



COMPETENCE REQUIREMENTS FOR PROFITABLE CUCUMBER PRODUCTION BY RURAL FARMERS IN AROCHUKWU LOCAL GOVERNMENT AREA OF ABIA STATE, NIGERIA

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ABSTRACT

The study examined the competencies required by rural farmers for profitable production of cucumber in Arochukwu Local Government Area of Abia State. Specifically, the study examined the production, Management, Climate-smart and marketing competencies required by rural farmers for a profitable Cucumber enterprise. The population of the study consisted of 60 rural farmers involved in Cucumber production. A structural questionnaire consisting of 35 items were used to solicit response from the respondents. Descriptive statistics, Means and Standard Deviation were used in data analysis. The findings showed that the farmers in the study area required 35 relevant competencies for effective cucumber production objectively, the study identified the competencies required for effective Cucumber production, management, climate-smart and marketing of cucumber fruits. Socio- economically, the study reviewed that most at the rural farmers involved in cucumber production were farmers between the age of 31-40 years with a mean household's size of 5 persons and a farming experience 1-10 years. Based on the findings, it was recommended among others that the identified competencies required for cucumber production be incorporated into the training modules of the Agricultural extension agents to enhance effective training of the farmers. Also, that Cucumber farmers in the study area should form cooperative societies to help them have a voice, access credit facilities and cross pollinate ideas for profitable cucumber production.

Keywords: Cucumber, Competence, Production, Rural farmers, Climate-smart, Marketing

Introduction

Cucumber (*cucumis sativus* L) a fruit vegetable, belongs to the cucurbitaceae family which also includes Watermelons, Pumpkins and squash. Cucumber an annual crop is classified according to Okafor and Yaduma (2021) is an exotic vegetable crop in Nigeria and is widely cultivated across different agro ecological zones. Due to its nutritional and economic value Cucumber has gained attention as a high-value short-cycle crop that matures within 35-90 days and responds well to good agronomic practices. Cucumber is propagated by seed. It has many varieties mainly grouped by use, habit and fruit type. According to Akanbi et al (2025) and Alarima et al (2025) the varieties usually grown in Nigeria, includes poinsett, Marketmore, Marketer and Ashley. This is due to its high disease resistance, growth capacity, habit, and high yield.

Cucumber is 95-96% water and very low in calories, making it, ideal for hydration and weight management. Medanta, (2024) assets that its high-water content helps maintain fluids balance, digestion and prevents constipation. The crop contains vitamin k, vitamin c, calcium,



magnesium, potassium and beta-carotene that supports the skin, eye, bone, health and general immunity. (Lemond, 2023). In diseases prevention, Healthline (2025) asserts that cucumber contains antioxidants such as flavonoids, tannins and cucurbitans which help to reduce oxidative stress and inflammation linked to chronic diseases, heart diseases and some cancers. The low glycemic index and high fiber of cucumber helps to control blood sugar and promote satiety for weight loss. The juice of cucumber according to Ugwu & Suru (2021) contains silicon and Sulphur that promote healthy hair and is widely used in cosmetic industries for skin hydration and reducing swelling.

In Nigeria, the use of improved varieties with good agronomic practices can attain optimum yields of 75-80 tonnes /hectare under a commercial production system. According to the funding of Adebayo et,al (2020) and Akanbi et,al (2025).

The Nigerian Horticultural institute, NIHORT trials yielded up to 15 tonnes / hac of market more variety and 22.64 tonnes / hectare of Poinsett variety in Egbede and Ogbomosho respectively. Indexbox(2024) opines that Africa's cucumber production was 1.7m tons in 2024 with average yield of 4.8 tons / hac and that Nigeria has a comparative advantage due to high local and international demand. Cucumber is widely cultivated across Nigeria's 36 States due to favourable climate and high market demand (Business Day, 2021). It matures within 60-90 days depending on variety, farm operations and management. (Ewepu,2023, Okonkwo-Emegba,2025).

Nationally, there is the need to increase the production of this very important fruit vegetable because of its nutritive value as a way of reducing poverty and food insecurity. This can be realized by exposing the rural women to the skills and competencies required for effective production of the crop. Competence refers to the knowledge skills, attitudes and practices needed to successfully plan produce, market and manage a cucumber enterprise.

According to Boyatzis (2008). Competence is "the combination of knowledge, skills, attitude, and behaviors that a person needs in order to perform a task or role effectively and efficiently in a given context. Profitability in cucumber farming is not automatic. It depends heavily on the technical competence which include the production/ cultural practice competencies, managerial, entrepreneurial / business competencies and climate – Smart and Adaptation competencies. All these includes the practical application of enterprising qualities, initiatives, innovation, creativity, adaptive, marketing and risk taking in the work environment using appropriate skills necessary for success in that environment and culture.

Climate change is one of the greatest environment issues of our time. Its phenomenal effect has brought about climate variability, land degradation, loss of biodiversity, food crisis and low agricultural production. Following the aforementioned, it is needful that we act quickly take advantage of existing solutions to prevent irreversible damage to our plant (Ozioko & Eze, 2021). For rural women who often face constraints as a result of ignorance to environment and climate situations, limited land access, lack of collateral for credit, discriminatory social norms, low access to extension services and improved inputs. These constraints reduce their ability to adopt improved technologies and respond to market information. Yet there is limited data on the specific competencies rural women in Arochukwu LGA actually possess versus those required for profitable cucumber farming. Hence, the need to identify the specific competencies required to overcome losses from pests, postharvest waste and price fluctuations.



Production is the creation of utility and the satisfaction human wants which can be paid for. According to Business Dictionary (2010), production is the process and method employed to transforming tangible raw materials, semi-finished goods and intangible inputs such as ideas, information and knowledge into goods and services. For the case of this study production involves all the competences employed in the management of cucumber cultivation by rural women in order to strengthen family sustainability, income and reduce food insecurity. For this to be realized the required competence for profitable cucumber production by rural women in Arochukwu Local Government Area of Abia State, Nigeria.

Objective of the study:

1. Determine the production competences required for profitable cucumber enterprise by rural farmers.
2. Examine the management competencies required for profitable cucumber enterprise by rural farmers.
3. Ascertain the Climate-smart competences required for profitable cucumber enterprise by rural farmers.
4. Determine the marketing competencies required by rural farmers for a profitable cucumber enterprise.

Research Questions

The following researched question were formulated to guide the study:

1. What are the production competencies required by rural farmers for a profitable cucumber enterprise?
2. What are the management competencies required by rural farmers for a profitable cucumber enterprise?
3. What are the climate-smart competencies required by rural farmers for a profitable cucumber enterprise?
4. What are the marketing competencies required by rural farmers for a profitable cucumber enterprise?

Theoretically, the study is anchored on two theories viz: The Human Capital theory which emphasis that investment in educational training and skills increases individual productivity and Income. The theory explains why farmers with higher education and extension contact achieve better gross margins. The other is the Competency – Based theory which posts that job performance depends on observable, measurable skills, knowledge and attitudes. In agriculture, competence refers to the ability to perform specific production task to acceptable standards. For cucumber production, competence are grouped into pre – planting, production/management and post – harvest / marketing phases. Competence-based training is thus essential for self – reliance and enterprise profitability.



Methodology

Area of study: The study was carried out in Arochukwu Local Government Area of Abia State, Nigeria located between latitude $5.23^{12} 1^{11}$ N and longitude $7^0 54^{144} 1^{11}$ E with a land area of approximately 524km^2 . Arochukwu is administratively composed of five clans: Abam, Ihechiowa, Isu, ututu and Aro with the LGA headquarters in Arochukwu town. Geographically, it is bounded to the north by Ohafia LGA, to the west by Bende LGA, to the south and southeast by Akwaibom State with towns such as Itu and Ikot Ekpene and to the east by Cross River State near Akankpa. The area has an average temperature of 28^0 C, and projected population of 246,600 as of 2022 (National population commission of Nigeria, 2006 as cited in city population 2022). The people of the LGA are predominantly farmers and traders.

Study design: The study employed a descriptive survey research design. According to Anyakoha, (2009) a descriptive survey research design makes use of interviews, questionnaires and observation to determine peoples opinion, attitudes, preferences and perceptions. The survey research design was considered appropriate for this study as it elicits information about the competences required for profitable cucumber production by rural women.

Population of the study: One village where cucumber is extensively grown was purposively selected from each of the five clans (Abam, Ihechiowa, Isu, Ututu and Aro) that make up the Local Government Area. In each selected village 12 cucumber farmers were purposively selected. This gave a total of 60 respondents used for the study.

Instrumentation: A structural questionnaire was the instrument used for eliciting responses from the respondents. The instrument has divided into part 1 and part II. Part 1 sought the socio-economic characteristics of the respondents while part II was sub-divided into four sections (A, B, C and D) in line with the purpose of study. The questionnaire adopted a four-point responses scale of Highly required (HR) averagely required (AR), slightly required (SR) and not required (NR) with a corresponding value of 4, 3, 2 and 1 respectively.

Validity and reliability of the instrument: Two experts from the department of Agricultural education, federal collage of education, Eha-amufu validated the instrument. The internal consistency was determined by the use of Cronbach Alpha reliability method with reliability coefficient of 0.85. Hence, the instrument was considered reliable and suitable for the study.

Method of Data collection: Five research assistants from the area assisted in administering the questionnaire to the respondents. All the 60 copies of the questionnaire were retrieved and used for the analysis. This indicates a 100% return rate for the instrument. The administration of the questionnaire by the research assistants lasted for one month.

Data analysis: The data collected from the respondents were analyzed using Mean and Standard Deviation. Where the mean value of any item is 2.50 or above the item was regarded as being required where the item had a mean value less than 2.50, the item was regarded as not required.



Result

Socio – economic characteristics of cucumber farmers

Table 1. Socio – E

Economic characteristics of Cucumber Farmers (N =60)

Age	Frequency	Percentage
21 -30	10	16.66
31-40	29	48.33
41-50	11	28.33
51-60	9	15.00
61 and above	1	1.67
Mean	39.42	
Gender		
Male	22	36.67
Women	38	63.33
Marital Status		
Single	5	8.33
Married	51	85
Widowed	4	6.67
Household size		
1 – 4	17	28.33
5 – 8	43	71.67
9 and above	2	3.33
Mean	4.75	
Educational status		
Primary	7	11.67
Secondary	38	63.33
Tertiary	13	21.67
No education	2	3.33
Farming Experience		
Less than 10 years	24	40
11 -20	20	33.3
21 -30	13	21.67
31 and above	3	5
Mean	13.67	
Access to credit		
Yes	18	30
No	42	70
Farm size(hac)		
o.1 - 0.3	14	23.33
0.4 -0.6	37	61.67
0.7 – 0.9	9	15.00
0.9 and above	0	
Mean	0.62	
Corporative membership		
Yes	15	25



Source: field survey, 2026

The distribution of the respondents according to their socio-economic characteristics is shown in table 1. From that table, most (63.337%) of the respondents were women and many of them (36.67%) were between 31-40 years of age. This indicates that most of them respondents were in their economic active age when they can head to adoption of innovation easily maritally, most (85%) of them were married with a mean household size of 4.75 persons educationally, 63.33% of the respondents had secondary education, while 40% and 33.3% had farming experience of 1-10 years and 11 – 20 years respectively. Most (70%) of the farmers had no access to credit and (75%) of the cucumber farmers are not members of any cooperative organization. The mean farm size of the farmers was 0.62 with 61.67% of the farmers cultivating between 0.4 – 0.6 hectares.

Research Question 1: What are the production competencies required by rural farmers for a profitable cucumber enterprise?

Table 2: Mean rating of the production competencies required by rural farmers for a profitable cucumber enterprise.

S/N	The production on competencies required by rural farmers	Mean	S.D	Remarks
1	Land preparation and soil knowledge	3.31	0.93	
2	Nursing establishment and transplanting	3.56	0.83	
3	Crop management	3.13	0.91	
4	Fertilizer application and water management	2.95	0.58	
5	Pest and diseases control	3.08	0.88	
6	Weed control	2.73	0.62	
7	Timely harvesting of the crop	3.11	0.68	
8	Appropriate post-harvest handling	3.06	0.77	

Source : field survey 2026

The data presented in Table 2 indicating the mean rating of the production competencies required by rural farmers for a profitable cucumber enterprise, revealed that all the 8 items had their mean value ranging from 2.73 – 3.56. This showed that the mean values were above the cut-off point of 2.50 This indicate that the respondents all agreed that they are the production competencies required for a profitable cucumber enterprise.

Research question 2: What are the management competence required for profitable cucumber enterprise by rural farmers?

Table III: Mean ratings of the management competencies required for profitable cucumber enterprise.

S / N	The management competencies required by rural farmers.	Mean	S.D	Remarks
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1	Effective farm planning and enterprise budgeting.	3.01	0.74
2	Land selection and soil management	2.63	0.77
3	Planting calendar management	2.93	0.58
4	Effective management of farm input.	3.12	0.91
5	Labour management	2.75	0.71
6	Weed / pest management	2.86	0.75
V7	Effective record keeping	2.91	0.74
8	Effective marketing and price negotiation.	3.11	0.63
9	Access to credit / financial information.	2.78	0.76
10	Risk management	2.81	0.72

Source , field survey 2026

Table III presented 10 management competencies required for a profitable cucumber enterprise. The data revealed that the 10 items had their mean values ranged from 2.63 to 3.01. This showed that the mean values were above the cut-off point of 2.50 indicating that the respondents agreed that all the 10 items presented were management competencies required for a profitable cucumber enterprise.

Research Question 3: What are the climate – smart competencies, required by rural farmers for a profitable cucumber enterprise?

Table 3: Mean rating of the climate smart competencies required for a profitable cucumber enterprise.

S/N	The climate – smart competencies required by rural farmers	Mean	S.D.	Remark
1	Climate adaptation planning	3.01	0.50	
2	Waste & input management	2.68	0.47	
3	Water management	2.80	0.73	
4	Climate forecast interpretation	2.86	0.93	
5	Seasonal risk assessment	2.94	0.87	
6	Safe agro chemical handling	3.02	0.84	
7	Use of climate resilient varieties	8.70	0.61	
8	Adaptive planting calendar management	2.75	0.74	

Source field survey, 2026

Research question 3, presented in Table 3 outlined 8 items of the climate – smart competencies required for a profitable cucumber enterprise. Items 1-8 recorded mean response of 2.68 – 3.70, which were above the cut of point of 2.50. This indicates that the respondents all agreed that the climate competencies were really required by rural farmers for a profitable cucumber enterprise. All the items had a standard deviation which ranged from 0.47 to 0.93, showing that the responds are not too far from the mean and were close to one another in their opinions regarding the climate – smart competencies required by rural farmers for a profitable cucumber.

Research question IV: What are the marketing competencies required by rural farmers for a profitable cucumber enterprise.



Table 4: Mean ratings of the marketing competencies required for a profitable cucumber enterprise

S/N	The marketing competencies required by rural farmers	Mean	S.D.	Remarks
1	Grade the cucumber fruit according to their sizes.	3.01	0.74	
2	Carefully arranged the cucumber fruit in a sack to avoid demanding or crushing the fruit	2.61	0.63	
3	Carry out the market survey for the crop	2.91	0.72	
4	Keep record of sales correctly	3.06	0.77	
5	Fix prices based on different sizes.	3.11	0.63	
6	Calculate the expenditure and income to determine profit	2.78	0.83	
7	Display the product well to attract patronage	3.03	0.84	
8	Transportation cucumber carefully to the market	3.00	0.78	
9	Create awareness for your cucumber fruit	3.02	0.73	

Source: Field Survey, 2026

The data on the marketing competencies required by rural farmers for a profitable cucumber enterprise as presented in table 4 showed that all the 9 items obtained means responses ranging from 2.61 to 3.11 which is above the cut-off mark of 2.50. This indicates that all the respondents agreed that all the items are the competences required by rural farmers in cucumber marketing for a profitable enterprise. Also, the standard deviation ranging from 0.63 to 0.84 implies that their respondents were close to each other in their responses.

Discussion of the findings

The research study analyzed competencies required for profitable cucumber production by rural farmers in Arochukwu L.G.A. of Abia State. The findings of the study showed that cucumber farming was dominated by women similar findings was reprinted Ada-okungbowa (2013) who asserted women dominated palm oil marketing in Ethiopia East Local Government Area of Delta State. Age distribution of the respondents was mostly between the age of 31 – 40. This shows that most of them were there in their economic active age. This agrees with the findings of kanu and Adawa (2019) that opined that farmers age influence adoption in several ways. Most of the respondents were married with a dominant family size of 5-8 persons. This shows that the respondents are responsible as it is believed that marriage instills responsibility and focus on a person, the family size is encouraging as it guarantees the availability of family labour, thereby reducing the cost of labour.

Most (63.33%) of the respondents had a secondary school education. This encouraging as education positive influence on adoption of innovation (Okonkwo –Emegha. 2025). Most (40%) of the respondents had a cucumber farming experience of less than 10 years. This implies that cucumber farming is not previously practiced there. Most (45%) of them asserted that they are not members of any cooperative society. This scenario may hinder them from gaining governmental



assistance in form of inputs, subsidy, credit or loans from bank or other financial institutions. On farm size of the respondents, most of them (61.67%) cultivated between 0.4 – 0.6 hectares of land. The mean farm size of cucumber farmers in the study area was 0.62 hectare implying that the farmers were mainly small-scale farmers.

The result of the study revealed that all the respondent farmers agreed that all the eight (8) production competencies mentioned for a profitable cucumber enterprise were required by rural farmers in the study area. The findings are in tandem with Ukonze (2010) who opined that vegetable production skills needed by instructors in universities include land preparation, soil knowledge and budget for various activities required among others.

The study also revealed the management competencies required for a profitable cucumber enterprise. All the ten (10) management competences outlined were agreed upon by the respondents. The findings of the study are in consonance with the findings of Oketoobo, Lawal and Onipede (2011) in a study on entrepreneurship skills required by graduates of schools for commercial cucumber production in South-west Nigeria where they found out that graduates of school of agriculture required.

On the climate smart competencies required by farmers for a profitable cucumber production table 3 revealed that all the eight (8) items were agreed, Upon by the respondents. This assertion tallies with the findings of Nwachukwu (2013) that for cocoa production to be enhanced, basic skills in cocoa productions coupled with an optimum motivation are sensitive requirement for best practices and consequently high yield of cocoa.

Table 4 revealed the marketing competencies required for a profitable cucumber enterprise. From the result all the outlined items are relevant and necessary for a profitable cucumber enterprise. This finding is in tandem with that of Ugwuode et al (2023) and Ike & Agba (2015) that outlined the marketing skills needed in the production and marketing of cucumber by senior secondary school students for self-reliance in Enugu State, Nigeria and the place of effective marketing system for sustainable production of cucumber in Tai LGA of River State, Nigeria.

Conclusion

The study identified the major saleable competencies required for profitable cucumber production by rural farmers in Arochuku, LGA Abia State. The competencies identified in this work can be adopted by farmers in related vegetable crops. The attainment and utilization of these competencies will be useful in the establishment of farms for cucumber and other related crops, training by school teachers and extension workers and act as panacea to solving unemployment and poverty challenges among rural farmers.

Recommendations

Based on the findings of this study, the following recommendations were made.

1. The identified competencies required for cucumber production should be incorporated into the training modules of the agricultural extension agents to enhance effective training of cucumber farmers in the study area.
2. Cucumber farmers should form cooperative societies. This will help them to have a voice, access credit facilities, buy input easily and cross pollinate ideas and challenges for profitable cucumber production and marketing.



3. The government and relevant bodies should make the roads accessible and transport cost moderate. This will make farmers and marketers to supply their cucumber fruits to the market of a reduced cost and enhance the profits they will make from sales.
4. Formal credit institutions, for instance, the Nigerian Bank of Agricultural (BOA) should encourage cucumber, farmers through financial empowerment and easy loan – accessibility.

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