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EVALUATION OF ENTREPRENEURSHIP DEVELOPMENT PROGRAM (EDP) ON BEEHIVE CULTIVATION CONDUCTED BY NATIONAL INSTITUTE FOR MICRO SMALL MEDIUM ENTERPRISES (NI-MSME) IN TELANGANA, INDIA

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ABSTRACT

Apiculture, the commercial rearing and management of honey bees for honey and other by-products, is an excellent agricultural entrepreneurship activity, providing income for rural communities and fostering economic stability. Entrepreneurship Development Programs assist farmers and unemployed youth in exploring business opportunities in beekeeping. The major limitation is the lack of awareness, which the National Institute for Micro, Small, and Medium Enterprises (ni-msme) addresses by bridging this knowledge gap. The evaluation of the Entrepreneurship Development Program (EDP) underscores its effectiveness in catering to participants with varying confidence levels in entrepreneurship. Through primary and secondary data analysis, including surveys and financial evaluations of beekeeping ventures, the study reveals insights into training program effectiveness, and challenges faced by beekeepers. Identified areas for improvement include streamlining the loan process, enhancing networking opportunities, extending program duration, and providing ongoing support. The program's positive impact is evident, with 88 per cent of respondents gained sufficient knowledge on beekeeping enough to start as a business unit and the trainees also felt confident in identifying business opportunities on other aspects post-EDP. This underscores the significance of EDPs in fostering entrepreneurial prospects and facilitating growth. Using the logit regression method it can be clearly inferred that, age, education, income level, and land holding have p-values less than 0.05, which shows a positive significance in adaption of beekeeping unit and on the other hand gender and family size showed a negative significance as the p-values is more than 0.05. The study suggests policy implications such as promoting beekeeping awareness, encouraging modern beekeeping practices and addressing marketing and procurement issues to support the growth of beekeeping as a sustainable and economically beneficial endeavor, particularly in rural areas.

Key words : Beekeeping, Entrepreneurship Development Program (EDP), Micro Small Medium Enterprises.

Introduction

Beekeeping is the process of rearing and management of honey bees commercially for obtaining mainly honey and other related products or by-products. Beekeeping which is also called apiculture is an ideal agricultural-based entrepreneurship activity that helps in providing income sources to the people in rural areas. Apart from honey and other by-products, honey bees are vital for

the pollination of many agricultural crops and more importantly horticultural crops (Abrol, 2006).

Honey production is the primary aim of the beekeeping industry, given its quantitative and economic significance. Honey stands as the most important product, having been utilized by humanity for centuries as a food source, a medicinal remedy and in various cultural ceremonies. (Cartland, 1970; Mcinerney, 1990 and Molan,

1999). Beekeeping has the potential to uplift economically disadvantaged communities by providing them with economic stability. Beyond honey production and pollination services, beekeeping offers various economic advantages, including contributions to agriculture and forestry. Besides honey, bee products like propolis, royal jelly, pollen and wax are significant in global trade. In countries with advanced agriculture, the focus is often more on enhancing vegetative production to boost the quantity and quality of crops, alongside bee product production (Kizilaslan and Kizilaslan, 2007). India is fortunate to have four native species of honeybees *i.e.* 1) *Apis cerana* 2) *Apis dorsata* 3) *Apis florea* and 4) *Trigona iridipennis* which shows its potentiality in beekeeping. The exotic species *Apis mellifera* has been introduced from western countries (Thomas *et al.*, 2002). Apart from the direct income generated from these products, beekeeping creates off-farm job opportunities across various sectors, such as hive construction, honey trade, renting out bee colonies for pollination, and establishing small-scale bee-related businesses (Ahmad *et al.*, 2007).

Table 1 : Year-wise honey production for last 5 years.

S. no.	Year	Production in Metric Tonns (MTs)
1	2016-17	94,500
2	2017-18	1,05,000
3	2018-19	1,20,000
4	2019-20	1,25,000
5	2020-21	1,25,000

Source (National Bee Board).

In India, about 12699 beekeepers and 19.34 lakh honey bee colonies are registered with National Bee Board and India is producing about 1,33,200 metric tons of honey (2021-2022 2nd advanced estimate). India is one of the major and exporting countries in the world and it has exported 74,413 MT of honey. India export honey to about 83 countries, the major market for Indian honey are USA, Saudi Arabia, United Arab Emirates, Bangladesh, Canada etc (APEDA).

The Entrepreneurship Development Program is a program that helps in developing the entrepreneurial abilities and skills that are required to run a business successfully among the students and the unemployed youth (Jindal *et al.*, 2016). Entrepreneurs evolve an idea for an organization, begins it, organizes it and manages it. EDP's are based on the thinking that the attitude of the people can be changed by developing their skills. Kumar (2017). The purposes of EDP are to improve skills, knowledge and attitudes of targeted individuals and

community (Fayolle *et al.*, 2016), to start a new business, and to add new jobs (Decker *et al.*, 2014), to provide an alternatives sources of income (Dvouletý, 2017) and to initiate economic growth (Martínez *et al.*, 2018). Through this program, the youth are converted into entrepreneurs through the process of training. The ultimate goal of this Entrepreneurship Development Program is to provide self-employment to the unemployed youth. The honey sector is considered as one of the income-generating activities for resource-poor farmers including women, youth, and underemployed sections of the community. National Institute of Micro Small Medium Enterprise (NIMSME) has given training to around 700 to 750 rural youth of Telangana in the skill development of beekeeping and entrepreneurship during the period 2021-2022. (www.nimsme.org, 2019) The organization is keen on knowing how many of these trainees have started beekeeping units, reasons for taking up or not taking up the activity, constraints faced as well as any gaps they perceived in the training program formulation and implementation. One such entrepreneurial activity can be apiculture which is being practiced from ancient times.

Limitations of commercial beehive cultivation

Climate Change : Climate change can disrupt the seasonal cycles of plants and flowers, affecting the availability of forage for bees. Extreme weather events like droughts, floods, and heat waves can also stress bee colonies and impact their ability to survive and thrive.

Habitat Loss : Bees rely on a diverse range of flora for nectar and pollen. Habitat loss due to urbanization, monoculture farming, and pesticide use can limit the availability of suitable forage for bees, impacting their health and productivity.

High Maintenance cost : The cost of beekeeping boxes, sugar feeding, and transport of bee boxes for floral source have become very cost effective. Poor nutrition due to lack of floral diversity or inadequate supplemental feeding can weaken colonies and make them more susceptible to diseases and pests.

Lack of awareness among farmers: The lack of awareness among the farming community about the beekeeping activity as apiculture an ideal agricultural-based entrepreneurship activity that helps in providing income sources to the people in rural areas.

Materials and Methods

Study area

Systematic random sampling method was used to for collection of data and the trainees for sampling was diversified across various backgrounds, including business,

students, entrepreneurs, households, farmers, retired employees and unemployed youth. Study was conducted in the state of Telangana. The Entrepreneurship Development Program was conducted by National Institute for Micro Small Medium Enterprises in different parts of Telangana state. To evaluate the Entrepreneurship Development Programme, data would be collected from 121 trainees from Telangana, who have undergone Entrepreneurship Development Program conducted by the National Institute of Micro Small Medium Enterprise (ni-msme) in 2021-2022 as the training program on honey bee entrepreneurship development program was conducted only during 2021-2022 for 30 batches for a duration of 7 days each under the project sponsored by National Bee Board. Data collection methods included telephonic and personal interviews, while in some instances; data was collected through Google Forms.

Methodology

Tabular/ Descriptive analysis : Tabular analysis was used for the computation of frequency and percentages to present the data regarding the response of the trainees.

Graphical analysis : Graphical analysis technique was used to represent the data of response of trainees by using bar graphs and pie charts.

Logit regression model : Logit regression model was employed to identify the factors influencing the adoption of fishery unit of trainees among participants, eight variables were hypothesized to influence the adoption of fishery units: age, gender, education, occupation, income, marital status and land holding. Logistic regression was used when dependent and independent variables are not linearly associated.

Logit is transformation of logistic regression to makes it linear. In the case logistic regression, the dependent variable is limited, representing the adoption of fishery units, while the explanatory variables include various socioeconomic factors.

The logit regression model was determined using the equation:

$$L_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8$$

Where,

L = Trainees' adoption of fishery unit (1 for adoption and 0 for non-adoption); and X = i Independent variables

X1 = Age of the respondents (years) 3 if > 40 yr; 2 if (31-40); 1 if (21-30 yr); 0 if (< 20 yr);

X2 = Gender: 1 if female; 0 if male

X3 = Education: 0 if Illiterate; 1 if primary education; 2 if secondary education; 3 if Intermediate 4 if Graduation; 5 if Post-Graduation

X5 = Farm size (ha): 4 if large; 3 if semi medium; 2 if medium; 1 if small; 0 if marginal.

X6 = Income: 5 if above 10 lakhs; 4 if 7.5 lakhs to 10 lakhs; 3 if 5 lakhs to 7.5 lakhs; 2 if 2.5 Lakhs to 5 lakhs; 1 if Below 2.5 lakhs; 0 if No income

X7 = Family size: 2 if >8 mem, 1 if 5-8 mem, 0 if 4 mem

Likert Scaling Technique

The likert scaling technique was employed to assess learners' attitudes towards EDP. The likert-type scale implies that the strength/intensity of experience/response is linear, *i.e.*, on a scale from strongly agree to strongly disagree and that attitudes can be measured. Respondents may be given a choice of five or seven pre-coded replies, with neither agreeing nor disagreeing being the neutral point. A five-point scale was utilised to assess trainee perception in this study.

Results and Discussion

Awareness about the beekeeping activity before attending the training programme

Before starting an enterprise, entrepreneurs need precise knowledge about various aspects of the business. Figure 1 shows that nearly 70 per cent of trainees lack awareness about beekeeping, 20 percent have moderate awareness and 10per cent are fully aware, with the latter group including those with agricultural backgrounds or professional beekeeping experience.

Knowledge about the beekeeping activity after attending the training programme at NI-MSME

Before starting an enterprise, entrepreneurs need precise knowledge. Fig. 2 shows that 73 per cent of respondents (88) believe the training is sufficient for starting beekeeping, 9 find it insufficient and 20 per cent consider it partially sufficient. This study was in agreement with the findings of research carried out by Rana *et al.* (2023)

Quality of the training programme

Fig. 3 indicates positive feedback on the training program: 39 per cent rated it very good, 27 per cent excellent, 19 per cent good, 8 per cent average and 4 per cent satisfactory. The study was in line with study of Jagadeesh and Jagadish (2022).

Status of the Trainee after completing the training programme

According to NI-MSME, a training program is

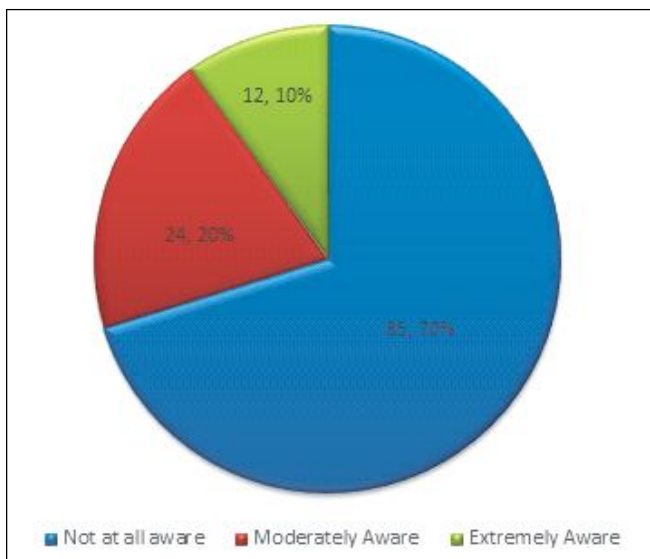


Fig. 1 : Awareness about the beekeeping activity before attending the training programme (n = 121).

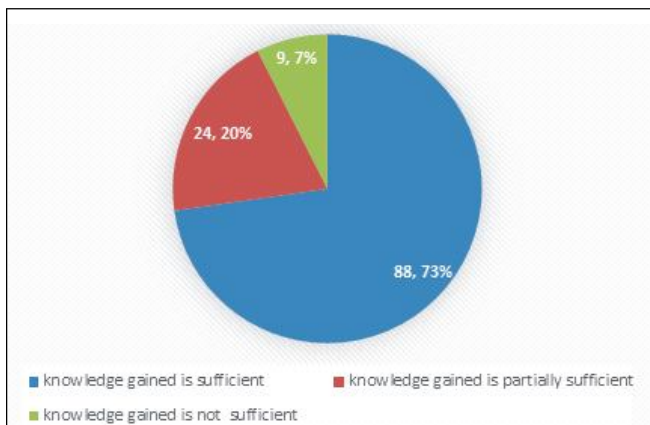


Fig. 2 : Knowledge about the beekeeping activity after attending the training programme at ni-msme (n = 121).

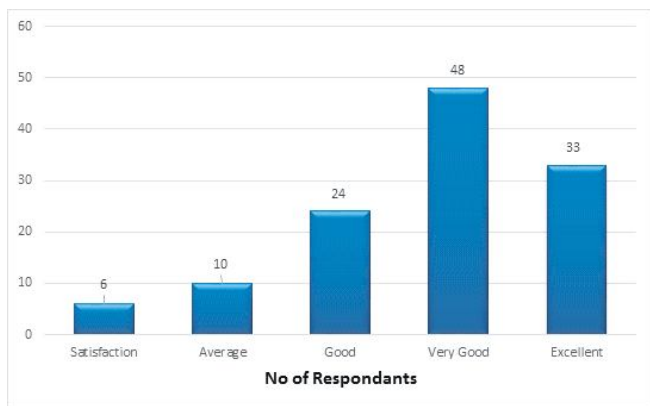


Fig. 3 : Quality of the training programme (n = 121).

deemed successful if 10-15 per cent of trainees start an enterprise. Fig. 4 shows 10 per cent of trainees began beekeeping, 65 per cent are trying to establish units, and 25 per cent are not interested. Thus, ni-msme officials consider the program successful in fostering entrepreneurship. The study was supported with study

Table 1 : Areas where the EDP can be improved.

Particulars	Score	Rank
Simplifying loan procedure	58.59	I
Connect with other entrepreneurs	53.28	II
Duration of EDP should be increased	51.62	III
Follow up actions	48.21	IV
Adequate facilities and incentives should be provided	38.54	V

of Udaykumar (2002).

Factors preventing the Initiation of Beekeeping Practice by the Trainees

The study identified key obstacles to trainees starting a beekeeping business (Fig. 5). Of 121 trainees, 48 faced financial issues, 13 lacked infrastructures, 25 were busy with other work, 29 were uninterested and only 4 had no technical support issues. This study is consistent with the research conducted by Nat Schouten *et al.* (2019)

Areas where the EDP can be improved

Table 1 highlights areas for enhancing EDP. Simplifying loan procedures ranked highest, emphasizing the need for financial aid. Building connections with fellow entrepreneurs was second, followed by increasing EDP duration. Follow-up actions ranked fourth, while provision of facilities and incentives was least critical, ranked fifth. This study aligns with the findings of research conducted by Ruth *et al.* (2021).

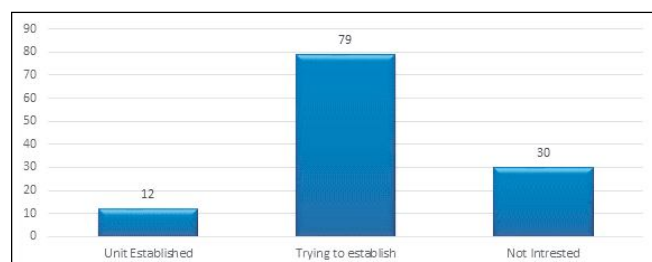
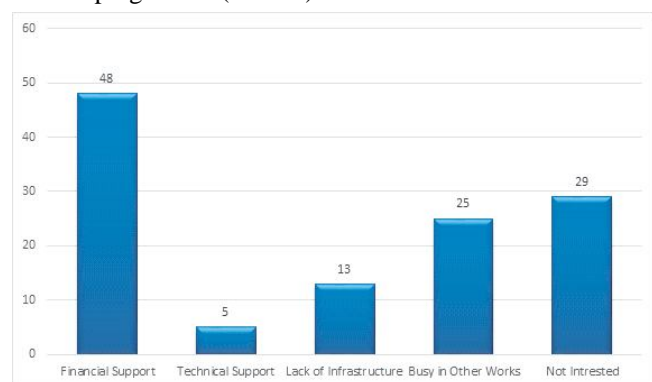
Factors influencing adoption of beekeeping unit

Specifically, younger individuals were more likely to adopt beekeeping, as each additional year of age decreased the likelihood of adoption by 0.805 times. Education had a substantial positive impact, with each unit increase in education level increasing adoption likelihood by 5.907 times. Similarly, higher income levels dramatically increased the odds of adoption by 8.746 times, underscoring the importance of financial resources. Larger land holdings also positively influenced adoption, with a 6.35 times higher likelihood for each unit increase, suggesting that those with more land are better positioned to diversify into beekeeping.

Interestingly, family size negatively influenced beekeeping adoption, as larger families were less likely to start beekeeping ventures. The odds ratio indicated a 2.932 times decrease in adoption likelihood with each additional family member. Gender showed no significant effect, with an odds ratio of 1.332, indicating that both men and women were equally interested in establishing beekeeping units. Overall, the analysis highlights the

Table 2 : Logistic regression coefficients of the factors affecting adoption of Beekeeping unit.

Particulars	B	S.E.	Wald	df	Sig.	Exp(B)	95 percent C.I. for EXP(B)
							Lower
Age	-0.217	0.082	7.059	1	0.008	0.805	0.686
Education	1.776	0.644	7.614	1	0.006	5.907	1.673
Family size	1.076	0.947	1.291	1	0.256	2.932	0.458
Income Level	2.169	0.708	9.378	1	0.002	8.746	2.183
Land Holding	1.849	0.83	4.967	1	0.026	6.352	1.25
Gender	0.287	1.211	0.056	1	0.813	1.332	0.124

**Fig. 4 :** Status of the Trainee after completing the training programme (n = 121).**Fig. 5 :** Factors preventing the Initiation of beekeeping Practice by the Trainees (n = 121).

importance of age, education, income, and land holding in influencing beekeeping adoption among. The study was in line with the study of Nor *et al.* (2016).

Conclusion

Trainees had varying levels of awareness about beekeeping before attending the NI-MSME training program: 70 per cent lacked prior knowledge, 20 per cent had moderate awareness, and 10 per cent were well-informed, particularly those with agricultural or beekeeping backgrounds. After the program, 73 per cent believed it provided sufficient knowledge to start beekeeping, though 9 per cent found it inadequate and 20 per cent felt it partially sufficient. Confidence levels varied among trainees before the EDP: 53 per cent had moderate confidence, 28 per cent high and 19 per cent low. Despite diverse confidence levels, the program was positively rated, with 39 per cent considering it very good and 27

per cent excellent. 10 per cent of trainees started beekeeping, 65 per cent pursued it actively, and 25 per cent were disinterested. Key obstacles to starting beekeeping included financial support (48 per cent), lack of infrastructure (13 per cent), other commitments (25 per cent), and lack of interest (29 per cent). Improvements in loan processes, networking, EDP duration, and follow-up were suggested. Beekeeping-related factors were valued, with the establishment of a beekeeping unit ranking highest for financial improvement. Statistical analysis showed age, education, income, and land holding positively influenced adoption, while family size had a negative impact. Gender had minimal effect.

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