Article
Socioeconomic condition and problem confrontation by the chicken farmers in the south western region of Bangladesh

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Abstract: A survey was conducted in the three district of south western region of Bangladesh like Khulna, Satkhira and Bagerhat, to observe the socioeconomic condition and problems facing by the chicken farmers under the existing management practices. Five hundred commercial chicken farms were considered in the present study. Data were collected using a pretested questionnaire by interview of the farmers. To observe the socioeconomic conditions, the age of selected farmers, their gender, occupation, education level, land size, annual income from chicken farms, experience, training exposure and bio-security score were considered. There are two problems are categorized like diseases outbreaks and socioeconomic problems. Among the respondents, maximum percentage of farmers were male groups within 31 to 40 years age had conjugated with the occupation of poultry and agriculture and belonged to HSC level of education. Highest percentage of medium land size farmer earned 01-03 lac BDT per year only from the chicken farms. Newcastle or Ranikhet disease was highly severed followed by Fowl cholera, Gumboro and Coccidiosis. Irregular fluctuation of market price was the major problem facing by the chicken farmer in the study area. Bio-security practice and proper marketing system should enhance the profitability of the chicken farms.

Keywords: disease; bio-security; market price; income

1. Introduction
The poultry industry of Bangladesh primarily produces chicken although a few other species like duck, pigeon, quail, goose, turkey, and guinea fowl are available throughout the year. Chicken meat and eggs are the cheapest source of animal protein and it is well accepted by all religious, economic, social, and demographic groups (Sarker et al., 2009; Simon, 2009). Since the beginning of 21st century, the poultry industry has become an unparalleled platform for a quick profit, the generation of local employment and the production of cheaper animal proteins. In recent years, the poultry sector in Bangladesh has gained sufficiency against the current market demand (Raha, 2013), but not against the standard nutritional requirement (DLS, 2016). Starting from the 1980s the industrial poultry sector gained massive momentum towards the industrial phase. After that, it gained a significant annual average growth rate, approximately 15 - 20% annually, until the outbreak of avian flu in 2007. After 2015, this industry again attained the capacity to fulfill the domestic demand for broiler, edible eggs, parent stocks, and precooked poultry products. According to the demand, production, availability, and deficiency of meat and eggs in the years 2015 and 2016 shows that production of meat and egg was found to be lacking 0.9 million metric ton (MMT) and 4,831.6 million (Khaled, 2015; DLS, 2016). The chicken meat consumption in Pakistan, Sri Lanka, Indonesia and Malaysia, is 5.5, 5.7, 7, and 38 kg per capita per year and chicken egg consumption is 60, 54, 87, and 320 eggs per capita per year, respectively, where Bangladesh is only consume 3.2 kg broiler meat and 41 eggs per capita per year (Kaiser Kabir, 2015). According to the national health strategy, an adult people need120g of meat everyday and 104 pieces of eggs per year. However,
presently the availability is only 67.17 and 63.65%, respectively (DLS, 2015). Although meat production has been increasing over time in the country but the per capita availability is far below the minimum requirement (Begum, 2008). Recently, the demand for poultry and livestock products has been increased significantly that leads most poultry-related development intervention is promoting intensification of traditional poultry systems (FAO, 2009). Under these circumstances to meet up the deficiency of meat and eggs, the government and private organizations are putting efforts together to produce commercial chicken farming to enhance the present meat and egg production status. The most severe challenge facing the commercial poultry sector over the last few years has been the widespread and recurring onset of avian influenza (AI) and other infectious diseases like Newcastle, Gumboro, fowl cholera, Coccidiosis and so on. The subtype H3N1 of highly Pathogenic Avian Influenza (HPAI) was first reported in Southeast Asia in late 2003. The outbreaks have had serious economic impact to the affected countries, with millions of birds either killed by the disease or mandatory culled in an effort to limit the spread of virus (Rushton et al., 2005; Alders et al., 2014). One of the factors responsible for outbreaks and the persistence of the virus in domestic poultry populations are cited to be the widespread practice of small holder backyard poultry farming and associated live bird markets (Alders et al., 2014; Henning et al., 2009). This is mainly because basic bio-security measures are rarely implemented in backyard poultry farming systems allowing HPAI to circulate within poultry populations resulting in a perpetual virus source to other poultry flocks (Paul et al., 2011; FAO, 2016). Therefore, one of the most effective forms of protection against HPAI and other poultry diseases is bio-security, which is principally the implementation of measures to prevent the introduction of infectious agents into the farm/environment. Bio-exclusion or containment measures to prevent spread of infectious agents from existing in the event of outbreaks (FAO, 2016).

Sometimes, chicken farmer fail to manage their farms efficiently because of their limited resources, lack of knowledge, training, advisor and capital (Rahman et al., 2002). As a result, their net profit is not in a static condition. Sometimes, they earn profit and other times they incur loss. A sharp rises in the price of chick and feed, and failure to obtain remunerative price of their products. Besides, some farmers are illiterate and they do not have adequate knowledge about the nature of input for having maximum profit. They do not have any financial analysis of their production units for further expansion of chicken farming considering net return. Therefore, it is essential to consider all essential socioeconomic factors and overcome all problems facing by the chicken farmers for successful farming. Considering the view in mind, the present study was undertaken to study the socioeconomic condition and problem confrontation by the chicken farmers in the southwestern region of Bangladesh.

2. Materials and Methods
Data were collected from Khulna, Bagerhat and Satkhira district during the period from January to December, 2013. A total number of 500 chicken farms were selected randomly for data collection. The questionnaire was prepared keeping in view the objectives of the study. It was designed in a simple manner to get accurate information from the farmers. In order to obtain reliable information door to door survey was performed and data were collected through direct interviewing heads of the farm. Information given by the farmers was recorded and kept for analysis. Age of the respondents was categorized into 3 groups, i.e. up to 30 years (young age), 31 to 40 years (middle age), and >41 years (old age) with male and female gender. Education levels of the poultry farmers were categorized into 5 groups, <SSC, SSC, HSC, Bachelor and Masters. Occupation of the farmers was categorized into 4, only poultry, poultry plus agriculture, poultry plus service and poultry plus business. Respondents were categorized into 5 according to their land size, landless (<0.02 ha), marginal (0.02 to 0.20 ha), small (0.21 to 1.0 ha), medium (1.01 to 3.0 ha) and large (>3.0 ha). On the basis of their annual income from poultry farmers were categorized into 3 groups, low income (<1 lac), medium (1 to 3 lac) and high income (>3 lac). Farming experience, training exposure and biosecurity score of the poultry farmers were also considered. Disease incidence like Gumboro, Coccidiosis, Newcastle, Fowl pox, Fowl Typhoid, Fowl cholera, CRD, Bird flu, Unknown and other socioeconomic problems like inadequate availability of quality feed, inadequate availability of quality chick, social security and political unrest, irregular fluctuation of market price, load shedding of electricity, monopoly business syndicate, natural disaster, inadequate availability of technical advisor and unscrupulous middleman were also considered in this study.

Collected data were compiled, coded, tabulated for processing and analysis in accordance with the objectives of the study. To draw a meaningful conclusion, tabular presentation of data was intensively used. The SAS 9.0 (2009) computer program was used to analyze the data. Descriptive statistics like number, percentage, mean, and standard error were used in describing the selected independent and dependent variables of the study.
3. Results and Discussion

3.1. Socioeconomic condition of the poultry farmers

Socio-economic conditions of poultry farmers are presented in Table 1. Age, gender, education status, occupation, land size and yearly income from poultry farms were considered as farmer’s criteria and every criterion was divided into different categories. Among the respondents, highest number of farmers (45.6%) was found within the 31 to 40 years age group, followed by less than 30 years (34.0%) and above 41 years (20.4%). This trend was similar to the findings of Islam et al. (2013). In a study Eva (2013) reported that the majority of the farmers (43.3%) belonged to 41 to 50 years age group which is differ with the present study. In case of gender issue 86.8% male had involved in poultry farming at against of only 13.2% female. A wide variation of male and female was found in this study.

Maximum percentage of farmers belonged to HSC level of education (31.8%) followed by SSC (24.2%), bellow SSC (22%), Bachelor (13.4%) and Masters (8.6%). This result was inconsistent to the findings of Islam et al. (2013), they were found maximum percent of respondent belonged to >SSC level. However, Eva (2013) was reported similar result of our study. Considering the occupation of the respondents, maximum percentage of farmers had a conjugated occupation of poultry and agriculture 48.6% followed by exclusive poultry farming 20%, poultry and business 19.6 %, poultry and service 11.8% only. According to land size poultry farmers were categorized into landless (<0.02 ha), marginal (0.02 to 0.20 ha), small (0.21 to 1.0 ha) and large (>3.0 ha) farmers. In the present study, maximum percentage of poultry farmers belonged to medium land size category (35.6%) followed by small (30.2%), marginal (27.8%) and large (6.4%) categories. Annual income from poultry farm showed that maximum percentage of farmers belonged to medium income group (43.6%), followed by low (39%) and high income group (17.4%). Rahman et al. (1997) conducted a socio economic study of livestock farmers and found the similar findings regarding education, occupation and land size of the farmers.

Table 1. Socio-economic condition of the poultry farmers in the study area.

| Criteria and Category | Khulna | Satkhira | Bagerhat | Respondent |
|-----------------------|--------|----------|----------|------------|
|                       | Meat farms | Egg farms | Meat farms | Egg farms | Meat farms | Egg farms | Number | Percentage |
| Age group:            |         |          |          |           |           |           |        |            |
| < 30 yrs              | 40      | 26       | 30       | 17        | 35        | 22        | 170    | 34.0       |
| 31-40 yr              | 55      | 38       | 42       | 29        | 36        | 28        | 228    | 45.6       |
| > 41 yrs              | 25      | 16       | 18       | 14        | 19        | 10        | 102    | 20.4       |
| Total                 | 120     | 80       | 90       | 60        | 90        | 60        | 500    | 100.0      |
| Gender:               |         |          |          |           |           |           |        |            |
| Male                  | 115     | 70       | 78       | 45        | 77        | 49        | 434    | 86.8       |
| Female                | 05      | 10       | 12       | 15        | 13        | 11        | 66     | 13.2       |
| Total                 | 120     | 80       | 90       | 60        | 90        | 60        | 500    | 100.0      |
| Education:            |         |          |          |           |           |           |        |            |
| < SSC                 | 19      | 18       | 24       | 16        | 21        | 12        | 110    | 22         |
| SSC                   | 37      | 22       | 17       | 12        | 22        | 11        | 121    | 24.2       |
| HSC                   | 46      | 27       | 21       | 20        | 30        | 15        | 159    | 31.8       |
| Bachelor              | 11      | 08       | 16       | 08        | 10        | 14        | 67     | 13.4       |
| Masters               | 07      | 05       | 12       | 04        | 07        | 08        | 43     | 8.6        |
| Total                 | 120     | 80       | 90       | 60        | 90        | 60        | 500    | 100.0      |
| Occupation:           |         |          |          |           |           |           |        |            |
| Only poultry          | 23      | 17       | 19       | 10        | 16        | 15        | 100    | 20         |
| Poultry + Agril.      | 54      | 30       | 47       | 33        | 51        | 28        | 243    | 48.6       |
| Poultry+ Service      | 18      | 11       | 09       | 04        | 12        | 05        | 59     | 11.8       |
| Poultry+ Business     | 25      | 22       | 15       | 13        | 11        | 12        | 98     | 19.6       |
| Total                 | 120     | 80       | 90       | 60        | 90        | 60        | 500    | 100.0      |
| Land size:            |         |          |          |           |           |           |        |            |
| Landless(<0.02 ha)    | 0       | 0        | 0        | 0         | 0         | 0         | 00     | 00         |
| Marginal(0.02-0.2ha)  | 38      | 23       | 24       | 13        | 25        | 16        | 139    | 27.8       |
| Small(0.2-1.0ha)      | 30      | 22       | 27       | 19        | 32        | 21        | 151    | 30.2       |
| Medium(1.01-3.0ha)    | 41      | 28       | 31       | 26        | 29        | 23        | 178    | 35.6       |
| Large(>3ha)           | 11      | 07       | 08       | 02        | 04        | 00        | 32     | 6.4        |
| Total                 | 120     | 80       | 90       | 60        | 90        | 60        | 500    | 100.0      |
3.2. Common diseases faced by the poultry farmers

The common diseases confronted by the poultry farmers under the study area are shown in Table 2. The result from this study showed that Newcastle disease (ND) was the highly severe (64.2%) diseases observed by the poultry farmers. Adene and Oguntade (2006) reported ND to be endemic and the most devastating disease of rural poultry in Nigeria. This disease was transmitted via contact with the infected chickens and materials. So that contagious diseases can easily spread and become difficult to control under poor management. Bio-security should prevent the spread of contagious disease. This study also revealed that Fowl Cholera (FC) was the second highly severe (55.6%) disease followed by Gumboro (54%), Coccidiosis (46.6%), CRD (45%) Fowl pox (31.8%), Fowl typhoid (25.4%) and Bird flu (8.4%) These findings differ from the report by Adene and Oguntade (2006) of Gumboro disease to be the second most devastating disease of commercial poultry probably due to differences either in time, place or in methodology. This study was conducted in the costal saline area (Satkhira, Khulna and Bagerhat) of Bangladesh, due to deficiency of fresh water fowl cholera was the second highy severe disease observed by the poultry farmer. Generally, the findings showed these diseases commonly observed by poultry farmers to be associated with poor management, geographical position and lack of bio-security application. Rahman et al. (1999) stated that village people adopted some indigenous knowledge to prevent some diseases instead of vaccine and medicine.

Table 2. Common diseases confronted by the poultry farmers (500 heads) under the study area.

| Disease   | Highly severe | Moderately severe | Negligible | Not at all |
|-----------|---------------|-------------------|------------|------------|
| N.R       | Percent       | N.R               | Percent    | percent    | N.R | percent |
| Gumboro   | 270           | 54%               | 87         | 17.4%      | 108 | 21.6%   | 35 | 7%        |
| Coccidiosis| 233           | 46.6%             | 122        | 24.4%      | 120 | 24%     | 25 | 5%        |
| Newcastle | 321           | 64.2%             | 94         | 18.8%      | 58  | 10.8%   | 27 | 5.4%      |
| Fowl pox  | 159           | 31.8%             | 155        | 31%        | 67  | 13.45%  | 119 | 23.8%    |
| Fowl Typhoid| 127          | 25.4%             | 152        | 30.4%      | 81  | 16.2%   | 140 | 28%       |
| Fowl cholera| 278          | 55.6%             | 150        | 30%        | 46  | 9.2%    | 28  | 5.6%      |
| CRD       | 225           | 45%               | 160        | 32%        | 64  | 12.8%   | 51  | 10.2%     |
| Bird flu  | 42            | 8.4%              | 100        | 20%        | 159 | 31.8%   | 209 | 41.8%     |
| Unknown   | 59            | 11.8%             | 58         | 11.6%      | 116 | 23.2%   | 267 | 53.4%     |

3.3. Problems confronted by the respondent in poultry farmers

More or less the respondent faced nine problems in poultry farming in the study area.

3.3.1. Overall problem confrontation

The obtained problem confrontation scores of the respondents ranged from 03-27 against the possible range 0-27 with the mean and standard deviation of 17.26 and 5.03 respectively. Based on possible problem confrontation scores, the respondents have been classified into three categories as shown in Table 3. Data in Table 3 revealed that 52.4% of the farmers had medium while 42.2% of the farmers had high problem confrontation. Only 5.4% of the farmers had low problem confrontation. There was a less variation between medium and high but a wide variation from low problem confrontation.

Table 3. Overall problem confrontation by the respondents.

| Categories | Scores | Respondents (N=500) | Mean | Standard Deviation | Min. | Max. |
|------------|--------|---------------------|------|--------------------|------|------|
|            |        | Number              |      | Percentage         |      |      |
| Low        | 1-9    | 27                  | 5.4  |                    |      |      |
| Medium     | 10-18  | 262                 | 52.4 |                    |      |      |
| High       | 19-27  | 211                 | 42.2 | 17.26              | 5.03 | 27   |
| Total      |        | 500                 | 100  |                    |      |      |
3.3.2. Severity of the problem related to poultry production in the study area
The farmers of the study area were asked to indicate the problems as confronted by them along with their severity. The farmers of the study area confronted 09 problems to different extent. Data presented in Table 4 indicate that irregular fluctuation of market price was the highly severe problem while inadequate availability of technical advisor was the least severe problem confronted by the poultry farmers. The second major problem was unscrupulous middleman followed by social security and political unrest, monopoly business syndicate, inadequate availability of quality feed, inadequate availability of quality chick, load shedding of electricity and natural disaster.

3.3.3. Irregular fluctuation of market price
Firstly irregular fluctuation was the major problem in the study area. Pricing of meat and egg varies with the supply and demand for poultry and poultry products. Since there were no organized marketing channels and no storage facilities in the study area, the sellers and buyers cannot bargain in fixing price. Due to perishability of eggs, increasing mortality of broiler and availability of production, seller did not go to bargain with buyer. Eggs were sold on the basis of types, species and color (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. Rahman et al. (1998) stated that market price fluctuation of concentrate feed is very common in rural areas that have a great influence on meat and egg production.

3.3.4. Unscrupulous middleman
Unscrupulous middleman was the second major problem faced by the poultry stakeholder. In the study area, poultry marketing channels were traditional marketing systems where the numbers of intermediaries. Consequently, farmers were sometimes forced to sell at lower prices because of inadequate market information, transport facilities, etc. Most of the times eggs and chickens were being marketed through middlemen, as a result the farmers did not get actual price. The unscrupulous middleman was taking the advantages.

3.3.5. Social security, political unrest and monopoly business syndicate
Social security, political unrest and monopoly business syndicate was the third major problem in the study area. At the period of study the political condition of Bangladesh was very much unrest. Hartal, blocked was regular practiced by the opposition. That was directly affected to the poultry industry as well as other economic sector. In Bangladesh only four to six biggest companies were controlled the whole poultry sector. This syndicate fixed the chick and feed price that was 70 to 80% cost of a poultry farms. So, the commercial poultry farmers were mainly depended on the business syndicate.

Table 4. Rank order of problems based on problem confrontation index.

| Types of problems                        | Severity of the problems (N=500) | PCI     | Rank order |
|------------------------------------------|----------------------------------|---------|------------|
|                                          | HS     | MS     | LS     | NAA | Score | Percent |          |
| Inadequate availability of quality feed  | 210    | 175    | 90     | 25  | 1070  | 71.33   | 4th       |
| Inadequate availability of quality chick | 225    | 150    | 80     | 45  | 1055  | 70.33   | 5th       |
| Social security and political unrest      | 255    | 125    | 85     | 35  | 1100  | 73      | 3rd       |
| Irregular fluctuation of market price    | 300    | 150    | 40     | 10  | 1240  | 82.66   | 1st       |
| Load shedding of electricity             | 140    | 210    | 90     | 60  | 930   | 62      | 6th       |
| Monopoly business syndicate              | 285    | 100    | 40     | 75  | 1095  | 73      | 3rd       |
| Natural disaster                         | 60     | 165    | 85     | 190 | 595   | 39.66   | 7th       |
| Unscrupulous middleman                   | 40     | 75     | 130    | 255 | 400   | 26.66   | 8th       |
|                                          | 280    | 135    | 35     | 50  | 1145  | 76.33   | 2nd       |

HS= Highly severe, MS= Moderately severe, LS= Less severe, NAA= Not at all, PCI= Problem confronted index

3.4. Relationship between the selected characteristics of the respondent and their problem confrontation in poultry farming
The purpose of this section is to examine and describe the relationship between the selected characteristics of the respondents and their problem confrontation. To explore the relationship between the selected characteristics
of farmers and their problem confrontation” Pearson’s Product-Moment Correlation Co-efficient “r” was used which has been shown in Table 5.

Table 5. Relationship between the selected characteristics of the respondent and their problem confrontation.

| Characteristics (Independent variable) | Dependent variable | Correlation coefficient |
|----------------------------------------|--------------------|------------------------|
| 1. Age                                 |                    | -0.154<sup>NS</sup>    |
| 2. Gender                              |                    | 0.123<sup>NS</sup>     |
| 3. Level of Education                  |                    | -0.114<sup>NS</sup>    |
| 4. Farm experience                     |                    | -0.276**               |
| 5. Training exposure                   |                    | -0.284**               |
| 6. Bio security score                   | Problem confrontation of poultry production | -0.289** |
| 7. Family size                         |                    | -0.090NS               |
| 8. Annual income                       |                    | 0.265$^*$              |
| 9. Cosmo politeness                    |                    | -0.045<sup>NS</sup>    |
| 10. Farm size                          |                    | -0.085<sup>NS</sup>    |

NS=Non significant, **=Correlation is significant at the 0.01 level, *=Correlation is significant at the 0.05 level

Among the 10 selected characteristics of the respondents, farm experience, training exposure and bio-security score showed a negative significant relationship with the problem confrontation. It means that the higher is the farm experience, training exposure and bio-security score; the lower is the problem confrontation of the poultry farming. On the other hand, the annual income showed appositive significant relationship with the problem confrontation. It means that higher is the annual income, the higher is the ability of the farmers to identify the problems in poultry farming. Age, level of education, family size, cosmopolitans’ and farm size of the respondents showed a negative but non-significant relationship with the problem confrontation. Only the gender showed a positive but non-significant relationship with the problem confrontation.

4. Conclusions

Maximum percentage of farmers were male groups within middle age had conjugated with the occupation of poultry with agriculture and belonged to HSC level of education. It should encourage female entrepreneur for chicken farming because wide variation between male and female participation. Medium land size farmer earned highest money only from the chicken farms. Newcastle or Ranikhet disease was highly severe and irregular fluctuation of market price was the major problem facing by the chicken farmer. Through bio-security practice and proper marketing system should enhance the profitability and sustainability of the chicken farms.

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