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Farmers Perception Towards Drivers and Barriers of Farm Diversification in Punjab and Tamil Nadu: A Comparative Study

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ABSTRACT

Background: Diversification of farm is important in agriculture. The present study focuses on farmers' perception and barriers towards farm diversification. This study aims to analyse farmers' perception towards drivers and barriers of farm diversification in Punjab and Tamil Nadu.

Methods: Primary data was collected through pre-structure and pre-tested questionnaire. Multistage sampling technique was used for the selection of the respondents. Data were collected from 120 farmers 60 from Punjab and 60 from Tamil Nadu. Mean, frequency, one sample t-test and independent sample t-test was used for the analysis of the collected data.

Result: Results of study revealed that good irrigation facilities and fixed assets (4.37), knowledge and farming experience (4.43) followed by new and modern production technology (4.10), opportunities to participate in extension activities (4.15) reported important drivers of farm diversification in Punjab and Tamil Nadu respectively. Lack of storage and processing facilities (4.48), (4.63) and market instability and demand variability (4.15), (4.32) reported important barriers of farm diversification in Punjab and Tamil Nadu respectively.

Key words: Barriers, Drivers, Farm diversification, Market.

INTRODUCTION

Agriculture provides livelihoods to millions of the population in the nation. India's diverse agro-climatic conditions facilitate the production of a wide array of agricultural commodities. Farm diversification comprises of moving resources from monoculture to a wide variety of crops and livestock, as well as changing the crop mix, activity mix and enterprise mix at the farm and household levels (Das and Nath, 2019). Farm diversification aims mainly to raise production, lower risk and boost income of the farmers. It is also essential for ensuring food security, protecting natural resources and fostering sustainable growth in rural regions (Das *et al.,* 2023). Most primary stakeholders' overall face challenges with farm income and profitability so diversification regarded as a significant motivator from an income and lifestyle standpoint (Jack *et al.,* 2021). A certain level of risk is involved in the choice to diversify a farm and farmers must consider a number of criteria (Northcote and Alonso, 2011). People are either opportunity driven pulled into a new business enterprise by job and life happiness or pushed or necessity into a commercial activity (Jack *et al.,* 2021). The most farmers held a favourable view, ranging from moderate to high, towards diversification (Lavanya *et al.*, 2012). In addition to perception of farmers towards the factors which influence the farm diversification differs from farmers in different regions. In this context, the study on perception of farmers towards drivers and barriers of farm diversification in Punjab and Tamil Nadu: a comparative study was undertaken with aims to study the perception of drivers and barriers towards farm diversification among the farmers.

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Review of literature

Recognising diversification as an evolution impacted by market potential, risk assessment, lifestyle preferences and economic need requires assessing both diversified and non-diversifying farmers (Northcote and Alonso, 2011). Most farmers are risk adverse and see droughts, pests, floods and excessive rains as major risks to their enterprises (Ullah *et al.*, 2015). Increased risk perception, risk aversion and economic motivations are common traits of farmers who vary their cropping patterns (Mutaqin and Usami, 2020). Farm size, age and education level, farming experience, off-farm income, distance and access to farm machinery were significantly influencing diversification decisions (Ashfaq *et al.*, 2008). Pillai and Radhakrishnan (2024) revealed that maize and finger millet were suitable as intercrops in coconut garden. Both push factors like external shocks and pull factors including market opportunities that guide diversification (Henke and Vanni, 2017). Primary

market access drives diversification where irrigation, fertilizers and mechanization limits diversification and leads to specialization towards high value crops (Kumar *et al.*, 2018). Continued technological and partial input support has significantly improved the famer's income (Chaudhary *et al.*, 2024). The farm household income has a positive relation with farm assets, diversification and education level (Kumar *et al.*, 2019). Factors such as household head's age, access to credit, technical assistance, regional characteristics, market access and active women involvement positively influence on-farm diversification (Rehan *et al.*, 2017). Lack of awareness and restricted economic prospects might be important causes (Memon *et al.*, 2020). There were multiple obstacles to diversification, such as fragmented landholdings and outdated apple orchards and necessary interventions are required for sustainable agricultural development (Sharma, 2011). Farms with greater debt asset ratio, farm in metropolitan areas, older farm operators and farm household with off-farm farm income are less likely to diversify (Mishra *et al.*, 2004). Key challenges to farm diversification included the lack of support prices and high credit needs (Singh *et al.*, 2009). Rani *et al.* (2025) educated farmers were more likely to notice changes in the climate and might adapt mitigating measures easily, improving farmers' education and offering free extension advices are crucial in boosting their response to climate change and promoting adaptation and improving livestock production. Geographic and infrastructural barriers also limit non-farm employment opportunities (Ghimire *et al.*, 2014). Lack of effective marketing channels, insufficient finance for new ventures, inadequate information about different enterprises, the need for better market facilities, improved access to institutional credit for small farmers and the need of trainings to disseminate information about agricultural diversification are the major factors which limit the diversification (Rai *et al.*, 2015). Poor market access, market instability, limited government support and relatively high input costs reduce the rate of diversification (Burchfield and Poterie, 2018). Agricultural diversification has been stressed at the national level as a strategy for increasing income and creating employment (Devi and Sharma, 2022). Enhancing market accessibility, supporting vulnerable groups like young and women farmers and improving literacy will boost income diversification and reduce rural poverty (Kwizera, 2021).

MATERIALS AND METHODS

The population of the study consists of all farmers from Ludhiana and Jalandhar, in Punjab and Namakkal and

Table 1: List of items included in the questionnaire.

Item	Author(s)
Drivers of farm diversification	
Ready availability of credit facility to farmers for buying farm inputs	Rehan *et al.* (2017); Neogi and Ghosh (2022)
Market access to sell the farm produces locally	Rehan *et al.* (2017)
Availability of new and modern technologies	Khan *et al.* (2020); Das and Nath (2019); Kumar *et al.* (2012)
Farm diversification helps to earn an additional income and availability of organized buyers for all produces	Khan *et al.* (2020); Sen *et al.* (2017); Anwer *et al.* (2019); Ali (2015)
Availability of good irrigation facilities in all seasons and more number of fixed assets	Aheibam and Singh (2017); Ashfaq *et al.* (2008); Kurdys-Kujawska *et al.* (2018)
Availability of information regarding market demand and prices of commodity	Rai *et al.* (2015); Khan *et al.* (2020); Aheibam and Singh (2017)
More opportunities to participate in extension activities	Rai *et al.* (2015)
Easy transportation facilities for transportation of agricultural commodities	Felix and Ramappa (2023)
Subsides given by the government in buying inputs	Bowman and Zilberman (2013)
Availability of renting facility for machines and implements	Daudu *et al.* (2019)
Barriers of farm diversification	
Lack of knowledge and information about the diversified farming practices and market conditions	Aheibam and Singh (2017)
Government schemes such as minimum support price, crop insurance *etc.*	Ghouse and Hassan (2020); Mishra *et al.* (2004)
Engaged in various off-farm income sources	Mishra *et al.* (2004); Ashfaq *et al.* (2008)
No market access for the produces market instability and demand variability	Burchfield and Poterie (2018)
High cost of various inputs for farm diversification	Bowman and Zilberman (2013)
Lack of storage and processing facilities for the diversified farm produces	Anwer *et al.* (2019); Ali (2015)

Dindigul in Tamil Nadu. Multistage sampling was used for the selection of the respondents. Where first selection of state followed by district, block and villages. As multistage sampling break down the sampling process into multiple stages making it more dispersed group representative. Two district of Punjab (namely Ludhiana and Jalandhar) and two district of Tamil Nadu namely (Namakkal and Dindigul) were selected conveniently. A total of 120 famers were selected (60 farmers from Punjab and 60 from Tamil Nadu and 30 from each district). The data was collected through a well-designed, pre-structured and pre-tested questionnaire. A literature review of previous studies was considered for the preparation of the questionnaire. The questionnaire contains questions related to demographics, age, educational qualification, number of family members, total income of the family and size of the farm land, experience in farming, farm diversification adoption, type of diversification activities adopted, drivers and barriers of farm diversification. The questions in the questionnaire were structured as scale-based questions on drivers and barriers of farm diversification. Respondents were asked about their agreement or disagreement on a five-point Likert scale (5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree and 1 = strongly disagree). Questions were examined and corrected several times before undergoing a pilot study with a group of ten respondents. Data was collected during the months of February-March, 2024. The mean, frequency, per cent, one sample t-test and independent sample t-test

Table 2: Demographic profile of the respondents (n = 120).

Particulars	Punjab (n = 60)		Tamil Nadu (n = 60)	
	Frequency	Per cent	Frequency	Per cent
Age of the farmers				
20-30 years	13	21.70	8.0	13.30
31-40 years	16	26.70	13	21.70
41-50 years	18	30.00	27	40.00
> 51 years	13	21.70	12	20.00
Education level of the farmers				
Illiterate	3.0	5.00	16	26.70
Primary school	1.0	1.70	21	35.00
Middle school	26	43.30	14	23.30
High school	15	25.00	5.0	8.30
Under graduate	9.0	15.00	3.0	5.00
Post-graduate	6.0	10.00	1.0	1.70
Number of family members of the farmers				
1-2	3.0	5.00	16	26.70
3-4	26	43.30	22	36.70
5-6	17	28.30	13	21.60
> 6	14	23.30	9.0	15.00
Farm size of the farmers				
< 1 hectare	3.0	5.00	9.0	15.00
1-2 hectares	19	31.70	26	43.30
2-4 hectares	17	28.30	17	28.30
4-10 hectares	14	23.30	7.0	11.70
> 10 hectares	7.0	11.70	1.0	1.70
Farming experience of the farmers				
< 5 years	15	25.00	6.0	10.00
5-10 years	10	16.70	4.0	6.70
10-15 years	7.0	11.70	9.0	15.00
15-20 years	18	30.00	15	25.00
> 20 years	10	16.70	26	43.30
Annual income of the farmers				
Rs. 50,000 - 75,000	6	10.00	10	16.70
Rs. 76,000 - 1,00,000	11	18.30	31	51.60
Rs. 1,00,000 - 4,00,000	32	53.30	16	26.70
> Rs. 4,00,000	11	18.30	3.0	5.00
Total	100	100.00	100	100

(Source: Primary data).

were used for the analysis of the collected data. This study is part of student research project of Master of Business Administration in Agribusiness at School of Business Studies, Punjab Agricultural University Ludhiana.

Table 1 depict statements included in the questionnaire. These statements synthesized from the previous published studies. The review of literature is helpful for identified the statement related to the study objectives.

RESULTS AND DISCUSSION

The demographic profile of the farmers includes age of the farmers, education, income, number of family members, farming experience, farm size *etc.*

Table 2 depicted majority (26.70%) of the farmers' age groups was 41-50 years in Punjab and Tamil Nadu followed by 31.40 years age group. Majority of the farmers (43.30%) had middle school education in Punjab and (35%) had primary school education in Tamil Nadu. In farmers family majority (43.30%) had 3-4 family members in Punjab and (36.70%) in Tamil Nadu. Majority of the farmers (31.70%) had 1-2 hectare farm size in Punjab and (43.30%) in Tamil Nadu, followed by 2-4 hectare farm size. Majority of the farmers (30%) had 12-20 years farming experience in Punjab and (43.30%) farmers had more than 20 years' in Tamil Nadu. Majority (53.30%) farmers' annual income was Rs. 1-4 lakhs in Punjab and (51.60%) of farmers income was up to Rs. 1 lakh in Tamil Nadu.

Table 3 revealed willingness to adopt farm diversification. It can be seen from the Table 3 that (61.70%) not willing to adopt and (38.30%) willing to adopt farm diversification in Punjab. In Tamil Nadu (73.3%) farmers willing to adopt farm diversification while (26.70%) not willing to adopt farm diversification. Anjaly and Ajith (2025) concluded that there is a significant gap between the potential of intercropping and its adoption on a larger scale by Indian growers.

Table 4 show that perception of famers towards drivers of farm diversification in Punjab and Tamil Nadu. In Punjab, most of the farmers perceives good irrigation facilities and fixed assets (4.37) followed by new and modern production technology (4.10) (Kumar *et al.*, 2018; Kumar *et al.*, 2019) followed by subsidies in buying inputs (4.02) followed by access to local market (3.97) followed by improved family income and livelihood stability (3.96) followed by knowledge about farm diversification and farming experience (3.88) and followed by credit availability for buying farm inputs (3.85) as significant drivers for farm diversification while in Tamil Nadu, knowledge about farm diversification and farming experience (4.43) followed by opportunities to participate in extension activities (4.15), access to market information (4.05) availability of organized buyers (3.92) good irrigation facilities and fixed assets (3.91) and followed by access to local market (3.88) were perceived as significant barriers by the famers. Gummagolmath *et al.,* (2020) revealed that facilitating the farmers with the other

Table 3: Willing to adopt farm diversification (n = 120).

	Punjab (n = 60)		Tamil Nadu (n = 60)	
Particulars	Frequency	Per cent	Frequency	Per cent
Willing to adopt	23	38.30	44	73.3
Not willing	37	61.70	16	26.70
Total	100	100.00	100	100.00

Table 4: Farmers perception towards drivers of farm diversification (n = 120).

Statements	Punjab (n = 60)				Tamil Nadu (n = 60)			
	Mean	S.D	t-value	p-value	Mean	S.D	t-value	p-value
Good irrigation facilities and fixed assets are important driver	4.37	0.71	14.86	< 0.001	3.91	1.30	5.44	< 0.001
New and modern production technology	4.10	0.63	13.53	< 0.001	3.80	0.75	8.21	< 0.001
There are subsidies in buying agri-inputs	4.02	0.57	13.88	< 0.001	3.48	0.81	4.61	< 0.001
Access to local market is important driver for you	3.97	0.74	10.17	< 0.001	3.88	0.92	7.42	< 0.001
Improved family income and livelihood stability	3.96	0.66	11.29	< 0.001	3.80	0.86	7.21	< 0.001
Knowledge about farm diversification and farming experience are important driver	3.88	0.78	8.73	< 0.001	4.43	0.77	14.47	< 0.001
Credit availability for buying farm inputs are important	3.85	0.88	7.48	< 0.001	3.73	0.84	6.75	< 0.001
Access to transportation facilities drive you towards diversification	3.78	0.61	9.89	< 0.001	3.80	0.75	8.21	< 0.001
Access to market information	3.77	0.69	8.51	< 0.001	4.05	1.01	8.01	< 0.001
Access to renting facility for machineries and implements	3.65	0.79	6.30	< 0.001	3.43	1.08	3.11	0.003
Opportunities to participate in extension activities	3.60	0.98	4.75	< 0.001	4.15	0.73	12.16	< 0.001
There is additional income from diversified farm	3.58	1.05	4.32	< 0.001	3.77	0.67	8.82	< 0.001
There is availability of organized buyers and market	3.57	0.91	4.83	< 0.001	3.92	1.12	6.32	< 0.001

(Source: Authors computation from primary data).

Table 5: Barriers of farm diversification.

Statements	Punjab (n = 60)				Tamil Nadu (n = 60)			
	Mean	S.D	t-value	p-value	Mean	S.D	t-value	p-value
Lack of storage and processing facilities are important barrier	4.48	0.78	16.21	< 0.001	4.63	0.77	14.92	< 0.001
Market instability and demand variability	4.15	0.62	16.34	< 0.001	4.32	0.63	14.07	< 0.001
Lack of knowledge and access to information are important barrier	4.03	1.03	6.28	< 0.001	3.83	0.86	9.28	< 0.001
Lack of adequate market access	3.98	0.72	12.12	< 0.001	4.13	0.89	8.54	< 0.001
The cost of various inputs	3.93	0.83	9.45	< 0.001	4.02	0.91	7.87	< 0.001
Lack of access to the crop varieties and livestock breeds with multi functionality	3.37	1.18	-2.41	0.019	2.63	0.97	2.92	0.005
Engagement in off-farm income sources	2.85	1.29	-5.12	< 0.001	2.15	1.31	-0.89	0.380
More wealth and economic stability	2.65	1.17	-2.09	0.041	2.68	1.07	-2.53	0.014
Limited government supports are barrier	2.25	0.91	5.13	< 0.001	3.60	0.87	-6.64	< 0.001

(Source: Authors computation from primary data).

Table 6: Comparison of perception of farmers' towards the drivers of farm diversification in Punjab (n=60) and Tamil Nadu (n=60).

Punjab/Tamil Nadu	Levene's test for equality of variances		t-test for equality	
	F-value	p-value	t-value	p-value
Equal variances assumed	1.01	.325	-4.96	<.001
Equal variances not assumed			-4.96	<.001

input services and capability building programme on various improved technologies motivate the farmers to shift from the cereals based cropping systems to vegetables and fruits based cropping system. It increases the farmer's income which indirectly reflected in the change of their lifestyle and increase in economic status. Kumar *et al.,* (2010) concluded that high-value crops have a significant comparative advantage over staple food crops; these are prone to higher production and price risks. Ray (2022) points out that the Birbhum district has a fairly diversified pallet of crops as the mean value of crop diversification indices is (00.64).

Table 5 show lack of storage and processing facilities (4.48) and (4.63) reported imported barriers of farm diversification in both states Punjab and Tamil Nadu respectively, followed by market instability and demand variability (4.15) (Burchfield and Poterie, 2018; Rehan *et al*, 2017) and (4.32), lack of knowledge and access to information (4.03) finding in support of finding of (Memon *et al.*, 2020) and (3.83) respectively. Limited government supports (2.25) engagement in off-farm income source (2.15) and lack of access to the crop varieties (2.63) reported least barriers of farm diversification in Punjab and Tamil Nadu respectively. Mondal *et al.,* (2025) revealed the level of knowledge in recommended scientific fish farming, (38.33%) of the respondents fell into the medium category, followed by (34.17%) who possessed a high level of knowledge. Rai (2022) concluded personal factors consisted of personal interest and satisfaction of farmers resulting from farming while physical factors consist of hard work and lack of resources along with hazardous working conditions in farming.

Table 6 revealed comparison of the perception of farmers towards the drivers of farm diversification in Punjab and Tamil Nadu. The results showed there are significance difference (p-value =<0.001) in perception of farmers of Punjab and Tamil Nadu towards drivers of farm diversification.

CONCLUSION

The study analyses perception of farmers towards drivers and barriers of farm diversification. Good irrigation facilities and fixed assets, new and modern production technology were important drivers of farm diversification in Punjab and Tamil Nadu. Farmers perceived that knowledge of farm diversification and farming experience and opportunities to participate in extension activities were important drivers of farm diversification. Lack of storage and processing facilities followed by market instability and demand variability followed by lack of knowledge and adequate market access were important barriers of farm diversification in Punjab and Tamil Nadu.

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Conflict of interest

All authors declare that they have no conflict of interest.

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