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Inventory management of maize value chain partners in Telangana state of India

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Abstract
The current investigation was carried out in four major maize growing districts of Telangana with a sample of 160 maize growers and 80 stakeholders. Value chain management involves various activities and corresponding actors who have some stake or add value at every stage of value chain. Inventory management is an essential part of supply/value chain systems that plans, implements and controls the storage, forward and reverse flow of goods between the producer and a consumer. Medium level of inventory management was observed by majority of the maize growers, whereas in case of other stakeholders more than half were reported with high level of inventory management.

Keywords: Value chain management, inventory management, maize value chain, stakeholders

Introduction
A value chain is a collection of activities that are performed by a company to create value for its customers (Porter, 1985) [1]. Value chain management involves various actors and their activities right from the raw material until the product reaches to the final consumer. This can be represented as primary activities and support activities. The primary activities are such activities which are directly involved in production, the supporting activities include facilitating activities such that the primary activities are carried out at ease (Porter, 1985) [1].

Inventory management facilitates the balancing of demand and supply in any business. To effectively monitor and manage the upstream and downstream channels amongst various stakeholders, inventory plays a vital role. It is an essential part of supply chain management that plans, implements and controls the storage, forward and reverse flow of goods between the producer and a consumer. There are many instances we observe that the core of any efficient supply chain or value chain intervention to be just about production or networks amongst various stakeholders or value chain partners. However, in reality the heart of these relationships is inventory movement and storage. When we talk about inventory in supply/value chain management, it is obvious that this happens at every chain partner level.

Maize has traditionally been grown as a staple food crop primarily for domestic consumption. However, in recent years, its demand was increased manifold because of its other diversified end-uses such as poultry and cattle feed, high quality starch and a wide array of industrial derivatives and different variants of food items such as sweet corn, popcorn, baby corn and other corn-based fast-food items. Also, maize is less water demanding than other cereal crops and being a C4 plant it gives higher yield per hectare in shorter period. Maize consumption in India can be broadly seen in three important categories i.e., feed, food and industrial. Feed accounts for about 60 percent of the maize consumption in India. The important actors in maize value chain in India are farmers, aggregators/traders, processors (Feed industry/ Starch industry), and consumers (Poultry industry/Food or feed industry).

Methodology
Exploratory research design was followed in the current investigation. The investigation was confined to four dominant maize growing districts of Telangana. The sample included 160 maize growers and 80 other stakeholders comprising various agencies involved in handling, storage and distribution of maize, industry firms, large scale processors, poultry farmers, few food manufacturers and traders. Inventory management was operationally defined as the degree to which value chain partners organize and control the quantities of physical goods either in the form of inputs or semi-finished or finished goods awaiting for production or further transformation or sale in future.

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The questionnaire consisted of various statements which were measured on a 3-point scale *viz.,* 3, 2 and 1 for agree, undecided and disagree respectively. The scores of all the statements were summed up to arrive at a total score of each respondent. The respondents were categorized into low, medium and high categories based on class interval technique. Further, a separate categorization was made specifically for stakeholders.

Results and Discussion
It can be observed from figure1, that majority (63.13%) of the maize growers had medium level of inventory management indicating that maize growers are able to manage their raw material/input stocks efficiently. Most opined that they always ensured to get exact quantity of inputs such that inputs won't get damaged and wasted. Some were even aware that few inputs have a shelf life and cannot be stored beyond expiry date.

More than half (58.75%) of the stakeholders had high level of inventory management. Further a separate analysis for stakeholders was done excluding the sample of six traders as shown in figure 2. While interviewing with the managers of storage, distribution and logistics agencies, it was observed that they take appropriate measures to maintain the stock at godowns. They ensured and verified the condition of warehouses such that stocks will not get damaged. They opined that maintaining the record of the stocks available at godowns helps in reducing extra transit costs and loss of produce in handling. Most (50%) of the poultry farmers had high level of this trait (figure 2) and industry firms (44.45%) too ranged between high to medium level since they opined maintaining stocks is a necessary evil in their business meaning stock management though appears not much important, but it is an inevitable operation on the basis of which production, supply and demand fluctuations rely upon. But few other industry firms (more than half as seen from figure 2) were reported with low level indicating their lesser importance focussed on inventory.
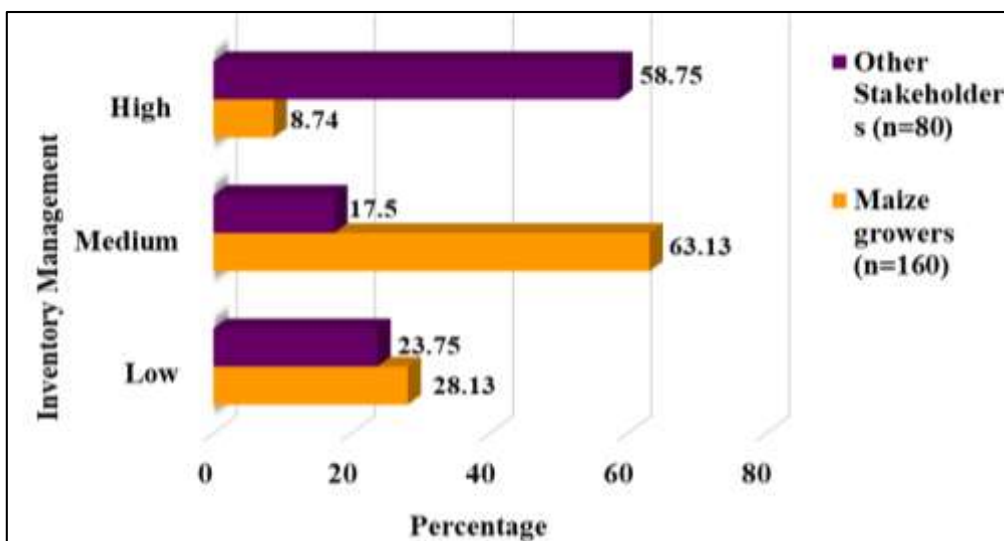

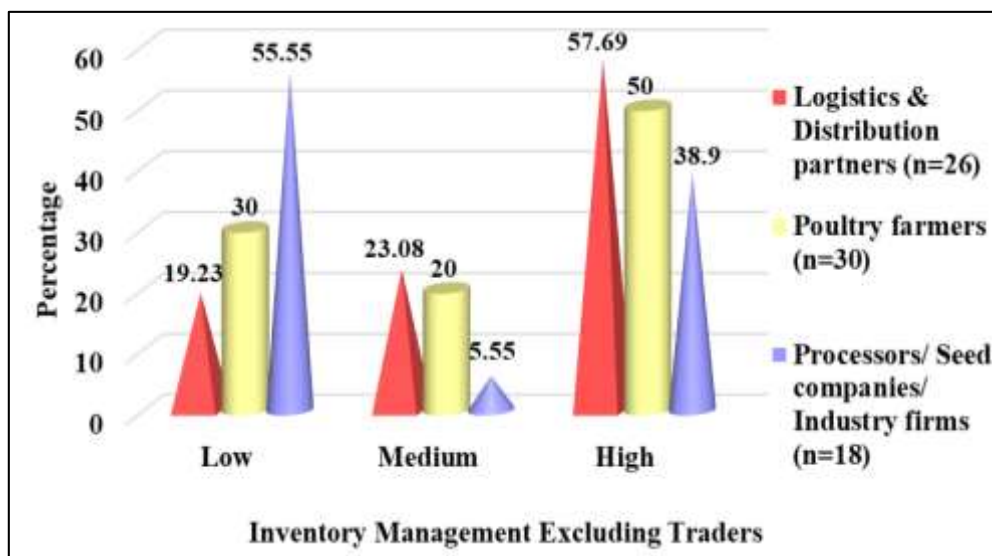**Fig 1:** Distribution of respondents according to their inventory management

Fig 2: Distribution of other stakeholders according to their inventory management

Conclusions
Inventory management is one such aspect of supply/value chain management which connects and bears an effect on all other activities. In current investigation, a sample of 160 maize growers and 80 stakeholders were analysed on this trait and was observed that for majority of maize growers, inventory management was medium and for most of the other stakeholders it was in between medium to high range. Efforts

may be directed such that farmers are made well aware of the pros and cons of the inventory in managing their farming besides they can also be enabled in efficient management of their inventories.

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