CHAPTER I

INTRODUCTION

1.1 Background and Rationale

Avian Influenza (AI) was first identified during an epidemic in Italy in 1901. The first occurrences of recent outbreaks were detected in geese in 1996 in the Chinese province of Guangdong and in 1997 in Hong Kong. In 2003 the disease broke out in the Netherlands, Belgium, USA, and the Republic of Korea. Since December 2003, many Southeast Asian countries including Thailand have had poultry outbreaks of AI type A (H5N1). Moreover, the disease which is now considered endemic in some countries has spread all over the world and is now present in Asia, Africa and sporadically, in some European countries. It is difficult to control.

AI has important economic consequences for poultry farmers in several affected countries, because is a highly contagious viral disease and mortality rates are very high. Stamping-out measures ("culling") of infected fowl has been practiced to prevent the disease from spreading. Due to the epidemics in Asia, the Food and Agriculture Organization of the United Nations (FAO) estimated that in approximately one year from January 2003 until January 2004, 20-25 million birds had been culled in the region and approximately 250 million birds until now. (Dolberg, 2005).

Nevertheless, the devastation can have an impact on local economies and both commercial poultry operations and smallholders especially in Thailand, where many households depend on poultry for food and income. Exports from Thailand in 2003 accounted for almost 7 percent of the global poultry meat trade, with an export value of approximately US$1 billion (Poomchatra, 2004). Poultry production is the biggest livestock industry in Thailand. According to a report from the Thai Broiler Processing Exporters Association, more than 800 million chickens are produced yearly and there are 400,000 people involved in the production line. Thus outbreaks of AI certainly cause high economic damage to the country.

During AI outbreaks in Thailand about 180 million chickens and ducks were culled, devastating the poultry industry. It is estimated that the economic loss for Thailand mounted to 60-80 billion Thai Baht, due to the culling of chickens, the decline in domestic consumption, and the temporary ban on export, in addition to the costs incurred as a result of panic in Thai society and lack of confidence in the government (Ministry of Public Health [MOPH], 2005).

Thailand Avian Influenza status

Thailand was one of the first countries in South East Asia where recent outbreaks occurred. There have been four waves. The first outbreak (wave) of Highly Pathogenic Avian Influenza (HPAI) infection was confirmed on 23rd January 2004. Until May 2004, HPAI infection was detected in 190 outbreaks in 89 districts in 42 provinces.

The second outbreak was from 3rd July 2004 to 12th April 2005. There were 1539 outbreaks in 264 districts and 51 provinces. The third wave was in July 2005 to December 2005. There were 75 outbreaks in 27 districts and 11 provinces. The fourth outbreak was confirmed on the 15th of January 2007 and it is still present. DLD confirmed that H5N1 was found in ducks at a farm in Muang district of Phitsanulok province. All 2,100 ducks were culled and the area put under a 21-day surveillance. It cleared that period with no further infections.

In Thailand over 36 million birds died or were destroyed during the first round of control activities (Poomchatra, 2004). Measures to control outbreaks included stamping-out infected poultry, movements control, surveillance networks to reach out into rural areas and intensive clinical surveillance ("X-ray"), disease investigation, public information, collaboration with communities, and teamwork with national and international institutes and other bodies eg FAO, WHO, OIE, CDC. Other supporting measures undertaken were developing legal obligations and updating related laws (notification, potential penalties), control of movement for fighting cocks, passports for fighting cocks, ducks, bio-security on farms, improvement of sanitation for poultry slaughterhouses and improvement of production systems for free range ducks and chickens. The selected control measures were based on the Office International des Epizooties (OIE) recommendations i.e. obligatory culling and movement control.

For the first outbreak the government allocated a budget of 5.3 billion Thai Baht (US$132.5 million) for direct compensation to affected farmers. The

compensation per bird was (in US$): for quail $0.38; $ 1.13 for broiler; $2 for duck; $2.25 for backyard chicken; $3.5 for laying hen; turkey $7.25 and for ostrich $65. During the second outbreak compensation was reduced by 25%. The third wave of compensation was also 75% of the market price and it is still the same.

Thailand had 17 human fatalities out of 188 fatalities; Indonesia had 78 fatalities, and Vietnam 42 (World Health Organization [WHO], 2007).

Since the introduction of the nationwide comprehensive "X ray" survey and surveillance program in Thailand and the culling of all infected poultry, human cases of H5N1 infection have been noticeably reduced.

Suphanburi Province

Suphanburi is Thailand's central province located 169 kilometers from Bangkok. This province is divided into 10 districts: Muang (the town of Suphanburi), Doembang Nangbuat, Bang Pla Ma, Si Prachan, Song Phi Nong, Sam Chuk, U Thong, Don Chedi, Dan Chang and the Nong Yarai district. The districts are further subdivided into 110 communes and 977 villages. In Supanburi province there were 3 fatal human cases during the first outbreak of AI.

Situation Analysis

In mid December 2003, there was an outbreak on a layer farm at Nong Bua district, Nakorn Sawan province. The outbreak was completely contained. On 23rd

January 2004, the Thai national reference laboratory (National Institute of Animal Health) officially confirmed HPAI on a layer farm in Bangplama district, Suphanburi. The results indicated that 153 samples were HPAI positive (Tiensin et al., 2005). On the same day Thailand notified the OIE and nominated Suphanburi province as an infectious disease control zone.

The poultry population in 1417 villages in Thailand was affected in 2004. A total of 83% of infected flocks confirmed by laboratory investigation were backyard chickens (56%) and ducks (27%) (Tiensin et al., 2005). Consequently, the Ministry of Agriculture and Cooperatives announced these villages to be infected disease areas and they immediately start with all necessary control measures. Even with very strict post outbreak measures and surveillance, a new outbreak was identified (report ending on March 19th, 2004, Department of Livestock Development, Thailand). The new outbreaks were in Chiang Mai province (north), Uttaradith province (north), Ayutthaya province (central) and Chonburi province (east). Layer chickens and ducks were affected in these outbreaks and a total of 29,405 birds were destroyed (MOPH, 2005).

From the report of the Coordinating Center for AI Control (private sector), from Chonburi province over 20,000 chickens were destroyed after the AI infection was confirmed on 18 March 2004 in layer chickens. This emergence of the disease has postponed the government's intention to declare the country free of AI, however consumers' confidence in eating poultry meat and eggs has been regained. In 2004

and 2005 more than 62 millions birds were killed or culled. (Department of Livestock Development [DLD], 2006)

Laboratory tests between 1st-21st July 2005 on chicken samples from 13 areas in Suphanburi province were confirmed to have been infected again with the H5N1. From 1st January 2006 – 28 December 2006, the Department of Livestock Development (DLD), Ministry of Agriculture and Cooperatives found HPAI transmission at two sites, one in Phichit province and one in Nakhon Phanom province (World Health Organization, Thailand [WHO/Thailand], 2006).

Since July 2004, active clinical surveillance in poultry has been carried out continuously in all provinces. All affected poultry was culled, farms disinfected and the poultry owners compensated for losses at 75% of the current market price. The area within a 5 km radius of the infected farm is established as a "Protection zone". A cloacal swab is taken from every flock in the protection zone for viral isolation. If H5N1 is detected, the particular premises will be depopulated and disinfected, and another 5 km radius protection zone will be established. In addition, the areas within a 10 km radius of the infected farm are established as a "Movement restriction zone". Any movement of poultry from the zone is prohibited for 30 days after the movement restriction zone is established (WHO/Thailand, 2006).

1.2 RESEARCH QUESTION

1. What is the most relevant source of information on AI in Suphanburi?

2. Is the community aware of and have some knowledge about AI?

3. What is the level of practice and attitudes to prevention of the villagers for rapid and effective response in case of new AI outbreaks?

4. What is the level of basic knowledge regarding the transmission and the spreading of AI?

5. Are there any differences between knowledge about, attitude towards and practices in regard to poultry of affected and non affected farmers?

6. What are villagers' opinions related to Government response policy?

1.3 OBJECTIVES

The objectives of the HPAI surveillance and knowledge investigation included:

1. Measuring villagers' knowledge about AI and their preparedness for rapid detection and precautions in case of new outbreaks of AI.

2. To describe the changes in the practices of poultry handling in Suphanburi province, in villages with a history of AI outbreaks.

3. To find out if there is a knowledge lack about AI in the community, after all government strategies and measures have been implemented e.g. health education, mass education, volunteers training, and general media broadcasts.

4. To measure satisfaction of affected farmers with government compensation.

5. To compare farmers who have and have not been affected with AI.

1.4 RESEARCH HYPOTHESIS

There is an association between attitudes toward AI and whether income has been lost due to AI.

There is an association between income and knowledge levels of villagers.

There is an association between gender and some practices in relation to AI disease prevention.

There is an association between knowledge of symptoms and knowledge of the ways of transmission of AI.

There is an association between knowledge held by farmers and whether they have been affected or not affected by AI outbreaks.

1.5 VARIABLES OF THE STUDY

In this study there are two groups of variables:

1. **Independent variables**

   - Social demographic characteristic

   - Source of information about AI

   - Farming system

   - Government policy for compensation

   - Government action for mass health education

2. **Dependent variables**

   - Knowledge about AI

   - Practices toward AI early detection, prevention

- Capacity for early detection and fast response in case of new outbreaks of AI

- Satisfaction with government compensation

1.6 TERMINOLOGY AND OPERATIONAL DEFINITIONS

A etiology is the causes or origin of disease

AI is Avian Influenza

Attitude refers to inclination to react in a certain way to a certain situation, or to organize opinions into coherent and interrelated structures

Bio-security is a practice designed to prevent the spread of disease onto farms

Broiler is a chicken raised primarily for meat

Capacity is a term used to indicate an individual's mental or physical ability

Carcass the dead body of an animal

Culling same as stamping-out (see below)

Diagnostics the branch of medical science dealing with the recognition and classification of disease

Ecchymosis skin discoloration caused by the escape of blood into the tissues from ruptured blood vessels

Early detection the process of discovering something at an early stage

HPAI Highly pathogenic avian influenza

Knowledge means awareness of, understanding of and problem-solving capacity in relation to

Layer chicken is a chicken raised to produce eggs

Practice means the application of rules and knowledge in action

Preparedness the state of being prepared, especially in emergency readiness for combating something

Quarantine a strict isolation imposed to prevent the spread of disease

Quails are small terrestrial birds

Slaughterhouse is a facility where farm animals are killed and processed into meat products

Stamping-out or killing animals speedily and humanely before disposal of carcasses commences. (If an outbreak of a transboundary animal disease or other serious disease occurs and a stamping-out policy is adopted for its control and eradication, it may be necessary to destroy a large number of animals.)

Surveillance a type of observational study that involves continuous monitoring of disease occurrence within a population

X-ray Survey is a nationwide comprehensive surveillance program. The goal of this survey was to detect HPAI infection in any village.

1.7 CONCEPTUAL FRAMEWORK

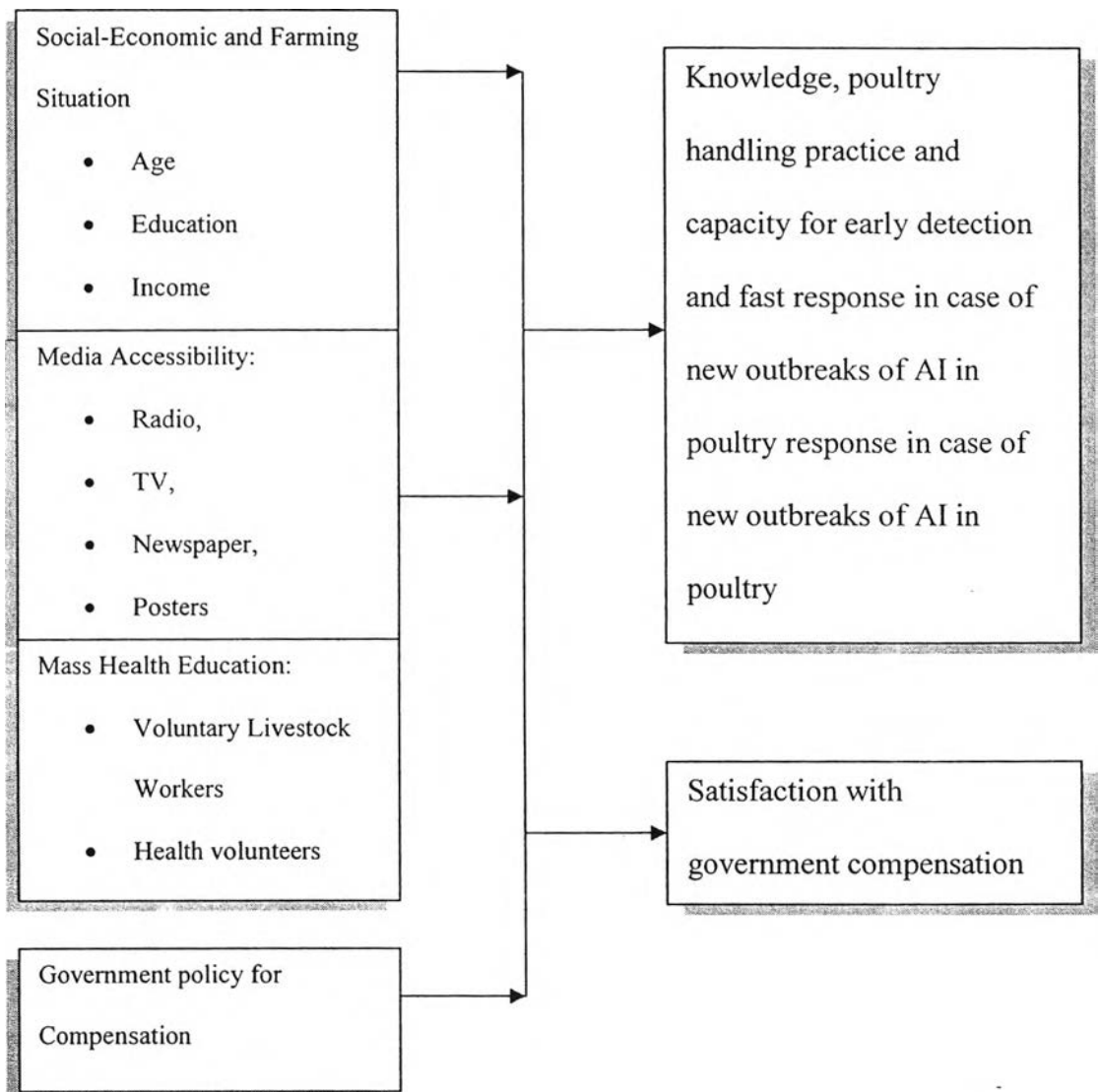The conceptual framework of this study is illustrated in Figure 1.1

Figure 1.1: Conceptual framework of the research with independent and dependent variables