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A study on socio economic characteristics of different stakeholders of turmeric value chain in Warangal rural district

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Abstract

Turmeric is a popular commercial spice crop in India. It is used as a spice, flavour, and colouring agent, as well as a primary ingredient in Indian cuisine as curry powder. India is the world's top producer, consumer, and exporter of turmeric. The current study was conducted in the Warangal rural district of Telangana. Warangal is one of the top producers of turmeric, with an area of 6676 hectares and a production of 333382 MT. Understanding the socioeconomic characteristics of different stakeholders in the turmeric value chain helps in the development of suitable initiatives, laws and regulations, and strategies to address their specific needs and challenges. It promotes the development of sustainable as well as equitable turmeric farming and trade practises that benefit all value chain participants.

Keywords: Spice, flavour, colouring agent

Introduction

Turmeric is a futuristic spice that is popularly known as "Indian saffron" due to its rich and vibrant curcumin content. India accounts for about 80% of world turmeric production and 60% of world exports. Traditional turmeric processing involves farm-level processing and plant-level processing. The farm-level processing involves harvesting, cleaning, curing, and drying, while the plant-level processing involves polishing, grinding, and packing. In turmeric value chain the farmers for seed production, value addition, marketing, and distribution should be at the farm level or through groups.

The farming technique should be changed to commercial and promote improved cultivation techniques for low cost of production, high production, and productivity. Irrigation facilities should be provided, and further research should be conducted on the effects and use of different organic and inorganic (plastic) mulching materials. Market information should be provided to different actors *viz.*, providers, producers, collectors, processors, wholesalers, retailers and consumer are involved in chain activity in time to maintain market equilibrium. (Chhetri *et al.* 2019) [2]. The main production and marketing challenges faced by the turmeric-producing community were a lack of technical assistance and a low market price for turmeric. (Smriti Baral *et al.* 2021) [1].

Planning for new project work heavily depends on the analysis of the socioeconomic traits of various players in the turmeric value chain in Warangal rural district. This study will be useful for presenting the actual situation of small landowner farmers and assessing the connections between key players in the turmeric value chain. This study contributes to the investigation of the current condition of the turmeric value chain in the rural Warangal district. The key barrier in a series of projects to meet the supply and demand of value-added products and receive value chain regulations is connectivity between stakeholders and service providers. This makes it possible for the actors to maintain a stable, balanced relationship that supports a positive business environment.

Materials and Methods

Turmeric is one of the important cash crops grown in Telangana, which plays a major role in the state's economy. The crop is cultivated in an area of 55,443 ha with a production of 3.07 lakh tonnes and its productivity of 5543 kg/ha.

Selection of the study site

The study was conducted in Warangal (Rural) district of Telangana state to identify and map the value chain of turmeric and to analyze the area and production of turmeric suitable for value addition. This district is one of the prominent turmeric cultivating districts in Telangana. So, Warangal (Rural) district was purposively selected for the present study to analyse the entrepreneurial opportunities in the turmeric value chain as it is the potential district for turmeric crop for developing food-based micro- enterprises.

Sample size

Purposive sampling method was employed for the study to collect the necessary information from all the players who are involved in the value chain of turmeric. Three mandals from the district were purposively considered for the study based on extensive cultivation of the crop. Primarily the information regarding the production, marketing and other aspects of value chain was collected from farmers through telephonic interviews (Due to COVID-19) during the year 2021. During the year 2021 this was followed by interviewing the traders, wholesalers, retailers, processors and FPO's, to collect the information regarding marketing and value chain aspects. Total sample size for the study is 150 (120 farmers, 30 other stake holders *i.e.*, 6 traders, 7 wholesalers, 6 retailers and 11 processors).

Methods and techniques of data collection

The study was based on both primary and secondary data. Primary data was collected from the farmers, retailers, wholesalers, traders and processors using pre-tested schedules through a telephonic interview for evaluating the objectives of the study. During the year 2021 the data with regard to land holdings, educational level, the volume of production, varieties cultivated, and marketing channels adapted, was collected from farmers. Data with regards to value addition and scope for entrepreneurship was collected from farmer producer organisations (FPOs). Secondary data with regard to the international markets with respect to turmeric and its value-added products was collected from Agricultural and Processed Food Products Exports Development Authority (APEDA), National Bank for Agriculture and Rural Development (NABARD), Directorate of Arecanut and Spices Development Ministry of Agriculture and Farmers Welfare, Official websites and Directorate of Economics and Statistics (DES).

Analytical Tools and Techniques

To fulfill the specific objectives of the study, based on the nature and extent of data, the following analytical tools and techniques were adopted.

Descriptive Analysis

Arithmetic Mean and Percentages were computed to describe the characteristics of sample variables used for the study.

Arithmetic mean: Arithmetic mean is the sum of the values divided by the number of observations.

$$\bar{x} = \frac{\sum x}{n}$$

Percentages: Percentage is a number or ratio that can be expressed as a fraction of hundred.

Results and Discussion

Socio economic characteristics of respondents *viz.*, farmers, intermediaries and processors in Warangal rural district were studied and detailed information were presented below.

Socio economic characteristics of farmers

Socio-demographic characteristics like age group, education status, household size, experiences in farming, land holding and method of sales were discussed by using percentage (%) method and it is presented in table.1 to assess the socio-economic characteristics of farmers.

Age group

The age of the farmers is a significant factor in decision-making because older farmers will have more traditional knowledge and experience than younger farmers, who are developing their skills, adopting modern techniques, and working in an array of market scenarios. In this study, the respondents are divided into four age categories *i.e.* under 30, 31 to 40, 41 to 50, and above 50 years. According to the group's observations the Fig 1 shows that out of the 120 farmers studied, the majority (42.5%) of those under the age of 41–50 years have more traditional knowledge and experience in growing turmeric, followed by those between the ages of 31 and 40 (30.83%), and those over 50 (15%) who have traditional knowledge but are unable to cultivate turmeric due to lack of muscle tone. Whereas, farmers under the age group of 30 years were the least knowledgeable about traditional practices (11.66%), but had good knowledge about modern technologies.

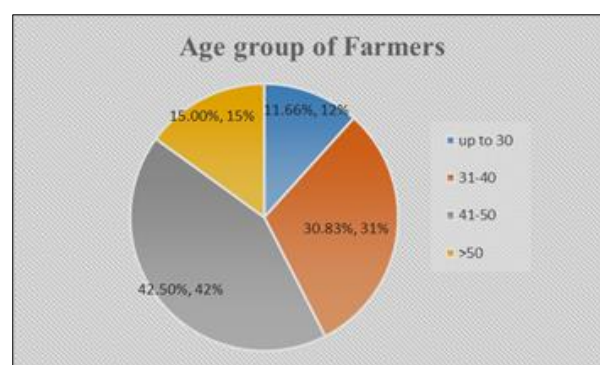


Fig 1: Age group of selected farmers

Education

Through education, farmers can gain access to knowledge about modern agricultural practices, scientific developments, and improved farming methods for the cultivation of turmeric. Knowledgeable farmers are more likely to stay current on new findings, participate in training sessions, and adopt innovative techniques that can increase output, lower hazards, and enhance the general quality of turmeric farming. Understanding consumer demands, having access to funding, and implementing sustainable practices. The education level of the farmer is divided into five categories in the current study *i.e.*, illiterate, primary education, secondary education, and finally, graduation and above. The majority of farmers (33.33%) had completed secondary school, followed by primary education (31.66%), and 29.16% were illiterate. According to Fig.2, it can be noted that 3.33% of the farmers were graduates and 2.5% of farmers completed post-graduation.

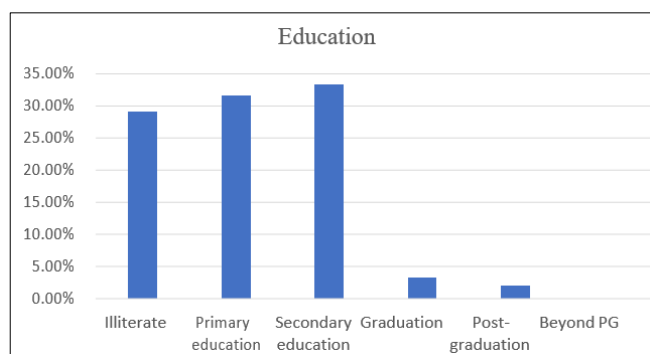


Fig 2: Educational status of farmer's

Household

Researchers are able to better understand the socio-economic dynamics, allocation of resources, decision-making processes, and overall effects of turmeric farming at the household level by using the household as the unit of study for research on turmeric cultivation. In the present study, the number of individuals in a farmer's home is divided into four categories *i.e.*, 1 to 5, 6 to 10, 11 to 15, and more than 15. The majority of farmers (85%) are found in households with a size of 1 to 5, followed by groups of 6 to 10 people (15%), households with a size of 11 to 15 people, and households with a size of more than 15.

Experiences

In general, farmers' experiences with turmeric production are a great source of useful information, adaptation techniques, innovation, problem-solving, and farmer involvement. It is possible to develop more sustainable and context-specific recommendations for better turmeric growing practices in the study region by combining this practical information with scientific research. The current study is separated into four categories *i.e.*, up to 5, 6–10, 11–20, and >20 years of farming experience. The majority of farmers (88.33%) have more than 20 years of experience. Farmers with 11 to 20 years of experience come in second (9.1%), and farmers with 6 to 10 years of experience come in last (5%).

Land holding

Generally, the size of a landholding impacts factors like production volume, crop rotation and diversification, resource allocation, adaptability of farming methods, investment potential, market access, and bargaining power, all of which can have a big impact on a farmer's ability to successfully grow turmeric. The current study is divided into three categories *i.e.*, small farmers with land holdings of less than 2.5 acres, medium farmers with holdings of between 2.5 and 5 acres, and large farmers with holdings of more than 5 acres. The majority of farmers (44.16%) were small farmers with land holdings of 2.5 acres or less, followed by medium farmers (40%) with holdings of 2.5 to 5 acres, while the least number of farmers (15.83%) were large farmers with holdings of more than 5 acres.

Method of Sale

For farmers who cultivate turmeric, selecting the appropriate method of sale is crucial since it can affect their access to markets, pricing negotiations, market knowledge, potential for value addition, risk management, and market connections. When choosing the best method of selling their turmeric

products, farmers should take into account the scale of their production, the resources at their disposal, market trends, and their own preferences. Regarding the sales approach, the current study divides it into two categories *i.e.*, APMC and processing units. Most farmers (94.16%) sell their produce to the Agriculture Produce Market Committee (APMC), and the least number of farmers (16.66%) sell their goods to processing units.

Crops grown

In the current study, maize, cotton, rice, groundnuts, turmeric, chillies, and vegetables are the main crops cultivated by farmers in the rural Warangal district. According to Fig.3, the majority of farmers (96.66%) grow turmeric, rice (61.66%), chillies (46.66%), cotton (42.50%), and groundnuts and vegetables (5%) in that order. All of these crops can be considered a representation of the district's agricultural diversity and serve as the core of the local economy, sustaining an immense portion of the population.

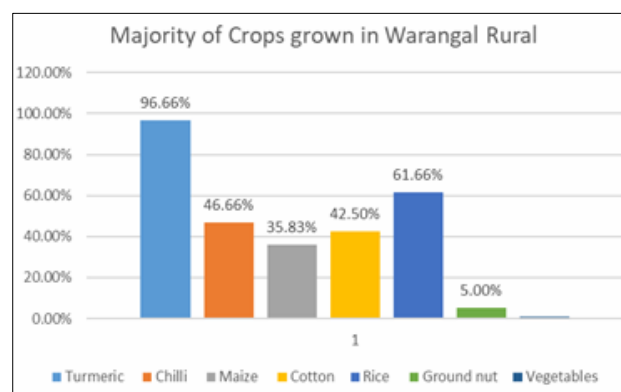


Fig 3: Major crops grown in Warangal rural district

Turmeric Varieties

Warangal turmeric, Salem turmeric, Nizamabad turmeric, Erode turmeric, and Sangli turmeric varieties are cultivated in the research region and the most prominent turmeric varieties grown in the Warangal rural district. Farmers may also cultivate local or indigenous kinds specific to the region, each with its own distinct traits and market preferences. In the Warangal rural district, the majority of farmers (60%) cultivate the Armoor type, also known as *Desavalli*, while the remaining farmers (40%) cultivate hybrid varieties such as ACC 48, ACC 79, *etc.*

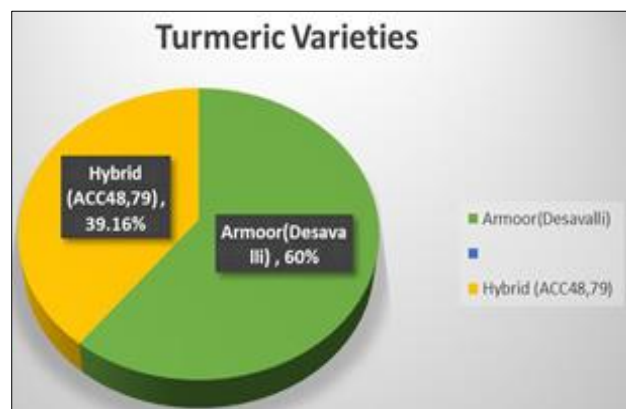


Fig 4: Turmeric varieties grown in Warangal rural district.

Table 1: Socio economic profile of farmer respondents (n=120)

S. no	Group	Particulars	Percentage (%)
1	Age group		
	a. Up to 30 years	14	11.66
	b. 31-40 years	37	30.83
	c. 41-50 years	51	42.05
	d. > 50 years	18	15.00
2	Education status		
	a. Illiterate	35	29.16
	b. Primary education	38	31.66
	c. Secondary education	40	33.33
	d. Graduation	04	03.33
	e. Post-graduation	03	02.05
	f. Beyond PG	00	00.00
3	House hold size		
	a. 1-5	102	85.00
	b. 6-10	18	15.00
	c. 11-15	00	00.00
	d. >15	00	00.00
4	Experiences in Farming		
	a. Up to 5	00	00.00
	b. 6-10	03	05.00
	c. 11-20	11	09.01
	d. >20	106	88.33
5	Land holding		
	a. Small (≤ 2.5 acres)	53	44.16
	b. Medium (2.5-5 acres)	48	40.00
	c. Large (> 5 acres)	19	15.83
6	Method of Sale		
	a. APMC	100	94.16
	b. Processors	20	16.66

Socio economic characteristics of intermediaries.

Here, the intermediaries are traders, wholesalers and retailers and their socio-economic characteristics are discussed below.

Socio economic characteristics of traders

Socio-economic characteristics like education status, experience, sources of purchase of turmeric, varieties procured, type of turmeric products procured, selling the final product are discussed by using percentage and it is presented in the table. 2 to access the socio-economic characteristics of traders.

Education & Experiences

The current study divides merchant education into five categories *i.e.*, illiterate, primary education, secondary education, graduation, and above. According to table 2, all merchants hold a graduate degree. Trading experience is classified into four categories *i.e.*, up to 5, 6–10, 11–20 years and more than 20 years. 33.33 percent of traders had 6–10 years of experience, according to the findings. Traders with more than 20 years of experience (33.33%), dealers with 11–20 years of experience (16.66%), and traders with less than 5 years of experience (16.66%) were the next most common. While education may provide traders with useful skills and information, actual experience and expertise in the turmeric trade are also essential. A combination of education, experience, and market exposure contributes to the effectiveness and success of traders in receiving raw turmeric from farmers.

Source of purchase of Turmeric

It is important to note that the specific sources of purchasing

in the Warangal rural district may vary according to individual traders, market dynamics, and trading practices.

Traders generally use many sources to ensure a consistent supply of turmeric throughout the year and to meet market demand. Due to a scarcity of quality material, all of the traders in the research area buy dry turmeric fingers from farmers and never from APMC.

Varieties Procured

Traders in Warangal rural district purchase numerous turmeric varieties based on market need and specific requirements. Armour and Hybrid are two of the most commonly obtained varieties, and all the traders have obtained polished dry turmeric fingers of Armour and Hybrid due to their high curcumin content. While procuring turmeric varieties from farmers, traders consider factors such as curcumin content, appearance, aroma, and market value.

Type of Turmeric products procured

The type of turmeric product purchased by traders is determined by market demand and the preferences of buyers such as wholesalers, retailers, food processors, spice makers, pharmaceutical firms, and other end-users. Traders play a vital role in linking turmeric farmers with consumers and ensure a steady flow of turmeric products on the market. According to the findings of the current investigation, all the traders buy polished dry turmeric fingers from farmers.

Selling the final turmeric products

Based on their business model, network, and market reach, each trader may have a different specific customer base. To secure the distribution of turmeric products to both domestic

and foreign markets, traders frequently cater to a varied range of buyers, including wholesalers, retailers, food processors, spice producers, pharmaceutical businesses, and exporters. According to the results of the current survey, all the traders

supply their final turmeric product, i.e., dry turmeric fingers, to wholesalers (50%), retailers (16.66%), exporters (16.66%), and processors (16.66%).

Table 2: Socio economic profile of traders (n= 6)

S.no	Group	Particulars	Percentage (%)
Education status			
1	a. Illiterate		
	b. Primary education	00	00.00
	c. Secondary education	00	00.00
	d. Graduation	06	100.00
	e. Post-graduation	00	00.00
Experiences			
2	a. Up to 5 years	01	16.66
	b. 6-10 years	02	33.33
	c. 11-20 years	01	16.66
	d. > 20 years	02	33.33
Source of purchase of turmeric			
3	a. Farmer	06	100.00
	b. APMC market	00	00.00
Varieties procured			
4	a. Armoor variety	06	100.00
	b. Hybrid variety		
Type of turmeric products procured			
5	a. Polished dry turmeric fingers	06	100.00
	b. Unpolished dry turmeric fingers	00	00.00
	c. Raw turmeric	00	00.00
Selling the final turmeric product			
6	a. Processors	01	16.66
	b. Wholesalers	03	50.02
	c. Retailers	01	16.66
	d. Exporters	01	16.66

1.1.2.2 Socio economic characteristics of wholesalers

Socio-economic characteristics like education, experiences, quantity procured, type of products preferred, to whom the products will be sold are discussed by using percentage and it is presented in table.3.

Education

It's essential to keep in mind that wholesalers can have varying levels of education and expertise. Others may rely more on practical expertise and on-the-job training, while some wholesalers may have formal education and significant industry experience. The success of each wholesaler is affected by a mix of their training, experience, market knowledge, and networking skills.

Respondents are grouped into five categories *viz.*, illiteracy, primary education, secondary education, graduate degrees, and above graduation. The majority of wholesalers in the study area (57.14%) had completed their secondary education, followed by 28.57% of graduates and 14.28% completed primary education.

Experience

Five types of experience were used in the current study, i.e., up to 5, 6–10, 11–20, and more than 20 years of experience. 42.85% of the wholesalers in the study area had experience ranging from 11 to 20 years, followed by 28.57% with experience ranging from 6 to 10 years, and 28.57% with experience ranging from 6 to 10 years.

Quantity procured

The choice to buy turmeric from traders or processors is

influenced by a number of variables, including the quality, quantity, cost, and particular requirements of the wholesalers' clients. To guarantee a steady supply of raw turmeric throughout the year, wholesalers frequently maintain partnerships with both dealers and processors. Before choosing the best sourcing option for their needs for turmeric, they may consider market conditions, quality requirements, and cost considerations. In the study area, it is seen that all the wholesalers purchase raw materials from the traders.

Type of turmeric products

The particular kind of turmeric items that wholesalers buy depends on the market's demand, consumer preferences, and the businesses or sectors that they are trying to reach. Wholesalers are essential in making sure that a variety of turmeric goods are distributed to retailers, producers, and other downstream buyers in the Warangal rural district and elsewhere. In the study region, it is seen that the majority of wholesalers, *i.e.*, 57.14%, prefer dry turmeric fingers while *i.e.*, 42.85%, choose turmeric powder and ultimately sell to a retailer.

To whom the wholesaler will sell the turmeric products

By ensuring the effective distribution and availability of turmeric goods in the Warangal rural district and elsewhere, wholesalers play a significant role in bridging the gap between turmeric growers and end users. All the wholesalers in the research area sell their turmeric products to retailers.

Table 3: Socio economic profile of wholesalers (n=7)

S.no	Group	Particulars	Percentage (%)
1	Education status		
	a. Illiterate	00	00.00
	b. Primary education	01	14.28
	c. Secondary education	04	57.14
	d. Graduation	02	28.57
2	Experiences		
	a. Up to 5 years	00	00.00
	b. 6-10 years	02	28.57
	c. 11-20 years	02	28.57
3	Quantity procured from		
	a. Farmer	00	00.00
	b. Trader	06	100.00
4	Type of turmeric products preferred		
	a. Dry turmeric fingers	04	57.14
5	To whom do you sell the turmeric products		
	a. Retailers	07	100.00
	b. Processors	00	00.00
5			
	c. Exporters	00	00.00

Socio economic characteristics of retailers

Socio economic characteristics like educational status, experiences, quantity procured from, type of turmeric products preferred are discussed by using percentage and it is presented in the table. 4.

Education & Experiences

Retailers' levels of education and work experiences can differ from person to person. While some retailers may have a formal degree and a wealth of industry experience, others may rely more on the hands-on experience they've earned over the course of many years working in the turmeric industry. The success of each retailer depends on a variety of factors, including their training, experience, market knowledge, and customer-centric mindset.

The table 4 reveals that 83.33% of retailers are graduates, followed by 16.66% of retailers with secondary education. 66.66% of retailers with experience ranging from 6 to 10 years, and the 33.33% of retailers with experience ranging from 11 to 20 years.

Quantity procured

According to the results of the current study, retailers would buy turmeric in large quantities from traders, wholesalers, and processors (66.66%, 16.66%, and 16.66%, respectively). A reliable supply chain, more affordable procurement costs, and economies of scale are advantageous to retailers.

Additionally, buying in bulk enables businesses to negotiate better pricing conditions and keep enough inventory on hand to satisfy client demand. Depending on the size of the company, the target market, and the preferred products, different retailers may use different sourcing strategies.

Type of Turmeric products preferred by the retailers

According to the information given, the types of turmeric products that Warangal rural district retailers preferences can be divided into the following categories viz., i) Dry turmeric fingers ii) Turmeric powder.

Dry turmeric fingers

The unaltered, unground turmeric rhizomes known as "dry turmeric fingers" have been dried to remove moisture. In the research area it is observed that 33.33% of buyers chose dried turmeric fingers for ritual purposes, herbal medicines, cosmetics and skin care, natural dyes, and home remedies. Some of them desired to grind them on their own and utilise them for specific culinary or therapeutic purposes.

Turmeric Powder

A finely ground version of turmeric known as turmeric powder is frequently used as a spice and food colouring agent. In the study area it is noted that majority of businesses i.e., 66.66% purchase turmeric powder.

Table 4: Socio economic profile of retailers (n=6)

S.no	Group	Particulars	Percentage (%)
1	Education status		
	a. Illiterate	00	00.00
	b. Primary education	00	00.00
	c. Secondary education	01	16.66
	d. Graduation	05	83.33
2	Experiences		
	a. Up to 5 years	00	00.00
	b. 6-10 years	04	66.66

	c. 11-20 years	02	33.33
	d. > 20 years	00	00.00
	Quantity procured from		
3	a. Farmer	00	00.00
	b. Trader	04	66.66
	c. Wholesalers	01	16.66
	d. Processors	01	16.66
	Type of turmeric products preferred		
4	a. Dry turmeric fingers	02	33.33
	b. Turmeric powder	04	66.66

Socio economic characteristics of processors

Socio economic characteristics like education, experiences, quantity procured from no. of value-added products processing, name of the value-added product, quantity of raw materials processed per month on an average (Quintal), branding for processed products, availability level of labour and Marketing channels adopted are discussed in the table.5 by using percentage.

Education

The level of education held by turmeric processors might vary from person to person, and success in the industry is based on a combination of formal education, professional development, and real-world experience. It is abundantly obvious from table.5 that 72.72% of processors have graduated with a degree, 9.09% have obtained a post-graduate degree or higher, and 9.09% have completed their secondary education. In the turmeric processing industry, while higher education provides a foundation, practical skills, knowledge, and competence obtained through experience are important. Through continual learning, trial and error, and exposure to new technology or industry practices, processors frequently improve their methods and understanding.

Experiences

The knowledge, effectiveness, and capacity of turmeric processors to provide the market with high-quality turmeric goods are influenced by their experiences. It was found that 36.36% of the processors in the research area had more than 20 years of experience working in the processing industry. While 27.27% of processors had experience in between 6 and 10 years, 27.27% had experience of up to 5 years, and the remaining 9.09% of processors had experience in between 11 and 20 years.

Quantity of raw materials procured by the Processors

Turmeric processors in the Warangal rural district used to buy a different amount of raw turmeric depending on a number of variables, including the size of the processing facility, production capacity, market demand, and the availability of turmeric supply. In the APMC market of Enumamula and Kesamudram, 36.36% of processors purchased a significant number of raw materials from farmers, according to the current study. The majority of processors (36.36%) purchase through traders, while only 27.27% buy through wholesalers. The amount of raw turmeric ingredients purchased can be expressed in terms of volume or weight. Furthermore, there are three different categories of processors in the study area viz., small-scale processors, medium-scale processors, and large-scale processors. Medium-scale turmeric processors frequently have greater processing equipment and higher production capacities than small-scale processors. They typically process in between 50 quintals (5,000 kilograms) to

hundred quintals (10,000 kilograms) of raw turmeric each month, depending on their processing capacity and market demands. However, it has been noted that the majority of them are medium-scale processors, suggesting that they have relatively greater access to turmeric in raw form. To

fulfil their processing requirements, they could purchase turmeric from neighbouring wholesalers and merchants or local farmers.

Number of value-added products processed & Name of the value-added product

The number of value-added goods processed by turmeric processors in the Warangal rural district, as well as the specific names of value-added products, may differ according to the various processors and their business models. However, there are some common value-added products such as turmeric powder, turmeric extracts, turmeric oil, turmeric capsules and supplements, turmeric tea and infusions, turmeric paste, turmeric face masks and skin care products, and so on. However, 99.99% of processors in the study area make single-value-added products (*i.e.*, turmeric powder), which is more commonly used.

Quantity of raw materials processed per month

It has been noted that medium-scale processors, who are found often and have better output capacity, make up the majority of the processors in the research area. Depending on their capacity and market demands, they process 50 to 100 quintals of raw turmeric each month. It has been observed that 99.99% of processors in the Warangal rural district process in the range of 1-2 tonnes per month. They installed motor inside the device with 10 to 15 horsepower capacity.

Branding for turmeric processed products

Branding is the tactic of providing a product with a unique personality and image on the market to differentiate it from competitors and increase customer loyalty and recognition. It is observed in the study area that 36.36% of processors mark their processed items, and the remaining 63.63% of processors in the study area do not label their products. Some of the brand names in the research area are ARSHI, VARSHA, EKASILA, and SREE CHANDRA.

Availability level of labour

The effective operation of turmeric processing activities depends on having access to labour, whether through a dedicated workforce or on needed basis. Cleaning, grading, drying, grinding, packaging, and other processing works require skilled labour. In the research region, 72.2% of processors have their own family labour readily available for their processing operations. This suggests that they have specific employees dedicated to their turmeric processing

operations. In contrast, 27.27% of processors rely on labour to meet their demands, suggesting that they may use seasonal or temporary workers as needed during busy processing times.

Marketing channels adopted by the processor

Processors use four different types of marketing channels *viz.*, wholesalers, retailers, exporters, and consumers.

Wholesaler

In the study area it is observed that 54.54% of processors sell their processed turmeric goods through wholesale markets. Further, wholesaler sells the products to retailers.

Direct sales to Retailers: It has been noted that 27.27% of processors in the research area develop direct connections with retailers. Retailers, including grocers, supermarkets, spice shops, and health food stores, are the ones to whom they

sell their goods directly. They are able to exert more control over pricing, branding, and product placement as a result.

Export Markets: 9.09% of turmeric processors in the Warangal rural district export their products to foreign markets. To increase their market reach and meet the demand for turmeric abroad, they collaborate with distributors, export agencies, or direct foreign purchasers.

Consumers: In order to market their processed turmeric products directly to consumers, some turmeric processors, or 9.09% of them, may set up their own retail storefronts or brand names. These channels give processors a platform to advertise their goods, inform consumers about their reputation and product quality, and develop a following of devoted customers.

Table 5: Socio economic profile of processors (n=11)

S.no	Group	Particulars	Percentage (%)
1	Education status		
	a. Illiterate	00	00.00
	b. Primary education	00	00.00
	c. Secondary education	01	09.09
	d. Graduation	08	72.72
	e. Post-graduation	01	09.09
2	f. Beyond PG	01	09.09
	Experiences		
	a. Up to 5 years	03	27.27
	b. 6-10 years	03	27.27
3	c. 11-20 years	01	09.09
	d. > 20 years	04	36.36
	Quantity of raw materials procured by the processors		
	a. Farmer	04	36.36
4	b. Trader	04	36.36
	c. Wholesalers	03	27.27
	d. Retailers	00	00.00
	No. of value-added products processed		
5	a. Single product	11	99.99
	Name of the value-added product		
6	a. Turmeric powder	11	99.99
	Quantity of raw materials processed per month on an average (Quintal)		
	a. 15000 kgs	00	0.00
	b. 125 Quintals	00	0.00
7	c. 1-3 metric tonnes	11	99.99
	Branding for processed products		
	a. Yes	04	36.36
8	b. No	07	63.63
	Availability level of labour		
9	a. Own labour	08	72.72
	b. As per need	03	27.27
9	Marketing channels adopted		
	a. Wholesalers	06	54.54
	b. Retailers	03	27.27
	c. Customers	01	9.09
	d. Exports	01	9.09

Conclusion

Socio-economic characteristics of farmer

The socioeconomic status of farmers greatly impacts the dynamics of the value chain for turmeric in the rural Warangal district. The level of education, experience, land ownership, and access to resources are important variables that affect the productivity, profitability, and general well-being of farmers. In the study region, it is observed that empowering farmers through knowledge transfer, experience

exchange, resource accessibility, and market connections can support the overall growth and development of the turmeric industry in the Warangal rural district.

Socio-economic characteristics of Traders

The socio-economic profile of the Warangal district's traders has a significant impact on how the turmeric market and value chain are shaped. These traits have a big impact on how traders conduct their business, how they approach the

markets, and how successful they are in general. It has been noted in the research field that, generally speaking, the socio-economic traits of traders in the Warangal district impact their level of competition, market positioning, and profitability in the turmeric sector. Trading companies can support a dynamic and effective turmeric value chain that benefits both regional farmers and consumers by utilising their training, experience, networks, and expertise in the business.

Socio-economic characteristics of Wholesalers

It has been noted in the study region that wholesalers who have favourable socio-economic traits are in a good position to negotiate the turmeric market in the Warangal district. They are able to make knowledgeable judgements, create connections, and contribute to the effective operation of the turmeric value chain because of their training, experience, networks, and market knowledge.

Socio-economic characteristics of Retailers

It has been noted that retailers' socioeconomic traits play a significant role in addressing the demands and preferences of customers. Retailers serve as intermediaries connecting wholesalers, processors, and final consumers. They are able to supply suitable products due to their knowledge of consumer preferences, cultural significance, and health awareness regarding turmeric goods, which increases customer satisfaction and loyalty. Enabling the shops to meet customer demand, maintain adequate stock levels, and ensure product quality. Socioeconomic factors can affect retailers' capacity to accept innovative methods and technologies, including branding, packaging, and product differentiation, which can increase their ability to compete in the market.

Socio-economic characteristics of Processors

It is assumed in the study area that the general socio-economic traits of processors in the Warangal district have a substantial influence on their abilities, market presence, and economic contribution. Improved processing procedures, product quality, market competitiveness, and overall expansion of the turmeric processing industry in the area might result from improving their education, experience, technical access, market linkages, and concentration on value addition.

Future scope

Overall, it is possible to use the socio-economic traits of those involved in the value chain for turmeric to promote sustainable growth, increase market competitiveness, and raise everyone's standard of living. The future of the turmeric value chain in the Warangal rural region holds enormous promise for socioeconomic development by focusing on empowerment, integration, value addition, consumer awareness, and research-driven innovation.

References

1. Baral S, Luitel G, Shrestha A, Basnet B. Production and marketing of turmeric (*Curcuma longa*) in Sunsari District, Nepal. Archives of Agriculture and Environmental Science. 2021;6(4):556-562.
2. Chhetri GB, Devkota D, Sharma B. Value chain analysis of turmeric subsector in Surkhet district of Nepal. *Chronic Complement Altern Integra Med: CCAIM-100010*, 1, 2019.

3. Kumar CS, Manivannan D. An Analysis on Production and Marketing of Turmeric and Chilli in Erode District. Chief patron chief patron
4. Mane US, Changule RB, Mane BB, Kolekar PL, Gharge SH. Economics of turmeric production in Sangli district of Maharashtra. Agriculture Update. 2011;6(2):34-37.
5. Presutti Jr, WD, Mawhinney JR. The value chain revisited. International Journal of Value Chain Management. 2009;3(2):146-167.
6. Reji EM. Value Chains for Integrating Small Producers into Market: Small- Scale Organic Turmeric Processing Enterprises in Orissa. IUP Journal of Business Strategy, 2013, 10(2).
7. Rohini A, Murugananthi D. Production and Marketing of Turmeric in Tamil Nadu. Indian Journal of Economics and Development. 2019;15(4):600-603.
8. Sahoo PP, Sarangi KK. Value chain analysis of organic turmeric in Kandhamal District of Odisha. Journal of Pharmacognosy and Phytochemistry. 2018;7(4):1130-1137.
9. Singh JM, Singh J, Garg BR, Kaur B. Value Chain Analysis in Turmeric-A Case Study in Punjab. Agricultural Economics Research Review. 2010;23:549.
10. Timsina KP, Shrestha KP, Chapagain TR, Sunita P. Value chain analysis of turmeric (*Curcuma longa*) in eastern Nepal. Nepal Agriculture Research Journal, 2011;11:70-79.