doi:10.1017/S0043933915002366

An overview of poultry industry in Pakistan

J. HUSSAIN[1], I. RABBANI[2], S. ASLAM[3] and H.A. AHMAD[4]*

[1]Department of Poultry Production, University of Veterinary and Animal Sciences Lahore, Pakistan; [2]Department of Physiology, University of Veterinary and Animal Sciences Lahore, Pakistan; [3]Department of Clinical Medicine and Surgery, University of Veterinary and Animal Sciences Lahore, Pakistan; [4]Department of Biology, Jackson State University, Jackson MS USA
*Corresponding author: hafiz.a.ahmad@jsums.edu

The poultry sector is an important and vibrant segment of agriculture in Pakistan with a significant contribution to the national GDP (1.3%). Commercial poultry production in Pakistan started in the 1960's and has been providing a significant portion of daily proteins to the Pakistani population ever since. During its evolution the industry enjoyed promotional policies of the Government, but has faced several challenges such as disease outbreaks and retail price fluctuations. Despite its important role in the country's economy, not a single scientific study is available on its evolutionary history. The data available in this regard are scattered and lack reliability. This review is an effort to encompass the history of the overall growth of the poultry industry in Pakistan, its present status (2012 statistics) and future directions and challenges. This article may serve as the basic source of information on Pakistan's poultry industry achievements. It will also guide poultry experts and policy makers for developing strategic planning for further growth of the industry.

Keywords: poultry industry; Pakistan; growth; economic importance; potential constraints

Introduction

In Pakistan the poultry sector is playing an important role in bridging the gap between the supply and demand for protein. Commercial poultry farming started in Pakistan in the early 1960s and showed rapid growth over the decades. The early growth of this sector was the result of the promotional policies from the Government and the persistency of the poultry farming community. The Government considered the poultry production chain to be a crucial part of the food processing industry and gave special incentives to this sector, and hence the poultry sector was declared free of sales and income tax as well as exempt from import duties for a number of years (Sadiq, 2004). As a result, during the early

World's Poultry Science Journal, Vol. 71, December 2015
Received for publication August 21, 2013
Accepted for publication July 24, 2015

1970s, the sector saw 20-30% growth per annum, and continued to grow at a rate of 10-15% in the 1980s. The most important reason for this growth was a vibrant domestic market, due to which poultry meat consumption increased more than 4% per year (Sadiq, 2004).

In Pakistan, poultry production is one of the most dynamic and well organised sectors contributing 26.8%, 5.76% and 1.26% respectively to total meat production, agricultural sector and overall GDP. In the last few years, the poultry sector has shown excellent growth and has emerged as a source of employment for more than 1.5 million people (GOP, 2014).

History of the poultry industry in Pakistan

Before 1963 native chickens provided the source of eggs and meat in Pakistan, and these birds produce, on average, 0.769 kg of meat at four months of age (Sahota and Bhatti, 2003a) and lay 30 eggs a year (Sahota and Bhatti, 2003b). These birds were raised as a backyard activity to meet individual household needs. In 1965-66, an improved variety of chicken called Lyallpur Sliver Black (LSB) was introduced by the Department of Poultry Husbandry at the University of Agriculture, Faisalabad. This breed was developed by crossing the native Desi breed with three imported breeds, namely; White Leghorn, White Cornish and New Hampshire in a two-way cross breeding program to develop a breed that could survive under the harsh environmental conditions of rural areas, as well as being capable of producing up to 150 eggs per year (Siddiqui *et al.,* 1979). In the mid 1960's Pakistan International Airlines (PIA), in collaboration with Shaver Poultry Breeding Farms of Canada established Pakistan's first commercial hatchery in Karachi (Sindh Province). At the same time, Lever Brothers Pvt. Ltd. established the first commercial poultry feed mill in the district Rahim Yar Khan in the Punjab province (Memon, 2012).

Introductory period (1965-1970)

In this period, early poultry ventures, especially those involving financial risks, were strongly supported by the government. Poultry production was exempt from national tax levies. Poultry producers were allowed to import genetically improved breeding stocks and equipment as duty free items. The perception of human protein deficiency in Pakistan, excellent profit margins, availability of technologies and support from the Government were the main forces behind shaping the early structure of the industry. The Directorate of Poultry Production in Karachi was established in order to provide extension services to a steadily growing poultry farming community.

Institutional development phase (1971-1980)

With the poultry-friendly policies of the Government and good profits, poultry production developed as a profitable enterprise in Pakistan. The success in this sector encouraged the government to strengthen institutions serving this industry. This era was characterised by the establishment of the Federal Poultry Board in1979 in order to establish an effective link between industry and government. Poultry research institutes were established in 1978 in Karachi and Rawalpindi with assistance from UNDP/FAO funds to provide research services to poultry farmers. This era is considered a boom period in the history of the poultry industry in Pakistan. Special incentives made by the Sindh Government in terms of availability of state land for poultry farming under ten year leases and the nationalisation of other industries by the federal Government attracted a number of entrepreneurs to this sector. However, during this time the poultry industry suffered in terms of limited marketing opportunities due to the imposition of a ban on the export of poultry products. Disease problems, relatively high prices of poor quality feed and a limited supply of feed ingredients further deteriorated the situation. Meanwhile, the Pakistan Poultry Association was established in 1979 to promote lobbying to uplift the status of the industry and farmers. From 1971 to 1980, the poultry industry experienced 177%, 271% and 297% overall growth in total number of birds, total poultry meat production and total number of eggs, respectively (GOP, 2013).

The following are the major policy decisions by the Government that helped the earlier growth of the industry (Memon, 2012):

1. Exemption of taxes from the income earned from poultry farming.
2. Permission to import poultry equipments and flocks under the free list.
3. Leasing of state land at nominal rates.
4. Provision of subsidies on grains to formulate low cost, high quality rations.
5. Declaration of Tuesday and Wednesday as meat-less days all except chicken to promote its consumption.
6. Establishment of Poultry Research Institutes, directorates of poultry production and Federal Poultry Board with the motives to train poultry farmers and provide research services and to create a link between the Government and poultry farming community.
7. Facilitation to the availability of loans through different financial institutions

The depression and adjustment phase (1981-1990)

During this period the poultry industry underwent a unique geographic relocation. In the early 1980's, the size and volume of poultry industry showed a remarkable decrease in the Sindh province. Additionally poultry farms located in different clusters faced a number of problems. Diseases outbreaks and decreased productivity due to climatic stress required long term solutions. Keeping all these constraints in mind, more progressive farmers decided to relocate farms to the relatively cooler and more biosecure northern areas of Pakistan. During this phase the poultry industry experienced 118%, 190% and 94% growth respectively in terms of total number of birds, overall meat production and egg production (GOP, 2013).

Severe disease outbreaks and re-emergence of the industry (1991-2000)

This period was characterised by a number of disasters in the industry, especially from disease. Hydro Pericardium Syndrome (HPS) appeared in 1990 and caused a huge damage to broiler and broiler breeder flocks. Gumboro appeared in 1991-and adversely effected broiler, layer and parent flocks. While the industry was trying to adjust itself from the earlier HPS and Gumboro attacks, another outbreak of Avian Influenza in Murree and Abbotabad in 1995 occurred in the parent flocks and caused up to 80% mortality (Akhtar, 1994; Anjum *et al.*, 1994).

The emergence of these diseases opened new avenues in the industry, whereby prophylactic measures regarding vaccination and biosecurity were introduced. New companies for the import of vaccines and medicines were established. The University of Agriculture in Faisalabad, poultry and veterinary research institutes played important roles in controlling these problems (PPA, 2013a). On the other hand, lack of planning led to an oversupply of parent stock in the country in 1996, which caused a sharp decline in day old chick prices below the cost of production. In 1997, the imposition of a ban by the federal Government on serving lunch in marriage functions (where chicken was consumed) further deteriorated the situation, as it reduced the demand of poultry products in the local market by about 40%. In 1998 chick prices improved and breeding and hatchery companies became more financially secure, but in 1999 the industry again suffered due to the appearance of influenza-like diseases (PPA, 2013a). Despite the industry experiencing heavy losses during this phase, it kept on growing and showed an excellent growth rate in terms of total number of birds produced, overall poultry meat production and total number of eggs produced with the growth values as 99, 125 and 67% (GOP, 2013), respectively.

Poultry farming in recent times (2001 until now)

The poultry industry started to stabilise in the late 1990s by gaining better profit margins on poultry products. New investors entered into the industry and adopted modern technologies such as environmentally controlled housing. In this phase the industry received huge investments from new investors and poultry farming started shifting from open sided houses to new, state of the art barns. The establishment of the University of Veterinary and Animal Science in Lahore in 2002 was a further step towards extending support to this fast growing industry in Pakistan by helping solve disease issues and providing trained personnel. The students obtaining the veterinary medicine and poultry science degrees proved to be an asset for the industry.

Up until 2004 the poultry industry enjoyed excellent growth with good profit margins however, the emergence of avian influenza in South East Asia (Naeem and Siddique, 2006), and its rumoured spread into Pakistan retarded this growth. The imposition of the ban on the import of poultry products by Middle East countries further deteriorated the situation. Despite its ups and downs, the Pakistan industry still attained 127% growth in the total number of birds produced, 126% growth in the total meat production and 71% growth in terms of total eggs produced between 2000 and 2010 (GOP, 2013). The reason behind this extraordinary growth is the existence of the strong base of this industry in Pakistan. Presently the cheapest available sources of animal protein in Pakistan are the eggs and meat from the poultry sector (PPA, 2013a). The overall growth of the poultry industry in Pakistan in terms of total number of birds, total meat and eggs produced is presented in *Figures 1, 2 and 3*.

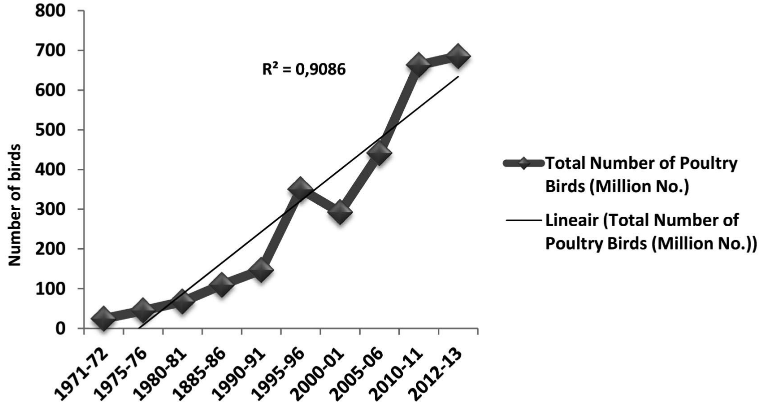

Figure 1 Overall growth in terms of total number of poultry birds (million no.) Source: Federal Bureau of Statistics, Government of Pakistan.

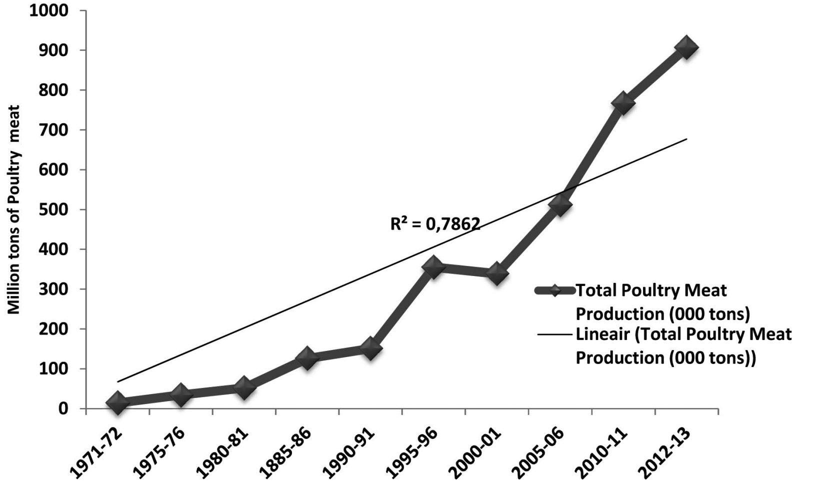

Figure 2 Overall growth in terms of total Poultry Meat Production (000 tons) Source: Federal Bureau of Statistics, Government of Pakistan.

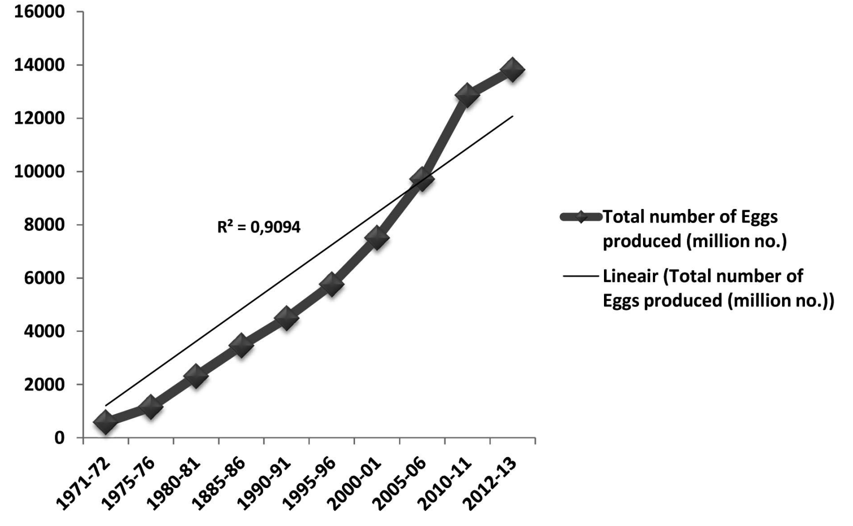

Figure 3 Overall growth in terms of total number of Eggs produced (million no.) Source: Federal Bureau of Statistics, Government of Pakistan.

Present status

Despite showing excellent potential and growth over the years, *per capita* availability of poultry meat in Pakistan is still 5 kg and 51 eggs per year, compared to developed countries where these figures are 41 kg meat and 300 eggs (PPA, 2013b). According to the World Health Organisation (WHO), the average daily requirement for animal protein is 27 g per person, whereas in Pakistan it is only 17 g (Memon, 2012). Out of this 17 g, the share of proteins from poultry is just 5 g, causing a gap of 10 g per person per day. If calculated on an annual basis, bearing in mind the present population of Pakistan (180 million), this gap is 788,000 t of meat. In the national meat pool the share of beef and mutton is either constant or decreasing steadily and the poultry sector has the potential to fill this gap (*Table 1*).

Table 1 Present Status of Commercial Poultry (2013-14 statistics).

Type	Units	2013-14
Domestic poultry	Million nos.	82.08
Cocks	Million Nos.	10.66
Hens	Million Nos.	39.47
Chicken	Million Nos.	31.95
Eggs	Million Nos.	3947
Meat	000 Tonnes	110.79
Duck, Drake & Duckling	Million Nos.	0.50
Eggs	Million Nos.	22.17
Meat	000 Tonnes	0.67
Commercial poultry	Million Nos.	50.1
Layers	Million Nos.	39.86

Table 1 Continued

Type	Units	2013-14
Broilers	Million Nos.	722.39
Breeding stock	Million Nos.	10.19
Day old chicks	Million Nos.	754.54
Eggs	Million Nos.	10586
Meat	000 Tonnes	875.24
Total poultry		
Day old chicks	Million Nos.	786
Poultry birds	Million Nos.	855
Eggs	Million Nos.	14556
Poultry meat	000 Tonnes	987

GOP, 2014

Relationship between the human population and the poultry industry

The human population in Pakistan is increasing at a rate of 2.03% per annum (GOP, 2013). There exists a strong correlation (89.0%) between the human population and poultry growth in Pakistan. This estimate shows the potential for the future growth of this industry in Pakistan (*Figure 4*).

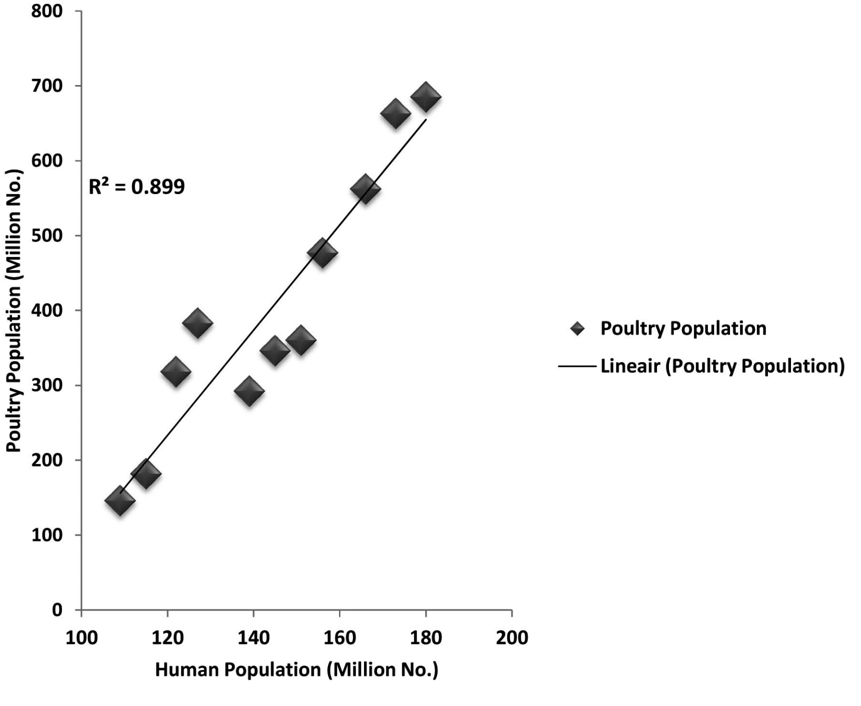

Figure 4 Relation between the growth of human and poultry population in Pakistan Source: Federal Bureau of Statistics, Government of Pakistan.

Comparison of poultry meat with beef and mutton

Poultry production has increased its share steadily in the total meat pool of the country (*Figure 5*). In 1971, the market share of beef was 61%, mutton was 37%, and poultry meat a mere 2-2.5% (GOP, 2013). In 2010 the market share of poultry meat had increased to 25%, whereas beef and mutton had reduced to 55% and 20% respectively (GOP, 2013). It was this dynamic increase in the overall magnitude of poultry sector that decreased the gap between the supply and demand of animal proteins in Pakistan, and also assisted in stabilising beef and mutton prices, making meat affordable to most of the Pakistani population.

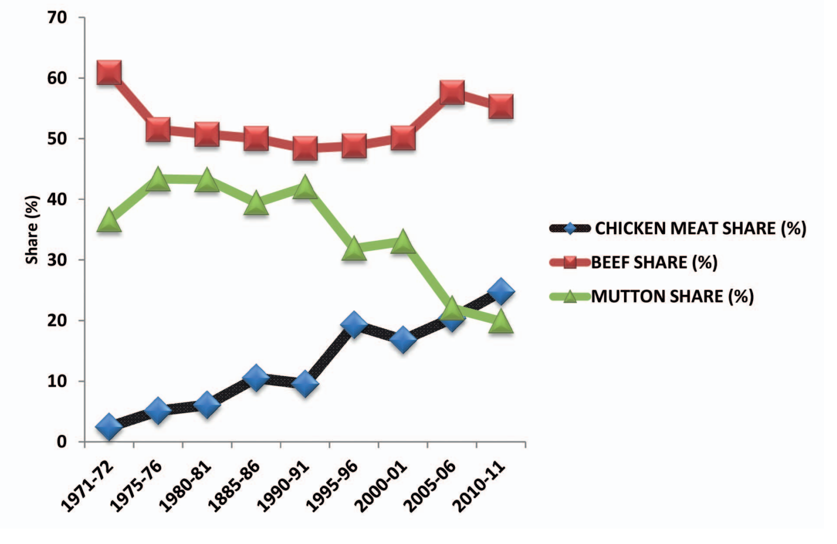

Figure 5 A comparison between the shares of different meat sources in overall meat production of the country (1971-2010) Source: Federal Bureau of Statistics, Government of Pakistan.

Seasonal variation in the prices of poultry products

The demand and supply mechanism governed the prices of poultry products in Pakistan, but there has always existed a huge variation of price of poultry products on a monthly basis, suggesting the influence of seasonal variations being more pronounced than for any other commodity. During the months of extreme heat (May to July) and cold (November to January) weather, day old chick prices were the lowest. This may have been attributed to the increased brooding costs in winter and higher mortality rates in summer. The highest farm gate rates regarding commercial broilers were observed in the months of March and April (GOP, 2013) as these are the months of marriage ceremonies in Pakistan, which increased demand for broiler meat. December and January, being the coldest months, resulted in increased egg consumption and concurrent costs. Seasonal highs and lows in the prices of poultry products have become a regular feature and need to be resolved in order to ensure the stability of the industry. *Figures 6, 7 and 8* depict seasonal variation in prices of day-old chicks, live broilers and eggs (per 30 dozen).

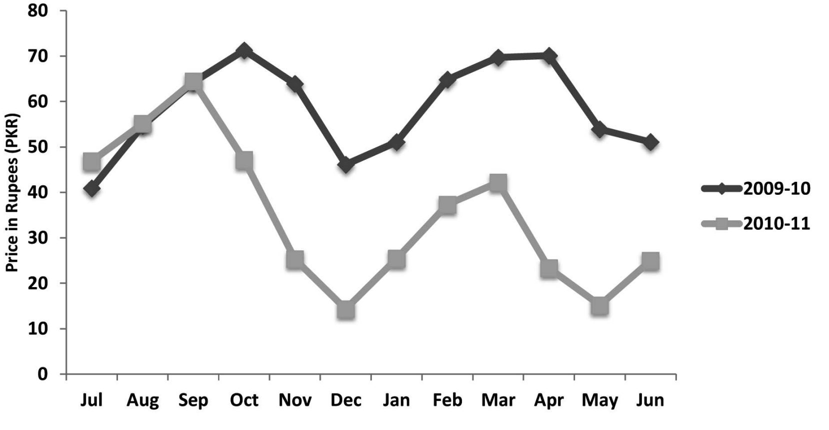

Figure 6 Studying variation in day old chick prices Source: Federal Bureau of Statistics, Government of Pakistan.

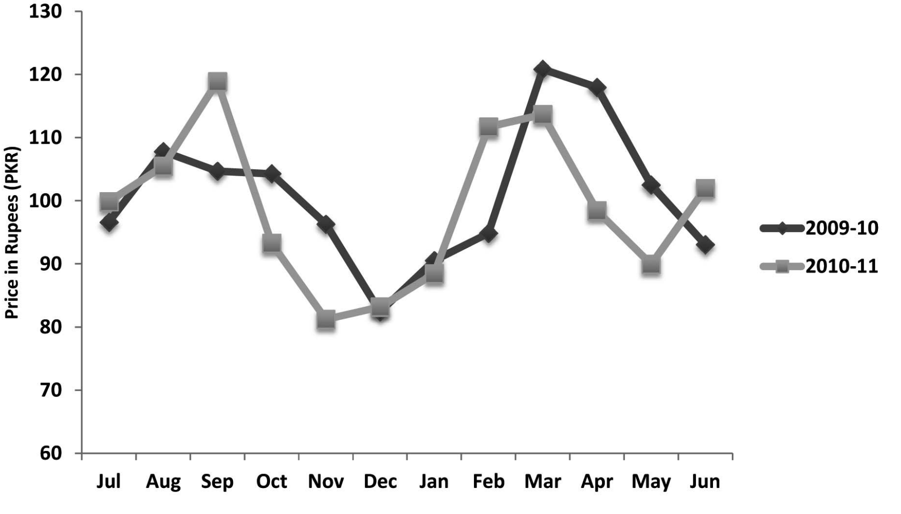

Figure 7 Studying variation in commercial broiler farm gate rates Source: Federal Bureau of Statistics, Government of Pakistan.

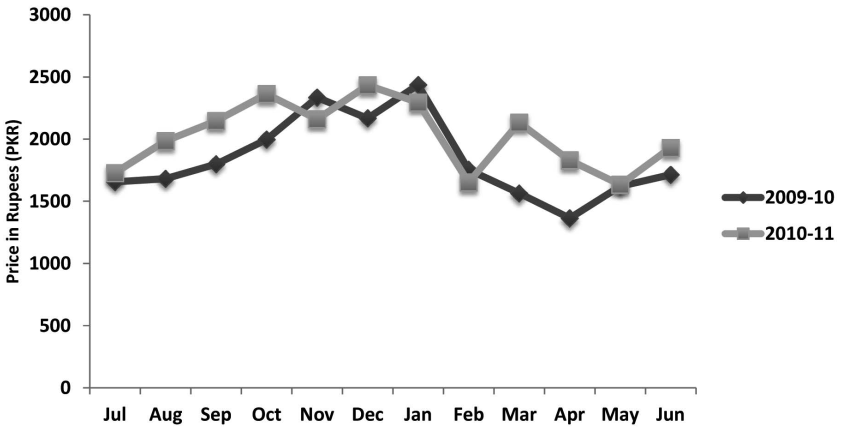

Figure 8 Prices for the eggs per box of 30 dozen Source: Federal Bureau of Statistics, Government of Pakistan.

Exports from the poultry sector

As poultry is sold as guaranteed Halal meat from a Muslim country, the Pakistani industry has potential regarding the export of raw and value added meat products. In previous years Pakistan's poultry sector has shown a little activity regarding the export of live and processed poultry products. In the year 2010-11, it earned Rs. 1.08 billion (according to exchange rate of Pakistan one Pakistani rupee was equal to 0.01172 USD in June 2010) in exports, but in the next year (2011-12) this decreased to Rs. 365 million. The main markets for Pakistani chicken products are Afghanistan, Iran, Turkey, Bahrain, Vietnam and Hong Kong. It still has the scope for exporting value added products, eggs from breeder stocks and day old broiler chicks (Memon, 2012), but this needs to be realised to maximise its potential.

Poultry industry in Pakistan and avian influenza

Regarding poultry diseases, Pakistan was particularly successful in controlling highly pathogenic avian influenza (HPAI) type H5N1. With assistance from the FAO, Pakistan set up a reference laboratory and a countrywide monitoring program. The first outbreak of HPAI in Pakistan occurred in 1995, when HPAI serotype H7N3 was reported in breeding stocks from commercial poultry farming (FAO, 2011) and resulted in heavy mortality and a severe drop in egg production. This disease was controlled by strategic vaccination and selective culling. In 1999, a new serotype of low pathogenic avian influenza (LPAI) H9N2 emerged and is still prevalent throughout the country (FAO, 2011). The HPAI virus type H7N3 emerged again in November 2003 in the southern city of Karachi, mainly affecting commercial layers. The disease subsequently spread to the northern region, primarily affecting breeding stock and causing heavy economic losses. The disease was eventually controlled by culling and vaccination strategies by the end of 2005 (FAO, 2011). The next outbreak of HPAI, caused by serotype H5N1 (bird flu), occurred in commercial poultry between February and July 2006. The disease reappeared in 2007 and 2008 in commercial and backyard poultry respectively. Altogether 22 outbreaks, mainly in breeding flocks, have been reported. From July 2008 to 2011, no new cases of H5N1 were recorded in Pakistan (FAO, 2011).

Conclusions

There is a long list of issues linked with the Pakistani poultry industry and proper strategies are needed to address these in order to show effective presence in international markets. The general law and order situation in Pakistan has been a factor contributing to slower growth of the local poultry industry, especially in the last 10 years. Long hours of power shortage, especially in the extreme hot weathers, caused real damage to the growth of the poultry industry. According to Nazir (2013), Pakistan has not been successful in producing specific pathogen free (SPF) chickens, and suffers from high feed prices (Tauqir and Nawaz, 2001) along with poor quality feed containing high levels of mycotoxins (Saeed *et al.,* 2009). Local poultry farmers need consultancy regarding the selection of suitable sites for constructing poultry farms as previous clustering of poultry farms in a specific locality has created high disease occurrence. Lack of implementation of bio-security plans along with a poor control upon temperature, humidity and ventilation has further deteriorated the situation (Nazir, 2013).

The industry has to control fluctuating prices and maintain a constant income, which means a move towards value added products. No doubt some companies like K&Ns, MENU and Mann-o-Salwa chicken have been successful in their ventures into value added poultry products, but this still needs sustained efforts to create awareness among consumers regarding overall quality and safety of value added products.

Acknowledgments

Research reported in this publication was supported by the U.S. Department of State under Award Number PGA-P210944; and the National Institute on Minority Health and Health Disparities of the National Institutes of Health under Award Number G12MD007581. The content is solely the responsibility of the authors and does not represent the official views of the U.S. Department of State or National Institutes of Health.'

References

AKHTAR, S. (1994) Hydro-pericardium Syndrome in broiler chicken in Pakistan. *World's Poultry Science Journal* **50 (2)**: 177-182.

ANJUM, A.D., SABRI, G.S. and JAMSHIDI, K. (1994) Occurrence spread and control of infectious bursal disease in Pakistan. *Proceedings of 1st PPA-PVMA Punjab, International Poultry Conference* March 30 - April 01, pp. 57-59.

FAO (2011) Pakistan and FAO: Achievements and success stories. *FAO representation in Pakistan.*

GOP (Government of Pakistan) (2013) Federal Bureau of Statistics, Ministry of Finance, Government of Pakistan.

GOP (Government of Pakistan) (2014) Economic Survey of Pakistan, Ministry of finance, Government of Pakistan.

MEMON, N.A. (2012) Poultry: Country's second-largest industry. *Exclusive on Poultry, Nov-Dec 2012.*

NAEEM, K. and SIDDIQUE, N. (2006) Use of strategic vaccination for the control of avian influenza in Pakistan. *Developments in Biologicals* **124**: 145-150.

NAZIR, H.K. (2013) Issues in Poultry Sector & Initiatives of Sindh Poultry Vaccine Centre. *Presented at LDFA Expo2013, Karachi.*

PPA (Pakistan Poultry Association) (2013a) Pakistan Poultry Industry has very strong roots in Pakistan as we just can't see our dinner or lunch without Chicken. June 23, 2013 at 3:03pm.notes/pakistan-poultry-association/pakistan-poultry-industry-poultry-industry-has-very-strong-roots-in-pakistan-as-/609998695692006.

PPA (Pakistan Poultry Association) (2013b) Present Status of Poultry Sector - June 23, 2013 at 3:03pm.notes/pakistan-poultry-association/pakistan-poultry-industry-poultry-industry-has-very-strong-roots-in-pakistan-as-/609998695692006.

SADIQ, M. (2004) Pakistan poultry sector still. *World Poultry* **20 (8)**: 10-11.

SAEED, M.K., AHMAD, I., SAKHAWAT, A., ASHRAF, M., KHURRAM, S., HAQ, I.U. and SHAIKH, M.A. (2009) Comparative evaluation of sorbatox and bentonite for detoxification of aflatoxin contaminated layer feed. *Pakistan Journal of Food Science* **19 (1-4)**: 27-31.

SAHOTA, A.W. and BHATTI, B.M. (2003a) Productive performance of Desi field chickens as affected under deep litter system. *Pakistan Journal of Veterinary Research* **1 (1)**: 35-38.

SAHOTA, A.W. and BHATTI, B.M. (2003b) Growth performance of different varieties of Desi generation-1 chickens maintained under deep litter system. *Pakistan Journal of Veterinary Research* **1 (1)**: 46-49.

SIDDIQUI, M.Z., QAZI, M.A. and SIDDIQUE, A. (1979) Poultry Industry in Pakistan– A Memoe. University of Agriculture, Faisalabad– Pakistan.

TAUQIR, N.A. and NAWAZ, H. (2001) Performance and Economics of Broiler Chicks Fed on Rations Supplemented with Different Levels of Sodium Bentonite. *International Journal of Agricultural Bio*logy **3 (1)**: 149-150.