



Identification and Classification of Constraints and Problems of Warehousing System: A Case Study of Telangana Stakeholders

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Aims: To identify the problems and constraints of stakeholders in warehousing system in Telangana state.

Place and Duration of Study: The study was conducted in Mahbubnagar and Jagtial districts of Telangana state, which were selected purposively based on the number of warehouses available in the districts. The study was conducted between 2023 to 2024.

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Methodology: The sample consists of 120 respondents which include different stakeholders viz., farmers, warehouse investors, warehouse managers, Handling and Transportation (H&T) contractor, H&T labour, Junior Assistant and Technical Assistant. All the stakeholders were selected using random sampling technique. Garrett's ranking technique was employed to analyze the data. The data was collected through personal interview method using pre-tested schedules.

Results: The study revealed that, the absence of warehouse space was regarded as the major constraint experienced by farmers, with a mean score value of 71.77, followed by financial difficulties in paying off debts (55.7). Two biggest challenges experienced by warehouse investors were limited stock arrivals (69.375) and stock rejections due to poor quality (62.5). The primary challenge, according to the warehouse manager and H&T contractor, is the shortage of labour for stocking, loading, and unloading of lots. H&T labour reported the major constraints they faced was lack of frequent employment (62.38) followed by migration from native places in search of work (57.88). Technical assistants have identified two constraints and they are changes in standard operating procedures (65.625) and extended working hours during peak seasons (60.625). Junior assistants had faced difficulties with maintaining pest-free goods (63.125) and rodent-caused storage losses (51.25).

Conclusion: The study recommends providing more storage facilities and issuing Nego able Warehouse Receipts to farmers, as well as improving the living conditions of H&T labourers to ensure their stable employment. Additionally, regular pest control and adherence to standardized warehouse management procedures are crucial for system improvement

Keywords: Warehouse investors; H & T contractor; constraints; garrets' ranking; arrivals; rejection; warehousing corporation

1. INTRODUCTION

India is one of the largest agrarian economies which contributes 18.2 per cent of the GVA at current prices in 2022-23 from agriculture and allied sectors [1]. Agricultural commodities are perishable in nature and seasonal in production, to make available commodities throughout the year and to protect the interests of farmers from high price fluctuations, storage is an important activity. Warehouses are considered as necessary means for the reduction of post-harvest losses resulting in food shortage [2] and provide remunerative prices for the produce [3] and avoid distress sales, ensures year-round availability of agricultural commodities, promote scientific storage and distribution of commodities.

The Central Warehousing Corporation (CWC) was set up on March 21, 1957 in New Delhi. CWC's role is to subscribe share capital in the State Warehouse Corporation (SWC). In order to inform farmers about the advantages of using public warehouses for scientific storage, the corporation has implemented a program at a few centres called the Farmers Extension Service. In 1956, Bihar marked the establishment of the first state warehouse [4,5]. The State Warehousing Corporations operate in areas that are significant to their districts. State governments and the

Central Warehousing Corporation each contribute an equal portion of the total share capital of the State Warehousing Corporations. The Central Warehousing Corporation and the State Government share control over the SWCs. At present India holds 201.26 MMT of warehouse storage capacity. Telangana holds 3.73 MMT which is 1.9 per cent of India's storage capacity [6]. The Grameen Bhandaran Yojana (GBY) was launched as a capital investment subsidy program by the government of India in 2001-02 to subsidize the setup of new godowns and renovate existing ones which were becoming dysfunctional [2]. Telangana State is the eleventh-largest State in the nation with a geographical area of 276.95 lakh acres. Among, 52.88 per cent of the total area is designated as net sown area [7]. Telangana produces about 11.7 per cent of nation's paddy, 7.5 per cent of maize and 6.04 per cent of Red gram. Even though the production is in increasing trend and the government had taken up many initiatives in establishing warehouses to encourage farmers for storage of commodities, farmers are not storing their produce in warehouses and a lot many problems faced by other stakeholders in the warehousing system. Hence, Garrett's ranking technique was employed in the study to disclose the problems faced by the stakeholders in warehousing system.

2. METHODOLOGY

The study was carried out on the basis of primary data collected from 4 mandals of Mahbubnagar and Jagtial districts of Telangana state. The study area was chosen based on purposive sampling technique because Mahbubnagar district have highest number of warehouses and Jagtial district have lowest number of warehouses. Mandals were selected based on the availability of warehouses and random sampling technique was used to select two warehouses from each mandal. The sample stakeholders selected includes Investors, Warehouse managers, Technical Assistants, Junior Assistants, Handling and Transportation (H&T) contractor, Labour and Farmers. The sample farmers selected were categorized as small (1-2 ha), medium (4-10 ha) and large (>10 ha) based on their operational holding and selected in equal proportion as 15 of each category from 4 mandals. Table 1 shows the category wise number of stakeholders. The total sample of 100 comprises of 60 farmers accounting to 60% of the sample, 8 investors, 4 warehouse managers, 8 technical assistants, 8 Junior assistants, 4 H&T contractors and 8 Labour accounts to 40% of the total sample. The primary data for the study pertains to the period of 2023-24. The required data from the sample stakeholders were collected through a pre-tested schedule by personal interview method for analyzing the constraints faced by them.

Garrett's ranking technique is employed for ranking the problems of stakeholders on different variables. This method helps to identify the most significant variable influencing the respondent. By this method the respondents are asked to rank their preference for all factors. The resultant outcomes of such rankings are converted to per cent position using the formula:

$$\text{Percent position} = \frac{100(R_{ij} - 0.5)}{N_j}$$

Where,

R_{ij} = Rank given for the i^{th} variable by j^{th} respondents

N_j = Number of variables ranked by j^{th} respondents

From the Garrett's Table, the percent position calculated is converted into scores. Then for each factor, the scores of each individual are added and then total value of scores and mean values of score is calculated. The factors having highest mean value is considered to be the most important factor.

3. RESULTS AND DISCUSSION

In this section, the problems faced by different stakeholders in the warehousing system were highlighted and various suggestions given by them are also enlisted. Stakeholder wise problems in warehousing system and the suggestions to address these problems are presented below.

The reasons of farmers for not utilizing the warehouses for storage. The reasons were ranked by 60 farmers of different categories i.e., small, medium and large from 2 districts Mahbubnagar and Jagtial. Table 2 shows the category wise reasons for non-storage of agricultural commodities by the farmers in warehouses. It was seen that majority of small farmers, about 45 per cent had financial difficulties that prevent them from storing agricultural produce in warehouse, while 30 per cent reported that low yields from small land holdings made storage impractical and 25 per cent of small farmers had the problem of non-availability of warehouse facilities for farmers as the warehouse managers refuse to accept their

Table 1. Classification of the sample stakeholders in study area

S. No	Stakeholder	Size of stakeholder	Percentage (%) in total sample size
1	Farmers	60	60
2	Investors	8	8
3	Warehouse Managers	4	4
4	Technical assistants	8	8
5	Junior Assistants	8	8
6	H&T contractor	4	4
7	Labour,	8	8
	Total sample size	100	100

Table 2. Category reasons for non-storage of agricultural produce in warehouses (Multiple response)

Problems/ Constraints	Categories of farmers (Frequency)		
	Small	Medium	Large
Non availability of warehouse facilities for farmers	5 (25)	15 (75)	18 (90)
Financial problems that induce early sale of produce	9 (45)	1 (5)	0 (0)
Selling produce at MSP is satisfactory	0 (0)	1 (5)	0 (0)
Price fluctuations during the period of storage	0 (0)	2 (10)	2 (10)
Fear of storage loss	0 (0)	1 (5)	0 (0)
High storage costs	0 (0)	0 (0)	0 (0)
Small land holdings with low yields	6 (30)	0 (0)	0 (0)
High transportation costs, loading and unloading costs	0 (0)	0 (0)	0 (0)
Total number of farmers	20 (100)	20 (100)	20 (100)

Figures in parenthesis indicate percentage to total

produce for storage. About 75 per cent of medium farmers faced the problem of non-availability of warehouse facilities for farmers and about 10 per cent of them quoted price fluctuations as the reason for non-storage and 5 per cent had financial problems and other 5 per cent had quoted storage losses may occur during storage. It was seen that 90 per cent of large farmers had the problem of non-availability of warehouse facilities for farmers and 10 per cent of them quoted price fluctuations may occur during storage as the reason for non-storage.

Using Garrett's ranking technique, the various problems faced by farmers were studied and the results are presented in descending order of their relative importance in Table 3. All the sample farmers identified eight major problems encountered in storage of commodities in warehouse. The most important problem identified by the farmers in the study was non-availability of warehouse facilities for farmers, the results were supported by Kappa et al. [8]. as storage in warehouse is utilized by government agencies like Food Corporation of India and Civil Supplies Corporation. The second major problem identified by the farmers was the financial problems faced by the farmers for clearing debts which induce early sale of the produce. The next

highest rated factor was selling the produce at MSP is satisfactory to the farmers based on their level of investment. Price fluctuations during the storage was ranked the fourth major problem, due to which the farmers sell their produce immediately after harvesting, the results were supported by price fluctuations [9]. This was followed by the problem of storage losses caused by infestation of pests and damage due to rodents which deteriorate the quality of produce, there by decreases price of commodity. High storage costs ranked the sixth followed by smaller land holdings with low yield was ranked as seventh. Farmers ranked High transportation, loading and unloading costs as eighth and the results were supported by excess transportation cost [10].

With the help of Garrett ranking technique, various problems faced by warehouse investors were ranked in descending order of their importance as shown in the Table 4. In the system the major problem faced by investors was less receipt of stock for storage in godown followed by rejection of stocks due to poor quality. Payments from government entities for storing commodities is low is ranked the third. Next to it was unavailability of labour for loading, unloading and stocking of lots.

Table 3. Ranking of constraints faced by the farmers in warehousing system

Problems /constraints	Garrett's mean score	Rank
Non availability of warehouse facilities for farmers	71.77	I
Financial problems that induce early sale of produce	55.70	II
Selling produce at MSP is satisfactory	51.48	III
Price fluctuations during the period of storage	51.03	IV
Storage may cause storage losses	44.25	V
Unable to bear storage costs	43.17	VI
Small land holdings with low yield	40.42	VII
High transportation costs, loading and unloading costs	40.18	VIII

Table 4. Ranking of problems and constraints faced by the Warehouse investors in Warehousing system in Telangana

Problems/ constraints	Garret's mean score	Rank
Less arrivals of stock for storage in godown	69.37	I
Rejection of stocks due to poor quality leads to less quantity of storage in godown	62.5	II
Low payments from government entities for storing commodities	41.25	III
Unavailability of labour for loading, unloading and stocking	33.75	IV

Table 5. Ranking of constraints faced by the Warehouse Managers in Warehousing system in Telangana

Problems/ constraints	Garrets mean score	Rank
Unavailability of labour for loading, unloading and stocking	56.5	I
Responsible for unjustified losses during storage	43.5	II

The major problem faced by Warehouse managers in the warehousing system was the unavailability of labour for loading, unloading and stocking of the arrivals and responsibility for unjustified losses during storage ranked second (Table 5.)

Analysis of various problems faced by Technical Assistants in the warehousing system revealed five different problems which were ranked accordingly using Garrett's ranking technique as shown in Table 6. The major problem identified by the Technical Assistants was frequent changes in standard operating procedures. The next major problem identified is lengthy analysis procedure followed before accepting stocks. This issue leads to stocking of lots in the next day where damage due to rodents may become problematic. However, extended working hours during peak season was ranked third followed by

problem with labour during dumping the arrivals on platform before analysis. The last and minor problem identified was Pressure from millers to accept rejected stocks.

Analysis of various problems faced by Junior Assistants in Warehousing system revealed (Table 7.) that maintaining stock pest free as the major problem and it is managed by fortnightly sprayings. The second most important problem identified is losses caused by rodents, the results were supported by Raheja and Mehrothra (1980) and they are managed by trapping them. The next problem reported is damage due to monkeys. Extended working hours during peak season and record keeping become a problem, as records were not properly maintained are reported as fourth and fifth most problems respectively.

Table 6. Ranking of constraints faced by the Technical Assistants in Warehousing system in Telangana

Problems /constraints	Garrets mean score	Rank
Frequent changes in Standard operating procedures	65.62	I
A lengthy analysis procedure before accepting stocks	60.62	II
Extended working hours during peak season	58.75	III
Problem with labour during dumping	34.37	IV
Pressure from millers to accept rejected stocks	30.62	V

Table 7. Ranking of constraints faced by the Junior Assistants in Warehousing system in Telangana

Problems/constraints	Garrets mean score	Rank
Maintaining stock pest free	63.12	I
Losses caused by rodents	51.25	II
Damage due to monkeys	48.75	III
Extended working hours during peak season of the year	46.88	IV
Problem in record keeping	40	V

Table 8. Ranking of constraints faced by the H&T Contractors in Warehousing system in Telangana

Problems/ constraints	Garrets mean score	Rank
Labour unavailability for loading, unloading and stocking	54.75	I
Competition for getting contract	50	II
Less payments for transportation from SWC	45.25	III

Table 9. Ranking of problems and constraints faced by the Labour in Warehousing system in Telangana

Problems/ constraints	Garrets mean score	Rank
Lack of employment throughout the year	62.375	I
Migrated from native places for work	57.875	II
Lack of proper facilities for living	46.375	III
Low wage rate	33.375	IV

Table 10. Suggestions of farmers to address problems in Warehousing system in Telangana (Multiple response (N = 60))

Suggestions	Frequency	Percentage
Small capacity warehouses should be constructed for every village	22	36.7
MSP prices should be increased	21	35
Warehouses should accept their produce for storage	17	28.3

Table 11. Constraints faced by stakeholders in warehousing system in Telangana

S. No	Stakeholders	Primary constraint	Secondary constraint
1	Farmers	Non-availability of warehouse facilities	Financial problems inducing early sale of produce
2	Warehouse investors	Low arrivals of stock for storage	Rejection of stocks due to poor quality, both issues lead to reduced returns on investment
3	Warehouse Managers	Labour unavailability	Responsibility for unjustified losses during storage
4	Technical Assistants	Changes in standard operating procedures	Long working hours during peak seasons
5	Junior Assistants	Difficulty in maintaining pest-free stock	Storage losses caused by rodents
6	H&T Contractors	Unavailability of labour for loading, unloading, and stocking of lots	Competition for getting contract
7	H&T Labour	Lack of frequent work opportunities	Migration from native places in search of work

Garretts ranking analysis of problems faced by the H&T Contractors ranked and presented in descending order in Table 8. All the sample stakeholders ranked Unavailability of labour for loading, unloading and stocking as major problem as the labour are migrated from Bihar work and they are not available throughout the year. The second major problem is

competition for getting contract, where anyone can compete for this. Less payments for transportation from SWC was ranked as least problem.

The major problems faced by the Labour in warehousing system was identified using Garretts ranking technique and the results are

presented in descending order of their relative importance in Table 9.

All the labour identified four major problems encountered in warehousing system. The most important problem identified is "Lack of employment throughout the year" as work is provided as the arrivals are not regular. The second most important problem is labour is migrated from native places for work. There is no proper place of living for labour is the third and wage rate for work is low as fourth most important problem.

3.1 Suggestions from the Stakeholders

In order to deal with the problems faced by the stakeholders in warehousing system, various suggestions were made by the stakeholders as shown in the Table 10.

Warehouse investors suggested that regular arrivals and increased payments from the government entities for better performance of warehousing system. Warehouse managers and H&T contractors suggested that providing shelter to labour can reduce the problem of labour unavailability.

4. CONCLUSION

Garrett's ranking technique was used to identify the constraints of stakeholders in warehousing system in the study area. Labour had suggested that providing regular employment and a place for their living reduce their difficulties. Technical Assistants suggested that following a single Standard Operating Procedures for accepting the arrivals is beneficial.

5. LIMITATIONS

The study area was confined to be smaller, hence the results may not be applicable to other geographical regions. Due to time constraint, wide area was not selected for the study. The responses from the stakeholders are on recall basis.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

I, hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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