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Gender-Based Division of Agricultural Labour in Chhattisgarh: Implications for Income Inequality and Women's Empowerment

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Abstract

The article emphasizes the need to promote self-employment among small, disadvantaged farm households to generate employment and extra income. Mushroom cultivation is proposed as a viable option for these households since it requires minimal land and can be pursued in backyard spaces. Moreover, this activity offers several benefits, including job creation and extra income. Mushrooms are also a great source of dietary fiber, protein, and nutrients, making them an ideal option for improving the social status of rural women and young people. The cultivation of mushrooms is environmentally friendly, utilizing sustainable technology, and studies suggest that women play a critical role in the agricultural sector of the American economy. By identifying opportunities for their business growth while considering equity and substance, rural women can improve their quality of life and contribute to the nation-building process. Furthermore, mushroom cultivation provides farmers with extra work during the winter season, when conventional farming is less productive. This study aims to identify the specific socioeconomic characteristics of mushroom beneficiaries in the region and examine the impact of mushroom cultivation on these individuals. Overall, the practice of mushroom farming has contributed to rural development by generating income and promoting self-employment, particularly among women, who make up 70% of the overall female population.

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Introduction

The latest trends suggest a sudden spike in unemployment[1] rates owing to population growth and technology change, both in developed and emerging countries.[2] Mushroom cultivation can be pursued in backyard spaces, which require minimal land.

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This can be particularly beneficial for young people and women in rural areas who aim to enhance their social status. By adopting mushroom farming, farmers can significantly contribute to the economic expansion. The cultivation of mushrooms utilizes environmentally friendly technology. Various types of mushrooms offer numerous medicinal benefits. Studies indicate that roughly seventy percent of agricultural and forestry products are not fully utilized.[3]

Unlike Indian economy due to orthodox, rural traditions, and under performers the western economy employ majority of individuals engaged in agriculture and farming are women. These women play a critical role in domestic production and ensuring the country's food security. Women's roles in agriculture have become more complex as they balance multiple responsibilities, including household chores, participating in agricultural activities for wage labor or savings, and seeking additional income opportunities. It is crucial to identify opportunities for women's business growth while considering equity and substance, as this will help rural women improve their quality of life and contribute their skills to the nation-building process.

Mushrooms are capable of obtaining essential vitamins and minerals from leftover plant material, making them a rich source of dietary fiber and protein.[4] Research has shown that mushrooms possess double the protein content of other vegetables, earning them the moniker of "vegetable protein." Additionally, mushrooms are low in calories and fat yet high in vitamins. Comprising 85 to 95 percent water, 3 percent protein, 4 percent carbohydrates, 1 percent lipids, and 1 percent minerals and vitamins, they are an exceptional source of these vital nutrients.[5]

Furthermore, mushroom growing offers farmers extra work during the winter season because of the temperature range of 20° C to 30° C, high humidity of 80-90 percent, and high organic matter, which is often less productive than conventional farming. As a result, engaging in mushroom cultivation can lead to socioeconomic improvement for those involved. Furthermore, mushroom growing has not only reduced hunger in rural communities, but it has also contributed to rural development by producing revenue and boosting self-employment, particularly among women, who account for 70% of the total female population.[6] One key problem addressed is the gendered division of agricultural labor in these areas. Male and female agricultural laborers have different rates of employment completion, engagement, compensation discrepancies, and overall earnings. The statement further adds that women entrepreneurs have showed an interest in specializing in mushroom cultivation through agri-clinics and agri-business centers established by the national government. This shows that women should pursue alternative agricultural jobs that would provide them with additional opportunities for empowerment and economic independence. This study aims to identify specific socioeconomic characteristics of mushroom beneficiaries in the region and to examine and describe the impact of mushroom cultivation on these individuals.[7] The study focuses on working conditions for workers in Chhattisgarh's Arang, Tilda, Dharsiwa, and Abhanpur blocks of Raipur district.

Materials and Methods

Sampling Strategy and Data Collection

The study's focus on female mushroom farmers in Chhattisgarh Raipur's specific districts of Arang, Abhanpur, Tilda, and Dharsiwa was due to their prevalence. The researchers selected these areas and included 10-15 self-help groups of female mushroom producers from each of the four blocks. A total of 32 villages in Chhattisgarh state were included in the study, which was conducted in the four blocks of Raipur District (Arang, Tilda, Dharsiwa, and Abhanpur). The eastern plateaus and hill region were divided into two agro-climatic blocks, with mushroom cultivation actively practiced in most of Raipur District.[8] The population of interest for the study consisted of 351 individuals who obtained mushrooms from the Raipur District in Chhattisgarh, India. Of the total number of respondents, 351 members were identified from 32 female self-help groups. Data was collected through personal, face-to-face interviews using a set of questionnaires to gather relevant information.[9] An interview schedule was carefully designed to align with the study's objectives. After data collection, the data was organized and analyzed using MS-Excel 2010 Windows on an Acer –Aspire 3 system model.

Table 1: Characteristics of Mushroom Entrepreneurs in General

INDEPENDENT & DEPENDENT VARIABLES	ARANG BLOCK		TILDA BLOCK		DHARSIWA BLOCK		ABHANPUR BLOCK		OVERALL MEAN	OVERALL SD
PARAMETERS	**MEAN**	**SD**	**MEAN**	**SD**	**MEAN**	**SD**	**MEAN**	**SD**		
Age	29.6	2.0	29.1	2.0	29.3	1.6	31.5	0.7	29.8	15.1
Education	2.1	1.0	2.8	0.4	2.7	0.4	3.0	0.6	2.6	1.1
Marital status	2.3	0.4	2.1	0.4	2.0	0.3	1.9	0.1	2.1	1.0
Family size	2.0	0.1	2.1	0.0	1.9	0.2	1.8	0.2	1.9	1.0
Caste	2.4	0.3	2.1	0.3	2.3	0.2	2.4	0.1	2.3	1.1
Source of income	4.2	0.8	3.3	0.5	3.4	0.9	3.2	0.6	3.5	1.5
Social Participation	6.3	0.5	5.9	0.3	6.0	0.7	6.0	0.2	6.1	3.0
Economic Motivation	4.1	0.1	4.2	0.1	4.1	0.2	4.1	0.4	4.1	2.1
Material possession	7.3	0.2	7.1	0.4	7.4	0.5	7.3	0.2	7.3	3.7
Extension participation	2.2	0.3	2.5	0.2	2.4	0.2	2.5	0.1	2.4	1.2
Cosmopoliteness	5.6	0.2	5.4	0.0	5.6	0.2	5.6	0.1	5.5	2.9
Fatalism/Scientism	4.2	0.2	4.2	0.2	4.3	0.2	4.4	0.2	4.3	2.2
Information seeking Behaviour	2.3	0.1	2.4	0.1	2.4	0.1	2.6	0.2	2.4	1.2
Management orientation	4.3	0.2	4.2	0.2	4.3	0.2	4.6	0.3	4.3	2.2
Decision Making	1.1	0.1	1.2	0.1	1.2	0.2	1.2	0.0	1.2	0.6
Leadership ability	1.4	0.0	1.5	0.0	1.5	0.1	1.5	0.1	1.5	0.8
Risk taking ability	4.0	0.1	4.1	0.1	4.0	0.2	4.0	0.0	4.0	2.1
Knowledge of enterprise	1.6	0.0	1.5	0.0	1.6	0.1	1.6	0.0	1.6	0.8
Achievement motivation	3.1	0.4	1.5	0.3	2.8	0.5	3.2	0.3	2.7	1.3
Innovativeness	3.5	0.6	3.0	0.3	3.0	0.5	3.5	0.4	3.2	1.5
Self confidence	3.6	0.5	3.4	0.2	3.2	0.6	3.5	0.2	3.4	1.6
Problems in Adoption	2.2	0.3	2.1	0.2	2.1	0.2	2.2	0.2	2.2	1.0

Measurement of the Independent Variables

The study incorporated a range of independent variables to examine the respondents' characteristics, including age, education, marital status, family size, caste, source of income, social participation, economic motivation, material possession, extension participation, cosmopoliteness, fatalism, information-seeking behavior, management orientation, decision-making, leadership ability, risk-taking ability, knowledge of enterprise, achievement motivation, innovativeness, self-confidence, and adoption issues.[10] These variables were evaluated using a standardized ranking approach. Age was measured in years from birth to the time of data collection, with each year assigned a score of one (1). The number of years spent in formal education was used as a measure of educational attainment, with those achieving an intermediate or higher grade assigned a score of five (5). Illiteracy was indicated by a score of one (1) for farmers who lacked the ability to read or write. Family size was determined by assigning a score of one (1) to each male family member and a score of two (2) to each female family member. The actual number of family members present during the interview, including the respondent themselves, was used to determine family size. The source of income was identified by evaluating agricultural and economic values on a scale ranging from 1 to 6.[11] Social participation, measured through membership and activity participation, was assessed with scores of 2, 1, and 0 indicating regular, occasional, and never participation, respectively.[12] Extension participation scores were based on the respondent's participation with various sources of information, with weights assigned to the responses from the 10 sources mentioned in the questionnaire. Information-seeking behavior scores were determined by assessing the frequency of utilization of different information sources, with weights of 2, 1, and 0 assigned to regular, sometimes, and never utilization, respectively. The level of innovation was assessed through agreement or disagreement with listed inventions, with scores of 5 and 1 indicating strong agreement and strong disagreement, respectively.[13] The cosmopoliteness scores were calculated based on the frequency of visits to various locations within or outside the local area, with weights assigned accordingly.

Measurement of the Dependent Variable

The study focused on examining the effect of mushroom farming on the socioeconomic circumstances of the beneficiaries. This factor encompassed various aspects such as management orientation, decision-making and leadership abilities, risk-taking skills, knowledge in business, drive for achievement, inventiveness, self-assurance, and problems related to the adoption of mushroom farming.[14] Management orientation was evaluated on a scale ranging from 1 to 5, where 1 indicated the strongest disagreement and 5 indicated the strongest agreement. The capability to make decisions independently, dependently, or not at all was rated on a scale of 0 to 1. Leadership skills were assessed on a scale of 0 to 2. Risk-taking abilities were examined on a scale of 1 to 5, representing a continuum from strong disagreement to strong acceptance. The level of enterprise knowledge was evaluated based on the extent of knowledge possessed. Adoption of mushroom farming was measured as a binary response, either a yes or no, on a scale of 0 to 1.[15] Achievement motivation was scored on a scale of 1 to 5. Innovativeness was also scored on a scale of 1 to 5. Similarly, self-confidence was evaluated using a scale of 1 to 5. Adoption issues were assessed through a series of questionnaires, with appropriate scores assigned for responses of never, sometimes, and always.[16]

Results and Discussions

Personal Characteristics of Mushroom Entrepreneurs

The personal attributes of entrepreneurs in the mushroom industry were examined, specifically in terms of age, gender, educational background, family size, and level of expertise in mushroom cultivation. The data revealed that a majority of the respondents were below the age of 35, with middle-aged adults comprising 40% and seniors making up 25%. Studies shown by[17] and[18] have shown that business owners, particularly those involved in agri-businesses, tend to be middle-aged or elderly. It is noteworthy to emphasize that young individuals are more inclined towards considering mushroom cultivation as an economic activity.[19] In rural areas, young individuals with higher levels of education have successfully embraced ventures such as mushroom

growing. In contrast to other agribusinesses, a significant portion (35%) of the mushroom farms in the study area were owned and managed by women. The cultivation methods for oyster and button mushrooms, which are more inclusive towards women, may serve as a source of inspiration for aspiring female entrepreneurs.[20] Oyster mushroom cultivation has proven to be a profitable endeavor for women self-help groups in challenging and remote areas of Chhattisgarh.[21] Furthermore, a higher level of education is required to effectively operate a successful mushroom business, as evidenced by over half of the respondents holding a graduate or postgraduate degree. Conversely, farmers in the study area had lower levels of formal education. These educational qualifications provide higher-level entrepreneurs with greater ease in comprehending the technical aspects of mushroom production.[22] In contrast, farmers with a lower level of education may encounter difficulties in acquiring knowledge related to spawn production, environmental control, pest and disease management, proper crop cultivation practices, hygiene maintenance, and other mushroom-specific operations.[23]

The majority of the respondents belonged to medium-sized families, followed by large and small households. Large and medium-sized families have an added advantage of being able to contribute labor and managerial assistance to support the family business. The labor and leadership responsibilities of this enterprise must be shared by the entire family.[24] Most of the respondents had less than two years of experience in mushroom cultivation. On the other hand, a portion of the respondents had over five years of expertise in mushroom farming, while others had between two to five years. These findings differ from those reported by,[25] who suggested that most farmers had extensive experience, indicating a higher attrition rate among growers in the mushroom industry. The results of a study on the socioeconomic and psychological characteristics of mushroom business owners are calculated. The bulk of participants (50%) owned land that was less than 10 acres in size. Only 5% of farmers had parcels of land larger than 10 acres.[26] These findings suggest that farmers with insufficient land holdings to provide a full means of subsistence are more likely to supplement their income through a variety of sectors such as mushroom farming, vermicomposting, and seasonal farming.

Profile of the Respondent's Personality

In the Arang block, an analysis of correlation was conducted, yielding an observed value of 0.81682. Similarly, a correlation analysis was performed for the Tilda block, resulting in the discovery of a value of 0.91769. The findings for Dharsiwa also underwent a correlation analysis, revealing values of 0.82571 for Dharsiwa and 0.52081 for Abhanpur Block. When examining the socioeconomic characteristics of Abhanpur and Dharsiwa, two of the four study blocks, it was evident that their residents did not rely heavily on mushroom farming as their primary source of income.[27] Conversely, the socioeconomic profiles of the Arang and Tilda blocks exhibited a strong dependence on mushroom farming.[21] Arang and Tilda's blocks were discovered to be predominantly dependent on mushroom cultivation, whilst Dharsiwa and Abhanpur blocks were discovered to be dependent on other kinds of money as well.[28] A correlation matrix was created for each of the four blocks.[29] The regression analysis was also carried out for all four blocks, and it was discovered that education, economic incentive, cosmopoliteness, and fatalism were notable and made significant contributions at the 5% level of significance to the development of livelihood in mushroom farming. When examined at a 5% level of significance, the remaining investigated parameters were less significant.[30] The majority of Chhattisgarh mushroom farmers report high levels of postponed satisfaction. Due to the firm's owners, only specific kinds of mushrooms should be allowed to grow year-round in the microenvironment. High temperatures and low relative moisture must be overcome before more than half of the state's districts can begin producing various species of mushrooms.

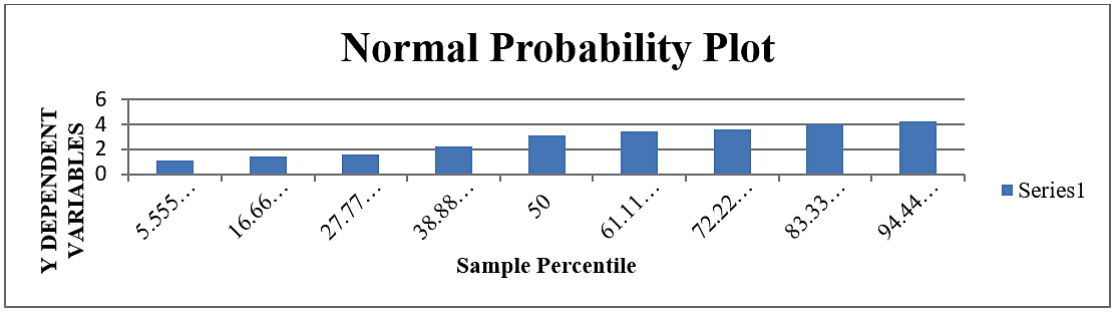

Fig. 1: Regression Analysis Plot of Arang Block

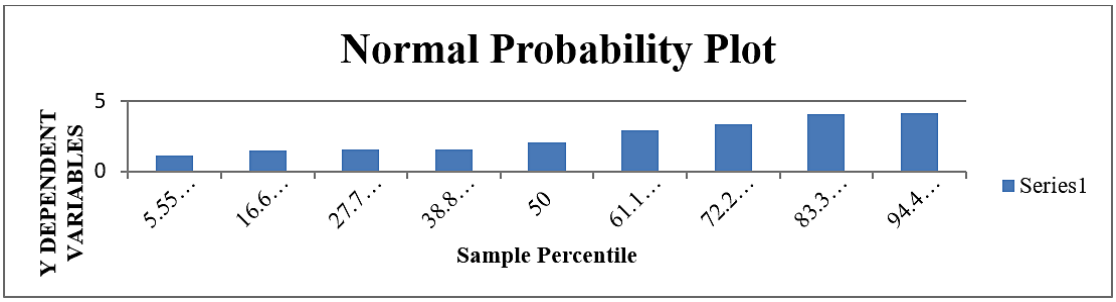

Fig 2. Regression Analysis Plot of Tilda Block

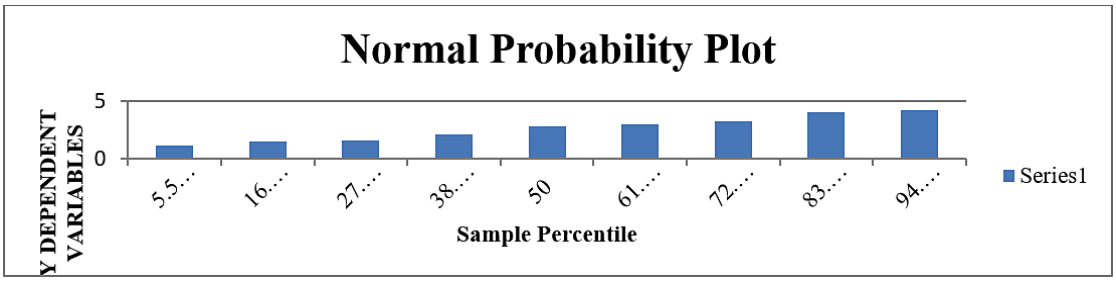

Fig. 3: Regression Analysis Plot of Dharsiwa Block

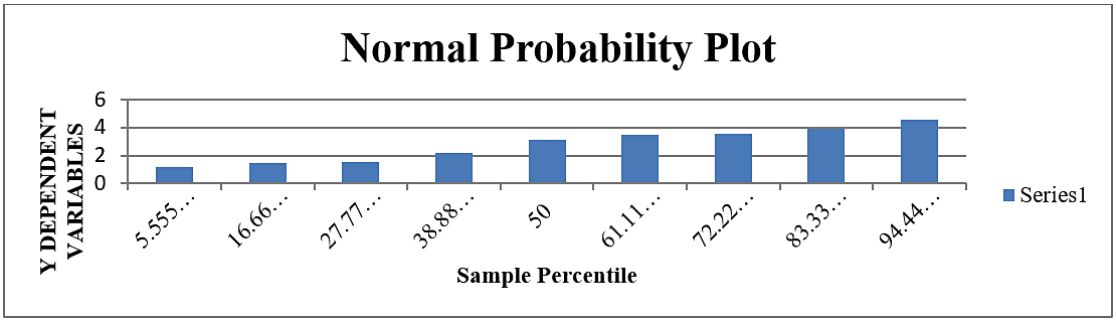

Fig. 4: Regression Analysis Plot of Abhanpur Block

Table 2: Correlation matrix of all the four blocks of Raipur district

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
A	1																					
B	0.1	1																				
C	0.3	-0.8	1																			
D	0.3	0.3	0.1	1																		
E	-0.3	-0.5	-0.1	-0.7	1																	
F	-0.3	-0.8	0.4	-0.5	0.6	1																
G	0.0	-1.0	0.8	-0.1	0.4	0.8	1															
H	0.2	0.0	0.4	0.8	-0.7	-0.1	0.1	1														
I	0.2	-0.8	0.8	0.2	0.3	0.6	1.0	0.3	1													
J	0.2	0.9	-0.8	0.1	-0.3	-0.7	-0.9	-0.2	-0.8	1												
K	0.1	-0.9	0.7	0.0	0.4	0.5	0.9	0.1	1.0	-0.8	1											
L	0.5	0.0	0.4	0.4	-0.4	-0.3	0.1	0.5	0.1	-0.1	0.1	1										
M	0.2	0.8	-0.5	0.1	-0.4	-0.9	-0.9	-0.2	-0.8	0.8	-0.7	0.3	1									
N	0.5	-0.1	0.4	0.4	0.0	-0.4	0.2	-0.1	0.4	-0.1	0.5	0.4	0.1	1								
O	0.0	0.9	-0.9	0.2	-0.2	-0.7	-0.8	-0.3	-0.7	0.9	-0.6	-0.3	0.7	0.1	1							
P	0.0	0.9	-0.7	-0.1	-0.4	-0.6	-1.0	-0.2	-1.0	0.9	-1.0	-0.1	0.8	-0.3	0.7	1						
Q	0.6	-0.4	0.7	-0.1	-0.2	0.1	0.3	0.2	0.3	-0.3	0.2	0.6	0.0	0.2	-0.6	-0.2	1					
R	-0.3	-0.5	0.6	0.3	-0.2	0.3	0.5	0.6	0.5	-0.8	0.4	0.4	-0.4	0.0	-0.6	-0.6	0.3	1				
S	-0.3	0.1	-0.4	-0.9	0.4	0.2	-0.3	-0.6	-0.6	0.2	-0.5	-0.3	0.2	-0.6	0.1	0.5	0.0	-0.4	1			
T	0.2	-0.9	0.9	-0.2	0.3	0.7	0.9	0.1	0.8	-0.9	0.8	0.3	-0.6	0.2	-0.9	-0.8	0.7	0.5	-0.1	1		
U	-0.4	-0.8	0.3	-0.5	0.7	0.9	0.7	-0.2	0.6	-0.8	0.6	-0.3	-0.8	-0.3	-0.6	-0.7	-0.1	0.4	0.2	0.6	1	
V	0.0	0.0	0.4	0.3	-0.6	-0.3	-0.1	0.4	-0.1	-0.3	-0.1	0.5	0.2	0.1	-0.3	0.7	0.5	0.6	-0.1	0.2	-0.2	1

A= Age, B= Education, C= Marital Status, D= Family Size, E= Caste, F= Source of Income, G= Social Participation, H= Economic Motivation, I= Material Possession, J= Extension Participation, K= Cosmopliteness, L= Fatalism/Scientism, M= Information Seeking Behaviour, N= Management Orientation, O= Decision Making, P= Leadership Ability, Q= Risk Taking Ability, R= Knowledge of Enterprise, S= Achievement Motivation, T= Innovativeness, U= Self confidence, V= Problems in Adoption.

Conclusion

Urban regions in Chhattisgarh are the most ideal conditions for mushroom cultivation. The promotion of mushroom entrepreneurship, which is typically an urban or semi-urban activity, will have some positive effects on rural areas, including the use of agricultural waste for the production of protein-rich food, the security of rural residents' livelihoods and economic development, job creation, and the reduction of malnutrition through mushroom consumption. It is critical to ensure that extension events are scheduled in response to the needs of the stakeholders. In addition to their academic credentials, loyalty to mass media, and participation in extension courses, the study found that additional traits such as cosmopolitanism, self-reliance, and training had an important influence on respondents' entrepreneurial activity. They should not be organized purely to collect money or force events to take place.

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Conflict of Interest

The author(s) do not have any conflict of interest.

Data Availablity Statement

The data used to support the study's findings are available upon request from the corresponding author.

Ethics Statement

This research did not involve human participants, animal subjects, or any material requiring ethical approval.

Author Contributions

Conceived and designed the analysis: DS, HKA & NVRS, Collected the data: DS, Contributed data or analysis tools: DS & NVRS performed the analysis: DS Wrote the paper: DS

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