rainforest climate with clear wet and dry seasons.

Agriculture forms the backbone of the local economy, with rural women playing a key role in cultivating crops like cassava, yam, maize, and vegetables. The region is culturally vibrant, with Igbo as the primary language and various local dialects used in daily communication and agricultural outreach. The target population includes all vulnerable women farmers in Imo State, particularly those involved in subsistence and small-scale farming across the three agricultural zones. Earlier studies in similar settings have worked with samples ranging from several hundred to thousands of women farmers, depending on the study's scope. For this research, participants are drawn from registered women's farming groups and official agricultural extension records. A multistage sampling method is applied: first, the three agricultural zones are deliberately included; second, Local Government Areas (LGAs) are randomly selected from each zone; third, communities within the chosen LGAs are picked at random; and fourth, individual women farmers are selected through simple random sampling from the registered lists. Data collection is carried out using a structured instrument titled the Language, Culture and Human Capital Development Questionnaire (LCHCDQ). The questionnaire is organized into sections: Section B focuses on how language affects access to agricultural information and training; Section C explores the impact of cultural practices on human capital growth; and Section D identifies obstacles to effective communication and skill development. Responses are measured on a four-point Likert scale: Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1). Data analysis relies on descriptive statistics, including frequency counts, percentages, means, and standard deviations, to summarize both respondent profiles and their responses. A mean score of 2.50 or higher is interpreted as indicating agreement, while a score below 2.50 suggests disagreement.

RESULTS AND DISCUSSION

Dominant languages used in agricultural information in the study area

Table 1 showed that five (5) major languages used in Agricultural Informationsharing and communication. These include the standard Igbo language (78.8%), which is standard and general to the people of southeast zone. Local Igbo dialects (69.6%), are second in rating. Thus, Igbo also but varies from people depending upon where one is at a given pointing time. Nigerian Pidgin English (38.0%) is also used as a popular lingua franca used by everyone. English language (62%) is also commonly used, among the people of the area. There is the combination of the Igbo + English/pidgin (55.2%), that people now used to make contact. In Imo State, the way agricultural information reaches women farmers is largely influenced by language accessibility.

Indigenous languages-primarily Igbo are the main channels for communication, supported to a lesser extent by English and occasionally Nigerian Pidgin. Research indicates that rural women farmers in the region depend heavily on their native languages to grasp and exchange knowledge about new farming practices. For example, studies on local communication approaches reveal that more than 90% of these women favor information delivered in their mother tongue, as it significantly improves understanding, particularly among those with limited formal education (Orisakwe and Okoroma, 2021). This aligns with broader findings across Nigeria, where many rural farmers are reported to communicate almost exclusively in their native languages, highlighting the necessity of using these languages in agricultural outreach (Oko, 2019). In Imo State, Igbo serves as the principal language in face-to-face interactions, community gatherings, and traditional knowledge-sharing networks.

Despite English being Nigeria's official language and commonly used in formal agricultural materials, its impact on rural women is constrained by uneven literacy rates. As a result, extension workers often simplify or translate technical content into Igbo to ensure clarity and encourage adoption. Nigerian Pidgin may also be used in areas with linguistic diversity, functioning as a secondary means of communication, but it plays a minor role compared to Igbo in the predominantly Igbo-speaking rural communities of the southeast. The widespread use of Igbo and other local languages in agricultural discourse highlights the need for dissemination methods that are both culturally and linguistically relevant. Delivering information in familiar languages not only enhances comprehension but also supports more effective knowledge sharing, greater involvement, and increased uptake of agricultural innovations among women farmers in the region.

Influence of Language on Access to Agricultural Information

Table 2 showed the influence of language on access to agricultural inputs language (Igbo) improves understanding information and learning (M=3.26), language limit participation (M=3.14),English is difficulty in understanding (M=3.0), local dialect enhance learning (M=3.24), performance for indigenous language training (M = 3.36), unfamiliar language reduces adoption of innovations (M = 3.10), pidgin helps understanding (M=2.94), language affect confidence (M=3.09),multi-lingual communication improves access (M=3.16), and translation improves learning (M = 3.38). Language significantly influences farmers' ability to access agricultural knowledge and training, affecting how well information is conveyed, understood, and put into practice. One key aspect is information accessibility. When materials such as guides, training content, or extension messages are provided in languages unfamiliar to farmers, comprehension and practical use become difficult. Research indicates that a lack of translated resources prevents speakers of minority languages from adopting new techniques and proven methods (Arshad, 2024).

Another factor is engagement in training programs. Farmers are more inclined to participate in and gain value from sessions conducted in their native or local languages. In contrast, using foreign or official languages can hinder understanding, reduce interaction, and discourage attendance, ultimately weakening the impact of extension services (Umar *et al.*, 2024). Language also plays a central role in how knowledge is adopted and applied. When communication occurs in a familiar language, farmers are better able to grasp new technologies and implement recommended practices effectively. However, where language barriers exist, the practical application of available information often falters, leading to lower productivity and persistent knowledge gaps (Badawacho *et al.*, 2024). Language impacts equity in agricultural development.

Rural farmers with limited literacy or minimal exposure to dominant languages—often among the most marginalized—are frequently left out of training initiatives. This exclusion deepens existing inequalities in access to knowledge and the adoption of innovations (Ongachi and Belinder, 2025).

Table 1. Dominant languages used in agricultural information sharing

Languages used	*Frequency	Percentage (%)
Igbo (Standard)	197	78.8
Local Igbo Dialects	174	69.6
Nigerian Pidgin English	95	38.0
English Language	155	62.0
Combination (Igbo + English/Pidgin)	138	55.2

*Multiple responses

Table 2. Influence of language on access to agricultural knowledge/learning

Statements	SA	A	D	SD	Total	Mean
Igbo improves understanding	120	90	25	15	250	3.26
Language barriers limit participation	110	85	35	20	250	3.14
English is difficult to understand	100	80	40	30	250	3.00
Local dialects enhance learning	115	95	25	15	250	3.24
Preference for indigenous language training	125	85	20	20	250	3.26
Unfamiliar language reduces adoption	105	90	30	25	250	3.10
Pidgin helps understanding	90	85	45	30	250	2.94
Language affects confidence	100	95	30	25	250	3.08
Multilingual communication improves access	110	90	30	20	250	3.16
Translation improves learning	130	80	20	20	250	3.28

Accepted mean=2.50

Table 3. Impact of cultural norms on women farmers' access to resources

Statement	SA	A	D	SD	Total	Mean
Cultural norms restrict land ownership	135	80	20	15	250	3.34
Traditional beliefs limit access to credit	120	85	25	20	250	3.22
Cultural practices reduce decision-making	125	80	25	20	250	3.24
Inheritance customs favour men	140	70	20	20	250	3.32
Gender roles limit access to farm inputs	115	90	30	15	250	3.22
Cultural expectations increase workload	130	80	20	20	250	3.28
Social norms restrict extension access	110	90	30	20	250	3.16
Cultural practices discourage cooperative participation	105	85	35	25	250	3.08

Accepted mean= 2.50

Impact of cultural norms and practices on women farmers' access to productive resources

Table 3 showed the influence of cultural norms and practices on women farmers' access to productive resources. With a discriminatory mean (M) threshold of 2.50, cultural norms restrict land ownership the following constraints were identified: cultural (M= 3.34), traditional beliefs limit access to credit (M=3.22), cultural practices reduce decision-making (M= 3.24), inheritance customs favour men (M=3.32), gender roles limit access to farm inputs (M=3.22), cultural expectations increase workload (M= 3.28), social norms restrict extension access (M= 3.16), and cultural practices discourage cooperative participation (M= 3.08). Cultural norms play a major role in shaping women farmers' access to essential resources like land, credit, labor, agricultural inputs, and decision-making authority. These norms are deeply rooted in long-standing traditions, societal expectations, and belief systems that define gender roles in rural communities. One key area is land ownership and inheritance, which are often governed by cultural customs.

In many regions, traditional laws prevent women from owning or inheriting land directly, allowing them only temporary use through male family members. This lack of formal rights hampers their ability to secure loans or make independent choices about farming practices (Adefila *et al.*, 2024; Hernandez *et al.*, 2023). Another factor is the influence of patriarchal structures on resource allocation. Social norms frequently assign men the role of primary decision-makers and household leaders, while viewing women as secondary or dependent.

Table 4. Influence of culture on human capacity development

Statements	SA	A	D	SD	Total	Mean
Land ownership is restricted by culture	135	80	20	15	250	3.34
Culture limits training participation	125	85	25	15	250	3.28
Culture reduces decision-making participation	120	90	25	15	250	3.26
Inheritance favours men	140	75	20	15	250	3.36
Gender roles limit access to inputs	115	90	30	15	250	3.22
Cultural expectations increase workload	130	80	25	15	250	3.30
Social norms restrict extension access	110	95	30	15	250	3.20
Culture discourages cooperatives	105	90	35	20	250	3.12
Cultural barriers limit education access	118	92	25	15	250	3.25
Culture reduces adoption of innovations	128	82	25	15	250	3.29

Accepted mean=2.50

Consequently, even when women perform substantial farm work, they often have little say over assets such as livestock, machinery, or household income (Ogwumike, 2015; Ekanem and Uloh, 2025).

Access to financial services and farming inputs is also affected. Because cultural barriers limit women's ownership of property, they typically cannot meet collateral requirements for formal loans. This restricts their ability to invest in better seeds, fertilizers, or modern technologies, ultimately affecting their yields (Hernandez *et al.*, 2023). Moreover, prevailing social expectations can exclude women from participating in important agricultural institutions.

Cultural attitudes may discourage their involvement in cooperatives, training programs, or leadership positions, limiting their access to vital information and support networks (Adefila *et al.*, 2024). Still, not all cultural practices are restrictive. Some traditional systems, such as community-based labor sharing or informal resource-sharing networks, can benefit women by strengthening social ties and improving access to support. When recognized and supported, these practices can contribute to greater resilience and empowerment in rural women's farming activities (von Maltitz and Bahta, 2024).

Influence of culture on human capacity development

Table 4 showed the influence of culture on the human capacity development of women farmers. With an accepted mean(M) score of 2.50, the following factors affecting women farmers' capital development include: culture limits training participation (M= 3.28), land ownership is restricted by culture (M= 3.34), culture reduces decision-making participation (M= 3.26), inheritance favors men over women farmers (M= 3.36), gender roles limit access to inputs (M= 3.22), cultural expectations increase workload (M= 3.30), social norms restrict extension access (M= 3.20), culture discourages cooperatives (M= 3.12), cultural barriers limit education opportunities (M= 3.25), and culture reduces adoption of innovations (M= 3.29). Cultural practices play a significant role in shaping the development of human capital among vulnerable women farmers, primarily by affecting their access to education, skills, knowledge, and opportunities for capacity building. One major factor is that cultural norms often limit women's access to education and training. In many rural areas, boys are prioritized for schooling, while girls are steered toward domestic duties. This imbalance hinders women farmers from gaining essential literacy, technical expertise, and agricultural know-how, all of which are critical for increasing productivity (Dada *et al.*, 2025).

Additionally, culturally defined gender roles can restrict women's involvement in training and development programs. Expectations that women manage household responsibilities limit their time and freedom to attend workshops, extension services, or other learning opportunities. As a result, their ability to build skills and adopt new agricultural innovations is diminished (Asare-Nuamah *et al.*, 2025). Another indirect effect stems from unequal access to productive resources.

Table 5. Influence of language on human capital development

Statement	SA	A	D	SD	Total	Mean
Indigenous language improves skills acquisition	125	85	25	15	250	3.28
Language barriers reduce training participation	120	90	25	15	250	3.26
English limits learning outcomes	110	95	30	15	250	3.20
Local language improves understanding of innovations	130	80	25	15	250	3.30
Language influences confidence with extension agents	115	90	30	15	250	3.22
Multilingual communication enhances human capital development	120	85	30	15	250	3.24
Poor translation reduces adoption of techniques	130	85	20	15	250	3.32
Indigenous language promotes cooperative training participation	118	92	25	15	250	3.24
Language affects access to educational materials	112	88	35	15	250	3.18
Local language improves productivity skills	128	82	25	15	250	3.30

Accepted mean=2.50

Cultural practices that prevent women from owning land or accessing credit reduce their ability to invest in education and skill development. Research indicates that such barriers significantly hinder both personal advancement and agricultural output (Gbagyi women study, 2025).

Moreover, prevailing cultural views about women's roles in farming affect how their skills are used. Women are frequently perceived as subsistence-level producers rather than commercial farmers, which limit their exposure to advanced training and modern technologies-factors crucial for expanding human capital (FSSS Gender Study, 2025). On a more positive note, some cultural traditions support collective learning, mutual aid, and informal knowledge exchange among women farmers, contributing to skill enhancement and resilience. However, these advantages are typically outweighed by more dominant, restrictive social norms.

Influence of language on human capital development among women farmers

Table 5 showed the various ways in which language influences human capital development among women farmers. With a discriminating mean (M) index of 2.50, the findings includes that indigenous language improves skills acquisition (M= 3.28), language barriers reduce training participation (M= 3.26), English limits learning outcomes (M= 3.20), local language improves understanding of innovations (M= 3.30), indigenous language influences confidence with extension agents (M= 3.22), multilingual communication enhances human capital development (M= 3.24), poor translation reduces adoption of techniques (M= 3.32), indigenous language promotes cooperative training participation (M= 3.24), language affects access to educational materials (M= 3.18), and local language improves productivity skills (M= 3.30). Language significantly influences human capital development among vulnerable women farmers, especially by affecting their access to education, skill-building, and agricultural knowledge.

When extension services, training programs, and informational materials are provided in dominant or foreign languages-such as English-rather than local dialects, many women struggle to understand the content. This creates obstacles to learning technical skills, adopting new farming methods, and increasing productivity, ultimately impeding human capital growth (Ekanem and Uloh, 2025).

Women farmers often report that language differences discourage their involvement in training and outreach activities. Those with little formal schooling typically depend on their native languages for comprehension. When instruction is not delivered in a linguistically familiar way, it results in exclusion, diminished confidence, and limited participation. As a result, efforts to share vital knowledge—such as farm management techniques, financial literacy, and market engagement—fall short (Olaleye *et al.*, 2024).

Moreover, language challenges are closely linked to cultural and social norms, further deepening disparities in access to information. Research indicates that communication breakdowns, frequently rooted in linguistic mismatches, reduce women's

engagement in agricultural systems and limit their ability to benefit from development programs (Hernandez *et al.*, 2023). This undermines human capital formation, as women cannot fully take advantage of available learning opportunities.

Additionally, language barriers restrict meaningful interaction between women farmers and agricultural extension workers, weakening the spread of new technologies. Without communication adapted to local linguistic settings, women find it difficult to grasp improved farming practices. This slows down both skill development and the adoption of innovations—key elements in building human capital (Gezahay *et al.*, 2025).

Overall, the absence of linguistic inclusivity tends to have a detrimental impact on human capital development for these women. Language gaps restrict access to training, hinder understanding, and limit the growth of essential skills, reinforcing cycles of low productivity and socio-economic marginalization. Enhancing the use of local languages and adopting more interactive, inclusive communication strategies can improve learning and significantly support the advancement of human capital.

Positive contribution of culture in human capacity development

Through culture, it could hinder human capital development through belief system and practices, it could offer counter benefits towards development of human. Table 6 showed the useful contributors of culture to human capital development of women farmers. These includes; promotes discipline and work ethics(75.6%), transmits knowledge and skills (85.2%), encourage innovation/creativity (67.2%), Develops communication and skills (78.0%), Preservation of indigenous knowledge (68.0%), Promotion of moral/ethical value (80.0%), influences educational attitudes (73.2%), enhances of team works and cooperation (71.2%), shapes leaderships styles (66.8%), supports for lifelong learning (61.6%). Culture significantly influences the development of human capabilities by shaping knowledge, skills, values, and behaviors that contribute to both productivity and social well-being. It serves as a foundation for learning, interaction, and innovation, all of which strengthen human capital. Values commonly embedded in cultural systems—such as discipline, cooperation, and a commitment to education—affect how individuals approach learning and skill development, supporting growth at both personal and societal levels (Vlasov *et al.*, 2023). A key benefit of culture lies in its ability to preserve and transmit knowledge. Through language, traditions, and indigenous knowledge systems, cultures pass essential skills and expertise from one generation to the next. In particular, education in the arts and cultural fields nurtures creativity, critical thinking, and innovative thinking—qualities increasingly vital in today's knowledge-based economies (Posnova, 2024).

Culture also supports social unity and collaborative efforts, which are crucial for building capacity. Common cultural norms help build trust, encourage teamwork, and promote collective approaches to problem-solving, enabling communities to pursue development objectives more effectively. This sense of cohesion enhances both educational outcomes and workplace efficiency (Vlasov *et al.*, 2023). Moreover, cultural environments that value creativity, lifelong learning, and open exchange of ideas can boost motivation and drive innovation. Whether at the organizational or societal level, such cultures empower individuals to generate new solutions and adapt to evolving circumstances. Research indicates these culture-based strategies play a meaningful role in accumulating human capital and advancing innovation (Cheng *et al.*, 2025).

Finally, culture helps shape personal and group identity, fostering self-confidence and a sense of belonging. This empowerment encourages greater involvement in education, economic participation, and leadership roles, ultimately enhancing overall human potential. Evidence also shows that cultural capital positively influences academic achievement and the development of practical skills (Jin *et al.*, 2024).

Table 6. Positive contribution of culture in human capacity Development

Contributions	*Frequency	Percentage
Promotes discipline and work ethics	189	75.6
Transmits knowledge and skills	213	85.2
Encourage innovation/creativity	168	67.2
Develops communication & skills	198	78.0
Preservation of indigenous knowledge	170	68.0
Promotion of moral/ethical value	200	80.0
Influences educational attitudes	183	73.2
Enhances of team works and cooperation	178	71.2
Shapes leaderships styles	167	66.8
Supports for lifelong learning	154	61.6

*Multiple responses

Table 7. Language roles in shaping agricultural productivity and food security

Role of language	*Frequency	Percentage
Dissemination of agricultural information	218	87.2
Facilitation of extension services communication	199	79.6
Transfer of indigenous knowledge	180	72.0
Access to market information	170	68.0
Understanding of agricultural policies	160	64.0
Training and capacity building	200	80.0
Promotion of innovation and technology adoption	175	70.0
Conflict resolution	140	56.0
Coordination of cooperative activities	165	66.0
Climate change awareness	150	60.0
Access to financial services	145	58.0
Record keeping and farm management	155	62.0
Gender inclusion	135	54.0
Networking among farmers	185	74.0
Food safety and nutrition education	170	68.0

*Multiple responses

Language roles in shaping agricultural productivity and food security

Table 7 showed that language and agricultural productivity are linked. Language promotes dissemination of agricultural information (87.2%) leading to understanding of information. Training and capacity building (80%), facilitation of extension communication (79.6%), food safety/nutrition education (68%), transfer of indigenous knowledge (72%), promotion of innovation and technology adoption (70%), Coordination of cooperative activities(66%), Climate change awareness(60%), Understanding of agricultural policies and change (66%), Record keeping and farm management(62%), Networking among farmers(74%). Language significantly influences agricultural productivity and food security by enabling clear communication, the sharing of knowledge, and access to critical resources for farmers and other stakeholders. It acts as a channel for delivering agricultural innovations, extension services, and proven farming methods. When information is provided in a language farmers are familiar with, it improves their ability to adopt better techniques, make use of climate data, and meet market needs effectively (FAO, 2017). On the other hand, language barriers can restrict access to important agricultural knowledge, leading to lower output and greater risk of food insecurity.

Moreover, language affects how inclusive and participatory agricultural development initiatives are. In multilingual countries like Nigeria, using local languages in agricultural outreach helps connect policymakers and extension workers with rural farming communities, especially women and disadvantaged groups. This approach fosters mutual understanding, increases engagement, and reinforces traditional knowledge systems—factors that support higher food production and stronger household-level food security (UNESCO, 2016). Language also plays a key role in maintaining indigenous agricultural expertise, such as time-tested farming methods, crop

choices, and environmental stewardship practices essential for long-term sustainability (Altieri, 2004). Language further impacts farmers' access to markets and economic opportunities. Those who can communicate in widely used or official languages often find it easier to participate in trade, bargain for better prices, and obtain financial services. This can lead to higher incomes and improved ability to feed their families. As a result, integrating multiple languages and including local dialects in agricultural policies and programs is crucial for boosting farm productivity and advancing sustainable food security (FAO, 2017; UNESCO, 2016).

Cultural practices roles in shaping agricultural productivity/food security

Table 8, indicates that gender roles (90%), norms around household decision-making (86%), and land inheritance systems (84%) are the primary cultural factors affecting agricultural productivity and food security. These traditions frequently restrict women's access to land, essential resources, and autonomy in decisions, which can hinder farming efficiency.

Conversely, certain practices support sustainable agriculture and strengthen food security—such as traditional soil knowledge (78%), shared labor systems (72%), and reliance on heirloom seed varieties (76%). Nevertheless, other cultural norms, including dietary restrictions (56%) and rigid beliefs about land ownership (82%), have adverse effects on nutrition and crop production by limiting both resource access and dietary diversity. Cultural practices significantly influence agricultural productivity and food security, especially within rural and smallholder farming contexts. They shape decisions around farming, resource allocation, and how households produce, consume, and store food. Traditional knowledge often informs choices related to crop varieties, planting schedules, soil management, and pest control, contributing to greater adaptability in the face of environmental shifts (Altieri, 2004).

Table 8. Cultural practices roles in shaping agricultural productivity/food security

Cultural practices	*Frequency	Percentage
Land inheritance system	210	84.0
Gender roles in farming	225	90.0
Communal labor system	180	72.0
Traditional farming methods	200	80.0
Food taboos and dietary restriction	140	56.0
Indigenous soil fertility knowledge	195	78.0
Cultural festivals affecting farming calendar	160	64.0
Beliefs about land ownership	205	82.0
Use of traditional seeds	190	76.0
Household decision-making norms	215	86.0
Marriage practices affecting labor	170	68.0
Religious beliefs influencing farming activities	185	74.0

*Multiple responses

Time-tested methods like crop rotation, intercropping, and organic fertilization support sustainable land use and can boost yields, particularly in areas with limited access to commercial agricultural inputs (Pretty, 2018). Cultural norms also define gender roles in agriculture, affecting overall output and food security. Although women are frequently central to food production, processing, and distribution, societal constraints often restrict their access to land, financing, and advisory services, undermining agricultural effectiveness (FAO, 2011). Cultural factors related to food—such as eating habits, dietary restrictions, and preservation techniques—influence what crops are grown, eaten, or stored, directly impacting household food availability (Kiptot and Franzel, 2012). Community-based practices, including collective labor arrangements and shared management of resources, foster social cohesion and can improve farm productivity.

On the other hand, certain cultural tendencies—like reluctance to adopt new technologies or reliance on

obsolete techniques can slow innovation and constrain yield improvements (World Bank, 2007). In sum, while cultural practices can promote sustainable farming and enhance food security, their overall effect depends on how they align with contemporary agricultural advances and broader socio-economic realities.

Why human capital development matters for women farmers

Table 9 showed that human capital development of matters a lot for women farmers. Human capital development matters significantly for women farmers. Women engaged in unproductive agricultural activities or non-productive activities such as household work and childcare are often excluded from economic calculations. These include Improves productivity and performance (90.0%), enhances skills and knowledge acquisition (86.0%), reduces unemployment/ underdevelopment (74.0%), Promotes of economic growth and development (78.8%), Increases income and standard of living (73.6%), Enhances innovation and creativity (71.2%), Improves adaptability to technological change (65.6%), Strengthens agricultural land development (70.0%), Improves health awareness and moral being (67.6%), Promotes national competitiveness (71.2%). Enhancing the capabilities of women in agriculture is crucial for boosting productivity, improving livelihoods, and advancing sustainable development. Women make up a substantial portion of the agricultural labor force, particularly in developing nations, but frequently encounter barriers to education, training, land ownership, and financial services.

Table 9. Why develop human capacity of women farmers

Reasons for human capacity development	Frequency	Percentage
Improves productivity and performance	225	90.0
Enhances skills and knowledge acquisition	215	86.0
Reduces unemployment/underdevelopment	185	74.0
Promotes of economic growth and development	197	78.8
Increases income and standard of living	184	73.6
Enhances innovation and creativity	178	71.2
Improves adaptability to technological change	164	65.6
Strengthens agricultural land development	175	70.0
Improves health awareness and moral being	169	67.6
Promotes national competitiveness	178	71.2

*Multiple responses

Equipping them with stronger skills, knowledge, and decision-making power enables them to reach their full potential and supports broader rural progress.

One key benefit is the positive impact on agricultural output and food security. Research indicates that when women receive proper training, access to modern farming methods, and relevant information, farm yields and management practices improve significantly (Jemaneh and Shibeshi, 2023). Given their major role in global food production, strengthening women's capacities directly enhances both household and national food security (Kelly, 2024). Another advantage lies in improved household well-being and income. When women gain skills and access to resources, their contributions to family income, nutrition, and economic resilience grow. Empowerment has been associated with better living standards, more diverse diets, and stronger community welfare (Sassi, 2026; FAO, 2024). Furthermore, investing in women farmers supports gender equality and greater social inclusion.

Building their capabilities helps reduce disparities in access to land, credit, and leadership roles within agricultural systems. This effort supports international development targets, including the Sustainable Development Goals—particularly SDG 5, which focuses on gender equality (Willagri, 2023). In addition, empowering women contributes to climate resilience and sustainable farming practices. Women often hold valuable traditional knowledge about local environments, and with appropriate training, they are more likely to adopt climate-smart techniques that

promote environmental health and long-term community adaptation (Behl *et al.*, 2023).

Strategies for improving human capital development through culturally and linguistically appropriate interventions

The following culturally and linguistically appropriate interventions were identified to improve human capital development: Indigenous languages in extension services (M= 3.40), training extension workers in local dialects (M= 3.33), translation of manuals into local languages (M= 3.42), community radio in local languages (M= 3.41), incorporation of cultural norms into training (M= 3.28), engagement of local leaders (M= 3.36), women's cooperatives for peer learning (M= 3.33), use of visual aids and demonstrations (M = 3.44), community-based workshops (M= 3.39), and inclusion in policy and training design (M= 3.35). Efforts to strengthen human capital through culturally and linguistically adapted approaches aim to make training, knowledge sharing, and capacity-building initiatives more accessible, meaningful, and inclusive—particularly for marginalized groups like women farmers. A central component of this approach is using local languages and communication methods that reflect the social context.

Table 10. Strategies for improving human capital development

Strategies	SA	A	D	SD	Total	Mean
Indigenous languages in extension services	140	80	20	10	250	3.40
Training extension workers in local dialects	130	85	25	10	250	3.33
Translation of manuals into Igbo and other local languages	135	80	25	10	250	3.42
Community radio broadcasting in local languages	145	75	20	10	250	3.41
Incorporating cultural norms into training	120	90	30	10	250	3.28
Engaging local leaders	125	85	30	10	250	3.36
Women's cooperatives for peer learning	130	85	25	10	250	3.33
Use of visual aids and demonstrations	150	70	20	10	250	3.44
Community-based workshops	138	82	20	10	250	3.39
Inclusion in policy and training design	132	83	25	10	250	3.35

Accepted mean= 2.50

When training and extension services are delivered in native languages, understanding, recall, and real-world application improve, leading to better skill development and increased productivity. Research indicates that tailoring content to match people's linguistic and cultural background significantly boosts comprehension and engagement (Whitehead *et al.*, 2025).

Equally important are community-driven and participatory models. Involving women farmers in shaping and delivering training ensures that programs align with their lived experiences, cultural norms, and practical needs. Approaches such as farmer field schools and peer-to-peer learning foster trust, encourage collaboration, and build collective knowledge, all of which contribute to stronger human capital outcomes (Ozor *et al.*, 2025). Addressing gender-specific barriers through targeted policies is also crucial. Initiatives that challenge restrictive social norms-such as those limiting women's mobility or decision-making authority—help create conditions conducive to learning and growth. Evidence shows that policies supporting women's access to education, resources, and training lead to greater resilience and improved human capital development (Jemaneh and Shibeshi, 2023).

Leveraging technology in ways that suit local realities is another effective strategy. Digital tools like mobile advisory systems, audiovisual materials in local dialects, and culturally appropriate online platforms can broaden access to information, especially in underserved and remote regions. When thoughtfully designed, these technologies support ongoing learning and skill advancement among disadvantaged populations (Ozor *et al.*, 2025). Finally, combining interventions across education, health, and economic sectors tends to yield stronger results.

Integrated programs that link literacy, financial services, and agricultural training-while respecting

cultural and linguistic diversity-have proven particularly effective in advancing women's empowerment and productivity (World Bank, 2025).

CONCLUSION

Language and culture play a vital role in shaping the development of human capital among vulnerable women farmers in Imo State. Agricultural training becomes more effective when information is communicated in local languages and respects cultural contexts, encouraging greater participation and the adoption of better farming techniques. On the other hand, difficulties arising from language differences and deeply rooted cultural constraints can hinder knowledge access, lower productivity, and perpetuate poverty in rural areas. To promote inclusive rural development and enhance human capital, agricultural extension services in Imo State should incorporate native languages and adopt approaches that are culturally sensitive and responsive.

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