

Asymmetric Effects of Cereal Crops on Agriculture Economic Growth: Case Study of Pakistan

Zaib-Un-Nisa^{1*}

¹Bahauddin Zakariya University, Multan, Pakistan

<p>Abstract: Agricultural marketing includes all activities which add value to agricultural products as they move from areas of agricultural production to ultimate consumption points. An effective and efficient marketing system is required in order to ensure fair returns to stakeholders but unfortunately little attention was paid to this sector in Pakistan. This resulted in welfare risk to stakeholders as price variation and values are common phenomena in the country. Public and private sectors jointly run agricultural marketing system in the country, as public sector is responsible for framing and implementing rules and regulation whereas private sector operates the system. Agricultural markets are governed under the Agricultural Produce Markets Ordinance 1978 which needs to be updated Due to poor post-harvest management practices, almost 25-40% produce is wasted which caused considerable value losses. In this chapter, an effort has been made to describe theoretical foundation of agricultural marketing along with highlighting the marketing system of major and minor agricultural commodities in Pakistan and the role of various institutions and regulations. Marketing efficiency is often understood in terms of marketing margins, physical losses and state of market competition. These indicators are also discussed in this chapter. Further, a section is devoted to identify major agricultural marketing problems with their possible solutions.</p> <p>Keywords: Agricultural marketing, Market efficiency, Marketing margins, Post- harvest losses, Risk.</p> <p>Copyright © 2023 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.</p>	<p>Review Paper</p>
	<p>*Corresponding Author: <i>Zaib-Un-Nisa</i> Bahauddin Zakariya University, Multan, Pakistan</p>
	<p>How to cite this paper: Zaib-Un-Nisa (2023). Asymmetric Effects of Cereal Crops on Agriculture Economic Growth: Case Study of Pakistan. <i>Middle East Res J. Agri Food Sci.</i>, 3(3): 36-46.</p>
	<p>Article History: Submit: 27.07.2023 Accepted: 02.09.2023 Published: 04.09.2023 </p>

INTRODUCTION

Agriculture sector in Pakistan is considered a major contributor to economic growth and development. This sector not only meets food demands of population but also provides raw material for industry besides providing surplus for exports. Although this sector has witnessed many ups and downs in the recent past, overall growth has remained satisfactory. This sector has great potential to support the national economy in future if due attention is given to solve emerging issues. Sustainable agriculture growth and development depend on how concerns of various stakeholders particularly farmers who are facing several risks in production and marketing of their produce, are adequately addressed. Often, growers have to bear value reduction in their produce due to poor infrastructure and post-harvest practices. Moreover, frequent food surpluses and shortages have highlighted the need to modernize marketing system so that such situations can be handled.

Market

Market can be defined and understood in different ways but commonly it is recognized as a place

or areas where buyers and sellers gather and interact for buying and selling goods and services. In a more solemn language of management sciences, market is referred as an exchange process of goods and services accompanied by price making mechanism.

Agricultural markets perform a central role of assembling agricultural commodities from scattered and vast production areas and distribute these commodities further to consumers and other stakeholders in urban and peri-urban areas. In terms of scope, these markets are generally of seven different types, which are discussed below;

- i. **Assembly Markets:** In these are rural markets, farmers and small village assemblers sell their agricultural products to larger traders and agro-processors. These markets mainly function to assemble agriculture products which are produced in distant and dispersed farms and enable buyers to buy in significant volumes at one place. These markets may be temporary or permanent. In case of temporary markets, farmers and buyers in certain hours during the

peak marketing season gather for accomplishing the exchange process. Permanent assembly markets function once or twice a week.

- ii. **Wholesale Markets:** These markets operate in towns and cities. Their major functions include assembling of agriculture produce brought by farmers, contractors and other marketing agents from different production areas and their subsequent distribution to urban areas or channelize agricultural produce for export. In the wholesale markets, a wide range of retailers such as shop keepers, street vendors and roadside sellers purchase their supplies for onward sale to consumers. Wholesale markets may also supply agricultural produce to agro-processors, wholesalers from other areas and exporters.
- iii. **Retail Markets:** Retail markets operate everywhere in cities, town and villages to serve needs of consumers. They may supply wide range of products such as fruits, vegetables, meat, pulses and other processed food items. Although they mostly operate on permanent basis, some retail markets may function on certain days of the week. In Pakistan, retail markets are operating in several formats such as permanent shops, roadside vendors and street hawkers. More recently, supermarkets and modern stores are increasingly becoming important retail outlets in Pakistan.
- iv. **Weekly Markets:** These markets are often organized to facilitate consumers to purchase food and agricultural commodities in bulk at cheaper prices in vicinity of their homes. In some areas these markets are organized on Sunday (*Itwar bazars*) and in some areas on Friday (*Jumma Bazars*). Normally food retailers from the nearby areas and farmers come to these markets to sell their produce.
- v. **Occasional Markets:** These markets are organized on special occasions such as *Eid-al-Adha*. Local governments make arrangements for such markets and market committees regulate various market functions in these markets. Generally, these markets are organized at some specific places around the outer borders of city areas.
- vi. **Consumer Convenience Markets:** Recently in Pakistan, an initiative has been taken to establish consumer convenience markets on regular basis. In these markets, basic infrastructure and facilities are provided so that sellers can sell their produce in a comfortable environment. Similar facilities are also provided to consumers. These markets are now common in big cities such as Lahore, Islamabad, and Faisalabad.
- vii. **Farmers' Markets:** It is often understood that farmers are generally exploited by market

intermediaries. It is therefore required to establish farmers' markets to provide them opportunities to sale their produce directly to consumers. This may enable them to earn their legitimate share by avoiding money which otherwise could have gone in the pockets of middlemen. These markets are generally established on public-private joint partnership and operated by the elective committee of farmers. Such initiative has been announced by the Govt. of Punjab for vegetable in the form of trading platforms for vegetables in different clusters of vegetable production.

Marketing

The term marketing may be defined in many ways. According to American Marketing Association, marketing can be defined as "performance of business activities that direct the flow of goods and services from producer to consumer, so as to reach the consumer at the time, place and in the form he desires and at a price he is willing to pay." As such, marketing performs all those tasks which ensure that products are available for consumption:

- At the convenient place,
- In the form desired by consumers, in the required quantity and quality
- At the desired time and at fair prices

Agricultural marketing encompasses activities which may include picking/harvesting, drying, cleaning, sorting, grading, processing, packaging, labeling, transporting, storage, promotion and sale of agricultural products. All these activities contribute in adding value to agricultural products as these products flow from producers to consumers. While some of these activities are performed on farm, the other are carried out off-farm by other market intermediaries such as traders and agro-processors.

According to another definition, "marketing consists of identifying customer needs and satisfying such needs in a profitable manner." According to this definition marketing is a customer-oriented and profit-driven process which is based on long-term and mutually beneficial relationships between sellers and customers. Hence, the scope of marketing cannot be confined to just producing products and then making efforts to sell it. Rather, the focus is on producing only those products that can be sold at remunerative prices. This implies that consumer needs and wants should guide on what to produce, how to produce and how, where and when to sell. In case of agricultural marketing, farmers and agro-enterprises need to analyze the market for determining consumer needs and then develop products or services. Only in this way, they can satisfy the needs of consumers and generate a profit.

Agricultural products differ from industrial products due to their perishable nature and special

requirements during various farm and marketing operations. But, this does not imply that the field of agricultural marketing is something entirely different from marketing of industrial and other products. It is simply application of principles of marketing in agriculture sector.

Agricultural marketing covers several activities and services which are performed when agricultural products move from farm areas to consumers. Some of these activities include production planning and production activities, harvesting, clean, sorting, grading, packing, transport, storage, processing, distribution, product promotion and sale. Successful performance of these activities cannot take place without adequate and timely availability of information and are finance. Since customer orientation and profit is the key focus of marketing, all those who are involved in marketing chains must have an in-depth understanding of customer requirements in terms of desired product attributes so that these can be met at minimum marketing costs. Given this, agricultural marketing includes all business activities designed to plan, price, promote and distribute want satisfying goods and services to household consumers and industrial users.

Agricultural Marketing System in Pakistan

Pakistan's agricultural marketing is characterized with numerous market players who perform different functions in transferring farm produce to consumer. It is observed that an agricultural commodity changes seven to eight different hands before reaching ultimate consumer (Mohy ud Din, 1998). Functions performed by various market functionaries (especially the middlemen in the market chain) remain one of the most controversial issues in Pakistan's agricultural economy. It is argued that middlemen exploit marginal farmers and hamper their legitimate share. Infrastructure plays vital role in facilitating and ensuring smooth functioning of agricultural marketing system (Aftab, 2007). Wholesale markets for instance, act as a cardinal link between producers and consumers and are operated by public and private sectors. Most of the wholesale markets in the country however give a poor look and lack basic infrastructure (efficient logistics, storage and other marketing facilities), putting farmers at a disadvantageous situation while selling their produce. Currently in Punjab, there are 152 wholesale grain markets, 95 fruits and vegetable markets, 81 feeder markets and 11 markets are working in private sector.

There is limited storage capacity (6-7% of total agricultural production) in the public domain and that too is limited to few commodities. Existing cold storage facilities are not evenly distributed among the province. Punjab dominates with 512 units and Sindh has 25 units, KPK 16 Units and Baluchistan has only 2 units. Most of these facilities are not compartmentalized which causes transfer of odor transfer various commodities placed in cold stores. Another unfortunate fact about existing status is limited processing (3 percent of fruits, vegetables and milk) in the country. There are 121 known pack houses in the country for horticulture crops. Department of Agricultural and Livestock Marketing and Grading (DALPMG) has made grades and standards for 42 agricultural commodities but there still exists a need for framing grades for other commodities besides updating the existing ones. Post-harvest losses are huge which amount to 35-40% of total fruit and vegetable production in the country. The present length of farm to market roads (60,000 km) is crucially less than potential requirements.

Functions performed by middlemen in the wholesale markets of Pakistan are widely debated. It is generally argued that middlemen exploit marginal farmers and deny them their legitimate share. This allegation may not be ignored as many commission agents, bypassing the provisions of Agricultural Produce Market Acts, have been found charging higher commission rates than prescribed. Pre-harvest contractors dominate the marketing system of fruits in Pakistan. They are often allegedly labeled to over utilize their power. However, despite all these allegations, importance and role performed by middlemen cannot be underestimated.

The performance of agricultural marketing system is generally judged by market margin approach which shows relative share of different stakeholders involved in the supply chain of agricultural commodities. It has been observed that share of farmer in consumer rupee is relatively low in case of perishable commodities as compared to non-perishables. In the case of fruits, pre-harvest contractors and retailers get more profit as compared to other stakeholders (Khushk and Sheikh, 2004). Vegetables and other agricultural commodities are no exception to above mentioned observation. The share of different stakeholders in the marketing of fruits and vegetables is presented in Tables 5.1 and 5.2

Table 5.1 Marketing Margins and Producer's Share in Consumer Rupee for Various Fruits in Punjab (%)

Market Agency	Mango	Citrus	Date (Fresh)	Guava
Producer	20	20	37	15
Pre-Harvest Contractor	39	26	20	33
Commission Agent	6	2	6	5
Wholesaler	9	8	13	5
Retailer	26	44	24	42

Table 5.2: Marketing Margins and Producer's Share in Consumer Rupee for Various Vegetables in Punjab (Percent)

Market Agency	Potato	Onion	Tomato	Peas	Carrot	Brinja	Smith				
Grower	56.0	62.1	63.7	49.1	55.0	57.0	55.5	54.9	25.0	56.9	60.6
Commission Agent	-	8.5	11.3	1.5	1.7	7.8	3.4	-	9.0	6.9	-
Wholesaler (Pharia)	-	11.5	2.1	21.0	14.8	-	10.0	16.4	-	12.8	12.4
Retailer	-	17.9	22.9	23.4	28.5	-	26.7	25.3	-	21.3	20.1
Marketing margin	44.0	37.9	36.3	50.9	45.0	43.0	44.5	45.1	75.0	43.1	39.4

Note: A: winter onion and B: Stored winter onion

Pakistan is a developing country and overtime agriculture has proved its central importance in uplifting and supporting the economy of the country but still its real potential needs to be realized. After independence, various governments took several measures to improve agriculture sector. However, the focus of these measures was on productivity enhancement and agricultural marketing remained a neglected area because marketing infrastructure development and post-harvest management of agricultural commodities did not receive adequate attention of policy makers.

Agricultural marketing infrastructure plays a key role in facilitating and ensuring smooth functioning of agricultural marketing system. An efficient logistic system is a pre-requisite for optimal performance of the marketing system. For example, infrequent, expensive and poor quality transport services will put farmers in a disadvantageous position in selling their crops because an expensive service will result in low farm gate prices. Similarly, poor quality roads, coupled with poor storage cause enormous losses of agricultural products, The perishables products such as milk, fresh vegetables and fruits in particular incur major losses because they of their shorter shelf life. As such, all weather roads play crucial role in enhancing market surplus for many of the agricultural products.

Food security and safety have emerged as prominent important concerns particularly in the scenario of recent trade liberalization reforms under WTO. Compliance to national and international standards has become one of the most important requirements for achieving food safety and security. At present, the situation is not satisfactory in Pakistan as many processors and manufacturers lack requisite capacity and know-how to ensure food safety. Businesses lack adequate awareness of modern hygiene and production management practices and requirements and are unable to obtain various food safety certifications such as Hazard Analysis and Critical Control Points (HACCP). As a result, they fail to capture opportunities available in high value markets of Europe, USA and other developed countries.

The food crisis in the past and occasional surpluses and shortages of agricultural commodities underline the need of taking measures by the government to improve the working of agricultural marketing system. Some of the major challenges which need urgent

attention of the government include poor farm to market roads, price volatility, inadequate storage capacity, poor value addition, inefficiencies in factor and product markets, poor tation of grades and standards.

Approaches to Understand Agricultural Marketing System

Agricultural marketing is a process of facilitating stakeholders that include suppliers, farmers, market agents, processors, retailers and consumers. These marketing practices are performed in different ways in Pakistan and in order to understand these market practices, a complete exploration of processes involved is necessary. To this end, following section describes various approaches which can be used to understand marketing system of agricultural products in Pakistan. This system can be studied by observing different functions performed or by analyzing the role of various agencies/ institutions involved in the agricultural marketing process or taking a commodity as case study.

Functional Approach

Under the functional approach, various activities performed in the marketing system are broken down into separate functions. A marketing function is a major specialized activity performed in accomplishing the marketing process. The activities involved in agricultural and food marketing processes are generally classified in three set of functions as under;

- i. Exchange functions
- ii. Physical functions
- iii. Facilitative functions.

Exchange Functions

This set of functions refers to those marketing activities which are related to transfer of ownership of goods and are mainly related to price determination process in the marketing chain. The exchange function has two sub-functions i.e. buying and selling. The primary objective of both buying and selling functions is the negotiations of favorable terms of exchange.

Physical Functions

Physical functions are those activities that involve handling, movement and physical change of the actual commodity itself. They are involved in solving the problem of when, what and where in marketing. It is composed of storage, transportation and processing.

- **Storage Function**

It is concerned with making goods available at the desired time. This function many involve various activities such as holding of large quantities of raw materials in elevators for further processing and storing finished goods products as inventories by processors, wholesalers or retailers.

- **Transportation Function**

Making goods available at the proper place is classified as transportation function and includes various activities related to preparation of for shipment such as crating and loading and unloading. Adequate performance of this function also requires weighing alternative routes and vehicle types as they might affect transportation costs.

- **Processing Function**

Most of the agricultural products cannot be consumed in raw form and need conversation. Hence, processing functions are performed to convert raw agricultural products into forms in which consumers can consume products. For instance, converting live animals into meat, meat into flour and bread and fresh peas into canned or frozen peas.

Facilitating Functions

These functions facilitate the smooth performance of exchange and physical functions and neither directly involved in the exchange of title nor the physical handling of products. Without facilitating functions, efficient functioning of modern marketing system is not possible. That is why, they are sometimes called the grease that makes the wheels of the marketing machinery move ahead. In facilitating functions, standardization, financing, risk bearing and market intelligence functions are included.

a. Standardization Function

It facilitates buying and selling by establishing and maintaining uniform quality and quantity measurements. Effective standardization is critical for efficient pricing process. Standardization also simplifies the concentration process, because it permits the grouping of similar lots of commodities early in movement from producing points. Monitoring of standards is crucial for ensuring quality control in processing plants and subsequent distribution of products across the marketing chain.

b. Financing Function

Advancing money to carry out various exchange and physical activities is termed financing functions. In case of storage or delay in the distribution of goods, someone must finance the holding of goods. The holding period may be for one year or more, as in operations of the canning industries, or a relatively short time, as in the marketing of perishables. Financing may take the form of credit from various lending agencies or tying up the owner's capital resources.

c. Risk Bearing Function

Accepting the possibility of loss in the marketing of a product is called risk bearing function. Risks in the markets are classified as physical risks and market risks. Physical risks include destruction or deterioration of products because of fire, accident, wind, earthquakes, cold, and heat. Market risks arise because of the changes in value of products as they flow across the value chain. There are various ways of risk bearing and may be the use of insurance companies for covering physical risks and the utilization of futures exchanges for bearing price risks. The entrepreneur himself may bear the risk without the aid of these specialized agencies. The function of risk bearing is often confused with the function of financing. Whereas, the need of financing arises due to the time lag between the purchase and sale of products, risk bearing is associated with the possibility of loss during the holding period.

d. Market Intelligence Function

Marketing intelligence refers to collection, analysis, interpretation and dissemination of data and information required for the smooth performance of various marketing functions. Evaluation of alternate marketing channels, the different ways of performing various functions, and the marketing potential of new products are also often considered as the broader function of market intelligence. This function has assumed greater importance in the modern day marketing because marketing functions cannot be efficiently performed in an information vacuum.

Institutional Approach

The institutional approach for market analysis refers to the study of various institutions and agencies which perform various marketing functions. Whereas the functional approach helps to answer the "what" in the question "who does what," the institutional approach focuses on the "who". Marketing institutions and agencies are the wide variety of business organizations that operate the marketing machinery. The institutional approach focus on human element by investigating the nature and characteristics of various middlemen and related agencies and how they are related and organized to operate marketing machinery.

The middlemen of particular interest in agricultural marketing can be of following types:

- Merchant middlemen (retailers and wholesalers)
- Agent middlemen (commission agents and brokers)
- Processors and manufacturers
- Speculative middlemen
- Facilitative organizations

Merchant Middlemen

Merchant middlemen take title of the products they handle. They buy and sell for their own gain and earn their income from the margins generating from the

sales (i.e. difference between their purchase and sale price). Unlike other classes of middlemen, they are not risk takers and hold uncertainty to a minimum i.e. know likely purchase and sale price. Merchant middlemen include wholesalers and retailers.

a. Wholesalers

Wholesalers buy agricultural produce in bulk and sell to other small wholesalers, retailers or industrial users in smaller lots. They do not sell their produce to ultimate consumers. In terms of business size and characteristics, they are highly heterogeneous group and may be small or large wholesalers.

b. Retailers

This type of merchant middlemen buys goods / services mainly from wholesalers for resale directly to ultimate consumers. They represent numerous types of agencies involved in the marketing process such as street vendors, roadside sellers, temporary and permanent shop-holders and modern retailers including supermarkets. In terms of undertaking marketing functions their role is no easier compared to wholesalers. In fact a retailer may have to do all the functions of marketing i.e. his job is complex. Retailers are also producers' representatives to consumers.

Agent Middlemen

The agent middlemen own the goods and derive their income from the fees or commission paid by their clients for the service they rendered. They do not sell physical goods to customers. Agent middlemen include commission agents and brokers. Their main stock in trade is their knowledge of market in which they participate. They use the knowledge in bringing together potential sellers and buyers. Their services will be retained either by buyers or the seller who feels that he/she does not have knowledge or opportunity to bargain effectively for him/herself.

a. Commission Agents

The difference between brokers and commissions agents is one of degree to which they are given power to handle the product that is being sold i.e. discretionary powers to assist their principals in ensuring that marketing process is accomplished. Commission agents are given more discretionary powers over physical handling of the product, arrangement for terms of sale/purchase, collection of revenue from sale. They are allowed to deduct their commission before remitting the difference to their principals.

Brokers

They are not given any physical control over the product. They ordinarily follow directions from their principals as they have little power over terms of sale or revenue collection. They bring seller and potential buyer together for which they are paid fees.

Speculative Middlemen

They are the middlemen in the market who take title to goods / products with the objective of earning profit from price movements. They are specialized risk takers and take uncertainty as given. They are also called traders, scalpers and spreaders. Speculative middlemen are interested in short term price fluctuations because they derive their income from short term fluctuations in the prices of goods they handle. They emerge in the marketing system because often merchant middlemen are not willing to take risk involved in purchasing and storing of goods for longer period of time. Speculative middlemen play important role in marketing process in ensuring that commodities are available from time to time.

Processors and Manufacturers

Processors and manufacturers perform the function of changing the basic form of agricultural products. Form changing is basically a marketing service because many of agricultural products cannot be consumed in raw form. Manufacturers and processors may take active role in other institutional aspects of marketing such as acting as their own buying agents in the producing areas, wholesaling of finished products and product promotion. In some cases, processing and manufacturing may be only part of activities they get involved in.

Facilitative Organizations

Main function of these organizations is to facilitate the activities of other middlemen of marketing and to ensure that the functions they perform take place in smooth manner. They do not directly participate in the marketing process either as merchants or agent middlemen rather they establish the rules that the other stakeholders have to follow. Some facilitative organizations may perform other functions such as establishing the terms of sale, frames grades and making arrangements of payment for the transactions. Some of these organizations also provide physical facilities for the handling of the product.

Commodity Approach

This approach focuses on specific agricultural commodities as they move from producers to consumers. Agricultural commodity under investigation is monitored across the marketing channel in terms of various functions performed and institutions involved. It helps in understanding various costs incurred and value added on different stages of marketing channel. This approach involves simultaneous application of both functional and institutional approaches on a particular agricultural commodity because different commodities have different problems and hence need different solutions as well.

Marketing of Agricultural Crops in Pakistan

Pakistan's agricultural marketing system is fairly diversified because of the involvement of both

private and public sectors. Private sector agricultural businesses across the marketing channels freely trade agricultural commodities. In the markets, agricultural commodities brought either by farmers or other intermediaries are freely trade and prices are determined on the basis of demand and supply. Sometimes, the public sector manages and controls marketing of some food grains and cash crops such as wheat, rice, maize, sugarcane and cotton.

Marketing of Wheat

In Pakistan, both the public and private sector plays an important role in the marketing of wheat. Private sector purchases wheat from farmers at the market price which is mostly less than the support price announced by the government. Farmers have the option to sell their wheat at the public procurement centers. Farmers may sell their wheat to their nearby village shopkeepers and brokers (Beoparis) who further sell wheat to the public procurement centers or to other private traders in the food grain markets.

Marketing of Rice

Rice is the second staple food and a major export commodities of Pakistan. The export of Basmati rice remained a public monopoly until 1987/88 and the Rice Export Corporation of Pakistan (RECP) was the major institution responsible for the procurement of cleaned rice from private rice millers and middlemen at the support price fixed by the federal government. Since 1987/88, deregulation has resulted in substantial increase in rice exports. The federal government announces the support price for paddy and PASSCO and Trading Corporation of Pakistan (TCP) are responsible institutions for stabilizing the paddy prices.

Marketing of Cotton

Cotton is marketed through three principal operators in Pakistan: growers, village dealers or commission agents and cotton ginners. Cotton is sold by growers to village dealers and commission agents who then sell it to cotton ginners. A small number of growers having larger landholdings sell directly to the cotton ginners. The commission agent, who assembles quantities of cotton sells directly to factories. On the other hand, village dealer is a less significant operator in terms of volume of trade.

Marketing of Sugarcane

Sugarcane is an important cash crop and a major input to the sugar industry in Pakistan. Because of substantial expansion in sugar industry, the area under sugarcane has also considerably expanded. While marketing their sugarcane, farmers either sell it to the village dealers and commission agents or at purchase centers established by the sugar mills in their surrounding areas. After processing in the mills, sugar is marketed to consumer through wholesalers, retailers and utility stores. In addition to sugar, several other by-products such as molasses and bagasse.

Marketing of Mango

Marketing of mangoes in Pakistan is in private hands and the public sector is responsible for ensuring an enabling environment for market promotion. Domestic mango supply chains are fragmented and involve numerous stakeholders. Pre-harvest contractors are the starting point in the marketing of mango but often their contribution to value addition is low because their operations are guided and financed by commission agents. Pre-harvest contractors do not have power to voluntarily change their harvesting and marketing practices. Commission agents control most of the marketing activities such as flow of fruit from contractors to the wholesale market.

Marketing of Apple

Prior to harvesting, the apple growers often sell their crops usually at flowering stage to contractors. When the product is sold, all marketing costs (transportation, handling and storage costs) are deducted and net price is paid to grower. A typical social and economic relationship (provision of credit for production and consumption purposes and marketing advice) exists between growers and commission agents. Majority of the apple growers in the country sell their produce to pre-harvest contractors

Marketing of Dates

Like other horticultural crops, trade of dates mainly rests with the private sector. Marketing of dates starts with pre harvest contractor who brings the produce in fresh condition from orchards to wholesale markets. Commission agents have strong ties with farmers and pre harvest contractors. Grading and standardization practices are not strictly followed especially in its export. Many problems are encountered in the marketing of dates both in the domestic as well as international markets.

Marketing of Livestock and its Products in Pakistan

Livestock is the leading sector regarding its contribution in agricultural GDP. Major livestock products are milk and meat which are obtained from buffalo, cow, goat, sheep, etc. while, minor products include hides, skins, wool, hair, blood, guts, casings, horns and hooves, bones, fats, dung, urine, head etc. Currently, 8.0 million rural families are directly or indirectly involved in rearing of livestock and their livelihood is closely associated with the development of this sector.

Major Agricultural Marketing Problems

Agriculture sector in Pakistan is beset with infrastructural and post-harvest related problems. Existing agricultural marketing infrastructure is neither adequate nor capable to meet current needs of the country. Some problems in the domain of agricultural marketing are summarized.

Lack of Proper and Modern Wholesale Markets

Wholesale markets act as a cardinal link in the marketing chain of agricultural commodities. These markets absorb bulk of the marketed surplus and are main source of supplies to retailers in the big cities and their surroundings. Wholesale markets are increasingly playing an important role not only as major centers of price formation where coordination between production and marketing takes place, but also as an important place for introducing innovations in the marketing practices. Most of the agricultural produce pass through wholesale markets for onward distribution in the consumption areas and to meet export demand.

At present there are reported over 700 fruit and vegetable wholesale markets in Pakistan. The province of Punjab occupies the largest share followed by Sindh, KPK and Balochistan respectively. In Balochistan there are two central wholesale markets for fruits and vegetables, one at Quetta and second at Dera Murad Jamali.

Lack of Farm to Market Roads and Poor Transportation Facilities

Poor farm-to-market roads are a common feature of agricultural marketing system. These roads are often unusable during rainy months and in some cases during chilly winter. There is an immediate need to increase farm to market roads length for improving

farmer’s access to markets. The establishment of all-weather farms to market roads particularly in the remote rural areas should be assigned priority in the upcoming policy reforms.

High freight is charged by transporters due to poor condition of roads, which ultimately increases marketing costs, largely shared by the consumers and farmers. Non-existence of good roads limit the use of economical mode of transporation (e.g., trucks). As such, farmers and traders have to rely upon relatively less efficient mode of transportation (eg carloads, small vans etc.). Poor condition of farm to market roads is also stumbling block in introducing innovations and new teachnology some time (replacement of wooden crates with fiberboard boxes in spite of their positive impact on net returns to farmers).

Inadequate Storage Facilities

Inappropriate storage facilities both in the public and private sector register highest losses during handling operations. The perishable farm produce (fruits and vegetables), due to their specific nature and characteristics, require variable storage conditions. In most cases, produce (especially the perishable products) is stored in shallow pits covered with farm wastes without ventilation, without proper sanitation and preventive measures for insect and disease control. These conditions usually exist in on-farm storage houses.

Table 5.3: Government Storage Capacity ('000' Tonnes)

Agency	2020	2021	2022
1. WHEAT	4339	4339	4339
Provincial	3780	3780	3780
Punjab	2483	2483	2483
Sindh	709	709	709
KPK	365	365	365
Baluchistan	223	223	223
Federal	559	559	559
Food Directorate	-	-	-
AK&NA	64	64	64
Def. Division	54	54	54
PASSCO	441	441	441
2. RICE	826	826	826
3. Cotton (In 000 Tonnes)	77	77	77
Total Capacity	5242	5242	5242

Source: Govt. of Pakistan (2013)

Lack of Modern Cool Chain Infrastructure

Modern cool chain infrastructure is a prerequisite for an efficient agricultural marketing system which is lacking in Pakistan. This is an important contributing in post-harvest losses and quality deterioration which results not only in price stabilization and loss of foreign exchange earnings. Even the existing cold storage facilities are unevenly distributed among various provinces.

Lack of Post-Harvest Technology and Management

Post-harvest losses still remain as one of the most pressing problems particularly for persihables. Despite advances in research, enormous quantitative and qualitative losses still occur. The extent of loss depends on how the commodity is handled from farm to the market. Studies reveal that post-harvest losses are greater than production losses.

Processing and Value Addition

Processing of agricultural commodities is performed to add value and prolong life. This is another good option to make existing supply of agricultural commodities more sustainable. An unfortunate fact about existing status is that only a nominal amount of total production is processed (3 percent of fruits, vegetables and milk) in the country. Some fruits are processed into products like jams, jellies, squashes, juices and pulp. Even many vegetables are processed by extracting moisture/water to prolong their shelf life (e.g. dry vegetables, cutlets and essence etc).

There exists enormous potential of adding value to various agricultural commodities especially perishables in the country which can be exploited by inculcating entrepreneurial skills among stakeholders by offering special incentives by the government to the agribusiness entrepreneurs. In addition role and working of food processing firms (sugar and flour mills) needs to be reviewed and regulated to avoid food crisis.

Poor Physical Handling of Perishable Products

The typical farm products change hands from four to ten times. Initial handling is done in the field during harvest where the product is subject to various

handling operations viz picking, piling, sorting and packaging. During this process significant loss of produce occurs. Careless loading and unloading of perishable farm produce also causes heavy losses. As such, while analysing marketing costs, significant part of total marketing costs is comprised of produce handling cost.

Inappropriate Packing and Packaging

The types of containers used for transporting and storing products (eg fruits and vegetables) vary from place to place. The most popular containers for fruits packing are wooden crates. Irrespective of the structure and properties of the farm products, a common practice is to use whatever container is available. As a result, produce is pressed hard in the crates or carried in oversized containers causing huge loss.

Packaging in prescribed containers (corrugated card board boxes) is an international trade norm/international requirement. Currently, the private sector enjoys an exclusive monopoly in the packaging material industry in Pakistan. There is strong need for offering special incentives to new entrants in this industry.

Table 5.4 Existing Pack House Facilities

Commodity	No	Status
Citrus	92	90 in Sargodha - 85 Active 1 in Khanewal – Active 1 in Peshawar – Inactive Mostly Indigenous
Mango	4	All in Karachi 3 Certified for HWT by Iran and China 9 Plants include 5 Large and 4 Small
Date	9	all in Khairpur Indigenous Low-Tech
Apple	1	1 in Quetta Recently Activated by PHDEC
Onion, Potato	15	All in Karachi, 2 Equipped with Mechanical Grading

Lack of Agricultural Marketing Information System (AMIS)

Availability of accurate and timely marketing information plays an important role in facilitating the process of transactions. In addition this information helps in negotiating and establishing prices for the stakeholders. Farmers are handicapped by lack of reliable information on prices and market conditions. Many farmers take the price dictated by traders or their informal financiers. Even the traders who operate in rural areas are not well informed about the prevailing prices in the wholesale markets. Even If the information is available, it is either too late or inaccurate. Information on daily prices and market arrivals are vital for farmers and village traders in planning shipment of their produce and in negotiating prices.

Measures for Improving Agricultural Marketing System

The importance of wholesale markets in the agricultural marketing system of Pakistan needs no emphasis. These markets confront many problems in the sphere of their operations, management and control. Special training programs in the area of agricultural marketing and post-harvest management should be entrusted to TEVTA with a supervisory role assigned to the agriculture universities of the country in this regard.

CONCLUSION

Agricultural marketing plays a key role in moving agricultural commodities from distant production areas so that they are available for consumption in urban and peri-urban areas. In doing so,

a number of value adding activities and processes such as production planning, harvesting, cleaning, sorting, grading, processing, packaging, transportation, storage and advertising are performed. Although some characteristics such as perishability and seasonality makes agricultural products different from other products, same principles of marketing are applicable in case of agricultural products. Efficient and effective agricultural marketing is essential for ensuring optimal returns to all stakeholders such as growers, traders and consumers. Various approaches available for analyzing agricultural marketing system include the functional, institutional and commodity approach.

REFERENCES

- Ali, S., Liu, Y., Ishaq, M., Shah, T., Abdullah, Ilyas, A., & Din, I. U. (2017). Climate change and its impact on the yield of major food crops: Evidence from Pakistan. *Foods*, 6(6), 39. Available from: <Available from: <https://www.mdpi.com/2304-8158/6/6/39>>. Accessed: Dec. 19, 2018. doi:10.3390/foods6060039. » <https://doi.org/10.3390/foods6060039>. » <https://www.mdpi.com/2304-8158/6/6/39>
- Anyanwu, S. O., Ibekwe, U. C., & Adesope, O. M. (2010). Agriculture share of the gross domestic product and its implications for rural development. *Report and Opinion*, 2(8), 26-30. Available from: <Available from: <https://www.researchgate.net/publication/283301798>>. Accessed: Dec. 15, 2018. » <https://www.researchgate.net/publication/283301798>
- Atif, R. M., Haiyun, L., & Mahmood, H. (2017). Pakistan's agricultural exports, determinants and its potential: an application of stochastic frontier gravity model. *The Journal of International Trade & Economic Development*, 26(3), 257-276. Available from: <Available from: <https://www.researchgate.net/publication/309303574>>. Accessed: Dec. 19, 2018. doi: 10.1080/09638199.2016.1243724. » <https://doi.org/10.1080/09638199.2016.1243724>. » <https://www.researchgate.net/publication/309303574>
- Ullah, A., Khan, D., & Zheng, S. (2018). Testing long-run relationship between agricultural gross domestic product and fruits production: evidence from Pakistan. *Ciência Rural*, 48, e20170854. Available from: <Available from: <http://www.scielo.br/pdf/cr/v48n5/1678-4596-cr-48-05-e20170854.pdf>>. Accessed: Dec. 19, 2018. doi:10.1590/0103-8478cr20170854. » <https://doi.org/10.1590/0103-8478cr20170854>. » <http://www.scielo.br/pdf/cr/v48n5/1678-4596-cr-48-05-e20170854.pdf>
- Breitung, J., & Candelon, B. (2006). Testing for short-and long-run causality: A frequency-domain approach. *Journal of econometrics*, 132(2), 363-378. Available from <Available from <https://www.sciencedirect.com/science/article/pii/S030440760500059X>>. Accessed: Dec. 19, 2018. doi:10.1016/j.jeconom.2005.02.004. » <https://doi.org/10.1016/j.jeconom.2005.02.004>. » <https://www.sciencedirect.com/science/article/pii/S030440760500059X>
- Dickey, D. A., & Fuller, W. A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American statistical association*, 74(366a), 427-431. Available from: <Available from: <https://www.researchgate.net/publication/312992058>>. Accessed: Dec. 19, 2018. doi:10.2307/2286348. » <https://doi.org/10.2307/2286348>. » <https://www.researchgate.net/publication/312992058>
- Dorosh, P. A. (2001). Trade liberalization and national food security: Rice trade between Bangladesh and India. *World development*, 29(4), 673-689. Available from: <Available from: <https://www.researchgate.net/publication/222298786> >. Accessed: Dec. 19, 2018. doi:10.1016/S0305-750X(00)00121-2. » [https://doi.org/10.1016/S0305-750X\(00\)00121-2](https://doi.org/10.1016/S0305-750X(00)00121-2). » <https://www.researchgate.net/publication/222298786>
- FAOSTATE. (2018a). Food and Agriculture Organization (2018). FAO Statistic for 2018, food agriculture statistic report for the year. Available from: <Available from: <http://www.fao.org/faostat/en/#data>>. Accessed: Dec. 19, 2018. » <http://www.fao.org/faostat/en/#data>
- FAOSTATE. (2018b). Food and Agriculture Organization of the United Nation, 2017-18. Available from: <Available from: <http://www.fao.org/economic/est/international-trade/en/>>. Accessed: Dec. 12, 2018. » <http://www.fao.org/economic/est/international-trade/en/>
- GOP- Government of Pakistan. (2018). Government of Pakistan. Economic survey of Pakistan 2017-2018. Finance Division. Economic Adviser's Wing, Islamabad, 2017. Available from: <Available from: <http://www.finance.gov.pk/> >. Accessed: Dec. 22, 2018. » <http://www.finance.gov.pk/>
- GOP. Government of Pakistan. (2017). Pakistan Bureau of Statistics. Available from: <Available from: <http://www.pbs.gov.pk/content/agriculture-statistics> >. Accessed: Dec. 22, 2018. Islamabad - Pakistan: 44000. » <http://www.pbs.gov.pk/content/agriculture-statistics>
- Hatemi-j, A. (2012). Asymmetric causality tests with an application. *Empirical economics*, 43, 447-456. Available from: <Available from: <https://ideas.repec.org/a/spr/empeco/v43y2012i1p447-456.html>>. Accessed: Dec. 19, 2018. doi:10.1007/s00181-011-0484-x. » <https://doi.org/10.1007/s00181-011-0484-x>. » <https://ideas.repec.org/a/spr/empeco/v43y2012i1p447-456.html>
- Hussain, A. H. (2012). Impact of credit disbursement, area under cultivation, fertilizer consumption and water availability on rice production in Pakistan (1988-2010). *Sarhad Journal of Agriculture*, 28(1). Available from: <Available from: https://mpra.ub.uni-muenchen.de/41963/1/MPPA_paper_41963.pdf >. Accessed: Dec. 19, 2018. doi:10.1088/2041-8205/808/2/L49. » <https://doi.org/10.1088/2041-8205/808/2/L49>. » <https://doi.org/10.1088/2041-8205/808/2/L49>

- 8205/808/2/L49.» https://mpra.ub.uni-muenchen.de/41963/1/MPRA_paper_41963.pdf
- Johnston, B. F. (1970). Agriculture and structural transformation in developing countries: A survey of research. *Journal of Economic literature*, 8(2), 369-404. Available from: <Available from: <https://www.researchgate.net/publication/4725103> >. Accessed: Dec. 19, 2018. » <https://www.researchgate.net/publication/4725103>
 - Alexander, M. (2013). An econometric analysis of the relationship between agricultural production and economic growth in Zimbabwe. *Russian journal of agricultural and socio-economic sciences*, 23(11), 11-15. Available from: <Available from: <https://www.researchgate.net/publication/289509538> >. Accessed: Dec. 19, 2018. doi:10.1007/978-94-007-7636-4_5. » https://doi.org/10.1007/978-94-007-7636-4_5.» <https://www.researchgate.net/publication/289509538>
 - Phillips, P. C., & Perron, P. (1988). Testing for a unit root in time series regression. *Biometrika*, 75(2), 335-346. Available from: <Available from: <https://www.researchgate.net/publication/4744135> >. Accessed: Dec. 19, 2018. doi:10.1093/biomet/75.2.335. » <https://doi.org/10.1093/biomet/75.2.335>.» <https://www.researchgate.net/publication/4744135>
 - Ranum, P., Peña-Rosas, J. P., & Garcia-Casal, M. N. (2014). Global maize production, utilization, and consumption. *Annals of the new York academy of sciences*, 1312(1), 105-112. Available from: <Available from: <https://www.researchgate.net/publication/260995060> >. Accessed: Dec. 19, 2018. doi:10.1111/nyas.12396. » <https://doi.org/10.1111/nyas.12396>.» <https://www.researchgate.net/publication/260995060>
 - Raza, S. A., Ali, Y., & Mehboob, F. (2012). Role of agriculture in economic growth of Pakistan. *International Research Journal of Finance and Economics*, 83. Available from: <Available from: <https://www.researchgate.net/publication/228518268> >. Accessed: Dec. 19, 2018. » <https://www.researchgate.net/publication/228518268>
 - Rehman, A., Jingdong, L., Shahzad, B., Chandio, A. A., Hussain, I., Nabi, G., & Iqbal, M. S. (2016). Economic perspectives of major field crops of Pakistan: An empirical study. *Pacific Science Review B Humanities & Social Sciences*, 2(1), 6-35. Available from: <Available from: <https://www.sciencedirect.com/science/article/pii/S2405883116300569> >. Accessed: Dec. 19, 2018. doi:10.1016/j.psrb.2016.09.002. » <https://doi.org/10.1016/j.psrb.2016.09.002>.» <https://www.sciencedirect.com/science/article/pii/S2405883116300569>
 - Sarwar, M. H., Sarwar, M. F., Sarwar, M., Qadri, N. A., & Moghal, S. (2013). The importance of cereals (Poaceae: Gramineae) nutrition in human health: A review. *Journal of cereals and oilseeds*, 4(3), 32-35. Available from: <Available from: <https://academicjournals.org/journal/JCO/articleabstract/CECB450571> >. Accessed: Dec. 19, 2018. doi:10.5897/JCO12.023. » <https://doi.org/10.5897/JCO12.023>.» <https://academicjournals.org/journal/JCO/articleabstract/CECB450571>
 - Seck, P. A., Diagne, A., Mohanty, S., & Wopereis, M. C. (2012). Crops that feed the world 7: Rice. *Food security*, 4, 7-24. Available from: <Available from: <https://www.researchgate.net/publication/257788764> >. Accessed: Dec. 19, 2018. doi:10.1007/s12571-012-0168-1. » <https://doi.org/10.1007/s12571-012-0168-1>.» <https://www.researchgate.net/publication/257788764>
 - Shahbaz, M., Van Hoang, T. H., Mahalik, M. K., & Roubaud, D. (2017). Energy consumption, financial development and economic growth in India: New evidence from a nonlinear and asymmetric analysis. *Energy Economics*, 63, 199-212. Available from: <Available from: <https://www.sciencedirect.com/science/article/pii/S0140988317300336> >. Accessed: Dec. 19, 2018. doi:10.1016/j.eneco.2017.01.023. » <https://doi.org/10.1016/j.eneco.2017.01.023>.» <https://www.sciencedirect.com/science/article/pii/S0140988317300336>
 - Shin, Y., Yu, B., & Greenwood-Nimmo, M. (2014). Modelling asymmetric cointegration and dynamic multipliers in a nonlinear ARDL framework. *Festschrift in honor of Peter Schmidt: Econometric methods and applications*, 281-314. Available from: <Available from: <https://www.researchgate.net/publication/228275564> >. Accessed: Dec. 19, 2018. doi:10.2139/ssrn.1807745. » <https://doi.org/10.2139/ssrn.1807745>.» <https://www.researchgate.net/publication/228275564>
 - Singh, T. (2016). On the sectoral linkages and pattern of economic growth in India. *Journal of the Asia Pacific Economy*, 21(2), 1-19. Available from: <Available from: <https://www.researchgate.net/publication/283848175> >. Accessed: Dec. 19, 2018. doi:10.1080/13547860.2015.1094175. » <https://doi.org/10.1080/13547860.2015.1094175>.» <https://www.researchgate.net/publication/283848175>
 - Sixtus, A. (2010). Agriculture Share of the Gross Domestic Product and its Implications for Rural Development. *World Rural Observations*, 2(3), 1-5. Available from: <Available from: <https://www.researchgate.net/publication/283301798> >. Accessed: Dec. 19, 2018. » <https://www.researchgate.net/publication/283301798>
 - USDA- United States Department of Agriculture. (2017). USDA Foreign Agriculture Services, Available from: <Available from: https://www.researchgate.net/publication/332370154_United_States_Department_of_Agriculture >. Accessed: Dec. 19, 2018. » https://www.researchgate.net/publication/332370154_United_States_Department_of_Agriculture