Pakistan Journal of Social Sciences 4 (4): 518-524, 2007

Economic Impact of Avian Bird Flu on the Poultry Industry in Nigeria

Daniel S. Ugwu
Department of Agricultural Economics and Extension,
Enugu State University of Science and Technology, PMB 01660, Enugu, Nigeria

Abstract: This study reviewed the available literature on the economic impact of the Bird Flu epidemic on the Nigerian poultry industry. It was noted that the Avian Bird Flu is an infection of poultry caused by an influenza A virus of the H5 or H7 subtypes, and that several different strains of the virus have been shown to infect humans. Avian bird flu caused by influenza A viruses can affect a variety of domestic and wild bird species. A perspective on the Nigerian poultry revealed the population of birds in the poultry industry in the country is about 140 million and the industry contributes about 9% to the country's GDP. However, the industry has witnessed lots of ups and downs as a result of favourable and unfavourable government policies, and shocks from disease epidemic climaxed by the deadly bird flu. With the detection of the virus H5N1 in the northern part of Kaduna and its spread to 13 of Nigeria's 36 states as well as the Federal Capital Territory (FCT) Abuja, the Federal Government was able to form a Technical Committee of Experts for the prevention and control of HPA 1 in Nigeria, among other key strategies. The impact of the Avian Bird Flu epidemic could be classified to two: Financial impact and derived economic impact. The financial impact were essential colossal financial losses with respect to Government losses/expenditures in terms of prevention and control expenditures and compensations to farms farmers and agro-institutions/establishment's. It also include losses to individuals. Farms and other stakeholders in financial terms. Derived economic impact were identified as negative or positive. Negative economic impact encompasses the psychological, social, political and environmental impacts of the epidemic. Positive derived economic impact include the strengthening of institution's, capacity building of personnel and intensified research in response to the outbreak of the avian bird flu epidemic in February, 2006. In order to contain the avian flu in the future, it is recommended that veterinary services should be adequately staffed with adequate budget provision as well as establishment of more well equipped veterinary research institutes and laboratories. It is also recommended that all poultry industries should be registered for effective communication, enforcement of international guidelines and standards on avian flu prevention and control as well provision of capacity building and facilities.

Key words: Nigeria, poultry industry, avian bird flu, economic impact

INTRODUCTION

Notifiable avian bird flu (Avian influenza) is defined by the World Organization for Animal Health (OIE, 2004) as "An infection of poultry caused by any influenza A virus of the H5 or H7 subtypes or by any avian influenza virus with an Intravenous Pathogenicity Index (IVPI) greater than 1.2 (or as alternative at least 75% mortality)".

Several different avian influenza strains have been shown to infect humans. These include the H5 subtype (H5N1), the H7 subtype (H7N2, H7N3, H7N7), the H9 subtype (H9N2) and the H10 subtype (H10H7).

Avian bird flu caused by influenza A viruses can affect a variety of domestic and wild bird species. Birds in the wild, all over the world carry this virus in their intestines, although they rarely become ill from it.

Nigeria was the first African nation to report H5N1 avian influenza and now scientists have found evidence that the virus was introduced into the country at least three separate times, possibly by migratory birds (CIDRAP, 2006).

With respect to the epidemiology of the Avian bird flu (Avian influenza) globally Table 1 shows the distribution of human cases of H5N1 by country and month and year of symptom of first and last reported case (WHO, 2006). From 1st December, 2003 to 30th April, 2006 9 countries reported a total of 205 laboratory confirmed human cases of H5N1 avian influenza to WHO. Table 2 is a summary of the countries affected by H5N1 in poultry and wild birds as at June, 19, 2006 (FAO, 2006).

The Nigerian poultry industry in perspective: The term poultry refers to the class of animals called Aves. There

Table 1: The distribution of human cases of H5N1

Country	Onset of first reported case	Onset of last reported case	No. of cases	No. of deaths
Viet Nam	December 2003 January	November 2005 November	91 22 6 32	42 14 6
Thailand	2004 January 2005 July	2005 March 2006 March	18 12 2 8 12	24 12 4
Cambodia	2005 October 2005	2006 April 2006 January	203	2 5 4
Indonesia, China	December 2005 January	2006 January 2006 March		113
Turkey Iraq	2006 February 2006 March	2006 April 2006 April 2006		
Azerbaijan	2006 December 2003			
Egypt all cases				

Source: WHO (World Health Organization) 2006

Table 2: A summary of the countries affected by H5N1

East Asia Southeast Asia	Europe, Siberia, Central Asia	Africa
Cambodia, China, Honk Kong, India, China, Japan, Laos, Malysia, Myanmar, Mongolia, South Korea, Thailand	Afghanistan Albania Austria Bosnia-Herzegovina Croatia Cyprus Czech Republic Denmark Georgia (former Soviet Republic) Germany Greece India Iran Israel Italy Jordan Kazakhstan Pakistan Pelestina Romania Russia (Siberia and European Russia) Saudia Arabia Scotland Serbia Slovenia Spain Sweden Sweden Switzerland Turkey Ukraine	Burkina Faso Cameroon-Djibouti Egypt Ivory Coast Niger Nigeria Sudan

Source: FAO 2006

are several members of this class that have been domesticated but the most popular families are the *Phasianade, Meleagridae, Anatidae* and *Numididae*. Of these, the genus and species *Gallus domesticus* (chicken), *Meleagris gallipavo* (Turkey), *Anas platyhynchos* (ducks) and *Numida meleogris* (Guinea fowl) are well known in Nigeria (AERLS, 1993).

In terms of commercial production however, the chicken has been the most extensively exploited and it forms the backbone for the poultry industry in the country. According to Osakwe (2006) the population of birds in poultry industry in the country is about 140 million and the industry contributes about 9% to the country's GDP. The development and growth of this industry has witnessed lots of ups and downs. At one time, the sub-sector will witness rapid growth as a result of favorable environments created by favourable government policies, at other times it will nose-dive as a result of adverse measures and/or diseases out break. More recently, prior to 1999, the sector was grossly debased and battered as the country witnessed massive importation of assorted poultry products from abroad. Local producers were forced to fold up as a result of high cost of production and low patronage as their products could not compete effectively with the imported frozen products.

To save this industry from total collapse, various bodies and stakeholders took it upon themselves to canvas for better policies from the government towards the industry. For instance, in 1992, a workshop titled "Nigerian Livestock Industry; Problems and Prospects" was organized by the World Bank and other stakeholders and among their recommendations was that there is the need for government to provide incentives for the production of poultry feeds in the country (Onucheyo, 1998). Feeds of course are singular most expensive issue in poultry production. With the coming into office in 1999, the civilian government banned the importation of all poultry products into the country. It became therefore a singular action that saved our poultry industry from collapse. Poultry farmers were therefore encouraged and the old players in the industry picked up their abandoned enterprises while new entrepreneurs emerged in the industry. Local feed manufacturers increased. The market was cleared for poultry farmers to sell their products of eggs and chicken.

The industry was however badly shaken as in February, 2006. There was the news of Bird Flu outbreak in the Northern part of the country, specifically at Sambawa Farms in Kaduna State. With this singular report the wave reverberated into the nooks and crannies of the country and the effect on the industry was unprecedented.

The bird flu cases in Nigeria: In spite of all the odds, the poultry industry in Nigeria was doing very well more especially with the ban on importation of poultry products into the country, until February 2006 when the avian flu was reported at Sambawa farms in Kaduna State. That was the beginning of the re-writing of the history of the poultry industry in Nigeria.

According to Costa (2006) the virus H5N1 was first detected in northern part of Kaduna and it quickly spread to 13 of Nigeria's 36 states as well as the capital city. According to him, "we have about 14 states and (including) the capital territory, Abuja with reported avian flu cases. But, nobody knows that about 40 local governments have been affected." He went further to say that Nigeria is the first African country to detect the deadly H5N1 strain of bird flu, but has not detected any cases of human infection. The fears expressed however was that continued existence of this virus in Nigeria increases the risk of human infection.

The above is from the informed sector. With the news of the bird flu, the country went hair wire with information. Speculations were rife. The press had a field day in dishing out information. Apart from these 14 officially reported states, speculations were mixed with reality to the extent that virtually every state within the Northern part of the country was blacklisted as high risk areas. Even some Southern States like Anambra started reporting cases. Any death of poultry from any farm was feared to be linked with bird flu.

In another development, Ozoemena and Ubani (2006) reported that an outbreak of the deadly avian flu has been confirmed in Nigeria, wiping out in one fell swoop over 46,000 poultry at a farm in Jaji, Kaduna State. The report went ahead to disclose that the affected farm is owned by the then Sports Minister, Alhaji Saidu Samila Sambawa. Also according to the same report, traders in Kano were making brisk business from the sale of chicken which died as a result of the birdflu disease.

The Federal Government of Nigeria was the first to confirm the outbreak through the Minister for Information and National Orientation. Mr. Frank Nweke after a Federal Executive Meeting in Abuja. The government took some immediate remedial measures to stem the spread of the disease. Apart from the Sambawa Farms, the government for pathological tests also quarantined some farms in Kano and Plateau States. Then they went swiftly ahead to set up Surveillance centres across the nation and backed it up with adequate information and publicity. Radio and television jingles were developed to educate the public. Movement of poultry and poultry products from one part of the country to another was banned without due clearance from the appropriate authorities. Equally, seminars and workshops were put in place to educate the professionals in the poultry industry and other stakeholders on the signs of the disease, control measures and other relevant information needed to do away with ignorance. Directives were given for the slaughtering of birds in any suspected farm and the sum of N2 Billion was approved for payment of compensation to farmers that would have their farms so affected, (Ozoemena and Ubani, 2006). Various rates were approved for the various species of poultry birds being kept in the country. Of course all the poultry at the farm of origin (Sambawa farms) were all slaughtered apart from the ones that died.

In spite of these prompt measures, the disease took its toll in the poultry industry. The nation and individuals counted their losses after the spread of the disease was brought under control and after all the psychological fear and propaganda associated with it seemed to have died down.

POLICIES AND STRATEGIES FOR THE CONTROL OF AVIAN BIRD FLU IN NIGERIA

Following the outbreak of Avian Influenza in Asia, President Olusegun Obasanjo, in October 2004, directed the Minister of Agriculture and Rural Development, Mallam Adamu Bello, to establish (in conjunction with the Veterinary Association of Nigeria) a Technical Surveillance Committee to explore the situation in order to mitigate the impact of the contagion on Nigeria.

This part proactive response of the Federal Government became necessary because Nigeria is on the migratory path of birds flying from Asia and Europe. Consequently, the committee established a total of 170 centres across the country as collection points for migratory birds, which were randomly tested for the Avian Influenza virus.

On December 12th, 2005, Federal Government inaugurated a Technical Committee of Experts for the prevention and control of HPAI in Nigeria. Since the outbreak of the bird flu was confirmed in Nigeria on February 8th, 2006, the Federal Government has demonstrated unparalled commitment to contain the disease by putting in place a well articulated strategy to avert mass loss in Nigeria's fast growing and promising poultry industry, but importantly to prevent possible human pandemic.

The strategies put in place by Government include the setting up of Avian flu Crises Management Centre at the Banquet Hall of the Presidential Villa, by the President, chief Olusegun Obasanjo. The Centre, which operates 24 h service, coordinates activities and disseminates information regarding the prevention and control of the Avian flu. It is jointly supervised by the Federal Ministries of Agriculture, Health, Information and National Orientation in collaboration with the representatives of some international and Donor Communities.

The communications sub-committee articulated an integrated Communication Strategy and Social Mobilization Plan, after a two-day workshop organized by the Federal Ministry of Information and National Orientation in collaboration with the Ministries of Health, and Agriculture and Rural Development, the UN systems and other development partners. This plan has been adopted as the framework for public enlightenment and mobilization of our people with a view to achieving behaviour change that will help prevent human infection (Nweke, 2006).

Right from the inauguration of the centre and on a regular basis, Nweke (2006) aquainted both the local and

internal news media, with the activities of the inter-ministerial committee and the centre, detailing our successes and challenges. Since February 16th, 2006, the communication committee has issued a total of 18 News Bulletins to keep the public properly and accurately informed on the management of the Avian flu in Nigeria. The committee made people to be familiar with the Avian jingles on radio and have also published materials in English explaining healthy behaviours and have been translated to Fulfulde, Hausa, Igbo and Yoruba. They have also established hotlines and e-mails where members of the public and accurate information from seasoned professionals who also operate on 24 h basis, (Nweke, 2006).

The Federal Government has completed the disbursement of relief to poultry farmers whose birds were culled to prevent the spread of the Avian flu. The relief package is meant to encourage poultry farmers to quickly report cases of high mortality among their bird population and to cushion the effect of losses incurred by farmers whose birds were culled as a result of the epidemic. And once the Avian flu is successfully stamped out, the Federal Government will commence the implementation of a restocking programme being worked out for poultry industry.

The Technical Committee of Experts for the prevention and control of HPAI after deliberations in a meeting at Veterinary Council of Nigeria (VCN) Conference Hall, Abuja on Dec. 12 - 14 2005 recommended the underlisted strategies for the control of HPAI into the country:

- Ban on importation of poultry and poultry products from countries where the disease HPAI is known to exist. At present, there is an existing total ban on importation of live birds and poultry products including fertile eggs into the country which needs to be re-examined from time to time with a view to ameliorating the negative impact on the fragile poultry industry without comprising the present HPAI status in the country.
- An effective animal disease surveillance involving high risk areas such as poultry markets, wet lands and poultry located along known migratory birds routes, poultry abattoirs, borders and targeted farms should be carried out. Results obtained may then be used to assess the need for a complete nation wide HPAI active disease virus and sero-surveillance to determine epidemiological status of the disease in the country.
- Improved and functional National Veterinary Quarantine Services (NVQS) including immediate rehabilitation and revitalization of existing veterinary quarantine infrastructure, control posts and enhanced manpower capabilities. This is to enable a sustained surveillance of animal disease at the posts of entry in the course of animal products, biologies and germ plasm trade. The NVQS service staff should maintain continuous presence at the posts of entry into the country and constitution point of the Joint Intelligence Board (JIB) which should play an active role in HPAI surveillance at the posts.
- Target community based training of rural backyard poultry farmers in various aspects of HPAI recognition and control including biosecurity procedures applicable to rural small scale poultry enterprises and the role of animal disease vigilante in the control of HPAI.
- Development of a traceability mechanism for animals and strict monitoring of movement of poultry and poultry products through registration and of licensing of poultry farms, hatcheries and other poultry enterprises.
- Development of a community based, participatory rural livestock and poultry disease surveillance system and integrating it into the existing epidemio-surveillance network.
- Training of veterinaries, auxiliaries, other categories of poultry farmers on HPAI prevention and control strategies including aspects of biosecurity.
- Effective public enlightenment and awareness programmes on HPAI.

ASSESSMENT OF THE ECONOMIC IMPACT OF THE BIRD FLU IN NIGERIA

The reported outbreak of Bird Flu in Nigeria in February 2006, had a deep economic impact in the poultry industry within the country, in two aspects: financial impact and derived economic impact. Financial impact focuses on financial losses to individuals, farms and cooperatives and poultry and allied industries derived economic impact concerns the psychological, social, political and environmental effects of the epidemic.

Financial impact

Government's losses/expenditure: The first strategy to cob the disease as adopted by the government after alerting the public on its existence and the signs to look out for was culling of affected birds and payment of

compensations. For instance, it was reported by the World Health Organization (WHO) that Nigeria culled a total of 700,000 birds. According to Osakwe (2006) these birds were culled at a cost of N560 million (about N44 million US Dollars). This is part of the N2 billion earmarked for compensation by the Federal Government (Ozoemena and Ubani, 2006) at the outbreak of epidemic. The government of course promised full compensations for all slaughtered birds at the rate of N250 per bird. Other classes of poultry like Turkey and Ostrich were graded higher in terms of compensation. Though statistics were not available on the total compensations paid out till date, the above is indicative that government made that pronouncement and followed it up, else, farmers couldn't have cooperated in disclosing the incidents of the diseases in their farms.

Apart from the Federal Government, state government where the outbreak of the disease was severe also incurred their losses in compensation payments. For instance, Ibrahim (2006) stated that Kano state government distributed the sum of N37 million to the first and second batch of the Avian Influenza affected poultry farmers in Kano state. The same source said that a total of 222,101 birds were killed in about 82 farms in the state during the outbreak. The above does not in any way represent all that the government expended on compensation to affected farmers notionwide. However, these are available records to the researcher.

The losses suffered by government at the various levels cannot be quantified monetarily alone and not even on compensations. The country lost a lot of faces politically and socially. In addition to the above compensational losses, a lot of money went into enlightenment and publicity which the government may not be willing to disclose. The outbreak was an emergency and was handled by the government as such. These were expanded through formation of various committees, at the national and state levels, production of handbills and bulletins to enlighten the public on avian flu, television jingles and publicity, training of personnel and other institutional re-strengthening. Of course all these constituted huge financial expenditure of public funds which could have found alternative uses.

Loses to individuals, farms and other stakeholders: Inasmuch as the government bore the final impact on monetary payment to farmers, the sector that sustained a major loss in the epidemic was the private sector that had the direct impact of the bird flu epidemic. What the farmers lost nationally will be difficult to quantify economically. It is only those big-time farms that could bring their cases out that had their losses quantified.

At the first farm of outbreak, The Sambawa sfarms, Jaji, a total of 46,000 birds were lost (Ozoemena and Ubani, 2006). This is just from a single farm out of many. Kano state put the loss from 82 farms at 222,101 birds (Ibrahim, 2006). Those of individual farmers are not included. Ozoemana and Ubani (2006) reported that poultry market crumbled immediately at the state and chicken prices went down from N1000/bird to N300/bird. The economic losses were enormous. At Enugu, the chairman of Poultry Farmers Association, Enugu chapter put the loss from the farmers within the state at over one billion naira (N1 billion) Ogbuene (2006). The loss according to him was incurred as a result of non-sale of eggs, chickens, and continued medication and feeding of birds. This arose as a result of people's scare and total rejection of poultry products as a result of the bird flu. Many of the farmers who lost their birds or who were badly affected by the drop in market for the products were deeply indebted to the banks and were helplessly watching their birds die as they could no longer afford to feed them because of the lack of demand (Ogbuene, 2006). In Enugu state, the price of a crate of egg fell from N350 to N200 while old layers came down to N350 (Ayalogu, 2006). If this could be happening at a state that had no outbreak of the flu just because of the scare alone, what then would have been the case in those states specifically identified as having the outbreak. Enugu and Kano state cases were typical of the situation across the nation. The financial losses associated with the news of the outbreak were enormous at the various states more especially with the private farmers who are the major poultry producers.

Derived economic impact

Negative impact: Though all losses sustained need to be denominated in monetary terms to be fully appreciated, one should not lose sight of the other incidental impacts that will be difficult to quantify financially.

One notable aspect of the above is sharp fall in demand for the poultry products without a corresponding decrease in the supply. With the massive information launch by the government and other stakeholders through various media, the populace was more of terrified than enlightened. People started avoiding poultry products. Chicken and eggs almost disappeared from the menu of various families across the country. Social occasion like weddings and other ceremonies where chicken used to be lavishly served as delicacies, completely dropped it and in its place fish and beef became the order of the day. The implication of this was that prices were forced down below the production cost. Ogbuene (2006) quoted two big poultry farmers from Enugu thus:

"Many of us are deeply indebted to banks. Some were watching their birds die and even went out to beg neighbors to come and pick them free of charge but many of them ran away. In fact, HIV/AIDS was more tolerable than touching our eggs."

With the situation where producers had to plead with consumers to purchase their products at even half the cost of production, it spells doom for future production. Within that space of time that the pandemic lasted, lots of poultry farms folded up not as a result of the direct wiping out of their birds by the virus but because they were forced out of the market due to their inabilitywere unable to sell their products. Following this striking of the industry, lots of people (poultry attendants and other workers) lost their jobs. For instance many of the farmers who were into ADP livestock (poultry) module in the Federal Government Special Programme on Food Security (NSPFS) lost the capacity to continue with that module. It is obvious that these losses of jobs by poultry industry workers will push down the Gross Domestic Product (GDP) and the Gross National Income (GNI) of this country for the year 2007 and even for subsequent years until the industry fully picks up again.

In a manner similar to the above, capacity utilization by companies serving the poultry industry within the country will likely fall. These include veterinary drug producing companies, feed manufacturers as well as manufacturers of poultry equipment. The effect of this on the employees will be similar to the one mentioned above. This equally will have adverse effects on the GDP as well as on the Gross National Product (GNP) of the country.

Positive impact: Strengthening of institutional framework: The outbreak of the virus and the embarrassment caused the country at both the national and international levels, turned out to be a disguised blessing for the industry. Though experts say the avian virus can be transferred by migratory birds, one thing was clear from various reports gotten. People who could afford it were importing day old chicks and other classes of poultry from outside the country, even from the Asian countries where the incidences of this disease had been experienced in the past. Our borders seemed to be free and the functionality of our livestock control posts at these borders and quarantine services were in question. With this outbreak and the beaming of public light on them, they were forced to sit up to their responsibilities. One can see a little semblance of this in the defense/explanations made by the Hon. Minister for Agriculture when he was reporting of the incidence of the disease at Sambawa farms. According to him "investigations has been going on for quite some time in this farm. Initially, we thought it was new castle or cold cholera, but some of them exhibited symptoms of Avian influenza……"

He continued, "In line with our policy, what we did when we found that there was high mortality at Sambawa farms was to quarantine it. We did this even before it was confirmed it was avian influenza" (Ozoemena and Ubani, 2006). Almost agreeing to this assertion of government agencies being made to sit up, Ibrahim (2006) quoted the field officer, Federal Department of Livestock and Pest Control as saying that government had to put in place emergency preparedness and differentiated action plan for surveillance and control of the disease. Part of the measure was putting a ban on the importation of poultry and poultry products, effective surveillance and functional National veterinary and quarantine facilities.

Apart from the above, the outbreak triggered off lots of researches within the country and helped attract the attention and sympathy of international communities and agencies towards rendering support to this industry. According to Umoru (2006) the Federal Ministry of Agriculture and Rural Development engaged the services of foreign experts to train the ministry's staff on how to confront bird flu and other agro-related epidemics in the country in case the epidemics near their heads again. In other words, this outbreak has awakened the consciousness of the Federal Government in realizing how unprepared the country's machineries had been to tackle such unforeseen problems and how our livestock industry had been in doldrums. Costa (2006) reported in Voice of America news (VOA) that the European Union (EU) is providing nearly $700,000 (seven hundred thousand Dollars) to the Food and Agricultural Organisation (FAO) to look for cases of avian influenza in Nigeria. The surveillance programme was aimed at helping eradicate the disease from Africa's most populous country. The six-month project involves a comprehensive study on the incidence, spread and impact of bird flu in Nigeria, as a means of eradicating the disease in the West African country. In it, more than 200 health workers will travel across the country to look for cases of the avian influenza. In a nutshell, this has lead to institutional re-strengthening, capacity building and intensified research on agro-epidemics in the country.

CONCLUSION AND RECOMMENDATIONS

- Veterinary services should not be understaffed and under budgeted. More veterinarians should be trained. This is because Nigerian outbreak of H5N1 in birds probably began in early January 2006, according to World Organization for Animal Health. A lack of veterinarians led to three-week delay in confirming the virus.

- Government should establish more veterinary research institute and upgrade them to carry out rigorous and acceptable scientific tests on bird samples.
- All poultry industries should be registered and should operate with registered hatching eggs.
- Well equipped local laboratories should be established in all the states to carry out testing and surveillance to avoid delay in confirming the virus and not to spread undetected within the country.
- Credit facilities should be given to poultry farmers to encourage them in increasing their production.
- Communication committee should keep the poultry farmers, properly and accurately informed on the immediate outbreak control measures to avoid further transmission.
- All the ministries involved in Avian Influenza activities should be encouraged to recognize the international guidelines and standards for reporting outbreaks, regulating international trade and creating travel policies.

REFERENCES

AERLS, 1993. Poultry Management Handbook, Extension Bulletin No. 63, Livestock Series No. 15, (National Agricultural Extension and Research Liaison Services, Ahmadu Bello University, Zaria.

Ayalogu, P., 2006. Provide farmers with vaccine, Service News, 18: 7.

Costa, G., 2006. EU, FAO Launch project to curb bird flu in Nigeria, VOA News, 23rd Sept. 2006 (web:http:/www.voanews.com/English/2006-09-23-voa16.cfm).

CIDRAP, 2006. News Article Nigeria's has Africa's first H5N1 Bird Flu Outbreak.

FAO, 2006. Should wild birds now be considered a permanent reservoir of virus? FAO AIDE news June 19, Issue No. 40.

Ibrahim, Y.A., 2006. Nigeria: Bird Flu-Poultry Farms Lose Over 222,000 Birds. Daily Trust, pp: 1.

Nweke, F., 2006. An address at a joint two-day communication workshop on the Management of Avian Influenza in Nigeria, Organised for the Heads of Federal Infarmation Centres, officers of the National Orientation Agency, and Practitioners of Mass Communication.

Onucheyo, 1998. Political Decisions in the Nigerian Agricultural Industry. Tamaza Publishing Coy. Lrd., Kongo-Zaria.

Ogbuene, D., 2006. Poultry Farmers Lose N1 Billion, Service News, 18: 6.

Ogbuene, D., 2006. Poultry Farms Count Losses: Commend Enugu State Government, Service News, 18: 6.

OIE, 2004. Highly pathogenic avian influenza. International Health Code. Chap, 2.7.12.

Osakwe C., 2006. "An Overview of the Avian Influenze in Nigeria", Being Paper Presented at a One Day Workshop Held at Enugu, Nigeria.

Ozoemena and T. Ubani, 2006. Bird Flu Hits Nigeria, Kills 46,000 Chickens, In: Vanguard, pp: 1.

Umoru, H., 2006. Nigeria: FG Patners with Asian Countries to Combat Bird Flu, Vanguard.

WHO, 2006. Avian Influenza Situation (birds) in Nigeria.