

Women Agripreneurs in Mushroom Cultivation and Food Processing: A Step Towards Sustainable Agricultural Development

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Abstract:

Sustainable business ventures are concerned with conserving the community and nature while creating a product or service. Agripreneurs continue to study and adopt sustainable processes of farming, commercial prospects across the agribusiness cycle and overcoming agribusiness hazards. They are continually looking for methods to make their businesses more sustainable. Involvement of agripreneurs in mushroom cultivation and food processing not only act as their source of livelihood but also contribute to sustainable agriculture and its development. Considering this, the study primarily focus on presenting the contribution of mushroom cultivation and food processing on sustainable agriculture. On the other hand, women are actively contributing in the development of the agricultural sector and their participation in the agri-business activities lead to the generation of women agripreneurs. Thus, this paper emphasizes on identifying the relationship between the profiles of women agripreneurs involved in mushroom cultivation and food processing and their annual turnover from their agri-ventures. The study adopted an empirical research design and it was conducted in eight districts of the state of Assam. The samples were selected using multi-stage sampling and ANOVA, t-test, correlation, mean, percentage and frequency were used to analyse the data. The result shows that educational qualification of women agripreneurs and business training have significant impact on the annual turnover of their business. Improving these two factors can lead to the enhancement of business performance of women agripreneurs in particular and sustainable agricultural development in general.

Keywords : *Women, agripreneurs, sustainable agriculture, Assam, mushroom cultivation, food processing.*

Introduction

Sustainable entrepreneurship is an emerging issue in today's world. Sustainable development is the development of a nation that occurs without depleting the environment. This concept has been defined in various manners but the core of it revolves around the idea of overall development of a nation without working against nature. Padmavathi stated that "for the long-term prosperity of the nation, development should not be just motivated by one need without considering the wider impact of the action" (Padmavathi, 2011). Sustainable development through entrepreneurial ventures can lead to an environmentally, socially and economically sustainable society. Another important emerging issue in the world is the empowerment of women of a nation. Women play a very important part in the development of any nation. It is of paramount importance that the effort should be taken towards the development of the female population of a nation. Sustainable development of women is needed to be focused on in order to develop an economy (Ambepitiya 2013; Sharma, 2020). By encouraging more and more women towards sustainable business ventures the nation can eradicate two issues at one go. One such step towards a sustainable development is empowering women by motivating them to become entrepreneurs. Women in entrepreneurship have a very significant potential in generating economic growth for a nation. As per a report by Forbes India, it has been identified that women comprise 13.76 percent of the entrepreneurs in India. It has also been identified that women own only 20.37 percent of the MSMEs in India. This indicates that there is a need to increase the number of women players in the field of entrepreneurship.

It has been established that the role of a woman in the development of a nation is very crucial. Recently it has been observed that "with the increase in the level of unemployment in India, more and more women are entering into agripreneurial business ventures" (Mahajan et.al. 2020). In recent years the number of women agripreneurs in India has increased. This is also observed in the state of Assam. At this stage of transformation women should be encouraged towards sustainable business ventures and this can be achieved through education and appropriate training. To encourage them towards sustainable business ventures, they must be enlightened on how they can increase the profitability of the sustainable business venture with minimal investment.

This study has mainly focused on women agripreneurs in Assam. Assam is an agrarian state with 75 percent of the population involved in agricultural practices. Assam Agriculture University, in its study on 'Agricultural Draft Policy' explained that "in Assam, there is huge untapped opportunity for fruitful employment of the youths in the agricultural sector, particularly, in secondary agriculture which adds value to agricultural products". It is generally agreed

that "Assam has a high potential for the development of agricultural entrepreneurship with the opportunities mainly in the food processing sector" (Borah, 2018). As per National Family Health Survey, 2019-21, it was reported that there are 1012 women per 1000 males in Assam. This indicates that the majority of the population in Assam comprises of women. Thus, encouraging the women population of the state towards entrepreneurial activities will not only help in fighting with unemployment but will also lead to a healthy growth of the national economy.

Moreover, it is to be considered that there are various agricultural practices that might not be sustainable to the environment. Some of the most common practices are the use of chemicals to induce the growth of an agricultural product, growing genetically modified organisms, deforestation as a result of the requirement of more land area, etc. "These practices are not only deteriorating nature but also harmful for the health of a human being" (Sharma et al. 2019). People are therefore looking for organically produced products as they are produced without the use of chemicals and are healthy to be consumed by a human being. Mushroom cultivation is one such organically grown product that is also sustainable in nature. This requires a very small amount of land and the growth rate of this product is very high as well. "Mushroom cultivation can directly improve the livelihood through nutritional, economical and medicinal contributions" (Shahi et al. 2018). Mushroom cultivation is becoming the preferable agribusiness activity among the agripreneurs due to minimum requirement of land and space for its production. "It not only adds to the health benefit of human beings but also its substrate can be used to produce high yield biogas" (Chavez et al. 2019). "India generates around 273.3 million tons of crop leftovers each year, and it has been calculated that if only 0.5% of the residue is employed in mushroom production, the amount of mushroom cultivation can be boosted to 300,000 tons" (Mishra 2008). On the other hand, food processing is one of the significant form of sustainable business venture, as through this process one can preserve a product and increase the longevity of the food product. It adds value to the agricultural product and helps in making mass availability of the products. These two forms of agriventure activities mainly show their utility not only for agricultural development but also for sustainable approach. Given this, the study primarily highlighted the importance of mushroom farming and food processing to sustainable agriculture.

However, concentrating on the sustainability of a venture is not enough, it is important to consider the profitability of a business venture. There are a number of factors that act as an influencing factor towards a profitable business venture. Some of these factors involve the education level of the entrepreneur, and the training acquired by them. It is required to analyse if these factors will also help agripreneurs in increasing their revenue in a year. Women,

on the other hand, are actively contributing to the growth of the agricultural sector, and their involvement in agri-business activities results in the formation of female agripreneurs. Women agripreneurs are adopting sustainable methods through agriculture, but it should support their livelihood.

It has been established that mushroom cultivation and food processing are sustainable forms of business ventures, however, there is a need to increase the growth rate of these business ventures to generate more annual turnover. Considering previous studies it has been observed that profile of the entrepreneurs helps in enhancing their business performance, so in this study, the researchers focus on determining the association of the profile of the women agripreneurs with the annual turnover of their agri ventures.

Objective

The purpose of the study is to establish the association between the profile of women agripreneurs engaged in mushroom cultivation and food processing and their annual revenue from their agri ventures.

Materials and Methods

To achieve the objective of the study, an empirical research approach was adopted for the study. The study was conducted in Assam, situated in the north-eastern region of India. The data were collected from 131 women agripreneurs, from different areas of Assam. In this study a multi-stage sampling technique was applied to select the respondents. Assam has six agro-climatic zones and 35 districts. To select the districts, in the first stage, out of 6 agro-climatic zones 4 were selected, these zones were Upper Brahmaputra valley zone, Lower Brahmaputra Valley zone, North Bank Plain Zone and Central Brahmaputra Zone. In the second stage, two districts were selected from each zones. These districts were, Lakhimpur and Sonitpur from North Bank plain Zone, Jorhat and Majuli from Upper Brahmaputra Valley Zone, Kamrup Rural and Kamrup Metro from Lower Brahmaputra Valley zone and Nagaon and Hojai from Central Brahmaputra Valley zone. In the third stage, women agripreneurs were selected purposively from the selected districts with the help of Agriculture Development Officers and Agricultural Extension Agents who are considered expert in accessing the ongoing agri venture activities within their jurisdiction.

For choosing the respondents from the selected districts, judgement sampling was employed. The judgement was on the basis that only those women agripreneurs were selected who were commercially involved in mushroom cultivation and food processing. No specific list of women agripreneurs in each of the districts was identified, as such the researchers purposively chose from among the available women agripreneurs identified when visiting the District Agriculture Office of the selected districts. Table 1 shows the sample distribution of

women agripreneurs across the selected districts of Assam.

Table 1: Sample distribution of women agripreneurs across selected districts of Assam

Districts	Number of samples
Lakhimpur	12
Sonitpur	14
Jorhat	2
Majuli	32
Nagaon	14
Hojai	19
Kamrup Metro	18
Kamrup Rural	20
Total	131

For the purpose of the study, information on age, educational qualification, age of business, business training, agri venture activities and annual turnover were collected from women agripreneurs using a structured schedule. Data on respondent's age, age of business and annual turnover were collected using a continuous scale. Later they were categorised to nominal scale for presentation. The hypotheses were tested using ANOVA and independent t-test, where the annual turnover was considered as the dependent variable, and educational qualification, business age, and business training were taken as the independent variables for the respective tests. ANOVA, t-test and correlation were used only after fulfilling the required assumptions, which included the test of normality using Shapiro-Wilk test, and homogeneity of variance using Levene's test. Further, Pearson correlation, frequency, percentage and mean were also used to provide an in-depth analysis of the data with the help of the SPSS software.

The following hypotheses were formulated for achieving the objective of the study:

H_{01} : There exists no statistically significant difference in the mean value of the annual turnover among the different levels of educational qualification of women agripreneurs

H_{02} : There exists no statistically significant difference in the mean value of the annual turnover among the different slabs of business age of women agripreneurs

H_{03} : There is no statistically significant difference in the mean score of annual turnover between the trained and untrained women agripreneurs

Discussion

The respondents of the study belonged to different profiles based on their education qualification, agri-venture activities, business age, business training, and annual turnover. The profile of the respondents has been displayed in table 2 below.

Table 2: Profile of women agripreneurs

Sl. No.	Particulars	Number of respondents	Percentage of respondents
1.	Agri-venture activities		
	Mushroom cultivation	30	22.9
	Food-processing	46	35.1
	Both	55	42
2.	Educational Qualification		
	Below class 10th	8	6.1
	Matriculation	20	15.3
	Higher Secondary	52	39.7
	Graduation	51	38.9
3.	Business Training		
	Yes	85	64.9
	No	46	35.1
4.	Business Age		
	5 -9 yrs	78	59.5
	10-14 yrs	39	28.9
	15-19ys	6	4.6
	20-24 yrs	8	6.1
5.	Annual Turnover		
	1-10 lakhs	90	68.7
	11-20 lakhs	32	24.4
	21 -30lakhs	7	5.3
	31-40 lakhs	2	1.5

Source : Data collected by researcher

Table 2 shows that out of 131 respondents of women agripreneurs, 22.9% are involved in mushroom cultivation, 35.1% in food processing and remaining 42% are engaged

in both of the agri-venture activities. Thus, it can be concluded that most of the women agripreneurs are carrying mushroom cultivation with food processing. On analysing the educational qualification of women agripreneurs, it was found that most of the respondents, i.e. 39.7% were higher secondary passed, followed by 38.9% graduates, 15.3% have passed matriculation and qualification with below class 10 were 6.1%. From the table we can see that 5 to 9 yrs slab covered the highest (59.5%) share of the respondents' business age, from which we can infer that most of the women agripreneurs are in the developing phase of their agri-venture. Based on the new segregation of MSME in India, under the MSME Act, 2006, it was found that annual turnover of all the respondents, fell under micro enterprises. Therefore, further segregation was made to make detailed analysis which presented that annual turnover of the 90% of the respondents fall within 1- 10 lakhs slab, and only 1.5% of the respondents have the annual turnover within 31 – 40 lakhs.

For testing the Hypothesis H_{01} , ANOVA was conducted, considering educational qualification of the respondents as the categorical variable.

Table 3: Results of H_{01}

Hypothesis	p-value
H_{01} : There exists no statistically significant difference in the mean value of the annual turnover among the different levels of educational qualification of women agripreneurs	0.000

Table 3 depicts the summary of ANOVA where it shows that p-value is 0.000 which is less than the level of significance 0.05. Therefore, the null hypothesis "there exists no statistically significant difference in the mean value of the annual turnover among the different levels of educational qualification of women agripreneurs" is rejected. This indicates that educational qualification of women agripreneurs affect the annual turnover of their agriventure activity. Huarng et al. stated that "on analysing 155 women entrepreneurs also found that lack of education among women entrepreneurs was one of the significant variables that relates with the difficulty they face in running their business"(495).

Table 4: Descriptive analysis between educational qualification and annual turnover

Educational Qualification	Number of respondents	Mean
Below Class 10	8	3.88
Matriculation	20	5.40
Higher Secondary	52	9.31
Graduation	51	14.08

To make further analysis between educational qualification and annual turnover of women agripreneurs, we have presented table 4. The mean scores of annual turnover of women agripreneurs are seen to have increased with the increase in their educational qualification. It can be observed that the mean score of women agripreneurs with graduation degree is highest, i.e. 14.08, followed by a mean score of 9.31 among higher secondary passed respondents. Further, a mean value of 5.40 was derived among women agripreneurs who have passed matriculation and the lowest mean value of 3.88 was derived among women agripreneurs with educational qualification of below class 10. So, it can be concluded that women agripreneurs with higher educational qualifications generate more annual turnover in their business.

For testing the Hypothesis H_{02} , ANOVA was conducted, considering business age of the respondents as the categorical variable.

Table 5: Results of H_{02}

Hypothesis	p-value
H_{02} : There exists no statistically significant difference in the mean value of the annual turnover among the different slabs of business age of women agripreneurs	0.981

Table 5 depicts the summary of ANOVA where it shows that p-value is 0.981 which is more than the level of significance 0.05. Therefore, the null hypothesis “there exists no statistically significant difference in the mean value of the annual turnover among the different slabs of business age of women agripreneurs” is not rejected. This indicates that the business age of women agripreneurs does not affect the annual turnover of their agriventure activity. For testing the Hypothesis H_{03} , independent t-test was conducted, considering business training attained by the respondents as the categorical variable.

Table 6: Results of H_{02}

Hypothesis	p-value
H_{03} : There is no statistically significant difference in the mean score of annual turnover between the trained and untrained women agripreneurs	0.038

Table 6 depicts the summary of independent t-test where it shows that p-value is 0.038 which is less than the level of significance 0.05. Therefore, the null hypothesis ‘there is no statistically significant difference in the mean score of annual turnovers between the trained and untrained women agripreneurs’ is rejected. This indicates that business training attained by the women agripreneurs affect the annual turnover of their agriventures activity.

To get an in-depth view of the nature of the association between the business training attained by the women agripreneurs and their annual turnover, Pearson correlation was employed. The results of the correlation test have been depicted in table 7.

Table 7: Correlation between business training and annual turnover

Particulars	Business Training	Annual Turnover
Pearson Correlation	1	0.182
Sig (2-tailed)		0.38
N	131	131
Pearson Correlation	0.182	1
Sig (2-tailed)	0.38	
N	131	131

Table 7, shows that there is positive correlation between the business training attained by the women agripreneurs, and their annual turnover. Similar result was also presented by Bauer on evaluating the “perception of women entrepreneurs with respect to the business training” they procured(23). The author found that participation of the respondents in the business training programs acted a key factor in their business growth in the later stage

Findings:

The purpose of the study is to establish the association between the profile of women agripreneurs engaged in mushroom cultivation and food processing and their annual revenue from their agriventures. The study has taken into consideration women agripreneurs involved in mushroom cultivation and food processing. The analysis revealed the majority of the women agripreneurs were engaged in both mushroom cultivation and food processing. Based on the result of business age, a very less number of women agripreneurs seemed to have more experience in their business. Here, three factors relating to the profile of the women

agripreneurs - educational qualification, business age and training were considered. The relationships of these three factors, with the annual turnover of the women agripreneurs were analysed. Statistical tests – ANOVA, independent t-test and correlation was conducted to test the hypothesis formulated for the study. The result of the respective tests shows that the educational qualification of the women agripreneurs and the business training attained by them has a significant impact on their annual turnover. On the contrary, the business age factor was identified to have no significant impact on the annual turnover of the women agripreneurs.

Conclusion:

Women entrepreneurs face several challenges in running their business which includes lack of finance, access to market information, gender discrimination, social and cultural boundaries, balance between home and work responsibilities. Mitchelmore and Rowley stated “above all inferior education and training pose a major hindrance for women entrepreneurs in their successful business growth” (139). Prior studies have established that the “education qualification, training, and the business experience of the women entrepreneurs affects their access to finance”, suggesting that their financial knowledge and experience has an impact on their business performance (Khaleque 37). In the case of the women agripreneurs in Assam, the study identified that educational qualification and training has the potential to enhance the business performance. It was established through the analysis conducted in this study that the women entrepreneurs who have received business training were able to yield better annual turnover compared to those who have not acquired any business training. Similarly, the increase in the level of education of the women agripreneurs positively impacted the annual turnover of their business ventures. The higher the level of education, the higher is their annual turnover. However, contrary to prior studies, the business age or experience of the women agripreneurs did not have any significant impact on their annual turnover. When it comes to sustainable farming techniques it is assumed that the level of profitability is very low, as the amount of investment in such techniques of farming is high. Mushroom cultivation and food processing require a very low amount of investment and its production can be increased with minimal effort. It was observed that this can be achieved through education and business training provided to the women agripreneurs involved in such businesses. Thus, it can be concluded that for enhancing the profitability of the sustainable businesses, proper education and training should be given to the agripreneurs. Such a step will not only encourage women empowerment but also support sustainable livelihood in the long run.

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