Agriculture Diversification and its Determinants in India

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Presentation Outline

- Introduction and problem statement
- Objectives of the study
- Data and methods
- Cropping pattern across landholding categories
- Level of diversification by farmer's profile
- Determinants of farm diversification
- Conclusion and implications

Introduction

- Technological intervention of mid-1960s has contributed significantly towards bringing the country from deficit to surplus stage in foodgrains production.

- The recent trend of rice-wheat cropping system is creating a lot of problems related to sustainability and market imbalances.

- In essence, diversification has become an essential strategy that can increase the performance of agriculture system and minimizes risk.

- A number of studies have been conducted to assess the magnitude, pattern and determinants of agricultural diversification at the macro-level.

- However, there are limited numbers of studies available, which have measured the farm diversification at the micro-level.

Objectives of the study

- This paper analyses the trends in agricultural diversification across landholding categories and factors affecting the diversification.

- The specific objectives of this research are as follows:

  - Assess the level of diversification across the landholding sizes.

  - Identify the factors determining the level of diversification

Data and methods

- This study is based on a comprehensive primary survey of 4779 farm households from a total of 12 districts, 48 corresponding blocks and 192 villages of one of the largest state – Uttar Pradesh, India.

- Multi-stage random sampling method was used to select representative farm households from the selected districts, blocks and villages.

- Data has been collected through personal interview using a structured questionnaire.

- Herfindahl-Hirschman Index has been used to measure the level of diversification.

- A Logistics Regression Model has been developed to identify the most likely factors determining the farm diversification.

Socio-demographic profile of sample surveyed

Socio-demographic Variables	Frequency (N)	%
Gender		
Male	4676	98.8
Female	58	1.2
Age Group (Years)		
<25	259	5.4
26-40	1748	36.6
41-60	2163	45.3
>60	604	12.7
Education Level		
Illiterate	983	20.6
Primary	1315	27.6
Junior High School	1065	22.4
High School and Intermediate	1027	21.6
Graduate and above	374	7.9
Social Category		
General	2067	43.4
OBC	1346	28.3
SC/ ST	1348	28.3
Occupation		
Farming	4528	62.39
Service – government & private	554	7.62
Labour	1762	24.28
Business	336	4.63
Housewife and students	23	0.41
Unemployed	54	0.74
Annual household income (Rs.)		
Less than Rs. 20000	183	4.1
Rs. 20000-50000	1134	25.4
Rs. 50000-100000	1399	31.3
Rs. 100000-200000	1069	23.9
More than 200000	682	15.2
Landholding category		
Marginal (< 1 ha)	2708	56.7
Small (1-2 ha)	1143	23.9
Medium (2-4 ha)	625	13.1
Large (> 4 ha)	303	6.3

Cropping pattern across landholding sizes (%)

Crops	Marginal	Small	Medium	Large	Total
Wheat	45.1	40.7	37.6	33.3	38.3
Paddy	26.9	24.7	21.5	22.7	23.6
Sugarcane	6.1	11.1	12.9	13.0	11.1
Coarse Grains	6.2	7.5	7.8	8.8	7.7
Pulses	7.1	5.3	7.4	9.3	7.4
Oilseeds	4.4	5.8	6.5	6.2	5.8
Fruits & Vegetables	2.7	3.4	5.0	5.3	4.2
Others	1.4	1.6	1.2	1.3	1.3

Level of diversification by farmer's profile

Profile Indicators	N	Mean	Std. Deviation	F	Sig
Age					
≤ 40 years	1608	.507	.161	5.481*	0.019
> 40 years	3148	.519	.166		
Total	4756	.515	.164		
Education					
< High School	3364	.508	.162	19.041**	0.000
High School & Above	1392	.531	.167		
Total	4756	.515	.164		
Social category					
OBC/SC	2699	.501	.167	46.865**	0.000
General	2057	.534	.158		
Total	4756	.515	.164		
Annual Income					
≤ Rs. 50000	1363	.483	.167	74.698**	0.000
> Rs. 50000	3393	.528	.161		
Total	4756	.515	.164		
Landholding Size					
Marginal (< 1 ha)	2324	.482	.167	79.346**	0.000
Small (1-2 ha)	1285	.528	.157		
Medium (2-4 ha)	769	.563	.144		
Large (> 4 ha)	378	.579	.158		
Total	4756	.515	.164		

**significant at the 0.01 level, *significant at the 0.05 level

Determinants of farm diversification

Variables	B	S.E.	Sig.	Exp(B)
Constant	-3.041**	.355	.000	0.048
AGE (Years)	-.003	.005	.593	1.003
EDU (>High School=1, Otherwise=0)	.039	.146	.790	1.040
SOC (General=1, Otherwise =0)	.327*	.141	.020	1.386
AINC (Annual Income > Rs. 50000=1, Otherwise =0)	.325*	.150	.030	1.384
WMEM (Number of working members)	.027	.048	.571	1.027
OH (Landholding in ha)	.171**	.039	.000	1.187
IRRI (Irrigation intensity %)	.001	.001	.299	1.001
MKTL (Market linkage Yes=1, Otherwise =0)	.596**	.173	.001	1.815
ICT (Use of ICT Yes=1, Otherwise =0)	.708**	.175	.000	2.031
-2 Log likelihood	1439.601			
Cox & Snell R Square	0.088			
Nagelkerke R Square	0.127			
Chi-square (df=9)	121.269**			
Coreected prediction	71.49			

**significant at the 0.01 level, *significant at the 0.05 level

Conclusion and implications

- Wheat and paddy are two dominating crops across the landholding size.
- The level of diversification increases with landholding sizes.
- The level of diversification varies with age, education, social category, income and landholding sizes.
- Thus, social category, income, landholding size, market linkage and use of ICTs are more likely factors determining the level of farm diversification.
- This analysis provides insights for promoting farm diversification among the farming communities.

THANK YOU