



Factors Influencing Youth in Family Farming: A Study from Southern India

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Abstract

India's agricultural products have robust demand across globe because of its diversity and quality. The agricultural sector is transforming rapidly with technological advancements in the areas of precision farming, IoT applications and Agritech innovations. Youth embody the promise of tomorrow. With 68 percent of India's population are under the age of 35 years, they play a critical role in ensuring food security of India. Economic factors such as availability of credit, finance and agricultural input play a significant role for youth to involve in family farming. Respectability for youth who involves in family farming and the presence of parents in agricultural activities and the family tradition also exercises its influence as a part of social factors. Access to information and communication technology, use of machineries in various farming activities and easy access to renewable resources play a crucial role in engagement of youth in farming. Thus, it becomes imperative to investigate the major factors influencing youth in family farming. This study followed key informant interviews with 58 farming families in Erode and Coimbatore districts of south India in a farmer's exhibition. The study highlights the significant challenges and practices related to selling produce, obtaining financing, and accessing markets. reliance on unofficial funding sources, such as moneylenders or personal connections, frequently entails high interest rates and unfavourable terms, which can limit the profitability and expansion of farming businesses financially. At the same time, enhancing market infrastructure and transportation facilities could greatly improve market accessibility for young farmers, addressing these challenges effectively thereby impacting youth participation in family farming in Southern India.



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Introduction

People are a nation's most valuable resource. The population of India is expected to increase from 121.1 crores to 152.2 crores from 2011 to 2036, marking an increase of 25.7 percent in twenty-five years.¹ The proportion of the middle age group (15 years to 59 years and the older ages (60 years and above) are set to increase considerably. The proportion of population in the working age group 15 to 59 years is expected to rise from 60.7 percent in 2011 to 64.9 percent in 2036. The median age of Indians is expected to be of 34.5 years in 2036 as compared to 24.9 years in 2011. 65 percent of the India's population live in rural areas and 47 percent of the rural population is dependent on agriculture for livelihood.² Agriculture in India is mainly dependent on natural resources and plays a significant role in India's economic growth. 54.6 percent of the total workforce is involved in agriculture and allied activities. This sector contributes to 17.8 percent of the country's Gross Domestic Product. Growth in the agricultural sector is evident in many areas, as the second largest horticultural production in the world, witnessing twelve-fold growth as the highest milk producer, second largest fish producer and the agricultural sector is expected to grow more than 350 percent that the registered growth in the preceding seven to eight decades.³

Youth embody the promise of tomorrow. With 68 percent of India's population under 35 years of age,⁴ they hold the important position in unlocking the immense potential in India. Youth constitute the most energetic and dynamic segment of the population. The growth potential of a nation is largely influenced by the size and strength of its youth demographic. Youth represent the most dynamic and vibrant segment of the population. A country's ability and potential for growth is determined by the size and strength of its youth population. There is no doubt that today's youth will become the innovators, creators, builders and leaders of tomorrow.⁵ When youth are empowered with the right knowledge and skills, they can drive change in their communities and countries. There is no universally agreed international definition of youth age group. United Nations for the purpose of collating statistics defines 'youth' as those persons between the ages of 15 and 24 years many countries draw a line on Age category of youth is classified as an age at which a person is

given equal treatment under the law often referred to as the 'age of majority' and this age is commonly identified as 18 years in many countries. In India, as per National youth policy 2014, the persons between the age group of 15 and 29 years are considered youth.⁶ India is experiencing a demographic window of opportunity 'youth bulge'. Youth bulge refers to a demographic pattern where a large share of the population is comprised of children and young adults. Youth bulge is an alternative way of looking at the future from the view of young people, their changing needs, their use of new digital technologies as digital natives and their views of the future.

Over the past three decades, there has been a significant shift in occupational preferences among the rural population, transitioning from agriculture to non-agricultural sectors. Around 77 percent of rural households depend on the agricultural sector to sustain their livelihoods.⁷ Over the years rural household's dependency on agriculture has declined to 50 percent.⁸ The agriculture sector's contribution to GDP declined from 34% in 1983-84 to 16% in 2018-19. Similarly, its share in employment dropped from 81% in 1983 to 58% in 2018, while non-agricultural employment rose from 19% to 42%. Additionally, the average age of an Indian farmer was 50.1 years, with 33.7% of operational landholders aged 41-50 years and 33.2% falling within the 51-60 age group,⁹ while the existing generation reaching the age of retirement, the next generation does not want to be involved in farming activities. The need to retain youth in agriculture was first voiced by the National commission on farmers by M S Swaminathan "The youth can be attracted and retained in farming only if it becomes economically rewarding and intellectually satisfying".¹⁰ The present study aims to explore the factors influencing the involvement of youth in family farming. This paper is organized as follows, Next part describes conceptual framework explaining factors influencing youth in agriculture followed by materials and methods, results and discussion and conclusion sections.

Conceptual Framework

Factors Influencing Youth in Agriculture

Understanding youth participation in family farming is crucial for addressing demographic shifts, ensuring food security, and promoting sustainable agricultural practices. Family farming significantly contributes

to the Indian economy, highlighting the need to investigate factors influencing youth involvement. Youth participation in family farming is influenced by a range of physical, social, technological, infrastructural, economic, and policy-related factors.¹¹

Economic Factors

Economic considerations significantly impact youth engagement in agriculture. Urban job opportunities are often perceived as more stable compared to farming. Key economic challenges include limited access to credit and inputs, perceived lower profitability of farming compared to urban jobs, and inadequate agricultural support services. Price fluctuations can affect input decisions and profitability, with 52% of agricultural households facing debt, primarily from formal sources like banks and cooperatives. Limited access to formal credit often forces farmers to rely on high-interest informal loans, increasing financial vulnerability and hindering risk management.¹²⁻¹⁴

Social Factors

Social factors heavily influence youth participation in agriculture. These include the social status of farming, family traditions, and educational aspirations. Perceptions of agriculture as a low-prestige occupation and the slow adoption of modern practices contribute to a stigma around farming. Encouraging youth involvement requires addressing these social perceptions and recognizing the role of agriculture in food security and economic stability.^{15,16}

Political Factors

Political frameworks impact youth involvement through policies and programs. Supportive policies, such as credit schemes, training programs, and farmer welfare initiatives, can enhance youth engagement. Conversely, inadequate policies addressing land fragmentation, low subsidies, and other challenges can deter youth from pursuing agriculture. Government schemes like Pradhan Mantri Kisan Samman Nidhi Yojana and Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan are examples of initiatives supporting young farmers.¹⁷

Technological Factors

Technological advancements play a crucial role in agriculture. Access to modern machinery, information technology, and renewable energy can

boost productivity and attract youth. Government programs like Digital India and Pradhan Mantri Krishi Sinchayee Yojana support technological adoption. Such policies related to agriculture technology may influence youth positively to participate in agriculture.¹⁸ However, high costs and rapid technological changes pose challenges, particularly in areas with inconsistent electricity.

Farming practices in India involve traditional and conventional methods that was passed down through generations¹⁹ and these practices predominantly include more reliance on manual labour, use of traditional implements and limited understanding of the farmers towards modern agriculture techniques.²⁰ Adoption and implementation of technology can offer numerous benefits to farmers but cost of accessing those technologies remains expensive. Initial investment in machinery, and other precision technologies including internet of things, satellite imagery, sensors, robotics, drones, and other high-tech tools to acquire and maintain them becomes an expensive task for the farmers.²¹ On the other hand, rapid pace of technological advancements can result in the obsolescence of certain tools and equipment. In remote areas with inconsistent electricity access, reliance on technology becomes another major challenge for the farmers to deal.²²

Physical Factors

Physical factors such as land fragmentation and climate variability affect agricultural productivity. Fragmented land holdings limit investment in inputs and technology, while climate change introduces variability in weather patterns, impacting crop yields and traditional farming calendars. These factors interact with technological and socio-economic conditions to shape the agricultural landscape and youth involvement.²³⁻²⁶

Physical factors interact with technological advancements and socio-economic conditions to shape the landscape of agriculture in India, impacting the engagement of youth in the sector. In Indian agriculture, various aspects relate to the natural environment and physical resources such as land and water resource availability, climatic conditions, physical landscape factors including soil fertility, biodiversity, and ecosystem of a place, whether the area is natural disaster-prone and if transportation and infrastructure facilities are in the area.²⁷

This framework provides a comprehensive understanding of the multi-dimensional factors influencing youth participation in agriculture, essential for developing targeted strategies to enhance their engagement and sustainability in the sector.

Materials and Methods

The study employed key informant interviews with farmers from diverse age groups, categorizing "youth" as individuals below 40 years of age and "non-youth" as individuals aged 40 and above,²⁸ Data were collected through a structured and pre-tested questionnaire administered to 58 farming households from the Coimbatore and Erode districts of Southern India, during a farmer exhibition event. The selection of variables was informed by existing literature²⁹ on youth participation in agriculture and rural development, focusing on five key dimensions frequently cited as influencing farming engagement: psychological, socio-cultural, technological, infra-structural, and economic factors. These dimensions provided a comprehensive framework for analysing the farming systems.

The sample included 30 households with at least one active farming member under the age of 40 and 28 households with active members aged 40 and above.

Data analysis was conducted in two stages. First, descriptive statistics were calculated using Microsoft Excel to summarize household characteristics and farming practices across the two groups. Second, inferential analysis was carried out through cross-tabulation and chi-square tests to examine the association between age group and key farming attributes.³⁰ These statistical techniques were selected considering the categorical nature of the data and the moderate sample size.

The study employed key informant interviews with farmers across different age groups, defining "youth" as individuals under 40 years old and "non-youth" as those 40 years and older. Data were gathered using a comprehensive questionnaire from 58 farming families in the Coimbatore and Erode districts of Southern India during a farmer exhibition. The sample comprised 30 households with members under 40 and 28 households with members over 40. Data collection

covered five dimensions: psychological, socio-cultural, technological, infrastructural, and economic contexts. Descriptive analysis was conducted using Excel to characterize the farming systems, while inferential analysis, including cross-tabulations and chi-square tests, was performed to examine differences between youth and non-youth.

Results

This study explored about Factors influencing youth in family farming across five dimensions: psychological, socio-cultural, technological, infra-structural, and economic factors. Results are presented systematically below, supported by descriptive statistics and inferential findings where applicable.

Demographics

The sample comprised predominantly male respondents (85%), with 53.35% aged above 40 years. The majority were married, consistent with traditional family patterns in rural India. Cross-tabulation analysis shows a significantly higher proportion of older men involved in farming compared to youth and women (Chi-square, $p < 0.05$).

Caste affiliation revealed that a majority (70.69%) of respondents belonged to Other Backward Classes (OBCs), followed by 12.07% from Most Backward Classes (MBCs) and 13.79% from Forward Castes. Chi-square tests indicate a significant relationship between caste and farming participation patterns ($p < 0.05$), aligning with historical land ownership disparities in India. In terms of technology, the study indicates that most farmers still rely on traditional methods of cultivation, and economically, many farmers have annual incomes below 300,000, indicating a need for strategies to improve their economic viability.

Table 1 shows a statistical outline of all descriptive aspects which might play a role in our social and agricultural progress. Findings of the study are evident with the historical roots of India, with the advent of agriculture, societies started to shift from egalitarian hunter gatherer to a system where power is shifted to physically strong males.³¹ Properties and decision-making power are shifted to male members in the family line and female autonomy gradually eroded.

Table 1: Descriptive Statistics

	Variable	Frequency	Percentage
Gender	Male	49	84.48
	Female	9	15.52
Age	Less than 40	31	53.45
	More than 40	27	46.55
Marital Status	Married	41	70.69
	Unmarried	17	29.31
Caste	FC / GC	8	13.79
	OBC	41	70.69
	MBC	7	12.07
	SC / ST	2	3.45
Migration	Yes	8	13.79
	No	50	86.21
Machineries Used	No Machineries	8	13.79
	Normal Machineries	36	62.07
	Advanced Machineries	14	24.14
Decision Makers in the family	Men	13	22.41
	Women	3	5.17
	Joint	42	72.41
Soil Testing	Yes	35	60.34
	No	23	39.66
Understanding of Seasonal Crop Cultivation	Yes	30	51.72
	No	28	48.28
Awareness about Pests infecting Crops	Yes	26	44.83
	No	32	55.17
Number of Training Workshops attended in a year	Less than 3	32	55.17
	More than 3	26	44.83
Family Income	Less than ₹ 50,000	5	8.62
	₹ 50,001 to ₹ 1,00,000	5	8.62
	₹ 1,00,001 to ₹ 3,00,000	22	37.93
	₹ 3,00,001 to ₹ 5,00,000	15	25.86
	>₹ 5,00,000	11	18.97

In northern India, 54 percent of the work in crop production is carried out by men, 23 percent involves joint participation by both men and women and 68 percent of are found responsible for managing livestock.³²

Caste and Land Ownership

The study reveals that 70.69% of the respondents belong to other backward classes, who are the non-creamy layers of the society, followed by 12.07% of the respondents belong to Most backward classes

and 13.79% of the respondents belong forward caste.

In India farming is deeply entrenched reflecting historical and social dynamics of the caste system. Caste has a significant impact on farming, as differences in land ownership patterns and access to resources contribute to income inequality, leading to a 3 to 13 percent variation in net farm income among different castes.³³

Whereas, the average size of operational holdings in India was 1.08 hectares with significant variations across caste groups.³⁴ Marginal and small farmers, who own less than 2 hectares, constitute 86.2% of total operational holdings but cover only 47.3% of the operated area. More than 60 % of these small and marginal farmers belong to lower castes. Small and marginal farmers, predominantly from lower castes, own less land and face income disparities.

Migration

The study reveals that 13.79% of respondents have migrated for better opportunities, while 86.21% remain in their ancestral locations, indicating a strong connection to traditional lands. Rural living remains prevalent, with 68.8% of India's population residing in rural areas, and 50% of the workforce engaged in agriculture. Farming is often more than livelihood and is a way of life passed down through generations carrying cultural and family values. 68.8% of the total population live in rural in India and 50 % of workforce is engaged in farming and allied activities for their live hood³⁵ Farmers find rural environment offers low cost of living when compared to urban areas.³⁶ The rise of sustainable and organic farming practices has opened new markets for farmers providing them with viable income sources not posing the need to relocate.³⁴ At the same time sense of belonging aids farmers towards intrinsic satisfaction of working in land keeps them close to heart rather than the perceived benefits of urban life.³⁷

Technology and Machinery

Most farmers (62.07%) use traditional machinery, with 24.14% using advanced equipment, and 13.79% using no machinery. Mechanization varies regionally, with more advanced practices in states like Punjab and Haryana compared to regions like Bihar and Odisha. Production and usage of tractors in agriculture in India has raised from 880 units in 1951 to 900,000 units in 2019.³⁸ Large farmers (holdings larger than 10 ha) are not the only ones who follow mechanization; small and medium-sized farmers, who own less than 2 ha of land, also heavily utilize farm machinery (44 percent of total farm machinery) in their cultivation.³⁹ In their study revealed northern states Punjab, Haryana and southern states Telangana and Andhra Pradesh are more mechanised while Bihar, Jharkhand, Odisha and Assam exhibit less level of farm mechanisation. However, in Tamil Nadu, issues

for farm mechanisation include the high cost of spare parts of the machinery used, shortage and inconsistency in fuel supply, lack of proper services and accessories to machines, difficulties in obtaining institutional credit by farmers for obtaining machines because of high costs.⁴⁰

Income

Income levels are generally low, with 37.93% earning between ₹100,000 to ₹300,000 annually, and 25.86% earning between ₹300,000 to ₹500,000. This contrasts with higher incomes in non-agricultural sectors and highlights the need for improved economic strategies.⁴¹

The average monthly income of a farmer household is ₹10218 which includes the sources of income raised from crop production (37%), livestock (15%), wages (34%) and other non-farm activities (14%). This is significantly greater than the income generated by farmer households during 2012-13 which was ₹6426. With better access to irrigation in states such as Punjab, Haryana and Maharashtra the Farmers household is substantially higher to ₹16000 per month in 2020-21, whereas in states such as Odisha, Andhra Pradesh, Tamil Nadu due to smaller landholdings and dependence on rain fed lands for agriculture the average monthly income was ₹7756 during 2020-21. Also 52% of farmer households were indebted due to crop failures, low market prices and high input costs to the tune of ₹74121 per household.⁴²

In summary, the study underscores the challenges faced by youth in agriculture, including socio-economic barriers, limited migration, and reliance on traditional practices, while highlighting the need for enhanced economic and technological support.

Discussion

As shown in Table 2, 53.45% of non-youth respondents and 39.66% of youth respondents indicated that the farming knowledge they acquired from various online and offline sources was first shared with their family members. This response received the highest mean score of 1.93. To support the above findings in another statement about the sources of information for farming activities, 51.72% of non – youth and 34.48% of youth depend on social media for their update with a mean score of 1.86. Another factor studied was to understand

about the decision-making process regarding the various farming activities. 41.38% of non-youth and 31.03% of youth had revealed that they make joint decisions in the family, whereas 13.79% of men in youth revealed they make independent decisions with a mean score of 1.83. To understand about the perception whether formal education is necessary to pursue farming activities 40% of non-youth and 33% of youth had confirmed that formal education is necessary for farming activities with a mean score

of 1.72. to understand the reason for the respondent's involvement in farming, 32.76% of non – youth and 31.03% of youth are continuing farming as because their family was involved in farming through generations, while 20.62% of non – youth with a mean score of 1.64 are continuing farming because of the passion they have got for farming activities. 31.03% of youth and 27.59% of non – youth are active members in social groups.

Table 2: Physical & Social factors influencing youth in family farming

Physical & Social Capital		Youth		Non-Youth	
		Frequency	%	Frequency	%
Formal Education is important for Agri Enterprises	Yes	19	32.76	23	39.66
	No	8	13.79	8	13.79
Motivation for involvement in Farming	Family Farming	18	31.03	19	32.76
	Passion for Farming	9	15.52	12	20.69
Sources of Agricultural Knowledge	Social media	20	34.48	30	51.72
	Family & Friends	7	12.07	1	1.72
Source of Labour	Family Labour	18	31.03	15	25.86
	Hired Labour	9	15.52	16	27.59
Decision Maker in your family for farming activities	Joint Decisions	18	31.03	24	41.38
	Men	8	13.79	5	8.62
	Women	1	1.72	2	3.45
Are you a member in any Social / Farmer groups / Networks	Yes	18	31.03	16	27.59
	No	9	15.52	15	25.86
To whom do you disseminate your agricultural knowledge?	Family Members	23	39.66	31	53.45
	Younger Generation	3	5.17	1	1.72

Based on the social and physical factors revealed in Table 02, suggest that a considerable number of respondents, both non-youth and youth, obtain farming knowledge from diverse channels and place a strong emphasis on sharing this knowledge within their families. This underscores the significance of passing down agricultural knowledge across generations within farming communities. Despite the advancements in technology and information accessibility, traditional modes of learning and teaching, especially within family settings, continue to play a pivotal role in shaping agricultural practices and knowledge dissemination.⁴³ Moreover, the results reveal a dual pattern in knowledge sharing. While traditional sources of information are still widely used both non-youth and young respondents

are increasingly showing signs of relying on social media platforms, according to the statistics. This shift highlights the evolving landscape of information consumption, where digital platforms are becoming pivotal in influencing agricultural behaviours and decision-making. This highlights how the dynamics of information consumption are shifting. Also, how digital platforms are influencing agricultural practices and decision-making procedures more and more.⁴⁴ Furthermore, there are some fascinating insights to be gained from the view of the need for formal education in order to pursue farming occupations. Although both youth and non-youth respondents agree that formal education is important for farming, there appears to be a minor bias in favor of this attitude among non-youth. Therefore, this could be

attributed to a generational shift in attitudes towards education and its relevance in agricultural practices. The motivations behind respondents' involvement in farming shed light on both familial legacies and individual passions. Due to customs and family ties, a sizable portion of respondents youth and

non-youth alike continue farming. But there's also a significant group of adults who are not young that identify passion as their main motivator. This implies a complex interaction between custom and individual preferences in determining community involvement in agriculture.

Table 3: Technological factors influencing youth in family farming

Physical & Social Capital		Youth		Non-Youth	
		Frequency	%	Frequency	%
Source of Seeds & Saplings	KVK / Govt	8	13.79	7	12.07
	Other Farmers	19	32.76	24	41.38
Awareness about the amount of fertiliser to be used for different crops	Yes	20	34.48	22	37.93
	No	7	12.07	9	15.52
Do you undertake soil testing as a part of land preparation for cultivation	Yes	14	24.14	8	13.79
	No	12	20.69	24	41.38
Are you aware about the seasons for the cultivation of right type of crops	Yes	23	39.66	27	46.55
	No	3	5.17	5	8.62
Awareness about the pests that might affect your crops	Yes	21	36.21	27	46.55
	No	6	10.34	4	6.90
Has the type of irrigation changed after your involvement in farming	Yes	13	22.41	15	25.86
	No	14	24.14	16	27.59
Type of irrigation used	Borewell / Well	3	5.17	2	3.45
	Drip	34	58.62	19	32.76
Possession of Android phone	Yes	24	41.38	28	48.28
	No	3	5.17	3	5.17
Access to internet connectivity	Yes	26	44.83	31	53.45
	No	1	1.72	0	0.00

In analysing about the technological factors that influences involvement of youth in farming activities, 53.45% of non - youth and 44.83% of youth have got good access to internet connectivity with a mean score of 1.98. This was also supposed by the usage of internet connectivity by possessing android phone, as 48.28% of non - youth and 41.38% of youth have got android phones with them. 46.6% of non-youth and 40 % with a mean score of 1.86 are very much aware about the different types of crops that can be cultivated in different seasons. Next related to the awareness about the pests that might impact their crops 46.55% of non-youth and 36.21 % have got very fair idea. 37.93% of non- youth and 34.48% of youth have got very good idea about the type and number of fertilisers that must be used for their crops with a mean score of 1.72. 27.59% of non- youth and

24.14 % of youth with a mean score of 1.48 have not changed the type of irrigation that they have used in their fields. 41.38% of non – youth have not done with soil testing, while majority 24.14% of youth do soil testing as part of preparing the and for cultivation. Majority 41.38% of non-youth and 32.76% of youth source their requirement for seeds and saplings from other farmers.

Results of Table 3, point to several technological elements that have an impact on young people's engagement in farming. The data shows that youth and non-youth differ in their access to and use of technology resources, which influences their agricultural practices and level of involvement in farming. A substantial proportion of both individuals who are not classified as youth (53.45%) and those

who are youth (44.83%) possess reliable internet connectivity, with 48.28% of non-youth and 41.38% of youth owning Android phones. Therefore, this level of connectivity establishes fundamental access to digital tools, enabling improved communication, information exchange, and access to agricultural advancements. Despite this relatively high level of access, there exists a disparity between youth and non-youth. This indicates that initiatives aimed at narrowing this digital gap could significantly boost youth involvement in farming by granting them essential information and resources crucial for modern agricultural techniques. Additionally, the knowledge regarding pests affecting crops is relatively similar between non-youth (46.55%) and youth (36.21%), indicating a substantial understanding of pest management in both groups. However, there is room for improvement, especially among youth. Similarly, the comprehension of the type and quantity of fertilizers needed for crops is observed in 37.93% of non-youth and 34.48% of youth. These statistics suggest that both groups have a decent grasp of fertilizer usage, although youth slightly trail behind non-youth. Hence, strengthening this knowledge through training initiatives and access to expert guidance could enhance farming practices effectively and sustainably.⁴⁵ Furthermore, the understanding of different types of crops suitable

for different seasons is demonstrated by 46.6% of non-youth and 40% of youth. Therefore, this suggests that the understanding level is moderate, which is necessary for efficient crop planning and production optimization. The somewhat lower awareness among young people points to the necessity of focused educational initiatives to improve their understanding and utilization of seasonal crop growing. Furthermore, the results for irrigation practices reveal that a significant portion of both non-youth (27.59%) and youth (24.14%) have not changed their irrigation practices. As a result, a resistance or lack of awareness regarding the adoption of modern irrigation techniques, which could potentially improve water use efficiency and crop yields. Additionally, soil testing is an area where there is a notable difference between non-youth and youth. While 41.38% of non-youth have not conducted soil testing, a majority (24.14%) of youth engage in this practice as part of their cultivation preparation. Therefore, this suggests that the understanding level is moderate, which is necessary for efficient crop planning and production optimization. The lower awareness among young people points to the necessity of focused educational initiatives to improve their understanding and utilization of seasonal crop growing.⁴⁶

Table 4: Finance and Marketing factors influencing youth in family farming

Physical & Social Capital		Youth		Non-Youth	
		Frequency	%	Frequency	%
Where do you sell your produce	Own	13	22.41	14	24.13
	To Govt	2	3.45	1	1.72
	Traders	12	20.68	16	27.58
Proximity to Market for Selling Your Product (In kms)	<5	7	12.07	13	22.41
	6 to 10	13	22.41	11	18.96
	> 10	7	12.06	7	12.06
Challenges faced in marketing the produce	Price Fluctuations	12	20.69	16	27.58
	Production Issues	7	12.07	5	8.62
	No Issues	7	12.06	11	18.96
Source of Information about Price	Formal	9	15.52	13	22.41
	Informal	18	31.03	18	31.03
Source of Finance for farming activities	Formal	11	18.97	13	22.41
	Informal	15	25.86	19	32.75
Does your family receive loan from bank	Yes	14	24.14	15	25.86
	No	13	22.41	16	27.58

Table 4 studies about the marketing and finance factors that determines about the involvement of youth in farming activities. Out of the produce yielded, majority of 27.58% of non -youth and 20.68% of youth sell their produce to traders.24.13% of non – youth and 22.41% of youth make their own arrangements to sell their produce with the highest mean score of 2.43. Finance is the life blood of any activity to take place. In this regard 32.75% of non- youth and 25.86% of youth are dependent on informal sources of funds for their financing requirements. While selling their produces, 27.58% of non-youth and 20.69% of youth face problems because of price fluctuations.in trying to understand the proximity towards the market 22.41% of non-youth are accessible to markets with less than five-kilometre radius and 22.41% of youth is able to access the market within six to ten kilometre radius.31.03% of youth and non-youth are dependent upon informal sources towards pricing of their products.

The analysis of Table 4 delves into the marketing and finance factors that impact the involvement of youth in farming activities. The results highlight the significant challenges and practices related to selling produce, obtaining financing, and accessing markets. All of which play crucial roles in determining the engagement and success of youth in agriculture. The results reveal that a significant proportion of both non-youth (27.58%) and youth (20.68%) rely on traders to sell their agricultural produce. Therefore, this heavy reliance on intermediaries suggests that many farmers, particularly younger ones, may lack direct access to markets or the necessary marketing skills to sell their products independently. Furthermore, a considerable number of non-youth (24.13%) and youth (22.41%) make their own arrangements to sell their produce. This indicates that some farmers, especially those who are more experienced, make concerted efforts to bypass intermediaries and potentially secure better prices for their goods. However, the lower percentage of youth compared to non-youth in both categories implies that younger farmers might face greater challenges in establishing market connections and negotiating sales effectively. Any agricultural endeavour needs money, and the study reveals that 32.75% of non-youth and 25.86% of youth rely

on unofficial sources of funding.⁴⁷ This reliance on unofficial funding sources, such as moneylenders or personal connections, frequently entails high interest rates and unfavourable terms, which can limit the profitability and expansion of farming businesses financially.⁴⁸ Moreover, non-youth rely more on unofficial sources, which may indicate that they have developed more reliable networks over time, while youth may still be developing their credibility and financial links. Additionally, the results disclose that 22.41% of non-youth have access to markets within a five-kilometre radius, while the same percentage of youth access markets within a six to ten-kilometre radius. Therefore, the slightly longer distance for youth implies possible logistical hurdles and increased transportation expenses, which may impact their competitiveness and profitability. Enhancing market infrastructure and transportation facilities could greatly improve market accessibility for young farmers, addressing these challenges effectively.⁴⁹ Furthermore, the data shows that dependency on informal sources for pricing information is prevalent among both groups, with 31.03% of youth and non-youth relying on such sources. This reliance can lead to inconsistent and potentially unfair pricing, as informal sources may not always provide accurate or market-reflective information. Therefore, access to reliable and transparent market information through digital platforms, cooperatives, or agricultural extension services could empower farmers to make better-informed decisions and secure fair prices for their produce.⁵⁰

Table 5 highlights economic factors affecting farming: 25.86% of non-youth achieve returns over 40%, while only 8.62% of youth get returns below 20%. Input costs concern 44.83% of non-youth and 34.48% of youth. Crop farming is preferred by 48.28% of non-youth and 29.31% of youth over livestock rearing. Price fluctuations affect 36.21% of both groups, and 32.76% of non-youth and 24.14% of youth do not achieve anticipated returns.

The key economic challenges and preferences influencing agricultural practices for both youth and non-youth are discussed in Table 5. A stark contrast exists between the financial outcomes of the two groups: 25.86% of non-youth earn returns

exceeding 40%, while only 8.62% of youth achieve returns below 20%. This suggests non-youth benefit from greater experience, resources, or better market

access, whereas youth face hurdles like limited capital and less market connectivity, impacting their long-term commitment to farming.⁵¹

Table 5: Economic factors influencing youth participation in agriculture

Physical & Social Capital		Youth		Non-Youth	
		Frequency	%	Frequency	%
Nature of cash flow from farming	Daily / Weekly	4	6.90	5	8.62
	Monthly / Quarterly / Half yearly	23	39.66	26	44.83
More profitable enterprise	Crop Farming	17	29.31	28	48.28
	Livestock	3	5.17	10	17.24
High-Cost activities	Inputs	20	34.48	26	44.83
	Pest control	7	12.07	5	8.62
Expected return for produce	Yes	13	22.41	12	20.69
	No	14	24.14	19	32.76
Proportion of Income from Agriculture and Allied activities	<20%	5	8.62	8	13.79
	20% - 40%	12	20.69	8	13.79
	>40%	10	17.24	15	25.86
Have you experienced price fluctuation for your produce	Yes	21	36.21	21	36.21
	No	6	10.34	10	17.24

Table 6: Factors influencing youth participation in agriculture

Detail of the Variable	Youth % Households	Non-Youth % Households	Significance (P-Value)
Land (>4 ha) owned %	43	29	0.06*
Membership in network groups (Yes) %	70	50	0.12
Num of farming enterprises (>2) in %	46	42	0.59
% of household income from agriculture (>20%)	80	75	0.42
Met anticipated Returns (Yes) in %	46	39	0.57
Irrigation (Modern-Drip, sprinklers) in %	23	7	0.09*
Migration (Yes) in %	23	7	0.08*
Distance to main road (>5 kms) in %	20	10	0.38
No. of cows owned (>10) in %	13	4	0.19
Importance of formal education (Yes) %	66	79	0.31
Source of labour (Hired)	37	50	0.31
Info about weather (Traditional source)	40	18	0.06*
Internet connectivity (Yes)	97	100	0.33
Received benefit from Govt. schemes (Yes)	80	75	0.65

Both groups face concerns about input costs, with 44.83% of non-youth and 34.48% of youth identifying this issue. High costs for seeds, fertilizer, and equipment particularly affect youth, highlighting

the need for financial support mechanisms such as loans, bulk purchasing options, and subsidies to ease the burden.

A preference for crop farming over livestock is evident, with 48.28% of non-youth and 29.31% of youth favouring crops. The lower youth preference for livestock suggests an opportunity to promote diversification. Education on livestock benefits and support systems could enhance income potential and sector resilience.⁵²

Price fluctuations are a significant issue for both groups, with 36.21% of each reporting volatility as a major concern. Implementing minimum support prices, crop insurance, and improved market information could help manage price risks and stabilize incomes.⁵³

Finally, 24.14% of youth and 32.76% of non-youth report not realizing the expected benefits from farming. This gap may be due to high input costs, market instability, or inefficient practices. Improved support systems, including financial literacy, extension services, and cost-effective technology, are crucial for helping young farmers achieve their goals and maintain interest in agriculture.

Significance of Factors Influencing Youth in Agriculture

Table 6 shows a notable difference in land ownership between youth and non-youth in agriculture. Young farmers often come from households with more than 4 hectares of land. In India, land ownership is a key symbol of rural wealth and stability, passed down through generations and representing economic and social status. For youth, owning land is an important aspiration linked to livelihood and financial independence.

Currently, 86.2% of India's farmers are small-scale, owning less than 2 hectares of land, while only 13.8% of farmers hold 52.7% of the total agricultural land. The rise of smartphones has also impacted agriculture; 54% of rural households use apps like "Kisan Suvidha," "AgriApp," and "Weather Bug" for weather forecasts and agricultural advice. Additionally, 4.4 million hectares of farmland use drip irrigation, with over 50% managed by tech-savvy young farmers.⁵⁴ While 8.6 million hectares use sprinkler irrigation.

Conclusion

This research highlights the multifaceted factors influencing youth participation in family farming in

Coimbatore and Erode, Southern India. A holistic approach is essential, addressing technological, infrastructural, psychological, sociological, and economic aspects to foster youth engagement, innovation, and resilience in agriculture. Enhancing economic viability, modern technology access, quality education and training, supportive policies, and changing societal perceptions of agriculture are key.

Land consolidation can make farming more economically viable, while initiatives like the Digital India Land Records Modernization Programme (DILRMP) can streamline land records, reduce disputes, and provide clear titles. Increased subsidies for agricultural machinery, fertilizers, and seeds can alleviate financial burdens on young farmers. Expanding youth-friendly crop insurance policies like Pradhan Mantri Fasal Bima Yojana (PMFBY) is beneficial. Establishing innovation hubs and incubators can promote agripreneurship, and direct market access through online platforms can ensure better prices for produce. Mentorship programs pairing experienced farmers with youth can enhance knowledge transfer and build confidence.

By creating an enabling environment, India can harness its youth's potential to drive innovation, sustainability, and growth in the agricultural sector.

Limitations of this Study

Small Sample Size

The study's small sample of 58 agricultural families limits the generalizability of its findings. With only 30 households under 40 and 28 over 40, the data may not fully capture the diverse experiences of young farmers in Coimbatore and Erode.

Data Collection at Trade Fair

Gathering data at a farmers' exhibition introduces potential biases. The busy, hurried environment may lead to less thoughtful responses, affecting the accuracy and reliability of the findings.

Need for Quantitative Data

While qualitative methods provide valuable insights, incorporating quantitative data could enhance the study. Quantitative analysis would allow for broader generalizations and a more robust understanding of the factors influencing young farmers' participation.

These limitations suggest that the findings should be viewed with caution, and future research should aim to address these issues for a more comprehensive analysis.

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Ethics Statement

This research did not involve human participants, animal subjects, or any other materials that requires ethical approval.

Author Contributions

- **Mohanamani Palanisamy:** Review of Literature, data collection, analysis and preparation of initial draft
- **Nethaji Subash:** Figure preparation, analysis and finalization of the manuscript
- **Thanammal Ravichandran:** Conceptualization of the study, Defining objectives and finalization of the manuscript.

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