Identifying, Mapping, and Analyzing Stakeholders of Tomato Value Chain

ABSTRACT

Aim: The research aims to optimize the efficiency of tomato value chain by identifying, analyzing, and mapping various stakeholders.

Study Design: The complete research design work is based on primary and secondary data collected through a structured questionnaire and from Madanpalli Agriculture Produce Marketing Committee, annual reports of the National Horticultural Board, and articles from the World Processing Tomato Council.

Place and Duration of Study: The study was taken as a part of the Research work of MBA (Agribusiness) carried out at Madanapalli taluka of Chittoor district in Andhra Pradesh.

Methodology: A multistage sampling technique was used for sample selection and Value chain analysis was carried out to identify the key activities within the industry. The total sample size was 187, Including farmers, commission agents, nursery growers, input suppliers, traders, wholesalers, retailers, and processors.

Results: A value chain map illustrates the journey of tomatoes from production to the consumer, highlighting the various stages and processors involved along the way. The linkages are shown vertically from left to the right hand side. The top head lists major functions of the chain. The functions, in this case, include input supply, production, trading, marketing/processing, and consumption. The vertical flow from left-hand to the right hand side depicts the actors involved in carrying out the different functions. Displayed on the left side, the enablers help and support the actors in performing their roles. These enablers primarily include formal and informal institutions, as well as private organizations.

Conclusion: Lack of access to credit, Huge loss of raw produce in a glut situation, Lack of adequate infrastructure, Seasonal business and competition during a short period, and No incentives for quality differentiation are the major constraints in the tomato value chain. The chain is not transparent and the middlemen are dominating the chain, which results in farmers having no grip on marketing their produce

Keywords: Value chain, Constraints, Middlemen/ stakeholders, Mapping

1. INTRODUCTION:

India has attained self-sufficiency and considerable stability in food production. This has created a need to provide health security to the population by supplying nutrition through a balanced diet. Vegetables are a crucial part of a balanced diet. The country is the World's second-largest producer of vegetables next only to China [9]. However, the per capita consumption is quite low. In the context of alleviating malnutrition in India, efforts are underway to enrich carbohydrates in cereals. To supplement them, vegetables can be used in a very effective manner. Most of the vegetables being short-duration crops can be produced in succession on the same plot and all the family labour of the vegetable grower can be employed throughout the year. The daily minimum requirement of vegetables, according to the universal dietary standards is 284 gms per head, i.e., about 20 per cent of the daily requirement of the total food of an adult in India [10]. This requirement is more in the case of a vegetarian diet. Tomato is one of the most popular vegetables in the tropics and sub-tropics grown all over the World. China, India, and the United States contribute about 70 per cent of the world's production of tomatoes [12]. India ranks second in the area as well as in the production of tomatoes [3]. It is one of the essential commodities of the Indian market. Some tomato products e.g. ketchup, juice, puree, paste, sauce, and pickles are available in the market [2]. These are items of common use in households, hotels, restaurants, and institutions. Thanks to the recent scientific advances in tomato processing industries and emerging organized food retail stores, which helped in matching supply and demand for tomatoes in the urban areas and protecting the interests of farmers during the crisis of overproduction. Hence the study has been taken up to map and analyze the various stakeholders involved in the tomato value chain.

The concept of the value chain, also referred to as value chain analysis, originates from business management and was introduced and made well-known by Michael Porter in his 1985 book, 'Competitive Advantage: Creating and Sustaining Superior Performance'. Adding value to a product passing through a chain of activities is called Porter's value chain [4].

2. MATERIAL AND METHODS

To fulfill the research objectives, a sound research methodology with appropriate tools of analysis is essential to draw a meaningful inference from the research study and for the generalization of the findings. The present study was confined to Madanpalli taluka of Chittoor district and it was carried out during the year 2019 as a part of masters research. Chittor is the largest tomato-growing district of Andhra Pradesh and Madanpalli is the largest tomato market in Asia [6]. Hence, Madanpalli of Chittor district was selected for study. The tomatoes from here are supplied to most of the southern states and some of the northern states of India [1].

A multistage sampling technique was used for the sample selection. In the first stage, Madanpalli Mandal was selected purposively as it is one of the largest tomato markets in Andhra Pradesh. In the second stage, five villages were selected and in the third stage, 20 farmers from each village along with input suppliers, nursery growers, traders, retailers, and other persons who were involved in the tomato value chain were selected randomly. Thus, the overall sample size reached 187, with data gathered from both primary and secondary sources.

The primary data was obtained from the farmers, commission agents, nursery growers, input suppliers, traders, wholesalers, retailers, and processors with the help of well-prepared questionnaires for evaluating the objectives of the study. Secondary data was obtained from government reports and online sources. Information was gathered from the Madanapalli Agriculture Produce Marketing Committee, annual reports of the National Horticultural Board, and articles of the World Processing Tomato Council.

Table 1: Composition of sample respondents for value chain mapping

Sr. No.	Selected Respondents	Sample Size
1	No. of farmers	100
2	No. of commission agents	10

3	No. of traders	15
4	No. of retailers	20
5	No. of processors	2
6	No. of buyers	20
7	No. of nursery growers	10
8	No. of input suppliers	10
Total		**187**

Value Chain Analysis:

Value chain analysis was a powerful tool to identify the key activities within the firm/industry that form the value chain for that organization.

Stages of study implementation

Stage 1- Identification and mapping of the commodity value chain

During this stage, the value chain for tomatoes from producer to consumer was mapped, including traders and commission agents. The proposed mapping methodology drew primarily on Primary data supplemented through field interviews with enterprises of the value chain. The value chain map has been presented in a conventional format with the key stages in the value chain identified on the top head of the map and associated players at each stage from the left-hand side to the right hand side. Value chain mapping was conducted in two phases

i. An initial basic map after the collection of initial data illustrating participants and functions and

ii. Adjusted mapping, which is conducted following additional and follow-on interviews.

Stage 2 - Analysis of key constraints

For each value chain, constraints and bottlenecks in achieving competitive advantage were also identified. Through the review of secondary information, semi-structured interviews with players at each stage of the value chain and interaction with stakeholders to identify the major constraints in achieving competitive advantage, commercialization, diversification, and increased value addition [8,11,5].

Stage 3 - Options for Improving Performance

The options for addressing the constraints identified in stage 2 were assessed at this stage. Following the detailed analysis of constraints to carry out in stage 2 of the study, intervention strategies were developed for improving the performance of value chains [13].

To explore potential opportunities for strengthening of tomato value chain the criteria were awareness about the distribution channel, experience and problems faced by the farmers in achieving competitive advantage, commercialization, diversification, and increased value addition [8,11,5].

3. RESULTS AND DISCUSSION:

The collected data were critically analyzed using different analytical tools and the observations are presented.

3.1 The Value Chain Map

The value chain map provides a graphical representation of tomato as it moves from production to the consumers, passing through different stages and processors. The linkages are shown vertically from left to the right hand side. The top head lists major functions of the chain. The functions, in this case, include input supply, production, trading, marketing/processing, and consumption. The vertical flow from left-hand to the right hand side depicts the actors involved in carrying out the different functions. The enablers, depicted on the left side, support and help the actors in performing their tasks. The enablers are mainly the institutions, both formal and informal as well as private institutions [7].

As seen in fig 1, 2 some actors perform more than one function whereas others are confined to only one function. For example, the local traders both collect the products from the farmers and supply them to the wholesalers or processors.

3.1.1 Functions and Actors in Tomato Value Chain

Public and Private Extension Services: They provide extension services to farmers like KVK, and APMAS.

Credit Institutions: Public and private institutions provide credit and information about schemes for tomato production such as Banks, APMAS

Input Suppliers: Input suppliers include seed, fertilizer, and plant protection companies, Government distributors, small wholesalers, and even smaller retail shops that sell small quantities of seed, fertilizer, and pesticide to farmers at the village level.

Farmers: Three types of production systems can be observed, viz., subsistence production, small-scale commercial production, and large-scale commercial production. Subsistence production is done for household consumption and is produced in limited quantities. The produce from these farmers generally does not enter the market or enters in a very limited quantity, especially in the local bazaar, market. Small and large-scale commercial farmers sell most of their produce to market intermediaries. The producers generally deal with traders and wholesalers through commission agents (value chain map). Due to easy access to communication technology, the farmers generally have access to market information to some extent.

Commission Agents: A commission agent is a licensed market functionary in APMC. A commission agent is a person who acts in consideration of commission upon the amount involved in each transaction, sells the product to the trader, and makes payment to the farmer.

Traders: Local traders are directly involved in buying and selling tomatoes from different remote district towns or markets and sell to the wholesalers at a profit. They often work as a facilitator to the large wholesalers or exporters.

Wholesalers: Wholesalers deal with a large volume of products through traders. They invest and transact large amounts of money in their business and often influence the market price.

Processing Firms: Galla Foods, located in Puthalapalle village, produces raw sauce, puree, ketchup, and juices from tomato, mango, and grapes. Its tomato processing capacity is 200 metric tons per day. It collects most of the tomatoes from Madanpalli taluka because of abundant production. The products are sold to secondary processors such as Hindustan Unilever Pvt. Ltd., Indira Food Products, etc., and then to retailers.

Retail Shops: The retail shops buy fresh tomatoes from the wholesalers and processed products from the processors through their distributors and sell directly to the consumers

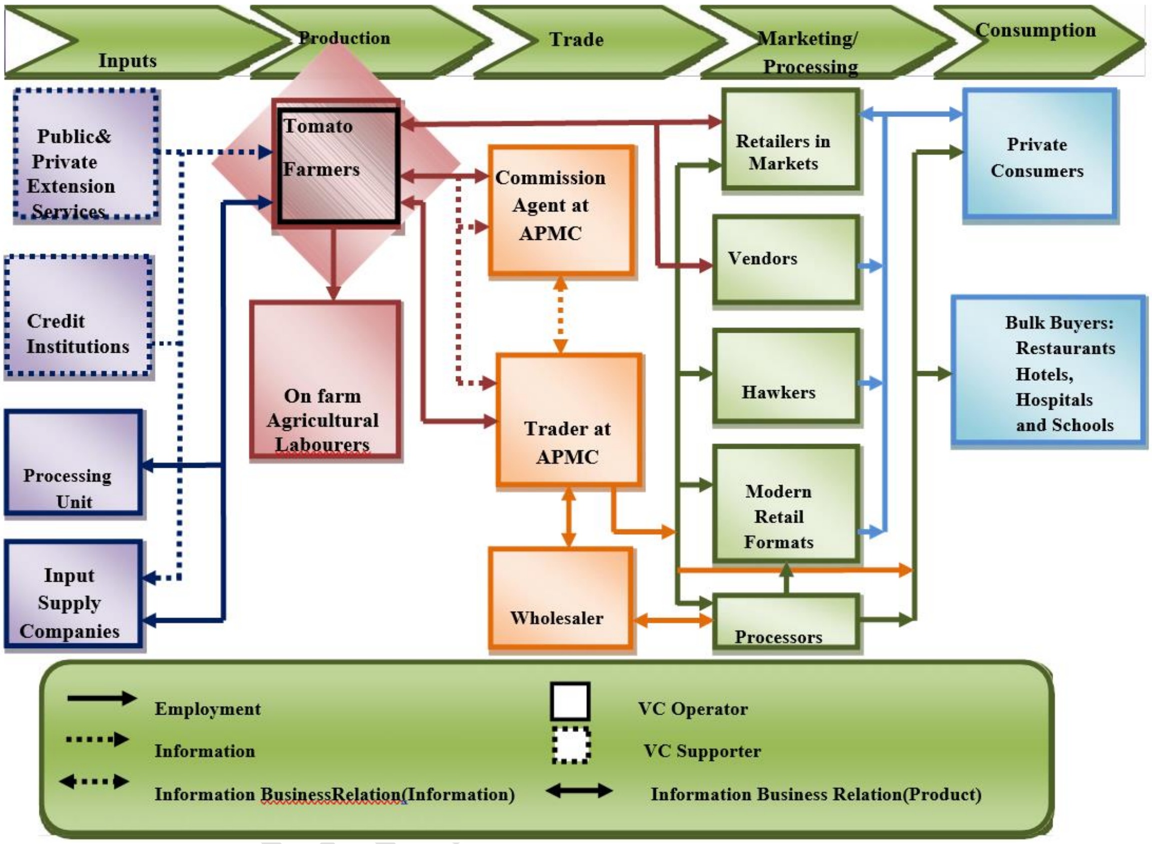

Fig 1: Tomato value chain map

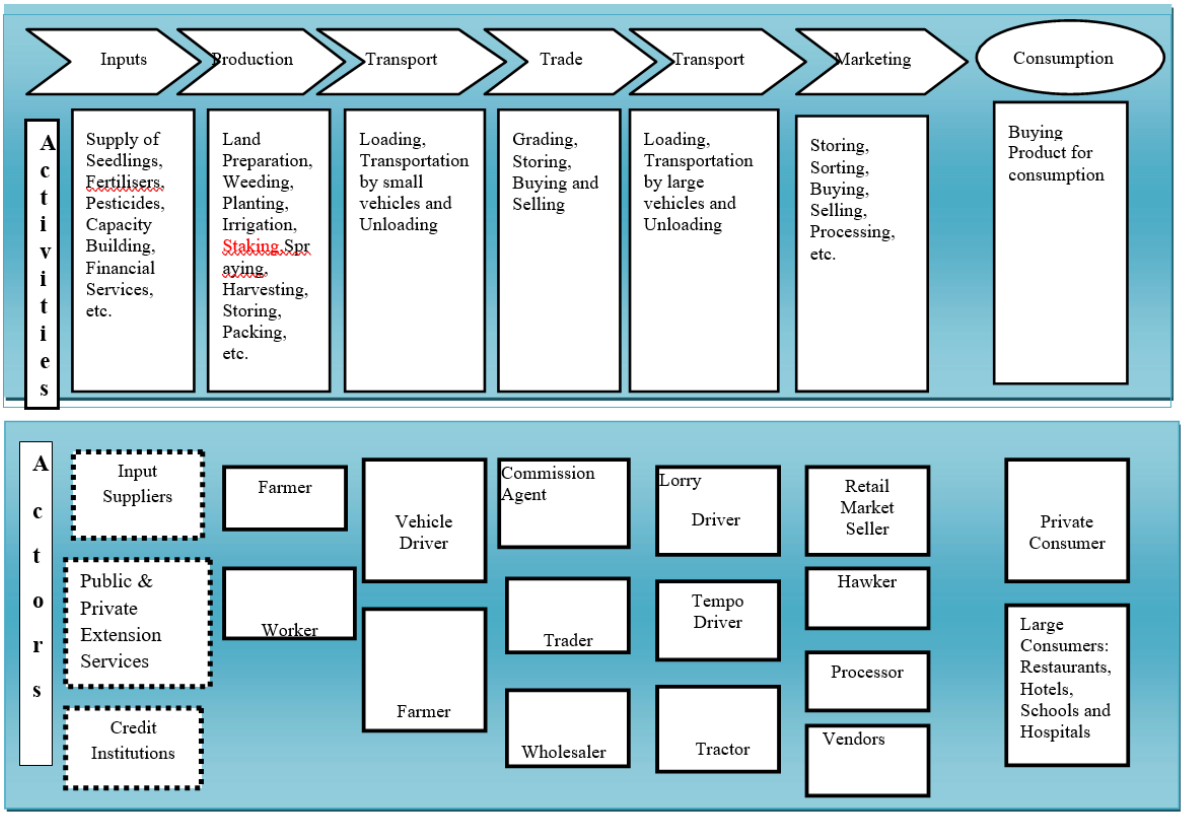

Fig 2: Tomato Value Chain - Actors and their Activities

3.2 Potential Opportunities for Strengthening of Tomato Value Chain.

Identifying constraints and opportunities is an integral aspect of value chain analysis. Using structured interview guides, value chain constraints and opportunities can be identified during interviews with value chain participants. The preliminary interview guide used in this approach was designed to identify constraints and opportunities faced by the players in the value. During the value chain analysis of the tomato, a variety of constraints were identified at different stages. Here is the list of constraints and opportunities actor-wise.

Input suppliers

Constraints

Lack of access to credit.

Lack of improved agricultural techniques and knowledge among farmers.

Poor outreach of District extension officers to farmers resulting in farmers not receiving technical or market information.

Farmers/extension workers lack the knowledge and skills to collect and use market information to improve production planning resulting in better marketing.

Opportunities

Demand for varieties and higher quality seedlings.

Establish linkages with chemical (fertilizers, PPC) company representatives for technical outreach.

Potential for promotional events to disseminate knowledge and increase sales.

Scope for small entrepreneurs to start inputs packaging industry.

Producers

Constraints

Lack of cold storage facilities.

Lack of irrigation facilities.

Farmer's inability to take maximum advantage of market fluctuations over time.

Lack of credit facilities.

Huge losses of raw produce in glut situations.

Instability in tomato price.

Infrastructure constraints (farm-to-market access roads, electricity, storage, etc).

Opportunities

Large local and regional demand for tomatoes, a staple crop of India.

Many farmers are open to new ideas and willing to change their agronomic practices to increase productivity.

Strengthen farmers' clubs to increase benefits, for e.g. coordinated input purchase, crop aggregating, etc.

The mobile telephone network is available in most areas including rural areas which enable quick dissemination of market information.

Scope for tomato processing industry (ketchup, puree, pickles, sauce, etc.).

Commission Agents

Constraints

Lack of adequate infrastructure(space).

Inconsistent quality.

Seasonal business and competition during a short period.

Bureaucratic procedures, payment delays, and corruption.

Opportunities

Improve relationships with a network of traders and producers.

Implementing uniform grades and standards to enhance efficiency

Potential for information technology to be used at all levels of the chain for increased efficiency.

Traders

Constraints

Lack of proper transportation and road infrastructure (capacity, rented vehicles, road conditions, etc.).

Seasonal business and competition during a short period.

Insufficient communication, transparency, and trust between traders and producers.

The chain is not transparent and the middlemen are dominating the chain, which results in farmers having no grip on marketing their produce.

Opportunities

Establishment of consistent grades and standards to improve marketing efficiency.

Capability to serve as channels of market information for farmers.

Potential to encourage farmers by providing inputs and credit for the production of tomatoes.

Retailers

Constraints

Limited operating capital.

No incentives for quality differentiation.

Opportunities

Good demand for both fresh tomato and processed tomato products.

Potential for alternative marketing channels to allow direct procurement.

4. CONCLUSION

This paper not only identifies, and maps the various stakeholders involved in the value chain but also analyses the constraints and opportunities. The tomato value chain is affected by various challenges. Notable among those are lack of access to credit, infrastructure constraints, instability in tomato prices, inconsistent quality, the chain is not transparent, and the middlemen dominating the chain, which results in farmers having no grip on marketing their produce. These challenges are affecting various stakeholders significantly. For farmers, the regular issue is low prices during glut periods. Tomato being a perishable commodity and due to lack of storage facilities, farmers are left with no other option other than selling their produce to traders at low prices. Madanapalli, having better agro-climatic conditions is suitable for tomato cultivation and because of its production there is a huge scope for tomato value addition

5. RECOMMENDATION

APMCs should take initiatives to maintain hygienic conditions and to provide better infrastructure facilities in the market area. One of the weak points in the value chain is tomato processing. There is a need for public-private partnerships to provide better income to farmers and also for companies to get the desired variety of tomatoes for processing. The majority of the stakeholders indicated the need for finance to enhance their business opportunities, hence banks and the government should come forward to provide financial support.

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