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Entrepreneurship Skills in Mini-livestock Production for Empowering Unemployed Youths in North-Central, Nigeria

Alexander Ojonugwa

Faculty of Educational Studies, Universiti Putra Malaysia

Mohd Hazwan Mohd Puad

Faculty of Educational Studies, Universiti Putra Malaysia

E-mail: hazwan@upm.edu.my

Muhd Khaizer Omar

Faculty of Educational Studies, Universiti Putra Malaysia

Enio Kang Mohd Sufian Kang

Faculty of Educational Studies, Universiti Putra Malaysia

Yahaya Joy

[5]Entrepreneurship Development Centre, Federal University of Allied Health Sciences, Enugu, Enugu State, Nigeria

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Abstract

In an era where youths' unemployment is high and characterized with various crimes, effort to boost entrepreneurial opportunities as strategies for youths' empowerment for meaningful livelihood become necessary. Thus, several forms of entrepreneurial skills and activities have been suggested to empower unemployed youths except in the direction of mini-livestock

production. Therefore, this study aimed at identifying the mini-livestock entrepreneurial skills required to empower unemployed youths in planning, maintenance practices, breeding and marketing. This study adopted a Fuzzy Delphi survey research design implemented on a panel of 50 experts. It was found that idle youths required all the entrepreneurial skills identified in the mini-livestock agri-business of planning, maintenance practices, breeding and marketing. The finding of the test of hypotheses showed no significant difference ($p>0.05$) in the experts' mean responses on the entrepreneurial skills in mini-livestock agribusiness in planning, maintenance practices, breeding and marketing for youths' economic empowerment. From these findings, it was therefore recommended that all the identified mini-livestock entrepreneurial skills be applied in the training of unemployed youths for meaningful livelihood.

Keywords: breeding, empowerment, entrepreneurship skills, fuzzy-Delphi**,** marketing, planning, production, unemployment

1. Introduction

Creativeness and innovativeness in identifying entrepreneurship skills in mini-livestock production for empowering unemployed youths is critical to avert the current high level of insecurity in Nigeria. The insecurity situation in Nigeria is a serious national concern that threatens lives and properties, national unity, and integration driven by incessant killings, kidnappings for ransoms, armed robbery, child/human trafficking, ritual killings, gang raping, ethno-religious conflicts, and political assassination (Awoniyi, Uche & Uzoma, 2021). This is the result of high unemployment among youths as little or no effort is put to ensure idle youths are gainfully trained in profitable venture like mini-livestock production. Hence, eradicating insecurity challenges by gainful engagement of idle youths in various enterprises will bring sustainable national security, economic advancement, and affluent foreign investments. According to Wachukwu and Salomi (2021), engaging idle youths in gainful enterprises other than waiting for the scarce white-collar jobs averts the over-dependency on Government for empowerments as curbing strategies to insecurity. Shifting from mere blaming of Government on the frequency of insecurity in Nigeria society and the way out is critical without hesitation through vital engagement of unemployed youths in entrepreneurship education (Ekezie & Deebom, 2019). Several researchers have also suggested entrepreneurship development to be the long-lasting remedy for youth idleness and insecurity (Joy, Akor & Ojonugwa, 2022; Nkechi, Ikechukwu & Okechukwu, 2012).

Entrepreneurship training is an empowerment vehicle for youths' self-sufficiency through steady income generation. Engaging in entrepreneurial skill acquisition enables idle youths to willingly discover their potentials, explore and exploit investment opportunities or create new jobs for themselves and others (Joy et al., 2022). Stressing the need for entrepreneurship training for skill acquisition in mini-livestock production among unemployed youths is an assurance to boost the nation' Gross Domestic Product (GDP) that would conveniently engage Nigerian idle youths as producers instead of being perpetual consumers. It has the capacity to alleviate poverty, thereby improving the standard of living and quality of life of the citizens. The system reduces crime rate drastically that are common among idle youths

through job creation. Effective adoption of entrepreneurship education and invention enhance economic development, transform traditional industries, stimulate investment, and increase scientific and technological development of a nation (Awoniyi et al., 2021). Therefore, in a period of this insecurity situations, stabilizing entrepreneurship skills in the direction of establishing small and medium scale businesses through mini-livestock production to national and multinational firms for large volume of wealth creation, would improve the standard of living of people. Because this practice creates more jobs, it will humiliate the baits for insecurity engagements amongst unemployed youths.

Unveiling the entrepreneurial opportunities in mini-livestock by preparing the unemployed/idle youths to establish small and medium scale businesses through planning, maintenance practices, breeding and marketing are crucial to produce and supply alternative animal proteins for the projected bulge human population by 2050. This is possible by making sure entrepreneurship skills in these directions are identified and integrated into the training of idle youths to make them acquire the skills of producing and supplying meat, frass, manure, cages, pups/hatchlings/larvae/pupa, and adult mini-livestock for market sales. Additional assurances of small-scale businesses in mini-livestock are directly gathering and converting organic wastes - such as decaying plant and animal materials into feeds (Dorte et al., 2021). Other ventures of entrepreneurship in mini-livestock feed preparation is the gathering and sales of pawpaw leaves, sweet potato leaves, cocoyam leaves, fluted pumpkin leaves, spinach, sweet pea, tomatoes, yam peels, cassava peels, pieces of bread, rotten plantains, mulberry leaves substrates, palm tree trunks, and palm fiber, and remnant foods without table salt for all categories of mini-livestock. Converting youths into mini-livestock marketing actors such as wholesalers, middlemen and retailers are other profitable ways of empowering unemployed youths. Any of the actors can be in the businesses of slaughtering and processing blood meals, cooking/frying mini-livestock meat or eggs, drying and crushing insect into flour, making mini-livestock bubbles/snacks/biscuits, harvesting and processing mini-livestock skin, hairs and bones for food manufacturing industries. Other entrepreneurship opportunities in mini-livestock marketing is the ability to convert idle youths into retailers/vendors/traders who can buy mini-livestock from producers or wholesalers and sell directly to final consumers in restaurants, shops, streets, parties, hotels, and bars.

However, the idle youths are not well sensitized to have entrepreneurial knowledge of planning, caring, breeding and marketing mini-livestock for sustainable livelihood, leaving the sector untapped for economic development. This makes them lack information pertaining to mini-livestock entrepreneurial activities and skills and in turn resorted to committing crimes for money making for livelihood. Therefore, the researchers are interested in identifying the entrepreneurship skills in mini-livestock production for economic empowerment of unemployed/idle youths in North-Central, Nigeria.

1.1 Research Questions

The following research questions, in view of the study objective, were outlined to guide the study:

i. What are the experts' opinions on the entrepreneurial skills unemployed youths required in planning for mini-livestock production in North-Central, Nigeria?

ii. What are the experts' opinions on the entrepreneurial skills unemployed youths required in the maintenance practices of mini-livestock in North-Central, Nigeria?

iii. What are the experts' opinions on the entrepreneurial skills unemployed youths required in mini-livestock breeding in North-Central, Nigeria?

iv. What are the experts' opinions on the entrepreneurial skills unemployed youths required for marketing mini-livestock in North-Central, Nigeria?

1.2 Research Hypotheses

Sequel to the stated study objectives and questions, the following null hypotheses were outlined, tested, and judgments were made using one-way ANOVA at 95% confidence interval representing a significance level of .05 ($p < .05$).

$H_0$1: There is no significant difference in the mean scores of the experts' views on the entrepreneurial skills unemployed youths required for planning mini-livestock production.

$H_0$2: There is no significant difference in the mean scores of the experts' views on the entrepreneurial skills unemployed youths required for the maintenance practice of mini-livestock.

$H_0$3: There is no significant difference in the mean scores of the experts' views on the entrepreneurial skills unemployed youths required for breeding mini-livestock among.

$H_0$4: There is no significant difference in the mean scores of the experts' views on the entrepreneurial skills unemployed youths required for marketing mini-livestock.

2. Methodology

2.1 Study Design

This study considered the use of Fuzzy Delphi approach. The choice to use this study technique is to get experts' agreement on the components of entrepreneurial skills in mini-livestock planning, management, breeding, and marketing appropriate for unemployed youths to transit to the world of business of mini-livestock production. Agreeing to Mohd-Jamil et al. (2017), the Fuzzy Delphi procedure is adequate to establish consensus among experts on a subject under investigation. The idea of allowing experts to continuously express their thoughts while saving time and money in managing questions is the advantage Fuzzy Delphi technique has over the traditional Delphi technique (Mohd. Jamil & Noh, 2017).

2.2 Study Participants

The study sample in this phase comprised of all the two hundred and three (203) experts in the field of livestock production, marketing, and teaching (Academic Planning Units of Tertiary Institutions, 2024). Therefore, a panel of 50 experts were earmarked using a purposive sampling method from the three dimensions of livestock production. Advocates of Delphi method, viz. Adler and Ziglio (1996) and Delbecq, Van de Ven and Gustafson (1975) advocated that the number of experts between 10 and 50 is appropriate to achieve a high agreement value.

The panel of experts were wisely chosen on the origin of their capability and understanding of the study (Jamil & Noh, 2020; Nworie, 2011). Defining aspects of the length of knowledge of experts in Delphi study is noteworthy to surety the excellence of the research results (Jacobs, 1996). Hence, a well-informed expert must have knowledge in the field involved progressively over five years. The range of experts offered infinite viewpoints in relation to the aim of the research. It equally provided more exhaustive and comprehensive conclusions about the variety of perspectives on the problems examined (Nworie, 2011). In this investigation, the expert panel consisted of several lecturers in livestock production and health management, agricultural economics, and agricultural education. Thus, the experts were carefully chosen based on certain standards according to the know-how of their individual fields as having a lowest work experience of five (5) years, lowest qualification of Master Degree, and must be lecturer(s) in the corresponding fields.

2.3 Study Instrument

The questionnaire for data collection in this Fuzzy Delphi was a set of entrepreneurial skills questionnaire (ESQ) with two sections, namely, “A” and “B”. Section ‘A’ elicited experts’ background information, and Section ‘B’ with forty four (45) items on the required entrepreneurial skills for MP were elicited based on the experts’ views on a 7-point Fuzzy Scale as extremely important (7), very important (6), important (5) moderately important (4), unimportant (3), very unimportant (2), and extremely unimportant (1). This questionnaire was developed from the review of the literature. According to Skulmoski et al. (2007), a literature review, pilot trials, and personal experiences are also used to generate questionnaire items for Fuzzy Delphi. Okoli and Pawlowski (2004) concluded that a literature review conducted within the parameters of the research's scope can be used to create the items and content parts of the study. Then, modifications were made to the questionnaire based on their feedback gotten from the validates. It was also tested for reliability. Consequently, every construct attained an outstanding Cronbach alpha value of 0.79 for entrepreneurial skills in planning mini-livestock, 0.77 for entrepreneurial skills in maintenance practices of mini-livestock, 0.89 for entrepreneurial skills in breeding mini-livestock, and 0.81 for entrepreneurial skills in marketing mini-livestock. To answer the research questions, a 7-point questionnaire, as stated in Table 1, was distributed to the experts online after converting it to google form to obtain their consensus on the items.

Table 1. 7-point Fuzzy Scale

Scale	Level of Consensus	Fuzzy Scale
1	Extremely important	(0.9,1.0,1.0)
2	Very important	(0.7,0.9,1.0)
3	Important	(0.5,0.7,0.9)
4	Moderately important	(0.3,0.5,0.7)
5	Unimportant	(0.1,0.3,0.5)
6	Very unimportant	(0.0,0.1,0.3)
7	Extremely unimportant	(0.0,0.0,0.1)

Source: Mohd Jamil and Mat Noh (2020)

2.4 Data Collection Method

The validated SELCQ was converted to google form and sent to all the selected experts via online as convenient to them. Nworie (2011) and McPherson, Krotofil and Killaspy (2018) asserted that questionnaire meant to collect data for a study can be sent to all study respondents either by face-to-face, email or as other means suitable to the experts. The experts were requested to rate each item agreeing to the available response options. Their opinions were carefully sorted from the google account where the google form was developed. The google-extracted responses in form of Microsoft Excel package was used in the data analysis session as recommended by Mohd-Jamil et al. (2017), Mohd Jamil and Mat Noh. (2020) and Ramlie et al. (2014).

2.5 Data Analysis

The data analysis in this study started with converting linguistic scales into fuzzy triangular numbers using the downloaded Microsoft Excel sheet containing the data. A fuzzy triangular number takes standards made up of letters m1, m2, and m3. The m1 stances for least value, the m2 stances for the medium value, and the m3 stances for the highest value. Triangular Fuzzy Number has two conditions: first, the value of Threshold (d) must be ≤ 0.2. hence, the experts' agreement was gotten when the resulting value was smaller or equal to 0.2 (Cheng & Lin, 2002). The formula below was applied:

$$d(\tilde{m},\tilde{n}) = \sqrt{\frac{1}{3}[(m_1 - n_1)^2 + (m_2 - n_2)^2 + (m_3 - n_3)^2]}$$

Secondly, the Triangular Fuzzy Number must involve a percentage of experts' agreement. The traditional Delphi method specified expert group agreement should exceed 75% before being accepted (Chu & Hwang, 2008; Murray & Hammons, 1995). While the ranking of the various entrepreneurship skills were achieved using defuzzification method. Defuzzification Process was the determination of the fuzzy (A) score value based on the α-cut value of 0.5 (Tang & Wu, 2010; Bodjanova, 2006). Fuzzy score value (A) ≤ 0.5 measured the accepted items while those with less than 0.5 were rejected. The fuzzy (A) score value determination was achieved via the below formula:

$$A = (1/3)*(m1 + m2 + m3)$$

A one-way ANOVA was used to test $H_0$1 - 4 at 95% confidence interval representing a

significance level of .05 ($p < .05$). The analytic tool is appropriate because it is often used to determine whether there are any statistically significant differences between the means of two or more independent groups. In this study, the choice of the use of one-way ANOVA is key to determine if the responses of the three groups of experts are statistically significantly different in the required entrepreneurial skills in MP.

3. Results

3.1 Findings on the Respondents' Demographic Information

Descriptive examination of the respondents' demographic background data is presented in Table 3.1. The background information are gender, age, work experience, highest qualification, field of expertise, member of professional body, experience working with mini-livestock, type of mini-livestock reared, and teaching of mini-livestock production to students are presented in the form of profile, frequencies and percentages. All these indices are in relation to the need of identifying ELCs for MP for the training of youths. Results based on the respondents' gender show that out of 50 experts, 36 (72%) are males while 14 (28%) are females. The analysis also show that 23 (46%) fall within the ages below 50 years while 27 (54%) are within the ages of 50 years and above. For the experts' work experience, below 11 – 20 years constitutes 23 (46%), 5 – 10 years 13 (26%), above 20 years 10(20%) and below 5 years of the experts constitutes 4 (8%). The analysis on the qualification of the experts show that 29 (58%) have PhD in their respective fields of livestock production and teaching. The breakdown of the analysis show that 17 (34%) experts are animal scientists and agricultural educators respectively. The analysis further shows that 49 (98%) of experts belong to professional body and 45 (90%) have experience of working with mini-livestock. As for the type of mini-livestock expert rear, the result of the study shows that 20(40%) rear poultry, 10 (20%) rear rabbits, 12 (24%) rear snail, 5 (10%) rear pigeon, 2 (4%) rear bees and 1 (2%) of experts rear pig. For those teaching, 36 (72%) teach mini-livestock production to students while 14(28%) do not.

Table 3.1 Respondents' Demographic Profile (n=50)

Profile	Frequency	Percentage (%)
Gender		
Male	36	72
Female	14	28
Age		
Below 50 years	23	46
Above 50 years	27	54
Work Experience		
Below 5 years	4	8
5-10 years	13	26
11-20 years	23	46
Above 20 years	10	20
Highest Qualification		
PhD	29	58

Master degree	20	40
First Degree	1	2
Field of Expertise		
Animal Science	17	34
Agricultural Economics	16	32
Agricultural Science Edu.	17	34
Do you belong a professional body?		
Yes	49	98
No	1	2
Do you have experience working with or raising mini-livestock?		
Yes	45	90
No	5	10
Mini-livestock Experts Rear		
Bee keeping	2	4
Pig	1	2
Pigeon	5	10
Poultry	20	40
Rabbit	10	20
Snail	12	24
Do you teach mini-livestock production to students?		
Yes	36	72
No	14	28

3.2 Analysis of Experts' Opinions on Entrepreneurial Skills Unemployed Youths Required in Planning for Mini-livestock Production

In this phase of identifying entrepreneurial skills unemployed youths required in planning for mini-livestock production, the items given to the experts for their views are slated in Table 3.2.

Table 3.2. Items on the Part of entrepreneurial skills in Planning for Mini-livestock Production

	Items
A1	Formulate specific objectives for mini-livestock production
A2	Make a budget to estimate the cost of production and estimated income
A3	Identify the source of finance for the mini-livestock enterprise
A4	Create a duty schedule for the mini-livestock enterprise
A5	Identify the source of feed for mini-livestock
A6	Identify the source of durable materials for cage construction

A7	Maintain suitable dimensions and orientation for cage construction
A8	Roof the cages with either asbestos, corrugated iron, zinc, or thatch
A9	Make the cage walls high to avoid mini-livestock leaping out
A10	Identify the source of mini-livestock for stocking
A11	Maintain appropriate stocking density
A12	Provide transporting boxes and other facilities

The threshold value (d), experts' agreement percentage, defuzzification and item position for the above items are shown in Table 3.3.

Table 3.3. Findings of Experts' Opinions on Entrepreneurial Skills in Planning for Mini-livestock Production

Condition of Triangular Fuzzy Numbers			**Condition of Defuzzification Process**		
Item	**d**	**% of Experts' consensus**	**Fuzzy Score (A)**	**Position**	**EV**
A1	0.076	94.10%	0.933	1	Agreed
A2	0.083	94.10%	0.927	2	Agreed
A3	0.083	94.10%	0.927	2	Agreed
A4	0.107	88.24%	0.912	9	Agreed
A5	0.107	88.24%	0.912	8	Agreed
A6	0.102	94.12%	0.922	4	Agreed
A7	0.091	94.12%	0.916	5	Agreed
A8	0.120	82.40%	0.914	6	Agreed
A9	0.120	82.40%	0.914	6	Agreed
A10	0.111	94.12%	0.910	10	Agreed
A11	0.111	94.12%	0.910	10	Agreed
A12	0.108	88.20%	0.906	12	Agreed

Decision:

Triangular Fuzzy Numbers
i) Threshold Value (d) ≤ 0.2
iii) Percentage of Experts' Consensus > 75%

Defuzzification Process:

ii) Fuzzy Score (A) ≥ α – cut value = 0.5
iv) EV = Experts' View

Sequel to the findings in Table 3.3 above, all the items recorded a Threshold value (d) of ≤ 0.2. This implies that all the items gained experts' agreement about the entrepreneurial skills in planning for MP. The experts' agreement calculation shows that all items are above 75% and all defuzzification values for items also exceed the value of α - cut = 0.5 (Chen & Lin, 2002). The result shows that the items on entrepreneurial skills unemployed youths required in planning for MP have gained agreement amongst the experts. The items are sorted by priority as shown in Table 3.4.

Table 3.4. Items Position by Priority

Sort by priority	Items	Item Number
1	Formulate specific objectives for mini-livestock production	A1
2	Make a budget to estimate the cost of production and estimated income	A2
2	Identify the source of finance for the mini-livestock enterprise	A3
4	Identify the source of durable materials for cage construction	A6
5	Maintain suitable dimensions and orientation for cage construction	A7
6	Roof the cages with either asbestos, corrugated iron, zinc, or thatch	A8
6	Make the cage walls high to avoid mini-livestock leaping out	A9
8	Identify the source of feed for mini-livestock	A5
9	Create a duty schedule for the mini-livestock enterprise	A4
10	Identify the source of mini-livestock for stocking	A10
10	Maintain appropriate stocking density	A11
12	Provide transporting boxes and other facilities	A12

The items in Table 3.4 are the parts of entrepreneurial skills in planning arranged based on the priorities for empowering unemployed youths to plan for a profitable mini-livestock production enterprise.

4.3 Analysis of Experts' Opinions on Entrepreneurial Skills Unemployed Youths Required in the Maintenance Practices of mini-livestock

The items given to the experts on the entrepreneurial skills unemployed youths required in the maintenance practices of mini-livestock are stated in Table 3.5.

Table 3.5. Items on Entrepreneurial Skills in the Maintenance Practices of Mini-Livestock

	Items
B1	Provide comfortable cages similar to wild sources
B2	Maintain an optimal temperature of 25℃ to 30℃
B3	Protect the cages from predators and thieves
B4	Provide nest boxes
B5	Feed mini-livestock with fruits, vegetables, weeds, and clean water with mixture of vitamin premix
B6	Plan a twice-daily feeding schedule, with one feeding in the morning and one in the late afternoon or at nightfall
B7	Feed mini-livestock with wheat bran, cereal substrates and vegetable substrates
B8	Quarter-slice leaves, fruits, and vegetables for gastropods
B9	Avoid table salt in mini-livestock feeds
B10	Inspect and identify health defects in mini-livestock
B11	Disinfect mini-livestock cages regularly
B12	Abate wounds, fractures, and boils by resolving the conditions of aggressiveness and panicking
B13	Abate dust, ammonia gas, and cold in cages to restraint respiratory encounters

B14 Control predators and prevent parasites and diseases
B15 Consult veterinarians on a regular basis to ensure the health of mini-livestock
B16 Cull and separate sick livestock and dispose of appropriately dead ones

The threshold value (d), experts' consensus percentage, defuzzification and item position for the above competency items are given in Table 3.6.

Table 3.6. Findings of Experts' Opinions on the Entrepreneurial Skills in the Maintenance Practices of Mini-Livestock

Condition of Triangular Fuzzy Numbers			Condition of Defuzzification Process		
Item	**d**	**% of Experts' consensus**	**Fuzzy Score (A)**	**Position**	**EV**
B1	0.063	100.00%	0.937	1	Agreed
B2	0.063	100.00%	0.937	1	Agreed
B3	0.076	94.12%	0.933	3	Agreed
B4	0.083	94.10%	0.927	4	Agreed
B5	0.083	94.10%	0.927	4	Agreed
B6	0.083	94.10%	0.927	4	Agreed
B7	0.120	82.40%	0.914	10	Agreed
B8	0.111	94.12%	0.910	11	Agreed
B9	0.130	94.12%	0.894	12	Agreed
B10	0.083	94.10%	0.927	4	Agreed
B11	0.091	94.12%	0.916	9	Agreed
B12	0.130	94.12%	0.894	12	Agreed
B13	0.130	94.12%	0.894	12	Agreed
B14	0.192	88.24%	0.822	15	Agreed
B15	0.088	94.10%	0.922	8	Agreed
B16	0.177	88.24%	0.806	16	Agreed

Decision:

Triangular Fuzzy Numbers

i) Threshold Value (d) ≤ 0.2

iii) Percentage of Experts' Consensus > 75%

Defuzzification Process:

ii) Fuzzy Score (A) ≥ α – cut value = 0.5

iv) EV = Experts' View

Based on the results in Table 3.6 above, all items for entrepreneurial skills in the maintenance practices of mini-livestock in captivity recorded a Threshold value (d) ≤ 0.2. This indicates that all the competency items have attained the experts' agreement. In line with the suggestion of Chen & Lin (2002), expert agreement shows that all items are above the value of 75%, and all defuzzification values for each item exceed the value of α - cut = 0.5. This result shows that the items for the entrepreneurial skills in the maintenance practices of mini-livestock have gained experts' agreement. Therefore, the competency items are sorted by priority as shown in Table 3.7.

Table 3.7. Items Position by Priority

Sort by Priority	Items	Item Number
1	Provide comfortable cages similar to wild sources	B1
1	Maintain an optimal temperature of 25℃ to 30℃	B2
3	Protect the cages from predators and thieves	B3
4	Provide nest boxes	B4
4	Plan a twice-daily feeding schedule, with one feeding in the morning and one in the late afternoon or at nightfall	B6
4	Feed mini-livestock with fruits, vegetables, weeds, and clean water with mixture of vitamin premix	B5
4	Inspect and identify health defects in mini-livestock	B10
8	Consult veterinarians on a regular basis to ensure the health of mini-livestock	B15
9	Disinfect mini-livestock cages regularly	B11
10	Feed mini-livestock with wheat bran, cereal substrates and vegetable substrates	B7
11	Quarter-slice leaves, fruits, and vegetables for gastropods	B8
12	Avoid table salt in mini-livestock feeds	B9
12	Abate wounds, fractures, and boils by resolving the conditions of aggressiveness and panicking	B12
12	Abate dust, ammonia gas, and cold in cages to restraint respiratory encounters	B13
15	Control predators and prevent parasites and diseases	B14
16	Cull and separate sick livestock and dispose of appropriately dead ones	B16

Based on Table 3.7, the presentation of maintenance competency items for mini-livestock in captivity were arranged based on priority when considering the entrepreneurship skills unemployed youths required.

4.4 Analysis of Experts' Opinions on Entrepreneurial Skills Required in Mini-livestock Breeding

The items given to the experts on the entrepreneurship skills for breeding mini-livestock are stated in Table 3.8

Table 3.8. Items for the Aspect of Entrepreneurship Skills in Mini-livestock Breeding

	Items
C1	Identify prolific breed of mini-livestock
C2	Ensure healthy parents for breeding
C3	Keep to the recommended breeding ratio of 1 male to 4 does
C4	Detect does on heat period and offer bedding materials
C5	Remove the buck/cock immediately pregnancy or incubation is detected
C6	Transfer pregnant does to a maternity cage and re-mate non-pregnant ones
C7	Keep hatchlings and pups in safe conditions
C8	Wean at appropriate time

The threshold value (d), experts' agreement percentage, defuzzification and item position for the above items are shown in Table 3.9.

Table 3.9. Findings of Experts' Opinions on Entrepreneurship Skills in Mini-livestock Breeding

Condition of Triangular Fuzzy Numbers			**Condition of Defuzzification Process**		
Item	**d**	**% of Experts' consensus**	**Fuzzy Score (A)**	**Position**	**EV**
C1	0.076	94.10%	0.933	2	Agreed
C2	0.063	100.00%	0.937	1	Agreed
C3	0.098	88.24%	0.924	4	Agreed
C4	0.083	94.10%	0.927	3	Agreed
C5	0.107	94.12%	0.916	5	Agreed
C6	0.120	82.40%	0.914	6	Agreed
C7	0.111	94.12%	0.910	7	Agreed
C8	0.130	94.12%	0.894	8	Agreed

Decision:

Triangular Fuzzy Numbers

i) Threshold Value (d) ≤ 0.2

iii) Percentage of Experts' Consensus > 75%

Defuzzification Process:

ii) Fuzzy Score (A) ≥ α – cut value = 0.5

iv) EV = Experts' View

The results in Table 3.9 above show that all the entrepreneurship skills in mini-livestock breeding recorded a Threshold value (d) ≤ 0.2. It signifies that all of these items have gained expert agreement as suggested by Chen & Lin (2002). The expert agreement percentage equally shows that all the entrepreneurship skills in mini-livestock breeding are above 75% and all defuzzification values for items also surpass the value of α - cut = 0.5. It shows that the mini-livestock breeding skills in relation to entrepreneurship development among unemployed youths gained agreement from the experts. Items are sorted by priority as given in Table 3.10.

Table 3.10. Items Position by Priority

Sort by Priority	Items	Item Number
1	Ensure healthy parents for breeding	C2
2	Identify prolific breed of mini-livestock	C1
3	Detect does on heat period and offer bedding materials	C4
4	Keep to the recommended breeding ratio of 1 male to 4 does	C3
5	Remove the buck/cock immediately pregnancy or incubation is detected	C5
6	Transfer pregnant does to a maternity cage and re-mate non-pregnant ones	C6
7	Keep hatchlings and pups in safe conditions	C7
8	Wean at appropriate time	C8

The items in Table 3.10 consists of the items for breeding mini-livestock and are the aspects of the entrepreneurship skills unemployed youths required to gain entry into practice of mini-livestock production enterprise.

4.5 Analysis of Experts' Opinions on Entrepreneurial Skills Unemployed Youths Required in Marketing Mini-Livestock

The items given to the experts on the entrepreneurial skills unemployed youths required for marketing mini-livestock are stated in Table 3.11

Table 3.11. Items for the Aspect of Entrepreneurial Skills in Mini-livestock Marketing

	Items
D1	Identify markets for the sale of mini-livestock
D2	Use a weighing scale to sort, grade, and standardize mini-livestock products
D3	Transport and distribute the products to customers
D4	Process, package, and store products in safe containers during marketing
D5	Take risks, advertise and fix prices on products for customers
D6	Dispose of and sell adult mini-livestock at attractive body weights
D7	Sell livestock at either farm gate, at chosen markets, or to invited wholesalers or retailers
D8	Collect money at the point of sale
D9	Determine profit and loss account

The threshold value (d), experts' agreement percentage, defuzzification and item position for the above items are shown in Table 3.12.

Table 3.12. Findings of Experts' Opinions on Entrepreneurial Skills Required in Marketing Mini-Livestock

Condition of Triangular Fuzzy Numbers			Condition of Defuzzification Process		
Item	**d**	**% of Experts' consensus**	**Fuzzy Score (A)**	**Position**	**EV**
D1	0.063	100.00%	0.937	1	Agreed
D2	0.083	94.10%	0.927	3	Agreed
D3	0.076	94.12%	0.933	2	Agreed
D4	0.098	88.24%	0.924	4	Agreed
D5	0.088	94.12%	0.922	5	Agreed
D6	0.091	94.12%	0.916	6	Agreed
D7	0.091	94.12%	0.916	6	Agreed
D8	0.120	82.40%	0.914	8	Agreed
D9	0.111	94.12%	0.910	9	Agreed

Decision:
Defuzzification Process:

Triangular Fuzzy Numbers

i) Threshold Value (d) ≤ 0.2

iii) Percentage of Experts' Consensus > 75%

ii) Fuzzy Score (A) ≥ α – cut value = 0.5

iv) EV = Experts' View

The results in Table 3.12 above shows that all the entrepreneurship skills in marketing mini-livestock received a Threshold value (d) of ≤ 0.2. This means that all of these items have gained expert agreement in accordance with the advice of Chen & Lin (2002). The expert agreement percentage shows that all items are above 75% and all defuzzification values for items also exceed the value of α - cut = 0.5. This indicates that the entrepreneurship skills in the direction of marketing mini-livestock have gained agreement from experts. Items are sorted by priority as shown in Table 3.13.

Table 3.13. Items Position by Priority

Sort by Priority	Items	Item Number
1	Identify markets for the sale of mini-livestock	D1
2	Transport and distribute the products to customers	D3
3	Use a weighing scale to sort, grade, and standardize mini-livestock products	D2
4	Process, package, and store products in safe containers during marketing	D4
5	Take risks, advertise and fix prices on products for customers	D5
6	Dispose of and sell adult mini-livestock at attractive body weights	D6
6	Sell livestock at either farm gate, at chosen markets, or to invited wholesalers or retailers	D7
8	Collect money at the point of sale	D8
9	Determine profit and loss account	D9

Centered on Table 3.13, the application of marketing skills are arranged based on priority when empowering unemployed youths for the business of mini-livestock production.

4.6 Hypothesis Testing on Entrepreneurship Skills Required by unemployed youths in Planning, Maintaining, Breeding, and Marketing Mini-livestock Production

Table 3.14. ANOVA of Experts' Ratings of Entrepreneurship skills Required by Unemployed Youths in Planning, Maintaining, Breeding, and Marketing Mini-livestock

Hypotheses (H)	Responses	Sum of Squares	df	Mean squares	F	Sig.	Decision
H1	Between Groups	349.089	2	174.544	1.585	.216	Not Rejected
	Within Groups	5174.691	47	110.100			
H2	Between Groups	652.777	2	326.389	2.409	.101	Not Rejected
	Within Groups	6368.103	47	135.492			
H3	Between Groups	109.191	2	54.596	.655	.524	Not Rejected
	Within Groups	3914.809	47	83.294			
H4	Between Groups	348.357	2	174.178	2.472	.095	Not Rejected
	Within Groups	3311.643	47	70.460			

The table 3.14 presented the results of the tested hypotheses. The H1's findings revealed that mean scores of the experts' opinion and decisions on identification of entrepreneurial skills in planning for mini-livestock production among unemployed youths was not statistically significantly different, F (2, 47) = 1.585, P (.216) > .05 level of significance. Therefore, the null hypothesis was not rejected. The result of H2 also showed no statistical significant difference in the mean scores of the experts' opinion and decisions on identification of entrepreneurial skills in the maintenance practices of mini-livestock among unemployed youths. The stated null hypothesis was not rejected, as the F (2, 47) = 2.409, P (.101) > .05 level of significance. Similarly, the result of H3 showed no statistical significant difference in the mean scores of the experts' opinion and decisions on identification of entrepreneurial skills in breeding mini-livestock among unemployed youths. The null hypothesis was not rejected, as the as F (2, 47) = .655, P (.524) > .05 level of significance. And the result of H4 equally presented no statistical significant difference in the mean scores of the experts' opinion and decisions on identification of entrepreneurial skills in marketing mini-livestock among unemployed youths. The null hypothesis was not rejected, as the F (2, 47) = 2.472, P (.095) > 0.05 level of significance.

4. Discussions

The findings for research question 1 as shown in Table 3.4 prioritized entrepreneurial skills in planning for MP that include formulate specific objectives for MP, make a budget to estimate the cost of production and estimated income, identify the source of finance for the mini-livestock enterprise, identify the source of durable materials for cage construction, maintain suitable dimensions and orientation for cage construction. These findings marry the idea of Olaitan and Mama (2001) that planning activities for any project include formulation of specific objectives, revising the objectives from time to time, deciding on farming operations to adopt, and planning for procurement of farm inputs among others. In addition, Mohammed (2007) submitted that planning steps of an enterprise include identification of sources of credit, keeping records of sales and expenditure together with ascertaining the profit margin of the enterprise. Shapiro (2021) is of the view that planning occasions an orderly process of recognizing a need before shaping the best system to make it work. The best system to achieve this need is the capacity of unemployed youths to think about the future of the initiative by doing something towards it right from the point of need identification. The point of need identification include the time of roofing cages with either asbestos or thatch, make cage walls high to avoid mini-livestock leaping out, identify feed sources, and create a duty schedule for the mini-livestock enterprise. Planning skills such as identify the source of mini-livestock for stocking, maintain appropriate stocking density, and provide transporting boxes and other facilities are what-to do and how to do it of a manager. These outcomes align with Litman (2022) who also testified a manager of a business needs to decide on what to do and how to do it with the target of making more incomes. Hence, planning is very required before taking active engagement in MP.

The findings for research question 2 as shown in in Table 3.7 prioritized the entrepreneurial skills in the maintenance practices of mini-livestock. These agree with the opinion of Jimoh and Akinola (2020) that maintenance culture for hatchings from gastropods is to allow them in the soil for five days, upon which they dispose of their shells and appear normal. After their emergence, the hatchlings are expected to be kept in houses inform of baskets with tiny holes that could prevent their escape until they are grown to larger proportions. The intensive cares should last for three months to ensure hatchlings attain maturity before moving them to well-pastured areas since they enjoy crisp and sweet vegetables (Jimoh &Akinola., 2020). Fattening of the hatchlings is expected to take place in cages for six months under moist conditions to avert aestivation, activity, and growth (ENADEP, 2009). According to Bayode (2009) and Amusan and Omidiji (1998), provision of juicy leaves, constant water, organic matter, a temperature of 25 – 30℃, and relative humidity of 80% are sure conditions for gastropods to lay maximum eggs for hatching. As such, warmness, moistness, and air are permitted at optimal level to enhance hatching (ENADEP, 2009; Jimoh & Akinola, 2020). According to AgroNigeria, (2019), Kittens/pups of mammalian mini-livestock are usually born naked in cages with their eyes closed at birth with caution not to touch them with bare hands. As the animals advance in age, Adu et al. (2017) and Njoku-Onu et al. (2019) suggested that accessories such as drinking troughs, sticks for cleaning, and bone or stones to

gnawing their frequently growing incisors should be provided. Control of temperature is eminent in the cages of these livestock. Hence, keeping to high temperature should be discouraged because it affects spermatogenesis and in turn reduce the volume and concentration of ejaculates and sperm motility (Lebas et al., 1986). Provision of underground shelters and making bricks or clay heaps of about 0.5 m high handle the effects of high temperature and difficulties in parturitions. Chicks of the avian mini-livestock are cared for to minimize chick mortality rate, and as such, adequate heat should be provided for chicks during brooding stage. Oluwatomi (2010) directs breeders to use a wired floor to keep the livestock separated from their feces, and entrance holes should not be allowed in cages as they will likely escape through such holes. For the comfort of the birds, Jimmy (2012) admitted that bedding materials (wood shavings), pet bowls, feeding troughs, and small chicken drinkers be provided in cages. All mini-livestock depend on the consumption of quality feeds for their survival and optimum productivity. In line with this, edible supplies such as fodder, forage, roughage, proteins, carbohydrates, fruits, root and tubers, minerals, concentrates, and water be offered to mammalian mini-livestock in ad-libitum (Adu et al., 2017; Marani, 2018; Derry et al., 2020; Jiwuba et al., 2020). 100 – 150 grams of balanced concentrate feeds are offered twice a day: in the morning and evening while pelleted feed invigorated with vitamins and salt are accompanied with green fodder or hay. In addition, ricebran, corn, and roots could be provided during the day and green leaves at night. All feed sources can be fed to gastropods. These include decayed and decaying plant and animal resources and their wastes (coprophagia), green leaves and other domestic wastes (Ogunniyi 2009; Jimoh et al., 2020). The avian mini-livestock feed on either plant-based feed sources that include grains, seeds, and oats or animal-based feeds like animal tissues, blood, and bones that are rich in nutrients including carbohydrates, proteins, fat and oil, minerals, vitamins, and water (Kanath, 2006). In the direction of health management, Salihu and Abdulrahman (2020) reported that keeping to providing *ad-libitum* of feeds and fresh-water and daily check to detect sick animals are basic health management practices for averting disease outbreak in mini-livestock farms. Other measures such as avoidance of overcrowding, control of predators are sure way of keeping to the health of mini-livestock (Azeez, 2009; Chah and Inegbedion, 2013).

Table 3.10 revealed entrepreneurial skills unemployed youths require to breed mini-livestock. The prioritized findings conforms with the fundamental success of breeding in mini-livestock as it has to do with right skill of determining the livestock sexes through their body morphologies except for snails that are hermaphrodites. According to Njoku-Onu et al. (2019), understanding of identification of bucks and does through the observation of the main features of their heads and genital characteristics are essentially needed to excel mini-livestock breeding. It is evident that bucks have big head and body with distant anogenital features (anus, penis and testes). The female mini-livestock have clamp anogenital features with the presence of teats and vulva (Adu et al., 2017; Njoku-Onu et al., 2019). Significant to this is the skill of identifying that mini-livestock with regular breeding parameters such as consistent oestrus cycles, mating, periodic vaginal membrane perforation, parturition, lactation and weaning young ones in captivity. According to Adu et al. (2017), keeping to the bodyweight of bucks and avoidance of breeding close related ones at mating

time are key to achieve positive results of the breeding parameters. Hence, the bucks have to be heavier than the does by least 0.5 - 1kg and only does from same parents are bred along with a buck from different parents. For effective copulation, a mating ratio of 1 buck to 4 does must be observed in a breeding cage and be allowed to stay together for a minimum of 1 – 2 months to avoid complications (abortion and other birth abnormalities) that are attributable to continuous/over mating. According to Adu et al. (2017), and Salihu and Abdulrahman (2020), pricked vaginal tissue, copulatory plug, female's trunk with scratches inflicted by buck during mating the does are parameters to detect successful mating in mammalian mini-livestock. Afterwards, a pregnancy check is expected through abdominal palpation (Addo, 2002; Adu et al., 2017; Ibitoye et al., 2019; Salihu & Abdulrahman, 2020). Pregnancy is said to have taken place if there is a presence of embryos if palpated like grapes of round-like textures. This which is usually done between 12th -14th day after mating, is meant to abreast farmers the need for immediate preparation for the provision of nest boxes as the gestation period hovers between 28-31 days. To ensure less or no mortality rate among pups during kindling, certain kindling experiences are required to set good intelligences. All mammalian mini-livestock with bloated abdomens are perceived inconspicuously every day for changes in their feed and water ingestion as well as changes in their behaviour and postures (Addo, 2002; Adu et al., 2017; Abioye et al., 2018). At the peak of their gestation periods, does within the last three days of gestation, frequently look at their lower abdomen, change their postures, stand on their hind legs, and tend to pull her fur and build a nest.

The outcome of the research question 4 in Table 3.13 indicates the result of prioritized entrepreneurial skills unemployed youths required for mini-livestock marketing. Prioritizing unemployed youths' ability to identify markets where mini-livestock are sold as well as transporting and distributing the products to customers are very crucial. Hence, unemployed youths are expected to use a weighing scale to sort, grade, and standardize mini-livestock products after processing for easy packaging and storage in safe containers. These agree with the view of Arene (1998), Elom Grace & Aja (2017) and Lovemore et al. (2019) that searching for markets, grading and standardizing, distributing and transporting product, recording financial transactions, and fixing prices are marketing skills entrepreneurs need to possess before making adventure of such enterprise. Experts also prioritized the tasks of taking risks, advertising, and fixing prices on products for customers, selling mini-livestock at attractive body weights at either farm gate, at designated markets, to invited wholesalers or retailers, and collect money at the point of sale with accurate record of profit and loss as entrepreneurial skills unemployed youths required for MP marketing. The outcomes are in congruence with the submission of Mizelle (2004) that marketing must be responsive to customers' demands for excellent, freshness and realistic prices, as well as their tastes and preferences.

5. Conclusion

It is evident that the level of youths' idleness/unemployment is very high in Nigeria and the reason for insecurities the entire nation face currently that retrograde her economic potentials. Hence, there is a convergence of views by the global economists that exploring alternative means of engaging youths in entrepreneurial activities would mitigate the menace and in turn

boost the economic statuses of everyone. If the awareness of the benefits of mini-livestock production and its entrepreneurship skills were properly applied, the level of economic empowerment of youths would increase beyond the baits set for being agents of destructions. In line with the outcomes of the study, it was therefore concluded that empirical evidence provided on entrepreneurship skills have a significant positive influence on the success of unemployed/idle youths in taking up businesses of mini-livestock. That is, the more the unemployed youths are exposed to the entrepreneurial skills, the more their business success in mini-livestock for sustainable economic development. Likewise, the more the application of the planning, maintenance, breeding and marketing competencies identified into spotting business adventures, the more unemployed youths are empowered and in turn guarantee workforce for the mini-livestock industries.

6. Implication and Recommendations

The study have the following implications:

The study outcomes, if implemented, would equip unemployed youths with skills to engage in sustainable mini-livestock production, enhancing their livelihoods and economic well-being.

The empowerment of youths would assure food security as more animal rich proteins would be available, contributing to national food security and self-sufficiency.

Engaging unemployed youths in this direction would increase their employment opportunities in terms of raising next generation of entrepreneurs in livestock production, processing, and marketing. This would motivate their creativeness and innovativeness to livestock production, improving efficiency and productivity.

The empowerment process would trigger knowledge transfer among youths as trained youths share knowledge with others, disseminating best practices and improving overall livestock production values.

Inline with the outcomes of the study, the following recommendations were made:

All tiers of government should sensitize the public through the media on the importance of youths taking full engagements in the establishment of mini-livestock farms in conjunction with the identified entrepreneurial planning competencies.

All stakeholders should encourage unemployed youths to take gainful participations in activities of business of mini-livestock across the federation to guarantee steady income generation.

Curriculum planners should integrate the identified mini-livestock enterprises into the entrepreneurial training modules of all schools to create more business opportunities awareness for the next generation of youths for quality living.

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