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Review Article

Status of Poultry Industry in Bangladesh and the Role of Private Sector for its Development

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Abstract

The present study attempts to examine the scenario of poultry industry and the role of private sector for its development in Bangladesh. In Bangladesh, more than half of the people is based on agricultural and livestock farming. The poultry sector is an integral part of farming systems and has created both direct and indirect employment opportunity, improved food security and enhanced supply of quality protein to people's meals, contributing country's economic growth and reducing poverty level in rural and urban areas of Bangladesh. The present meat and egg production can meet only 68 and 64% of the national demand. The demand for meat, egg and meat and egg products have been expanding dramatically with income growth, population growth, urbanization and dietary changes. Recognizing this fact, the government and the private sector are working together to solve the problem in poultry industry through various development activities. Apart from this, government is encouraging private sectors and NGOs to undertake steps for the development of poultry by liberalizing its present policy. This review study has tried to unearth the present scenario of poultry industry in Bangladesh, contribution of private enterprises for the development of poultry sectors, marketing of poultry and poultry products, problems and constraints of poultry industry and explores the scope and opportunity of poultry industry of Bangladesh. This study has also explored the status of poultry business development through various programs designed and implemented by private sectors.

Key words: Poultry farming, private sector, meat production, egg production, marketing of poultry, scopes of poultry industry, problems of poultry industry

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INTRODUCTION

The poultry sub-sector is an important avenue in fostering agricultural growth and reduce malnutrition for the people in Bangladesh¹. It is an integral part of farming system in Bangladesh and has created direct, indirect employment opportunity including support services for about 6 million people². This sub-sector has proved as an attractive economic activity, thereby, indicating its importance for the entire economy. The sector accounts for 14% of the total value of livestock output and is growing rapidly³. It is find out that poultry meat alone contributes 37% of the total meat production in Bangladesh. Poultry contributes about 22-27% of the total animal protein supply in the country⁴. It is stated that in Asia, poultry manure is used as feed for fish where poultry are raised on top of the ponds as part of an integrated system for example, fish-cum-duck farming⁵. Development of poultry has generated considerable employment through the production and marketing of poultry and poultry products in Bangladesh¹.

The total number of poultry farms in the public sector is 33 excluding 2 duck farms. In addition to that, there are 6 poultry and 2 duck hatcheries are operated in the public sector⁶. The objective for establishing of those farms was to conserve and develop native AnGR, but it was not achieve due to various reasons. It is stated that, the performance of poultry production depends on the type of genetic resources, feeding practices, the prevalence of diseases, prevention and control, the management of flocks and the interactions among these factors⁷. The progress of poultry industry in Bangladesh is mainly in private sector. In the early 90s, a number of private parent stock poultry farms started their operations to produce commercial broiler and layer day old chicks. During 1970-80, the poultry population growth rate was 0.7% which increased to 4% per year during⁸ 1990-2005. Since 1995, a significant annual average growth rate of 15-20% in commercial poultry has been achieved until 2007 and slow down after due to avian influenza outbreak¹. There are 8 grand parent stock farms are in Bangladesh and supplies about 80% of the total demand of parent stock; the rest 20% is imported⁹. In October, 2011, there are 82 parent stock farms and hatcheries are in operation in Bangladesh and producing 55-60 lac day old broiler and 5 lac day old layer chicks per week, it was about 90-95 lac⁹. Seventy four feed mills are producing concentrated feed for the birds. The poultry sector in Bangladesh has been affected significantly by avian influenza in the early 2007 and had continued up to June, 2008. The aggravated situation had been improved from July, 2008 but again it seriously affected the industry during¹⁰ October, 2011 to March, 2012.

According to the national health strategy, an adult people need 120 g of meat every day and 104 pieces of eggs per year. However, presently the availability is only 67.17 and 63.65%, respectively⁶. Although meat production has been increasing over time in the country but the per capita availability is far below the minimum requirement⁸. Recently, the demand for poultry and livestock products, in general has been increased significantly that leads most to poultry-related development interventions promoting intensification of traditional poultry systems¹¹. Under these circumstances to meet up the deficiency of meat and egg, the government and private organizations should put efforts together to enhance the present meat and egg production status. The government is getting interested in this sector and is encouraging both urban and rural people to work here and enhance capacity. People in rural areas are getting attracted to this sector and taking it up as a business². Besides government, there are many private enterprises, like Aftab Poultry, Aman Poultry, Bangladesh Rural Advancement Committee (BRAC), C.P. (Bangladesh) Co., Ltd., Kazi Poultry, Nourish Poultry, Paragon Poultry etc. are working for poultry and poultry products development in the country. Moreover, good management practices should improve for the development of poultry industry. Experiences from South Asian countries show that adoption of good practices of poultry management can significantly contribute to an improvement of farmer's livelihoods¹².

Despite the poultry sector is an important part of our national economy, presently there has been no study that investigates the status of poultry sector and the role of private sector for its development in Bangladesh. In order to establish future plan for the poultry development in the country, it is essential to know details about the current activities. Therefore, we did this review study to solve the problems related to poultry production and development in the country. This paper explores the present status and future potentials of poultry industries in relation to existing farming activities, available breeds, medicines and vaccines, meat processing and marketing of poultry and poultry products, scopes and constraints of poultry production and recommendations for poultry development in order to accelerate poultry industries in Bangladesh.

The purpose of the present studies was to examine the present scenario of poultry industry in Bangladesh, to determine the contributions of private sector for development of poultry industry, to know the scopes and opportunities of poultry industry in Bangladesh and to find out the problems and challenges of poultry industry in Bangladesh.

CONTRIBUTION OF LIVESTOCK AND POULTRY IN THE NATIONAL ECONOMY

Livestock and poultry have playing an important role in the national economy, contributing significantly to agriculture and the gross national product. About 44% of human daily intake of animal protein comes from livestock products. Furthermore it plays a pivotal role in the rural socio economic system as maximum households directly involved in livestock. It has created job opportunity for more than 6 million people. The poultry industry has been engaging supply of quality protein to the Bangladesh population at the lowest price in the world. In the 90s total investment in this sector was only BDT 15 thousand million, but now it is more than BDT 150 thousand million. Investment in poultry sector should be doubled within the next decade and it will enhance the growth of this sector and contribute in the GDP and creates employment opportunity. The contribution of livestock and poultry in the national economy of Bangladesh is presented in Table 1.

STATUS OF POULTRY INDUSTRY IN BANGLADESH AT A GLANCE

In addition to family poultry production carried out at a small scale, mostly with indigenous poultry, the poultry sector is producing commercial broiler and eggs to meet up the demand of the consumers. To make it possible, the industrial farms are producing grand-parent (GP) stock and Parent Stock (PS) while the commercial sector is mostly in the hands of small-scale (up to 3000 birds) and medium scale (above 3000

but below 20,000 birds) producers. Table 2 and 3 shows the present status of poultry sector's in Bangladesh at a glance and the division wise registered private poultry farms in Bangladesh, respectively. Presently, the poultry sector has employed huge manpower (approximately 0.6 million) of both technical and non-technical background workers and expected to make more room for employment in the future. Nowadays, the commercial sector comprised of hatchery, breeder farm (both GP and PS), feed mill, medicines and vaccines manufacturing and/or marketing and laboratory services etc., each of the components being a specialized venture. The production of day-old-chicks (DOCs) is currently lower and therefore the chicks are priced higher. Crisis and instability in poultry sector are the obstacles for the expected growth of the industry. The reasons are manifolds. The role of

Table 1: Contribution of livestock and poultry in the national economy of Bangladesh

Particulars	Contributions
Contribution of livestock in Gross Domestic Product (GDP)	2.50%
GDP growth rate of livestock	2.83%
GDP volume in million (Taka)	13,2580
Share of livestock in agricultural GDP	14.08%
Foreign exchange earning (from hides and skin)	4.31%
Nutrition (combined with fisheries sector)	80%
Employment (Directly)	20%
Employment (Partly)	50%
Cultivation of land	50%
Animal draft power in agriculture	50%
Animal draft power in transportation	50%
Manure production	80 MMT
Organic manure production	10% of chemical fertilizer
Fuel supply	25%

Source: DLS¹⁰

Table 2: Status of poultry industry in Bangladesh at a glance

Particulars	Current figures	Remarks
GP breeder farms	08	Imported at day old
PS breeder farms and hatchery	82	Imported and locally produced
Feed manufacturing and marketing company	74	One fifth of this figure are major producers
Commercial broiler farm	53112	Registered
Commercial layer farm	18222	Registered
Commercial duck farm	6546	Registered
Meat processing plant	06	One of them is for large animal
Medicine manufacturing and marketing company	93	-
Poultry vaccine marketing company	10	-
Broiler DOC production per week	8166000	Production declined due to AI
Layer DOC production per week	819000	Production declined due to AI
Poultry feed production per year	2767440 Mt	Dominated by imported raw materials
Broiler feed production per year	85800 Mt	
Layer feed production per year	1357070 Mt	
Investment in poultry sector (Taka)	15,0000 million	-
Annual turn over (Taka)	20,0000-25,0000 million	-
Employment in poultry sector	6 million	-
Chicken production per day	1.6 million kg	March, 2011
Egg production per day	23.5 million	March, 2011

Source: DLS⁹ and BPD²²

Table 3: Division wise registered private poultry farms in Bangladesh

Name of division	Total broiler farm	Total layer farm	Total duck farm	Total poultry farm	Total districts
Dhaka	14573	5817	2639	23029	17
Rajshahi	9771	3567	1194	14532	9
Rangpur	3097	1671	333	5101	7
Khulna	11944	4208	342	16494	10
Chittagong	7819	1685	258	9762	11
Sylhet	1761	103	1151	3015	4
Barisal	4147	1171	629	5947	6
Total	53112	18222	6546	77880	64

Source: DLS¹⁰

Table 4: Population and growth rate of chicken and duck in Bangladesh

Years	Chicken		Duck		Total	
	No. (million)	Growth (%)	No. (million)	Growth (%)	No. (million)	Growth (%)
2004-05	183.45	-	37.28	-	220.73	-
2005-06	194.82	6.21	38.17	2.39	232.99	5.55
2006-07	206.89	6.20	39.08	2.38	245.97	5.57
2007-08	212.47	2.70	39.84	1.95	252.31	2.58
2008-09	221.39	4.20	41.23	3.49	262.62	4.09
2009-10	228.04	3.00	42.68	3.52	270.72	3.08
2010-11	234.69	2.92	44.12	3.37	278.81	2.90
2011-12	242.87	3.49	45.70	3.58	288.57	3.50
2012-13	249.01	2.53	47.25	3.39	296.26	2.66
2013-14	255.31	2.53	48.86	3.41	304.17	2.67
Average growth rate for 10 years (%)		3.75		3.05		3.62

Source: DLS⁶

Table 5: Status of meat and egg production and growth rate (%) in Bangladesh

Years	Meat		Eggs	
	Production (MMT)	Growth rate (%)	Production (Million No.)	Growth rate (%)
2004-05	1.06	-	5623.0	-
2005-06	1.13	6.6	5422.0	-3.57
2006-07	1.04	-7.96	5369.0	-0.98
2007-08	1.04	0	5653.20	5.29
2008-09	1.08	3.85	4692.00	-17.00
2009-10	1.26	16.67	5742.40	22.39
2010-11	1.99	57.94	6078.50	5.85
2011-12	2.33	17.09	7303.89	20.16
2012-13	3.62	55.36	7617.40	4.29
2013-14	4.52	24.86	10168.0	33.48
Average growth rate for 10 years (%)		19.38		7.77

Source: DLS⁶

the government can play a vital role to flourish the sector. There are many points related to policy matter of the government. Although national poultry development policy has been approved by the government in 2008, it has not yet been implemented.

Population and growth of poultry in Bangladesh: Poultry population in Bangladesh is estimated about 304.17 million where chicken population is about 255.31 million and duck population is about⁹ 48.86. Changing pattern and growth of poultry since 2004-05 to 2013-14 is shown in Table 4. The growth rate of chicken and duck for last 10 years was 3.75 and 3.05% respectively. Growth rate of poultry was about 6.21%

during 2004-2007 but growth rate declined (2.70%) during the financial year 2007-08 due to incidence of bird flu (avian influenza). This situation improved during 2008-09 (4.20%) and again declined since 2009-10 about 2.89%.

Present meat and egg production status in Bangladesh: The meat and egg production of last 10 years along with growth rate is shown in Table 5. The average growth rate of meat and egg for 10 years was 19.38 and 7.77%, respectively. The growth rate of meat production was highest in 2010-11 (57.94%) and lowest in 2006-07 (-7.96%). The growth rate of egg production was highest in 2013-14 (33.48%) and lowest in 2008-09 (-17.00%).

Table 6: Requirement, availability and deficit of meat and eggs

Products	Need per capita	Availability per capita	Production per year	Demand per year	Deficit per year
Meat	120 g h ⁻¹ day ⁻¹	80.64 g h ⁻¹ day ⁻¹	4.52 MMT	6.73 MMT	2.21 MMT (32.83%)
Eggs	104 y h ⁻¹	66.2 y h ⁻¹	10168 million	15,974.4 million	5806.4 million (36.35%)

Source: DLS⁶

Table 7: Consumption of meat and egg in SAARC countries

Countries	Meat consumption	Egg consumption
Bangladesh	20 g h ⁻¹ day ⁻¹	33 h ⁻¹ year ⁻¹
India	25 g h ⁻¹ day ⁻¹	50 h ⁻¹ year ⁻¹
Nepal	38 g h ⁻¹ day ⁻¹	30 h ⁻¹ year ⁻¹
Pakistan	45 g h ⁻¹ day ⁻¹	55 h ⁻¹ year ⁻¹
SriLanka	27 g h ⁻¹ day ⁻¹	75 h ⁻¹ year ⁻¹
Maldives	31.5 g h ⁻¹ day ⁻¹	33 h ⁻¹ year ⁻¹

Source: FAO¹³

Present demand and supply of meat and eggs in Bangladesh:

The requirement, availability and deficit of meat and eggs are presented in Table 6. The consumption of meat and egg in SAARC countries are presented in Table 7. The per capita poultry meat consumption is much lower (1.9 kg) compare to other Asian countries. The poultry meat consumption in Pakistan is 4.4 kg, Indonesia 7.0 kg, Philippines 11.0 kg, Egypt 11.6 kg, China 12.8 kg, Thailand 12.3 kg, South Korea 16.4 kg, Vietnam 15.6 kg, Malaysia 38.1 kg and Japan 19.1 kg¹³. In Bangladesh, the availability of meat and egg is much lower than demand. Therefore, there is a deficit condition to be met up.

Progress of poultry industry in Bangladesh:

The progress in the development of business in poultry subsector has been remarkable in the last two decades. The progress is almost totally in the private sector. The business in poultry subsector has been grown in two aspects-farming business and feed manufacturing business. The growth of poultry farming has been shown in Table 8. The later has been growing based on the demand by the poultry businessmen. The requirement of meat and eggs of the country is although not being met but the contribution of poultry meat to the total meat products is 35.25% and egg production is 63.65% of the national need. Compared to that of poultry the contribution of beef, goat, sheep and buffalo to the total meat production is only 64.75%.

Status of commercial feed production in Bangladesh:

Presently, there are 74 feed manufacturing and marketing company in the country, where as 35-40 feed industries are in large size and producing poultry and fish feeds but the amount can not satisfy the needs of the growing poultry farms. Bangladesh produces only 2.73 million tons of commercial animal feeds¹⁴ most of which is used for commercial poultry production against a total poultry feed requirement of 5.94 million tons¹⁵ meeting only 46% of the

need. As a result there is enough scope for increased growth of poultry feed industry. Annual production of commercial poultry feeds in the country is shown in Table 9.

Status of Grand Parent Stock (GPS) and Parent Stock (PS) breeds and available vaccines in Bangladesh:

The available grand parent stock, parent stock and vaccines in the country is exhibited in Table 10-12. It is observed that all world class GP, PS and vaccines are available in Bangladesh and contributing a lot for the development of poultry industry.

Present meat processing industry in Bangladesh:

The country has a reasonably large single meat industry installed in Pabna district and a few small scale plants also exist in the country which has insignificant contribution. There are five poultry meat processing plants in the country (Table 13). The amount of meat produced from these plants can no way meet the demand of the country (only 16% of the demand is met). Akbar *et al.*¹⁶ stated that bovine meat production is slowly increasing whereas poultry meat production sharply rising from the year 2000-2001 up to the present stage because of the sharp increased growth of broiler industry in the country. One of the important reasons for increase in meat production is the increased fattening program by the small to medium level as because small and medium scale fattening farms in this country is in growing stage.

There is enough scope for more increased growth of poultry farm business and particularly poultry processing and poultry product processing plants. It can be mentioned here that recently, because of the outbreak of bird flu or other viral diseases, transmissible from birds to humans, it is suggested that the poultry birds should not be sold live rather they should be sold after processing. This will definitely encourage establishing poultry processing industry in the country which in turn will increase the scope of new employment. With the increasing change of food habits and taste preferences of the people, the value addition in poultry products has the possibility of opening new business in this subsector.

Marketing system of poultry meat and egg:

Marketing system remains still in traditional and heterogeneous condition. As a result, producers are not getting remunerative price and the consumers are paying more price per unit products. Reasons for non-remunerative price to small

Table 8: Growth of commercial poultry industry in Bangladesh

Description	1984-85	1991-92	2000-01	2003-04	2004-05	2005-06	2008-09	2010-11
No. of hatchery	2	6	130	130	130	130	80	84
Broiler parent stock (000)	5	30	1550	1990	2454	3225	3128	3374
Day old broiler chicks per year (000)	600	3540	126000	186264	237432	301912	297200	320500
Broiler meat production (MMT year ⁻¹)	0.475	4.54	170	217	276	320	297	320
Layer parent stock (000)	2	22	236	345	212	400	609	1523
Day old layer chicks per year (000)	160	2025	21240	30960	19080	25380	42600	106600
Egg production (000000)	48	610	3430	4780	5623	5422	5653.2	6078

Source: Huque *et al.*²³ and Kabir²⁴

Table 9: Approximate annual commercial feed production (Mt) by top 25 feed mills

Name of organizations	Feeds category	Production per year
ACI Godrej Agro Pvt., Ltd.	Poultry, fish and cattle	1,09,680
Aftab feed products	Poultry, fish and cattle	2,91,360
Apt pellet feed	Poultry and fish	30,000
AIT	Poultry, fish and cattle	81,000
Aman feed Ltd.	Poultry, fish and cattle	44,400
Aleya feeds	Poultry, fish and Shrimp	22,800
BRAC feed Ltd.	Poultry and fish	52,800
CP (Bangladesh) Co., Ltd.	Poultry	1,21,200
City poultry and fish feeds	Poultry, fish and cattle	55,800
Fresh feed Ltd.	Poultry	50,000
Jayson agro-vet Ltd.	Poultry	43,200
Kazi feeds Ltd.	Poultry	2,28,000
Krishibid feed Ltd.	Poultry, fish and cattle	36,000
Paragon poultry Ltd.	Poultry	2,52,300
Lion feeds Ltd.	Poultry and fish	51,000
M.M. Agha Ltd.	Poultry	30,000
New hope feed Ltd.	Poultry, fish and cattle	91,000
Nourish poultry and hatchery	Poultry and fish	2,82,300
National feed Ltd.	Poultry	72,000
Mono feed Ltd.	Poultry, fish and cattle	45,000
Provita feed Ltd.	Poultry	37,000
Quality feeds Ltd.	Broiler, fish and shrimp	2,73,300
Saudi-Bangla fish feed Ltd.	Poultry, fish and cattle	2,16,000
Savar co-operative feed Ltd.	Poultry and fish	44,400
Spectra hexa feed Ltd.	Poultry and fish	48,000
Sub-total		26,07,640
From other feed mills		1,87,400
Total		27,95,040

Source: PBD²⁵

producers are: (a) Producers are unable to establish a marketing system without having government policy, (b) They are too far from consumers, (c) They are not able to find out what consumer want or need, (d) They are too small as regards output, (e) They do not have vehicle to bring their products to consumers, (f) Most of the consumers are not habituated to eat broiler meat, (g) Live chicken marketing is popular in Bangladesh, because of trust on dressed birds for slaughtering method (Halal or not) diseased or dead bird. Therefore, appropriate marketing channel is needed for favour of producer or consumer. The existing live broiler and egg marketing system in Bangladesh are presented in Fig. 1 and 2.

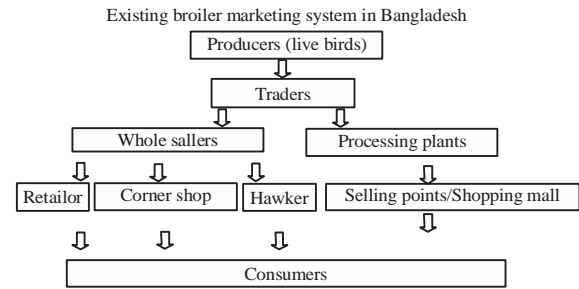


Fig. 1: Marketing channel of poultry meat (based on researcher personal communication)

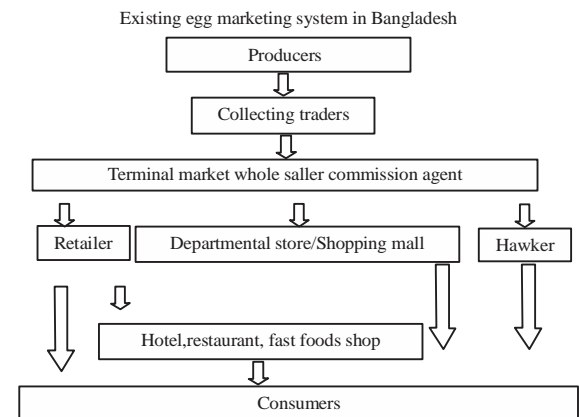


Fig. 2: Marketing channel of egg (based on researcher personal communication)

SCOPE AND OPPORTUNITY OF POULTRY INDUSTRY IN BANGLADESH

Global prospective: Farrell¹⁷ stated that, over the next 20 years significant expansion of most livestock industries, especially poultry eggs and meat is likely to occur mainly in developing countries. Bangladesh is one of the potential countries to catch this opportunity. The forecast of production eggs and meat within the year 2020 is shown in Table 14.

The poultry industry in low income countries will be expanded in future but its long-term sustainability is questioned, given reliance on importation of feed and other

Table 10: Present GP breeder farms and available breeds in Bangladesh

Name of Farms	Name of breeds	Type of breeds	Imported from
Aftab GP farms limited	Hubbard classic	Broiler	France
CP (Bangladesh) Co., Ltd.	COBB 500	Broiler	USA, Netherlands
Kasila (Bangladesh) limited	COBB 500	Broiler	USA
Kazi grand parents limited	COBB 500	Broiler	USA
M.M. Agha GP farms limited	Hubbard classic	Broiler	France, USA
Nourish grand parents limited	COBB 500	Broiler	USA
Paragon GP limited	Hubbard classic Novogen brown	Broiler Layer	France, USA
Rashik GP hatchery limited	Lohmann meat	Broiler	USA, Australia, New Zeland

Source: BPD²²

Table 11: Present parent stock marketing company and available breeds in Bangladesh

Name of company	Name of breeds	Type of breeds	Imported from
Advance animal science Co., Ltd.	Lohmann brown classic/lite Lohmann white (Lohman LSL lite)	Layer	Germany
Advance bio-products limited	Lohmann Indian River (LIR) ISA brown ISA white	Broiler Layer	France, Netharlands, Canada
Ample animal care	Shaver star cross 579 brown Shaver white, shaver black	Layer	France, Netharlands, Canada
Bengal overseas limited	Hisex brown, Hisex white Bovan's brown, Bovan's white, Bovan's Nera, Bovan's goldline Dekalb white, Dekalb gold, Dekalb black	Layer	France, Netharlands, Canada
Chicks and feeds limited	SASSO coloured	Broiler	France
Paragon group	Hubbard classic Novogen brown	Broiler Layer	France, USA
Poultry consultant and development services	Hubbard classic, Hubbard HI-Y, Flex, colored broiler Novogen brown, Novogen White	Broiler Layer	France, USA
Protimax international	Arbor Acres Plus S (Sexable broiler) Arbor Acres Plus (Fast-feathering broiler)		USA, Australia
Zaman group	Lohmann meat	Broiler	Germany

Source: BPD²²

requirements. Matching poultry production with available resources is the key to sustainability. According to an estimate, the 40% minimization of deficit in meat and egg production in Bangladesh will need investment of about Tk. 60,000 million and will create new employment opportunities for 14 million people.

Supply versus demand driven growth: Like elsewhere in the world, the poultry industry of Bangladesh is mostly demand driven. The elasticity to demand depends on population growth, income growth and urbanization. The steady population, urbanization and income growth reveal that there is an increasing demand of animal origin food like meat and egg. The deficit percentage (Table 6) clearly indicates the potential of the poultry industry in Bangladesh. Although the annual broiler meat production almost triple and egg production is double during past decade⁹ but the per capita egg and meat consumption is still low (Table 7).

Price of egg and broiler meat: The price of egg and broiler meat is low compared to beef and mutton and also other

sources of protein such as fish, vegetable etc. This is cheapest source of protein and large number of people could afford it. Egg and poultry meat are also substitute of other meat and vegetable protein. An opinion piece in financial express of Bangladesh states that it has already shown the way to increasing protein availability of the vast population of the country (newsroom-meattradenewsdaily.co.uk).

Create huge job opportunity: This sector can create huge job opportunity. It offers full or part time employment of large number of peoples particularly women, children or elderly person on the farm operations. This clearly indicates that there is scope for expansion of this industry.

Favorable environment for foreign investment: In Bangladesh, the government has created favorable environment for foreign investors in poultry sector. Presently, there are few foreign companies like CP, New Hope, Sokuna, Godrej etc. are working in Bangladesh. Now it is a scope for other foreign investors to invest poultry production in Bangladesh.

Table 12: Present vaccine marketing company and available vaccines in Bangladesh

Marketing company	Manufacturing company	Country of origin	Available vaccines
ACI Limited	Ceva santé Animale, Ceva Biomune	France, USA	Cevac BI L, Cevac Gumbo L, Cevac IBD L, Cevac FPL, Cevac New L, Cevac ND-IB-EDS K, Cevac ND-IBD K, Cevac New K, Cevac Broiler ND K, Cevac Corymune 4 K, Cevac Corymune 7 K, Cevac Transmune IBD, Layermune SE, Multimune K5, Proximune AE, Reomune-3, Repromune-4, Vectormune FP-MG, Vectormune HVT-AIV, Cevac MD Rispense, Vectormune HVT-NDV
Advance Animal Science Co., Ltd.	Meril	France, USA, Italy,	Avinew, Gallimune 302, Bioral H 120, Bur 706, Cryomarex Rispens, Diftosec CT, Gumbopest, Gallivac AE, Haemovax, Imopest, CF Marek's, Bio Ava, Gallivac Reo, Bio Typhoid, Gumbovac Plus, MG Vax, Gallivac Lasota, IBD Blen, Livacox Q, Vaxiduk, Gallimune 403, Gallivac LT
Bengal overseas Limited	MSD Animal Health	Netherland's	Nobilis Gumboro D78, 228E, Nobilis Ma5+Clone 30, Nobilis ND Clone 30, ND Lasota, Nobilis IB Ma5, IB 4/91, Nobilis SG 9R, Nobilis Reo 1133, Nobilis AE+Pox, Nobilis ILT, Nobilis CAVP4, Nobilis Rismavac+CA 126, Nobilis Gumboro Inac, Nobilis Corvac, Nobilis EDS, Nobilis Newcavac, Nobilis ND Broiler, Nobilis MG Inac, Nobilis Salenvac, Nobilis G+ND, Nobilis IB+ND, Nobilis IB+ND+EDS, Nobilis IB+G+ND, Nobilis Influenza H5N2, Nobilis Reo Inac, Nobilis Reo+IB+G+ND
FnF Pharmaceuticals Ltd.	-	-	Bangla BCRDV, Bangla Gumboro vac, Bangla Duck Plague vac, Bangla ND vac, Bangla ND+IBD vac
Jayson Agrovet Ltd.	IZO, SPA	Italy	Izovac B, Hitchner, Izovac Clone, Izovac H ₁₂₀ +Lasota, Izovac Gumboro-2, Gumboro-3, Izovac IBD, Izovac ND, Izovac IB+ND, Izovac ND+EDS+IB+IBD, Izovac ND Broiler, Izovac Coryza
Nasco Agro Products	Hipra SA	Spain	Hipra viar-bpl-2, Hipra Gumboro-bpl-2, Adenipravac, Coripravac, Hipra Gumboro, Hipra Gumboro CH/80, Gumboro GM/97, Hipra viar B1/H120, Hipra viar Clone/79
Novarties (Bangladesh) Limited	Fort Dodge	USA	Bursine 2, Bursine Plus, Tri Reo, Newcastle Lasota, Newcastle Bronchitis, AE Poxine, Pro Vac 4, Poxine, MD Vac CFL, Poulvac Pavac iv
Pharma and Firm	ChoongAng Vaccine Lab	Korea	PoulShot Gumboro, PoulShot Lasota, PoulShot B ₁ , PoulShot B ₁ +IB, PoulShot Lasota+IB, PoulShot NDO, PoulShot BNE, PoulShot Coryza, PoulShot Coccimune, PoulShot ING Plus, PoulShot MG-F, PoulShot S/9R, PoulShot Pox, PoulShot HVT, PoulShot AEP, PoulShot IBO
Speed Care Limited	NEUVA	Italy	Bio-Vac NDV 6/10, Bio-Vac Lasota, Bio-Vac LS-H120, IBA-Vac, Vaiol-Vac, Bio-Marek HVT, Ol-Vac, Gumb Vac, Olvac B+G, Hg-Gel-Vac 3, Set-Vac, Myc-Vac

Source: BPD²²

Table 13: Present meat processing industry in Bangladesh

Name of plant	Capacity	Employment	Nature of processing
Aftab poultry processing plant	8000 birds day ⁻¹	Direct-132 Indirect-68	Processing of live broiler, further processing, packaging and marketing
CP (Bangladesh) Co., Ltd.	5000 birds day ⁻¹	Direct-116 Indirect-328	Processing of live broiler, further processing, packaging and marketing
BRAC processing plant	8000 birds day ⁻¹	Direct-83 Indirect-120	Processing of live broiler, packaging and marketing
Golden harvest	No processing plant	Direct-50 Indirect-25	Further processing like nugget, sausage, KFC items, pizza items etc.
Bangladesh army	2000 birds day ⁻¹	Direct-25 Indirect-20	Processing of live broiler only for their own need
Bengal meat	Large animals, 40-50 day ⁻¹	Direct-50-60 Indirect-200-250	Slaughter and process for meat of cattle, goat and sheep, packaging and exporting

Source: Akbar *et al.*¹⁶

Table 14: Production forecast of poultry meat and eggs

Commodity	Region	2001	2020
Poultry (million Mt)	Developed	33.5	36.0
	Developing	30.9	47.0
Egg (million Mt)	Developed	18.6	18.0
	Developing	38.4	54.0

Source: Farrell¹⁷

Increased demand for processed meat and processed food:

The international restaurants (KFC, Macdonald, Nandos, A and W etc.) have been operating in Bangladesh since last 5 years. Besides, fast food shops are also increasing every year. There is a demand of hygienically slaughter meat in these shops. Therefore, the demand of processed poultry

meat is increasing day by day and it has opportunities to set up more processing plant.

Export opportunity: Bangladesh started export of day old chicks and feed to other countries during 2002-2007 and it is temporarily stopped due to AI. However if we control the AI, we will be in position to export not only the chicks and feed but also poultry meat.

Increased domestic maize production: The production of maize is increasing and it is not grown only in North Bangle but also in other part of the country and dependency on import is decreasing.

Animal health products and services: The government, animal health company and other private sector are providing the technical services to poultry farmers. All animal health products and equipments are available in Bangladesh, which are promoting and supporting the growth of poultry industry.

Representation to international or regional seminars/congress: Delegates from Bangladesh are also attending the international/regional seminars/congress (World poultry science association, WPSA and others) and exchange their knowledge. Moreover, WPSA Bangladesh Branch is organizing international show and seminars in Bangladesh in every alternative year.

Supportive government policy: Government has also liberalized its policies to encourage the growth of commercial poultry sector in Bangladesh by introducing tax holiday, subsidy in electricity and also incentives for export.

MAJOR PROBLEMS AND CHALLENGES OF POULTRY INDUSTRY IN BANGLADESH

Avian Influenza outbreak: A threat for poultry growth: Due to avian influenza, the industry suffered losses of around Tk. 7000 million. This was a huge loss for the producers and they did not get any sort of financial help to mitigate it. In 2007-2008, 60% of poultry farms and 70% of hatcheries and breeding farms were closed due to bird flu attack¹⁸. As per FAO report (20 April, 2011)¹³, Bangladesh and five other countries, India, China, Egypt, Indonesia and Vietnam has been suffering from the H5N1 virus. Avian flu is still endemic due to poor veterinary and livestock production services that retard appropriate revealing and managing of infection. This is because of 'firmly entrenched' due largely to 'weak producer

and service associations' to support farmers. In aforesaid countries avian flu is still endemic due to poor veterinary and livestock production services retard appropriate revealing and managing of infection. Due to bird flu, presently we can not export chicken in Nepal and also Middle East countries.

Price of poultry feed and feed materials: One of the major problems in the development of the poultry subsector in Bangladesh is the lack of sufficient and appropriate feed¹⁹. Both manufactured and mixed ingredient feeds are used in the subsector. The manufactured feeds of different feed mills available are not homogeneous in nature. The manufacturers differentiate poultry feeds based on quality, brand name, sales promotion and packaging. The marketing chain for feed is also different. Some feed manufacturers distribute feeds through agents; others use wholesalers and retailers, while others have their own sales centres. Taking into account market competition, feed millers set the price of feeds independently. They usually set the prices for wholesalers and commission agents (aratdars), giving little scope for bargaining, except that the commission rates may vary according to the volume of feed purchased. The millers usually promote their products through advertising and providing quality assurance and incentives such as differential commissions to wholesalers; some millers also provide incentives to farmers. Generally, feed manufacturers do fix prices for wholesalers, who sell feed in both cash and credit to retailers and farmers. Feed is a major cost in broiler production and accounts for 45-60% of total broiler production costs in Bangladesh⁸. In setting prices, some wholesalers charge a fixed margin on the total cost of feed marketed and others add a certain percentage of total costs as profit. The price of feed varies from brand to brand. For example, during 2010, broiler feed price per tonne varied from 30 000-32 000 taka and layer feed from 24 000-27 000 taka²⁰. Most feed ingredients such as maize, meat bone meal, soybean meal and protein concentrate are imported and therefore sensitive to the movement in world prices. Poultry feed is mainly imported from Germany, China, Thailand, India and Taiwan province of China.

Price variation of day-old chicks (DOCs): The price of day-old chicks is set by hatchery owners which vary from month to month. For example, during 2010, the price of broiler DOCs varied from 18-75 taka and layer DOCs from 12-75 taka²⁰. There is no bargaining between buyers and sellers of DOCs at any point in the supply chain, since the market is basically supply driven. The DOCs are usually sold in cash at a fixed price to farm owners and agents, but with a commission to agents. Hatchery owners sell the DOCs at the hatchery or

through their sales centres directly or through sales agents to the poultry farmers. The DOCs are usually packed in paper boxes or bamboo baskets. A few hatcheries use their own or hired trucks to transport DOCs from the hatchery to the sales centres or agents. Mostly, however, poultry farmers do not transport DOCs by specialized vehicles but use buses, rickshaws or vans, which are hazardous and increases the likelihood of chick mortality.

Pricing of broiler and egg: It varies with the supply and demand for poultry and poultry products. Since there are no organized marketing channels and no storage facilities in Bangladesh, the sellers and buyers can not bargain in fixing price. Due to perishability of eggs, increasing mortality of broiler and availability of production, seller does not go to bargain with buyer. The processed birds are normally sold at hotel or departmental store. Most of the consumers prefer small size live bird (1-1.5 kg) even per unit price is higher than bigger size birds. Indigenous chicken are sold on the basis of size, age, appearance, sex and colour. The price of indigenous chicken is almost double to broiler²¹.

Eggs are sold on the basis of types, species and colour (exotic and indigenous chicken, duck etc.). The price of brown shell egg is about 10% higher than that of white egg and indigenous egg price is about 6% higher than farm egg price. The price of eggs is also varies in different seasons. Eggs are sold at higher price in winter than in summer. The opposite trend is true in case of broiler marketing.

Problem of marketing systems and middlemen: In Bangladesh, poultry marketing channels are traditional marketing systems where the number of intermediaries is high. Consequently, farmers are sometimes forced to sell at lower prices because of inadequate market information, transport facilities, etc. Most of the times eggs and chickens are being marketed through middlemen, as a result the farmers does not get actual price. The unscrupulous middleman is taking the advantages. As a result, the farmers have been counting huge losses for some times, as the production cost is high and selling price is low. The actual producers don't get the benefit of the high price as they are oppressed by the middlemen who suck the profit. Moreover, the end users i.e., customer has to pay higher price.

Most of the consumers are interested to purchase live birds instead of processed birds due to lack of trust, whether the birds were slaughtered as halal method, dead or diseased

birds. Most of the ultimate consumers prefer deshi chicken because of their taste, firmness, pigmentation and leanness.

High price of veterinary drugs and lack of disease control:

Diseases are a major problem for the poultry industry in Bangladesh. The mortality rate of poultry is high (35-40%) because of disease and predators. Poultry farmers usually carry out vaccination and medication for common poultry diseases (IBD, Newcastle, fowl pox, fowl cholera, fowl typhoid, *Salmonella*, *Mycoplasma*, infectious coryza, coccidiosis, infectious bronchitis and EDS). The IBD is a dangerous disease for broiler which is called poultry AIDS. Newcastle is a dangerous disease for poultry which is called poultry cancer. However, the medical facilities are poor at district and upazila level livestock offices. The prices of essential animal drugs are high. Although the government gives some necessary vaccines at low cost to help farmers, they nearly always urgently need to buy vaccines at high prices on the open market. However, vaccines are not regularly available throughout the country, especially in remote rural areas. Vaccination failure is common because of improper transportation and storage, handling and application. Most poultry farmers use vaccines without knowing the maternal antibody status of their flocks. The marketing chain for drugs is simply composed of the pharmaceutical companies that distribute drugs to the wholesalers, the wholesalers themselves and the retailers that purchase drugs from wholesalers and sell to poultry farmers.

High bank interest: The bank interest rate is very high which is on an average 12-14% per annum and real effective interest rate is around 18-20% per annum. Moreover, lot of hidden charges and costs are associated in this sector to avail the loan from the banking sector. Actually bank interest rate should be less than 10%. Moreover, NGOs and also Grameen bank should play more active role to lower the interest rate for poultry sector under their social business program so that rural people can be motivated.

Lack of research and training: Livestock, in spite of its importance, has been a neglected area of agricultural research in Bangladesh. No visible improvements can be made because of the absence of a sense of urgency and low investment in research. Scientific research studies relating to economic aspects of poultry industry are not adequately available. Moreover, due to a lack of effectiveness in its research and

extension services, it has not yet been demonstrated that livestock farming and particularly poultry farming, can be transformed into an attractive and profitable business.

No cooperation or limited cooperation between research and government organizations, private organizations, universities, NGOs and beneficiaries: In Bangladesh, it is very common that there is no or limited cooperation exists between government, universities, private companies and NGOs. The government doesn't follow carefully the activities of private sector's and NGOs.

DISCUSSION

In Bangladesh, the progress of poultry business development has been remarkable in the last two decades although the sector is facing multifarious problems and the future outlook is positive because the demand for poultry products is expected to increase given its current low level of per capita consumption and anticipated growth in population and household incomes. The progress is almost totally in the private sector. The expansion of the commercial poultry sector has resulted in a decline in real prices of poultry products and consumption has consequently increased. In addition to family poultry production carried out at a small scale, mostly with indigenous poultry, the poultry sector is producing commercial broiler and eggs to meet up the demand of the consumers. Presently, the poultry sector has employed huge manpower of both technical and non-technical background workers and expected to make more room for employment in the future. In Bangladesh, the commercial sector comprised of hatchery, breeder farm (both GP and PS), feed mill, medicines and vaccines manufacturing and/or marketing and laboratory services etc., each of the components being a specialized venture.

In Bangladesh, the availability of meat and egg is much lower than the demand and there is a deficit condition to be met up. The contribution of poultry meat to the total meat products is 35.25% and egg production is 63.65% of the national need. The per capita poultry meat consumption is much lower (1.9 kg) compare to other Asian countries. The poultry meat consumption in Pakistan is 4.4 kg, Indonesia 7.0 kg, Philippines 11.0 kg, Egypt 11.6 kg, China 12.8 kg, Thailand 12.3 kg, South Korea 16.4 kg, Vietnam 15.6 kg, Malaysia 38.1 kg and Japan 19.1 kg¹³.

To fulfill the national demand of poultry and poultry products it is need to expand the poultry business to all over the country. It is not immediately possible to set up a nationwide poultry business in the short run, because

establishment of such business requires huge credit support from the banking system for various players and for ensuring quality output. Aside from that banks have to adopt proactive and liberal approach in financing poultry sector to take advantage of opportunities thrown open due to the implementation of policy on poultry development. On the other hand the government has to monitor whether or not poultry farms are looking after the benefits of all categories of farmers. Combined with favorable government policies like extension of subsidies to poultry farmers and exporters and protection from imports, will help Bangladesh to play a significant role in global poultry products trade besides meeting the ever increasing domestic demand. It can be suggested that to increase poultry production and develop the poultry industry, the government as well as other private integrators can take initiatives to establish an effective and well organized poultry farming system in Bangladesh.

The findings of the present study are expected to be helpful benchmark information for poultry producers, economists, researchers, as well as policy makers and will provide useful information for the further development of poultry farming in Bangladesh. The study may also provide useful information to the researchers for further research in this area.

CONCLUSION AND FUTURE RECOMMENDATIONS

Although the poultry industry and business is progressed considerably, but still the industry is facing a lot of problems that creates hindrance in poultry farming and business. The major problems are high price of feed, unorganized and unstable marketing system, shortage of poultry processing plants, high and fluctuating price of feed ingredients for the industry, lack of quality control of feeds, export of feeds etc. In order to encourage the business in poultry industry the above constraints must be removed. It must be realized that if the poultry business would not have been flourished at this level the price of poultry and its products would have been so much high that only 1-2% people could afford to consume these nutritious food items. Its effects on health and nutrition of the nation would have been in the dark. The government's food and nutrition security would have been jeopardized. To mitigate food deficit especially that of protein, the poultry sector needs special attention. The following recommendations should be considered:

- Public and private collaboration is essential. Strategic alliance between private sector and the government can be developed and non-resident Bangladeshis should be encouraged to invest in this sector

- Increased quality poultry feed production and establishment of feed analytical and quality control laboratory at district level is demand of time
- Imposition of tax on import of maize ought to be withdrawn
- Tax exemption should be extended till 2025
- Bank loan in the poultry sector should be arranged at a 5-7% simple interest rate per annum. Conditions should be eased. Moreover, banks should come forward through opening special windows for loan and special services so that new entrepreneurs can invest in this sector
- The price of chicken and egg, if fixed should not be fixed for only some months, but for the whole year considering the production cost
- Supply chain management should be improved so that the poultry farmers can supply directly to the retail shops and middlemen can not suck the profit
- Farms affected by avian influenza should get subsidy from government immediately after culling
- The government should come forward to deal with the problem of avian influenza. It needs prior planning and preparation for bird flu and should arrange appropriate steps so that farmers can maintain bio-security and keep healthy environment inside and outside the farms
- A special fund may be created by the government to help the actual producers
- Poultry insurance should be introduced immediately. Insurance companies should come forward with such policies
- Electricity supply arrangement is required for the poultry farms
- To generate the admirable flow of skilled human resources in poultry sector, professional trainer is mandatory for all. Professional trainer should be hired from domestic or foreign resources to take technical knowledge, proper education, training and motivation to the farmers
- The relevant authority should arrange workshop, seminar, conferences and live demonstrations for improving training to the farmers regarding the latest knowledge of poultry and marketing
- The government may come forward to produce bio-electricity or support the poultry farmers to produce it
- Transportation costs for eggs and chicken and chicken related products should be kept minimal so that the consumers can purchase at a reasonable price
- A close association between the industrial community and the educational community is necessary to the

benefit of both. The educational community is dependent on financial support from a productive and profitable industry. Without this monetary support provided for education and research, a fruitful advancement of education and research cannot be attained. In turn, the industry is dependent upon the academia to provide a continuing flow of semi-skilled manpower who can quickly be trained to become effective workers in the industrial structure. Moreover, financing scientific or trouble-shooting projects provide incentive to scientists who will discover new knowledge or new applications for the industry. Therefore, here is a close interdependence between education and the industry

- Collaboration between national and international research organization is necessary to exchange ideas and generated technologies between them. Recent developments in the field of biotechnology have aroused much interest in scientific communities in developing countries. Some biotechnology may be used as a tool by scientists to enhance or accelerate the improvement of smallholder poultry production, such as in the fields of vaccine production and nutritional improvement

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