



Full Length Article

Development of Entrepreneurial Skill Training Program in Micro-livestock (Bee Keeping) for Reengagement of Retirees in a Sustainable Occupation in Enugu State

OLAITAN, S.O., F.O. IFEANYIEZE AND J.C. OMEJE¹

Faculty of Education University of Nigeria, Nsukka

¹Corresponding author's e-mail: joachimomeje@yahoo.co.uk; Floraoby2001@yahoo.com

ABSTRACT

Retirees are individuals that have disengaged from their initial employment after long service but are still willing and able to continue their existence in any desirable but less strenuous occupation. To assist these retirees in achieving their objectives of continuous desirable existence, this study was designed. Five research questions were developed and answered by the study and five hypotheses were formulated and tested at 0.05 level of significance and 284 degree of freedom, A 60 item structured questionnaire was developed and face validated by three experts. The reliability of the questionnaire was determined using Cronbach alpha statistics and an alpha co-efficient of 0.89 was obtained. It was administered on 286 respondents made up of 120 extension agents and 164 bee keeping farmers in Enugu state. The weighted mean and standard deviation were used to answer the research questions, while t-test statistic was used to test the hypotheses. The findings of the study revealed that: (a) 11 skills were required in planning for bee keeping enterprise, (b) 18 skills in site selection and construction of beehives, (c) 10 skills in stocking and feeding of bees, (d) 10 skills in managing bees and (e) 11 skills in harvesting and marketing of bee products. There was no significant difference in the mean ratings of the responses of the two groups of the respondents on all the entrepreneurial skills identified by the study. It was recommended that the identified skills should be used to train retirees in Enugu state for establishment of bee keeping enterprise for sustained livelihood.

Key Words: Skill training programme; Micro-livestock; Bee keeping; Nigeria

INTRODUCTION

Bee keeping is a profitable business among a few bee keeping farmers in Enugu state. Agrolod (1991) stated that bee keeping is the manipulation of a bee colony by man based on the understanding of the science of tapping the economic benefits of the honey bees. Bee keeping can also be viewed as an agricultural activity whereby bee farmers employ their understanding of bee biology to provide good housing, appropriate feeding in addition to needed management practices to bees for the purpose of harvesting the honey. In the view of Chamber (2007) bees can be reared as it is adaptable to many climatic and laboratory conditions Ntega and Muogongo (1990) stated that honey from bees are valued, because of its food, medicinal and industrial uses. The authors further explained that in some part of the world, honey is extracted from the bees reared by farmers for generating income. Other by products from the bee that provide the farmer income include wax, propolis and venom for medical uses. In order to produce bee by products efficiently and profitably, the individuals require entrepreneurial skills. Hull (1991) said that skill is the habit of doing something well. Drucker (1970) stated that entrepreneur refers to a person who is ready to take risk. The author stated further that the behaviour of the entrepreneur

reflects a kind of person willing to put his or her career and financial security on the line and take risks in the name of an idea, spending much time as well as capital on the venture. Therefore, an entrepreneurial requires mastery of entrepreneurial skills in order to succeed in a business. Application of the entrepreneurial skills to bee keeping can increase the income of the individuals in the enterprise such as farmers, business men, teachers and retirees.

A retiree can be viewed as an individual that has disengaged from his or her initial employment after a long service but is still willing and able to continue his existence in any desirable but less strenuous occupation. Redmond (2007) said that a retiree is a person who has withdrawn or disengaged from busy paid occupation after having worked for many years. A retiree in Enugu State is Characterised by: (a) anxiety to get engaged in any profitable business with less to competition as observed in business communities;

(b) Looking for job that part of his pension can sustain, that is, job with very low capital investment.

Bee keeping is of very low capital investment but with high rate of turnover. If the retirees are trained and well equipped with entrepreneurial skills in bee keeping, they will have avenue to invest part of their pension and reduced energy to obtain sustainable income. The purpose of this

study is therefore to develop an entrepreneurial skill training programme in bee keeping for re-engagement of retirees in a sustainable occupation that can increase their income.

MATERIALS AND METHODS

Five research questions were developed and answered and five null hypotheses were formulated and tested. Survey research design was adopted for the study. A 60 item questionnaire was developed from the literature reviewed to obtain data for the study. The scale for the questionnaire was Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD).

The population for the study was 286 made up of 120 extension agents and 166 bee-keeping farmers. The entire population of extension agents and bee keeping farmers were involved in the study, because of their small size.

Three experts face validated the questionnaire items. Cronbach alpha technique was used to determine the internal consistency of the questionnaire items and a coefficient of 0.89 was obtained. The questionnaire was administered on 286 respondents and a total of 284 copies (99%) were retrieved and analysed.

Weighted mean and standard deviation were used to answer the research questions, while t-test statistic was used to test hypotheses. A cut off point (arithmetic mean) of 2.50 was used to determine the items that are regarded as entrepreneurial skill in bee keeping occupation. An interval scale of 0.05 was used to determine the upper limit of the cut off point (arithmetic mean) in which decision on each item was based, which was 2.55 any item with a weighted mean value of 2.55 and above was regarded as an entrepreneurial skill required for bee keeping, while any item with a mean value below 2.55 was not regarded as an important entrepreneurial skill required for bee keeping. The standard deviation was used to determine the closeness or otherwise of the opinion of the respondents from the mean. Any item with a standard deviation less than 1.96 showed that the respondents were close to the mean-while any item with a standard deviation above 1.96 showed that the respondents were not close to the mean and therefore the item was not very valid. The null hypothesis of no significant difference was accepted for any item whose t-calculated value was less than the t-table value, while it was rejected for any item whose t-calculated value was greater than the t-table value.

RESULTS

The results of the study were obtained from the research questions answered and the hypotheses tested. They were presented in Table I-V below.

Research question 1. What are the entrepreneurial skills required in planning for bee keeping occupation?

Hypothesis 1. There is no significant difference in the mean ratings of the responses of extension agents and bee keeping

farmers on the entrepreneurial skills required in planning for bee keeping occupation.

The data for answering the research question and testing the hypothesis are presented in Table I.

The data presented in Table I revealed that all the items had their mean values ranged from 3.46-3.57. This showed that the means were above the cut off point of 2.55 indicating that the respondents agreed to the items as the entrepreneurial skills required in planning for bee keeping. The table also showed that the standard deviation (SD) of the items ranged from 0.51-0.64, which were below 1.96. This indicated that the respondents were not too far from the mean and from the opinion of one another in their responses. This showed that the items were valid. Furthermore, all the 11 items had their t-calculated values less than their t-table values. This indicated that there was no significant difference in the mean ratings of the responses of the two groups of respondent on the entrepreneurial skills required in planning for bee keeping. Therefore the null hypothesis of no significant difference was accepted for all the items.

Research question 2. What are the entrepreneurial skills required in selection of site and construction of beehive?

Hypothesis 2. There is no significant difference in the mean ratings of the responses of extension agents and bee keeping farmers on the entrepreneurial skills required in selection of site and construction of beehive.

The data for answering the research question and testing the hypothesis are presented in Table II.

The data presented in Table II revealed that all the items had their mean values ranged from 3.59-3.17. This showed that the means were above the cut off point of 2.55 indicating that the respondents agreed to the items as the entrepreneurial skills required in selection of site and construction of beehive. The table also showed that the standard deviation (SD) of the items ranged from 1.32-1.93, which were below 1.96. This indicated that the respondents were not too far from the mean and from the opinion of one another in their responses. Furthermore, all the 18 items had their t-calculated values less than their t-table values. This indicated that there was no significant difference in the mean ratings of the responses of the two groups of respondent on the entrepreneurial skills required in selection of site and construction of beehive. Therefore the null hypothesis of no significant difference was accepted for all the items.

Research question 3. What are the entrepreneurial skills required in stocking and feeding of bees?

Hypothesis 3. There is no significant difference in the mean ratings of the responses of extension agents and bee keeping farmers on the entrepreneurial skills required in stocking and feeding of bees.

The data for answering the research question and testing the hypothesis are presented in Table III.

The data presented in Table III revealed that all the items had their mean values ranged from 2.98-3.13. This

Table I. Mean Ratings (X) and t-test Analysis of the Responses of Extension Agents and Bee keeping Farmers on the Entrepreneurial Skills Required in Planning for bee keeping Occupation in Enugu State

S/N	Item statement	X	SD	t-cal	t-tab	Remark
1	Make contact with established beekeeping farmers	3.55	0.51	0.58	1.96	* NS
2	Formulate specific objectives for bee keeping	3.50	0.58	0.18	..	* NS
3	Review the objectives periodically to meet economic or business situations	3.47	0.56	0.75	..	* NS
4	Draw up programme to cover different stages of bee keeping	3.52	0.64	0.57	..	* NS
5	Decide on where to locate the bee hives.	3.52	0.60	0.05	..	* NS
6	Identify relevant personnel.	3.54	0.59	0.51	..	* NS
7	Identify relevant farm input required for bee keeping	3.57	0.52	0.22	..	* NS
8	Identify market outlet for bee by products	3.49	0.57	0.93	..	* NS
9	Identify relevant records to keep	3.45	0.54	0.95	..	* NS
10	Make budget for bee keeping	3.46	0.55	0.11	..	* NS
11	Identify sources of fund (credit)	3.47	0.56	0.75	..	* NS

N=284(120 extension agents and 164 bee keeping farmers)

key: X=mean, SD= standard deviation, t-cal=t-calculated, t-tab=t-table value *= required, NS= not significant

Table II. Mean Ratings (X) and t-test Analysis of the Responses of Extension Agents and Bee keeping Farmers on the Entrepreneurial Skills Required in Site Selection and Construction of Beehive

S/N	Item statement	X	SD	t-cal	t-tab	Remar
1	Locate bee hive on an established farm	3.05	1.40	0.70	1.96	* NS
2	Locate beehive on an area free from environmental pollution	3.12	1.80	0.35	..	* NS
3	Site beehive in an area free from infestation	2.94	2.04	0.59	..	* NS
4	Locate beehives near sources of food	3.12	1.80	0.50	..	* NS
5	Site beehive in an area that are not directly affected by heavy wind or direct rays of sun	2.99	1.93	0.62	..	* NS
6	Site beehive on a fenced plot of land that is not immediately habited	2.99	1.93	0.71	..	* NS
7	Identify traditional beehive that is adaptable in an area of operation	3.07	1.44	0.69	..	* NS
8	Mould two clay pots for bees	3.02	1.39	0.62	..	* NS
9	Tie the two clay pots together at their open ends to form an enclosure	3.01	1.38	1.33	..	* NS
10	Perforate both ends of the two pots to serve as entrance and exit of bees	2.59	1.40	0.28	..	* NS
11	Put appropriate baiting material to attract bees	3.00	1.47	0.27	..	* NS
12	The pot on a crotch of tree for a catch or introduce a swarm of bee	3.12	1.37	0.50	..	* NS
13	Identify modern beehive that is adaptable in area of operation such as langstroth hive	2.98	1.43	0.44	..	* NS
14	Select wood that is wrap-proof, resistance to the rooting effect of sun and rain	3.14	1.37	1.37	..	* NS
15	Reduce the wood to part of a box following the given specification	3.15	1.85	0.44	..	* NS
16	Introduce appropriate chamber and accessory into the box	2.97	1.48	0.53	..	* NS
17	Introduce four legs into the box like a table	3.17	1.45	0.43	..	* NS
18	Introduce baiting material into the chamber.	3.14	1.37	0.94	..	* NS

N=284 (120 extension agents and 164 bee keeping farmers)

Table III. Mean Ratings (X) and t-test Analysis of the Responses of Extension Agents and Bee keeping Farmers on the Entrepreneurial Skills Required in Stocking and Feeding of bees

S/N	Item statement	X	SD	t-cal	t-tab	Remar
1	Identify the swarming season of bees in the area	3.10	1.40	0.70	1.96	* NS
2	Preparer beehive thoroughly by cleaning any dirt from the hive.	3.06	1.61	0.29	..	* NS
3	Coat all the ridges, rough surface, in the hive body with beeswax.	3.04	1.36	1.41	..	* NS
4	Select <i>Induce Apice</i> , <i>melifera specie</i> and <i>Apis indiva specie</i> for stocking.	3.13	1.74	0.24	..	* NS
5	Bait a swarm of bee into a hive using baiting material.	3.01	1.38	0.18	..	* NS
6	Capture a swarm of bee that cluster low.	3.00	1.47	0.35	..	* NS
7	Prepare feed in form of sugar solution.	3.07	1.44	0.59	..	* NS
8	Feed bees with peeled plantain, pineapple tomatoes fruit mango fruits' palm wine and beeswax.	2.98	1.40	0.23	..	* NS
9	Provide bees with water in a water device like sponge inside container full of water.	3.01	1.38	0.50	..	* NS
10	Plant bee-attracting plants.	2.98	1.40	0.82	..	* NS

N=284 (120 extension agents and 164 bee keeping farmers)

showed that the means were above the cut off point of 2.55 indicating that the respondents agreed to the items as the entrepreneurial skills required in stocking and feeding of bee. The table also showed that the standard deviation (SD) of the items ranged from 1.36-1.74, which were below 1.96. This indicated that the respondents were not too far from the mean and from the opinion of one another in their responses. Furthermore, all the 10 items had their t-

calculated values less than their t-table values. This indicated that there was no significant difference in the mean ratings of the responses of the two groups of respondent on the entrepreneurial skills required in stocking and feeding of bee Therefore the null hypothesis of no significant difference was accepted for all the items.

Research question 4. What are the entrepreneurial skills required in the management of bees?

Table IV. Mean ratings (X) and t-test Analysis of the Responses of Extension Agents and Bee keeping Farmers on the Entrepreneurial Skills Required in the Management of Bees

S/N	Item statement	X	SD	t-cal	t-tab	Remar
1	Work with bee colony in the hive during bright day light.	3.01	1.44	0.65	1.96	* NS
2	Wear white or brown bee suit when working with bee colony.	2.98	1.40	0.25	..	* NS
3	Control bee swarming by killing the queen cells	3.01	1.83	0.29	..	* NS
4	Replace non-active queens whenever they are found to prevent honey lost and swarming.	3.03	1.89	0.12	..	* NS
5	Control robbing by designing beehive entrance with proper coating.	3.11	1.80	0.12	..	* NS
6	Provide smoke and other relevant tools required	3.15	1.85	0.24	..	* NS
7	Operate beehive gently during routine work	3.07	1.44	0.39	..	* NS
8	Keep good apiary bee keeping calendar record	3.09	1.94	1.53	..	* NS
9	Inspect the colony following the guided procedure	3.11	1.80	1.47	..	* NS
10	Keep bee inspection and observation records	3.13	1.74	1.23	..	* NS

N=284(120 extension agents and 164 bee keeping farmers)

Table V. Mean Ratings (X) and t-test Analysis of the Responses of Extension Agents and Bee keeping Farmers on the Entrepreneurial Skills Required in Harvesting and Marketing of Bee Products

S/N	Item statement	X	SD	t-cal	t-tab	Remar
1	Put on protective cloth (white or brown)	3.05	1.40	0.24	1.96	* NS
2	Puff smoke round the hive and open the harvesting door of the pot or Lange struts	3.12	1.80	0.18	..	* NS
3	Smoke gently inside the hive to calm the bees	2.94	0.87	0.55	..	* NS
4	Collect the comb of the hive and put in a container	3.12	1.80	0.18	..	* NS
5	Close up the hive after harvesting.	2.99	1.93	0.11	..	* NS
6	Make market survey	3.57	0.77	0.90	..	* NS
7	Put quantity required in a container eg lucozade bottle.	2.94	0.87	2.20	..	* NS
8	Fix price for each container.	3.69	0.89	0.71	..	* NS
9	Sell on the spot or transport to buyers.	3.69	0.89	2.20	..	* NS
10	Receive payment at the selling spot.	2.94	0.87	2.20	..	* NS
11	Calculate the income and expenditure.	3.32	0.81	0.76	..	* NS

N=284(120 extension agents and 164 bee keeping farmers)

Hypothesis 4. There is no significant difference in the mean ratings of the responses of extension agents and bee keeping farmers on the entrepreneurial skills required in the management of bees.

The data for answering the research question and testing the hypothesis are presented in Table IV.

The data presented in Table IV revealed that all the items had their mean values ranged from 2.98-3.15. This showed that the means were above the cut off point of 2.55 indicating that the respondents agreed to the items as the entrepreneurial skills required in the management of bee. The table also showed that the standard deviation (SD) of the items ranged from 1.40-1.94, which were below 1.96. This indicated that the respondents were not too far from the mean and from the opinion of one another in their responses. Furthermore, all the 10 items had their t-calculated values less than their t-table values. This indicated that there was no significant difference in the mean ratings of the responses of the two groups of respondent on the entrepreneurial skills required in the management of bee. Therefore the null hypothesis of no significant difference was accepted for all the items.

Research question 5. What are the entrepreneurial skills required in harvesting and marketing of bee products?

Hypothesis 5. There is no significant difference in the mean ratings of the responses of extension agents and bee keeping farmers on the entrepreneurial skills required in harvesting and marketing of bee products.

The data for answering the research question and testing the hypothesis are presented in Table V.

The data presented in Table V revealed that all the items had their mean values ranged from 2.69-3.69. This showed that the means were above the cut off point of 2.55 indicating that the respondents agreed to the items as the entrepreneurial skills required in harvesting and marketing of bee products. The table also showed that the standard deviation (SD) of the items ranged from 0.77-1.93, which were below 1.96. This indicated that the respondents were not too far from the mean and from the opinion of one another in their responses. Furthermore, all the 11 items had their t-calculated values less than their t-table values. This indicated that there was no significant difference in the mean ratings of the responses of the two groups of respondent on the entrepreneurial skills required in harvesting and marketing of bee products. Therefore the null hypothesis of no significant difference was accepted for all the items.

DISCUSSION

The findings of the study in planning agreed with the views of Olaitan and Mama (2001) who stated that planning for farm operation activities include: formulation of objectives, review of the objectives periodically, drawing up programme plan for the enterprise among others. These activities could also be adopted in bee keeping by the retirees. The findings were also in agreement with the view

of Thomson and Sheldon (2001) who advised that a beginner in livestock enterprise should make contact with established producers to have the idea of what to plan for.

The findings of the study on site selection and construction of beehive were in conformity with the opinion of Agrolods (1991) who suggested that appropriate site for bee keeping could be in already established farms such as in oil palm plantation farms and other arable crop farms. The findings were also in agreement with the opinion of Smith (1960) who said that beehives could be sited in an area free from environmental pollution, pests and diseases in addition to sites far from agrochemical industries, reach of children, livestock and noisy environment. The findings of the study further agreed with the recommendation of Abubakar (1990), which stated that in construction of pottery-hive, two clay pots could be selected, perforated and tied together at their open ends to form an enclosure with the two perforated ends serving as entrance and exit to the bees. The author further suggested introduction of appropriate baiting materials such as granulated sugar, small cake, bee-wax, palm wine and so on into the pot and placing the tied pot in the crotch of tree, where swarms of bee could be attracted.

The findings on stocking and feeding of bees were in consonant with the view of Smith (1960) who observed that with detection of swarm season of bee, one can trap them for rearing as bee species like *Apis mellifera*, *Apis florea*, *Apis indica* and *Apis indiva* can easily swarm into an enclosure. The findings were also in agreement with the opinion of Odontan (1999) who stated that bee keepers should provide feed in form of sugar solution directly to the colony. The finding further agreed with the statement of Cale in Gront (1963), who said that in America, bees were provided with water using different water devices like placing sponge or twig inside a container full of water and the bees collect the water by clipping their proboscis into the container this technique could also be adopted by retirees in Enugu state as a means of providing water to the bees.

On the management of bees, the findings of the study were in consonant with the opinion of Akachukwu (1995) who recommended that there is need to have the knowledge of the best time to work with the bees as well as mastering the apiary bee calendar record to follow up all the activities of the bee throughout the year. The author advised bee keepers to approach bee colony gently without fear, while maintaining quietness. The authors advised further that the bee keepers should wear white or brown bee suit or work cloth as red or dark colours annoy bees.

The findings of the study on harvesting and marketing of bee products were in agreement with the view of Abubakar (1990) who explained that some rules are necessary to be kept for successful harvesting of honey such as:

- Select all the necessary tools for harvesting honey such as knife, smoker.
- Put on protective clothes preferably white or brown.
- Puff some smoke gently round the hive to calm the

bees and others.

The finding of the study on marketing of honey agreed with the view of Stanton (1996) who stated that marketing activities include grading, advertising, recording of all financial transactions and calculating the profit or loss. The findings were also in conformity with the opinion of Beth (1999) who affirmed that there is more than one way of selling products, this can be directly to consumers at the open market or supplied to consumers at home or the consumers coming to the farmers house to buy from him in bottles. The views, opinions, advice, recommendations and statements of the authors above helped to validate the findings of the study.

On the hypotheses, the study found out that there was no significant difference in the mean ratings of the responses of the extension agents and bee keeping farmers on 11 entrepreneurial skills required in planning, 18 in site selection and construction, 10 stocking and feeding 10 in management and 11 in harvesting and marketing of bee products. The implication of this is that despite the differences in the professional experiences of the respondents in their opinions were not significantly influenced on 50 items required for efficient and profitable bee keeping.

CONCLUSION

It is the wish of the Enugu State government to care for retirees in the state by redirecting them towards less strenuous and quick turnover occupations or businesses to which they can re-engage in for sustained livelihood. It was therefore recommended that the 50 entrepreneurial skills identified by this study should be used to train retirees in Enugu state for establishment of bee keeping enterprise for sustained livelihood.

REFERENCES

- Abubakar, M.L.B.S., 1990. Honey Gathering by People in the Interior of East Halimanton. *Bee World*, 7: 153-7
- Agrolod, 1991. FMST and the Presidency, Abuja Honey Production Technology. *Training Manual*, 1: 2-3
- Akachukwu, C., 1995. A Study of Effect of Seasonal Variation on Bee Keeping in Southern Nigeria. *Unpublished Paper Presented at the 30th Annual Conference of Agriculture Society of Nigeria Held at Edo State University, Ekpoma*, 5th November
- Beth, S., 1999. *Heliculture is Hot and Marketers are Many*, pp: 47-8. *Ag Adventures*. Pt. 1. February -March Retrieved from www.google.com on 14 July 2008
- Chambers, K.A., 2007. *A Horney Bee*. Microsoft@Student 2008(DVD): Microsoft Corporation. <http://www.microsoft.com/encarta>
- Cale in Gront, 1963. *The Hive and the Honey Bee*. Dadant and Sons Hamilton Illinois: Publisher of the American Bee Journal
- Ntenga, G.N. and B.T. Muogongo, 1990. A study of traditional bee keeping in babati district honey hunter and bee keepers. *Sweden University of Agric. Sci.*, 6: 28-32
- Drucker, P., 1970. Entrepreneurship in Business Enterprise. "*J. Business Policy*", 1: 3-5
- Redmond, W.A., 2007. *Microsoft@Student 2008(DVD): Microsoft Corporation*. <http://www.microsoft.com/encarta>
- Hull, H.S., 1991. *Method and Problem in Apprenticeship System*. New York: the century publishers

Odontan, C., 1999. *The Practice of Bee Keeping*. Abeokuta Institute Vocational Bee Craft
Olaitan, S.O. and R.O. Mama, 2001. *Principles of School Farm Management*. Owerri, Cape Publishers
Smith, F.G., 1960. *Bee Keeping in the Tropics*. Longman, London

Stanton, W.J., 1996. *Foundation of Marketing*. McGraw-Hill International, London
Thomson, Rebecca and Sheldon, Chency (2001). *Raising Snails*, www.nal.usda.gov/afsic/AFSIC_pubs/srb96-05.htm

(Received 20 August 2008; Accepted 18 September 2008)