



Food safety performance in key pork value chains in Vietnam

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I. Introduction

Pig production plays a crucial role in the culture and livelihoods of smallholder farmers in Vietnam, especially in rural areas. Approximately 60% of the national livestock production value and three million jobs were generated annually by this sector (MARD 2017). The pig herd has continuously increased over the past several years, reaching well over 28.2 million heads in 2018. Pork is also the most widely consumed meat accounting for more than 70% of all meat consumed in the country.

As people's income increases and their living standard improves, the safety of pork and food in general is becoming a top concern among Vietnamese consumers. Studies show that most pork sold in Vietnam have unacceptably high levels of hazards and contaminants (Grace 2012; Fahrion 2013; Dang et al. 2019). Consumers also raise major concerns towards inappropriate use of antibiotics and banned veterinary residues, high levels of microbial contamination, and spoiled products. However, these concerns are mainly linked to chemical hazards. Biological hazards, which are much more serious in causing foodborne illnesses are mostly neglected (WHO 2015). This misperception is mainly caused by the ineffectiveness

of risk communication strategies adopted by the mass media in Vietnam (Nguyen-Viet et al. 2017).

The International Livestock Research Institute (ILRI), in collaboration with national and international partners, has been implementing the “market-based approaches to improving the safety of pork in Vietnam” project in an attempt at improving risk communication and public health by reducing the burden of foodborne diseases caused by unsafe pork. The project is funded by the Australian Centre for International Agricultural Research (ACIAR) and will last until 2022. Under the project, a range of light-touch and incentive-based interventions will be developed, evaluated and recommended for improving food safety along the pork value chains while safeguarding livelihoods of the relevant chain actors.

In order to provide a solid base for the design of appropriate and feasible interventions under this project, a study was conducted to have a better understanding of food safety perceptions and practices of actors in existing pork value chains. This brief provides selected findings from the food safety performance assessment for key pork value chains in northern Vietnam.

2. Methodology

Eight pork value chains had been identified by the research team through discussion with stakeholders during inception meetings and follow up consultations. These chains were then classified into four groups—traditional markets, modern markets (supermarkets, convenient stores and boutique shops), street food vendors and canteens, and the local pig value chain. The first three groups were studied in Hanoi, Hung Yen (Duc Thang Cooperative) and Nghe An (Canh Nong Cooperative); while the last group of local pigs was studied in Hoa Binh's Da Bac district. Hung Yen province is a peri-urban area located close to Hanoi and represents a scenario of rapid, unplanned and demand driven development. Nghe An is the largest province in the north-central coast and represents a more traditional pig system with different possible trajectories of development. These two provinces mainly specialize in exotic and cross-bred pig production. On the other hand, Hoa Binh province has various ethnic minorities and shows a strong interest in developing indigenous pig businesses.

A newly developed value chain food safety performance tool was used to describe characteristics of value chain actors and assess their food safety performance. Data was collected from August–December 2018 using 11 focus group discussions (FGDs) with producers only and 542 key informant interviews (KIs) across all other value chain actors including producers. Key components of the tool included information on food knowledge, attitude and practices (KAP); food safety behavior; food safety trust and governance; and potential interventions for food safety improvement.

Table 1. Number of FGDs and KIs by value chain actors

Actors	Number of FGDs	Number of KIs
Producers		
1. Local pigs (Hoa Binh)	6	42
2. Crossbred and exotic pigs (other sites)	5	44
Slaughterhouses		
1. Local pigs (Hoa Binh)		11
2. Crossbred and exotic pigs (other sites)		10
Retailers		
1. Hoa Binh*		20
2. Other sites (Hanoi, Hung Yen and Nghe An)		227
Modern retailers		40
Traditional retailers		93
Street vendors		60
Canteens		34
Consumers		
1. Hoa Binh*		18
2. Other sites (Hanoi, Hung Yen and Nghe An)		170
Modern retailers		55
Traditional retailers		78
Street vendors and canteens		37
Total	11	542

*Higher proportion of local pigs traded or consumed

3. Results

3.1 Characteristics of value chain actors

Local pig value chain in Hoa Binh

Local or Ban pigs are mainly kept by smallholder producers with an average of two to three sows to produce piglets and fatteners. Ban pig trading is also at low level with an average of 32 kilo carcasses per day per retailer and less than eight pigs per month per slaughterhouse. There are two types of slaughterhouses in the study areas—large slaughterhouses in Hoa Binh city with an average capacity of slaughtering 300 pigs per month (but rarely slaughter Ban pigs), and family-run slaughterhouses that only slaughter Ban pigs upon order from customers.

Other value chains in Hanoi, Hung Yen and Nghe An

Duc Thang cooperative in Hung Yen has 16 pig producers. Eight of them raise 61–200 pigs per cycle, six raise 31–60 pigs per cycle, and two raise 10–30 pigs per cycle. The cooperative helps link members with input suppliers and market outlets via contractual arrangements. Approximately 50% of all pigs produced by members of the cooperative are sold to two slaughterhouses; the rest goes to other provinces through a network of interprovincial traders.

Canh Nong cooperative in Nghe An has 40 pig producers with an average production scale of less than 30 pigs per cycle. Unlike Duc Thang cooperative whose members are only pig producers, members of Canh Nong cooperative include input suppliers, slaughterhouses and retailers making them more likely to have business within the cooperative. About 60–80% of total pigs produced by the cooperative are sold to six slaughterhouses in the cooperative; the rest is sold to outside slaughterhouses or traders.

Slaughterhouses in these study sites are mostly small scale with an average of 3 pigs slaughtered per day. Nearly half of the pork (54.8%) was sold to retailers, 23.3% to household consumers and 21.9% to school and company canteens or government offices.

Pork retailers are classified into traditional, modern (supermarkets, convenient stores, boutique shops), street food vendors and canteens with average retail volume of 6.6 kg, 47.3 kg and 7.5 kg per day, respectively. While 82.5% of the interviewed modern retailers confirmed constantly increased retail volume over the last three years, approximately half (56%) of the traditional retailers and all food street vendors reported no change.

3.2 Food safety performance

Food safety knowledge, attitude and practices (KAP)

Most actors in all value chains believe that unsafe pork could be detected by its physical appearance such as smell, taste or look. This belief was confirmed by all interviewed slaughterhouses, 90% of producers, traditional retailers and consumers, and 67.5% of modern retailers. About 10% of producers and 9% of slaughterhouses in the local pig value

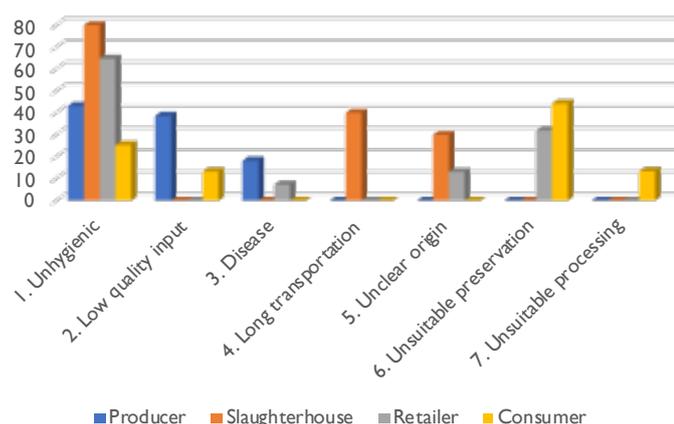
chain showed concern over the possible role of chemical residues in causing cancer risks. All of the retailers in the local pig value chain and the majority of the actors in the other chains (60–86.5%) believed that chemicals in food are the main cause of cancer. A high proportion of all actors in the local pig value chain (76.2–100%) believed that pork would be safer for consumption if it is properly cooked for long time and at a high temperature. In contrast, this proportion in the other value chains only ranged from 20%–47.3%.

Regarding attitude towards foodborne diseases, most value chain actors (91–100%) blamed poor hygienic practices as the main cause of foodborne diseases. The majority of local pig producers (70%), slaughterhouses (80–100%), modern retailers (89%) and consumers (64–77%) considered foodborne diseases can cause serious illnesses, while only half of the crossbred and exotic producers and traditional retailers shared the same thought. While ensuring food safety was regarded as the government’s responsibility by well over 80% of all actors in the local pig value chain, the majority of actors in the remaining value chains (70–89%) also acknowledged the responsibility of other actors in the value chain.

Food safety behavior

Identifying the main causes of unsafe pork is the first step in the attempt to improve pork safety. Results of FGDs and KIs with various value chain actors revealed seven key reasons leading to unsafe pork. These include poor hygiene, low quality inputs, diseases, long duration of meat transportation, unclear origin of pork, and improper preservation and processing techniques. Among these reasons, poor hygiene was reported as the most important by producers, slaughterhouses and retailers.

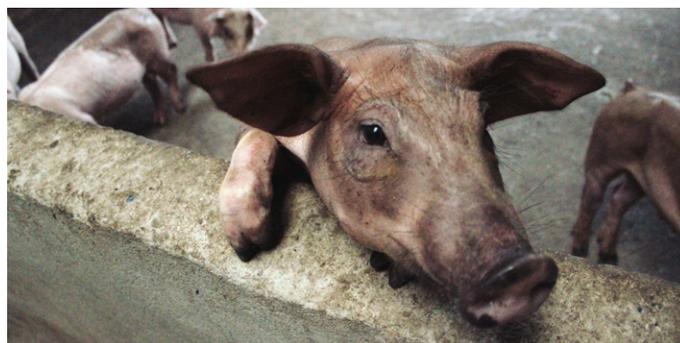
Figure 1: Practices that make pork less safe along value chain nodes



Food safety trust and governance

All actors were asked to rate their trust level in different stakeholders in the pork supply chains with regard to pork safety on a scale of 1–10, 1 indicating hardly any trust and 10 indicating complete or 100% trust. Overall trust levels decrease from rural to urban areas and along the value chain from producer (highest) to consumers (lowest).

In the local pig value chain, veterinarians and the media are more likely to get high trust from all actors with average



scores of 8.4 and 8.2 respectively. Meanwhile, traders and wet markets received low trust scores of 5.0 and 5.3 respectively.

Interviewed actors in the cross-bred and exotic pig value chain also put high trust on food safety messages provided by television and radio (7.9–8.3). While producers and slaughterhouses found farm input suppliers the most reliable informants (8.7–9.0), traditional retailers and consumers did not find them reliable (5.8–6.1).

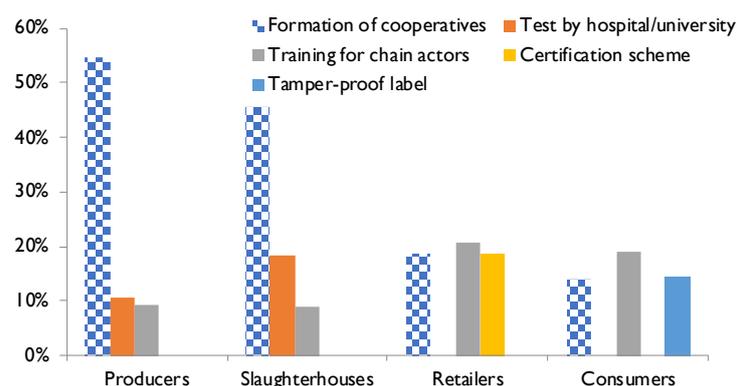
Most downstream value chain actors agreed that pig producers are most responsible for producing safe meat. While this perception was found highest in modern retailers (77%), only 50% of butchers, traditional retailers and consumers shared this opinion. Interestingly, more than 60% of the producers also thought that ensuring pork safety is their responsibility and not that of other actors. This is again linked to the common perception that chemical hazards rather than biological hazards are the main culprits causing unsafe pork.

Potential interventions for food safety improvement

Some predefined propositions for improving the safety of pork were shown to participants of the study for ranking in order of their preference. Formation of cooperative groups and improving market linkage came first in the preference list of most respondents regardless of value chains. This is expected to help implement product traceability from production to product distribution channels eventually building consumer trust on pork products.

Other common preferences include tamper-proof labelling, frequent publication of test results done on pork samples from markets and organization of government campaigns to raise awareness of value chain actors about the importance of food safety.

Figure 2. Top three important interventions selected by value chain actors



4. Conclusions and recommendations

The study revealed that most value chain actors were concerned about foodborne diseases and poor hygiene during food preparation. Practices and trust on food safety varied by value chain actors and locations. Overall trust levels decrease from rural to urban areas and along the value chain from producers (highest) to consumers (lowest). Formation of cooperatives was considered the most promising intervention to improve food safety by various value chain actors.

Key findings from the study also showed the misperception of various value chain actors regarding threats on human health from chemical hazards as opposed to biological hazards. Consequently, most value chain actors believe that producers should be the most responsible for the safety of pork.

Recommendations:

- Strengthen communication efforts across all value chain actors to ensure that they focus on the most important risks.
- Tailor risk communication messages to make them relevant to the location of value chain actors (rural or peri-urban/urban), value chain actors (producer, slaughter or retail) and types of pork value chains (traditional, modern or local pigs).
- Give special emphasis to food safety risk communication to consumers.
- Prioritize TV and local radio when disseminating food safety messages.

Photo credit: ILRI/Hanh Le and ILRI/HUPH/Ngan Tran

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- Explain clearly the efficacy of suggested food safety interventions to value chain actors.
- Promote tamper-free labelling to increase trust or recognize safer pork across value chains.
- Design food safety interventions with the target value chain and value chain actors in mind.

5. References

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