



Opportunities for ethnic Ban pig smallholders in safe pork value chain in Hoa Binh province, Vietnam

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ABSTRACT

Local Ban pigs are raised by ethnic minority farmers in the mountainous areas of Vietnam due to their good adaptability to harsh conditions and low input requirements. Ban pork is considered tastier and more tender than pork from exotic breeds and has the potential to bring higher prices for farmers. However, Ban pigs are mainly sold in local markets due to weak linkages between smallholder pig farmers and other actors in the value chain, and incomplete information on consumer preferences. Vietnamese consumers are increasingly concerned about food safety and tend to prefer certified and safe products. Food safety issues in pig production are now considered at all nodes along the value chain. The challenge is how to promote the marketing potential of Ban pork products and improve pork safety management along the value chain. This study was conducted in Hoa Binh province and Hanoi under the project: Market-based approaches to improving the safety of pork in Vietnam (SafePORK) project from 2018 to early 2023 through a series of assessments aligned with intervention activities, including assessing Ban pig production, studying marketing and branding options, and developing business plans for cooperatives. The approach included training, mentoring, study visits, provision of low-cost equipment, facilitation of partnerships with private sector actors, and business plan development. The results showed that there are many opportunities for smallholder Ban pig farmers to create new market linkages, market shares, and profits when working within a cooperative. Branding Ban pork with support from local authorities is essential to enable better market access. The SafePORK project addressed food safety issues through training and provision of low-cost equipment, contributing to behavioral changes in pig slaughtering. Creating new market linkages takes time. To ensure sustainability, the distribution of added value among cooperative and market actors must be transparent and involve all stakeholders

Keywords: Opportunities, Ban pig smallholders, safepork value chain, Hoa Binh province

Introduction

Local Ban pigs are kept by ethnic farmers in remote villages of mountainous areas of Vietnam because of their good adaptability under harsh conditions and their low input requirements. Ban pork is preferred by consumers as it is regarded as tastier and tenderer than pork from exotic breeds (Pham *et al.*, 2009). Even though Ban pork is a niche market, it has potential of offering high price premium for producers. However, Ban pork

is mainly consumed at local markets due to weak linkages between pig smallholders and other chain actors, and insufficient information on consumer preferences (Pham *et al.*, 2009; Lapar *et al.*, 2012; Huyen *et al.*, 2016; Huyen and Sautier 2017.)

Vietnamese consumers are concerned about food safety, increasingly preferring certified and safe products. Food safety in livestock production is now considered in all nodes along the value chain (USAID, 2015), contributing

to an improved and safe meat value chain. To gain competitive advantages in urban areas, Ban pork quality should be approved via a certificate of veterinary inspection (Huyen *et al.*, 2016) but gaps between legislation and inspection for pork safety transport, slaughter, and retail in Vietnam are significant limitations (Sinh 2018). Veterinary inspection is mainly only done in big or medium slaughterhouses, whereas most rural pigs, especially local pigs, are slaughtered under smallholder conditions (Huyen and Sautier 2017; Sinh 2018). At the same time, ethnic minority producer groups have a poor awareness of food safety in local pig production and consumption (Huyen and Ngoc, 2018), while slaughterhouse workers and pork sellers have considerable misperceptions about zoonotic and foodborne diseases (Sinh *et al.*, 2016). These problems aggravate consumers' distrust of pork quality as they either do not believe in safe pork sold in markets or are unable to know what 'safe pork' is (Nga *et al.*, 2015). The challenge is how to foster the marketing potential of Ban pork products as well as improve pork safety management along the value chain.

Takanashi *et al.* (2013) argue that incorporating perceptions of value chain actors about food safety practices can lead to better communication to improve food safety. The SafePORK project aims to improve food safety in pork through light-touch and market-based approaches by focusing on understanding the local Ban pig and pork value chains as well as improving the capacity of smallholder pig producers to be more actively involved in the improved market chains. It is expected that collective actions, branding

Ban pork products and closely linking with a quality feedback system in a short food supply chain, as suggested by Muth *et al.* (2015), can improve income of involved stakeholders as well as enhance food safety management and practices.

Materials and methods

Location and time

This research was implemented in Hoa Binh province and Hanoi in the frame of the SafePORK project from 2018 to beginning 2023.

Methods

A series of assessment studies aligned with intervention activities were conducted (Figure 1). A knowledge, attitudes and practices (KAP) survey was carried out in 2018. Participatory tools were used to collect data. Data on Ban pig production and relevant activities were depicted from the focus group discussions (FGDs) with groups of 8 to 10 Ban pig keepers. A total of 6 FGDs were carried out in 6 communes. Information focusing on quality and safety along the Ban pork value chain was collected; in-depth interviews were held with 42 Ban pig smallholders, 11 slaughtermen, 20 retailers and 18 consumers; and opportunities for improving

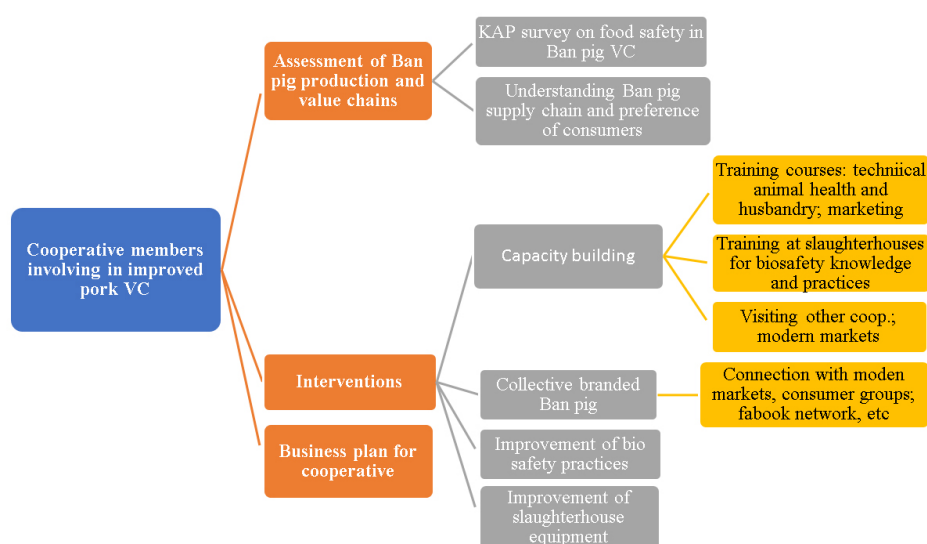


Figure 1. Summary of research approaches

business and food safety performance were identified.

In 2019, a study on marketing and branding options for pork products from Ban pigs in Northern Vietnam was also conducted in Da Bac district and Hoa Binh City, Hoa Binh province, and in Hanoi. A qualitative approach was applied to determine the current marketing channels of Ban pigs, the preferences of Ban pig buyers, and hindrances of buyers from the consumption of Ban pigs in these regions. In total, six FGDs with cooperative members and 85 in-depth interviews with collectors, traders, retailers, and consumers were implemented.

Capacity building for members of Ban pig cooperative on marketing and food safety through a series of training courses were organised in July 2020. These included: Three training courses organized by the National Institute of Animal Science (NIAS) collaboration with Hoa Binh Sub-DAH and Da Bac Agricultural service centre on 'breeding techniques and disease prevention and treatment' for members of the cooperative from six communes Cao Son, Hien Luong, Doan Ket, Tan Pheo, Giap Dat and Muong Chieng; and a training program on 'strengthening market connection and promoting production linkage of the cooperatives' for members of cooperatives boards.

Registration of collective brand was implemented using the procedures and requirements for pig production husbandry and health care procedures, action regulation, planning etc. of the cooperative. These focused on applying a collective brand of Da Bac Local Ban pig and were facilitated and supported by the NIAS team and Hoa Binh Sub-DAH in the last six months of 2020.

A model visit was organized in December 2020 to the Muong Pa Pig Cooperative. Members of this cooperative were Ban pig producers in Mai Chau district, Hoa Binh province. The visit (i) facilitated the experience exchange among farmers of two cooperatives; (ii) reviewed perceptions of, and learned

from, the organization structure; and created linkages between members and the Muong Pa cooperative market; (iii) included tours to a slaughterhouse and a retailing point.

A training program on good slaughter practices to improve pork safety was held in April 2021. It was co-hosted by NIAS and the Hanoi University of Public Health (HUPH).

Supportive interventions to activate smallholder members of cooperatives involved in improved pork value chains: Two slaughterhouses were improved (restructuring floor and walls) and equipped with grid tables for safe pork dressing. Members of the two slaughterhouses were practicing hygienic and biosecure slaughtering. In March and April 2022, commitments on pig production for food safety between members and the cooperative were signed in six communes. The project team facilitated and activated marketing links between cooperative and modern and urban market actors through market visits, and mentoring on signing contracts with private sector (Happy Mart). It also helped establish groups of consumers, Facebook groups, meetings with cooperatives, etc. during 2021 and 2022.

A business plan for the Da Bac Ban Pig Cooperative to start improving the pork value chain sustainably was developed based on data from current Ban pig production, productivity and market channels of the cooperative and opportunities in different market.

Results and discussions

KAP on food safety

Results of the KAP survey revealed that most interviewees perceive that unsafe food can be detected by its physical appearance. The worry about foodborne disease (FBD) was quite different between interviewed stakeholders. Almost all Ban pork consumers (89%) were concerned about unsafe food, while only 5% of retailers thought of this issue. A large percentage of all stakeholders (70- 89%) considered that ensuring food safety is the responsibility of the

government. Veterinarians and TV-radio got high trust levels, while traders and wet markets got low trust levels from all Ban pork value chain stakeholders for food safety messaging. It was noted that veterinarian should be involved in food safety interventions for improvement of pork safety and TV-radio should be used to disseminate extension message on food safety.

Ban pig value chain in Hoa Binh province

The study of market options for Ban pork in Hoa Binh showed that marketing channels of live pigs and slaughtered pigs at different weights of less than 10 kg, 10–20 kg and above 40 kg were available. Marketing channels of processed meat have not developed due to low consumers' demand and belief deficiency in the quality of products. Trading patterns of Ban pigs varied between regions in Hoa Binh province, depending on the availability of local traders and collectors. Collectors played an important role in these channels. In particular, communal

collectors are important for Ban pig keepers in sale transactions, and district collectors and traders in terms of information provision to pig keepers. On the other hand, district collectors have a key role in connecting the local market with consumers outside Hoa Binh province (Figure 2).

Both men and women participated, and had common difficulties, in pig production and trading. Lack of capital and poor knowledge of production techniques, lack of feedstuffs (both green feed and home-produced feed) were major obstacles for farmers in the pig production. The limited information on market prices and consumers' demand make it difficult for farmers to sell pigs at reasonable prices. The limited production capacities of smallholders and inadequate production management in feeding and breeding also limit the number of pigs supplied to collectors and traders resulting in increased transaction costs and high prices for consumers in Hanoi.

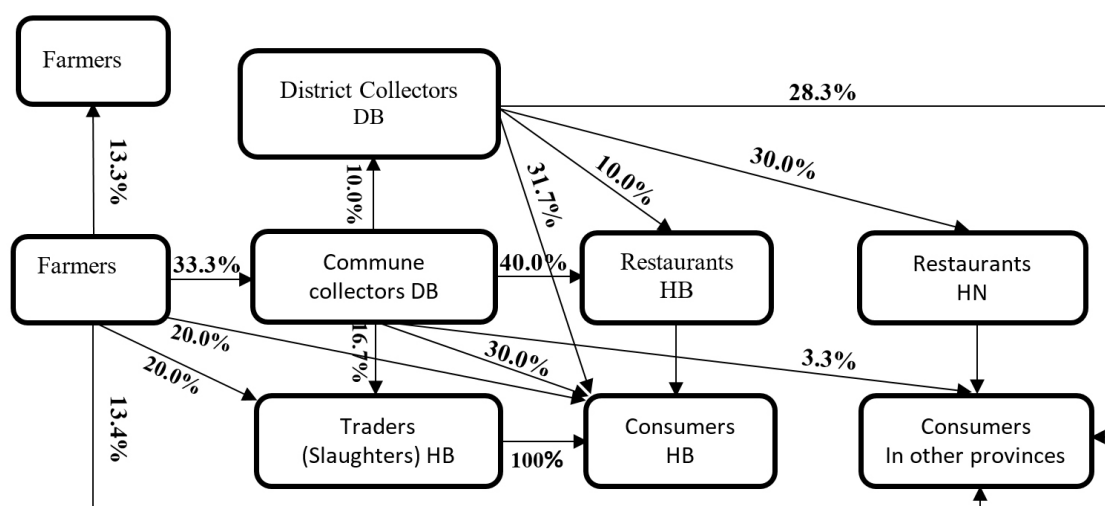


Figure 2. Marketing channels of Ban pigs in Hoa Binh province

Note: DB: Da Bac; HB: Hoa Binh; HN-Hanoi; Source: Stakeholder workshop 2019

Preference of consumers for local Ban pig/ pork and options for an improved Ban pig value chain

The study of market options for Ban pork identified that quality, prices, and raising methods were the most important factors to all

buyer groups. Collectors, restaurants and traders cared about quality traits of live pigs, such as appearance, breed, weight and age. In contrast, food stores paid more attention on quality attributes of pork such as colour, freshness, lean rate, and eating attributes like taste, flavour and

tenderness. The information of pigs' origin was significant to food stores' owners and consumers in Hanoi, and the credibility of sellers affected the consumption behaviour of consumers in both markets. While collectors and restaurants in Hoa Binh province, and food stores in Hanoi preferred pure Ban pigs from 15 to 25 kg, restaurants and collectors in Hanoi tended to favour small, crossbred pigs. Crossbred heavy pigs above 40 kg were demanded by traders in Hoa Binh, food stores in Hanoi, and consumer groups in Hoa Binh.

Online marketing, tasting events, and the establishment of consumer groups were the most preferred options for marketing Ban pigs. Implementation of these options at the same period and from the first phase of a marketing strategy was recommended. Other marketing options, including building sale points in Hoa Binh and Hanoi, and consignment contracts with food stores were suggested for latter phases due to high cost requirements. Building large-scale/focal slaughterhouses for Ban pigs was not recommended due to the scarcity of Ban pigs in the area. Stakeholders in Hoa Binh agreed that branding was essential for marketing Ban pigs. The willingness to purchase and to pay a premium for certified Ban pork showed a demand for branded products of food stores and consumers in Hanoi. Two branding alternatives were recommended: branding via the improvement of consumers' belief in the quality and via a brand name for Ban pigs. Brand names of the cooperative and a governmental stamp or quality certification from testing agencies were most preferred options.

Capacity development of cooperative members in marketing and safe pork

The technical training courses on efficient smallholder pig production and biosecurity management were offered to 83 ethnic people of the Da Bac Ban Pig Cooperative (7 females and 76 males). Most participants

appreciated the training content on economic pig production processes, silage and veterinary issues. Participants found this course was effective and helped improve aspects of their livestock production. The course helped farmers understand how to raise pigs effectively. However, participation of female participants was low due to long travel distance between communes.

Six members of the cooperative's board participated in the marketing management training. All participants said training content was tailored to their needs, the discussions were useful and applicable in practice. The practical exercises, the appropriate training time, and the ease of use and clarity of the training materials was also praised. Some participants said that they liked the business plan content in the program and would apply it after the course.

Participants in the model visit to the Muong Pa Cooperative and its slaughterhouse included 15 members of the Da Bac Ban Pig Cooperative (2 women, 13 men); a deputy director of Da Bac agriculture service centre, a member of party committee of Muong Chieng commune and two NIAS researchers. The discussion focused on the organization structure of the Muong Pa Cooperative, roles of members; the differences in benefits between cooperative members and non-members, application of a common price in purchasing products (and how to follow that price while other traders might offer better prices), the facilitation of breeding herds and annual pig output. Both cooperatives also exchanged experiences and lessons in marketing pigs after which Muong Pa cooperative express its wish to import breeding sows from Da Bac cooperative.

The SafePORK project supported two slaughterhouses to reconstruct the floors and walls and provided pork handling tables and stainless-steel grids to avoid cross contamination of pork. A training course on food safety practices at slaughterhouses was provided for

eight members (including 2 women) of the Da Bac Ban Pig Cooperative. The training and the provision of low cost equipment by SafePORK has contributed to behaviour change among the cooperative's slaughter team members about the importance of complying with regulations on slaughter hygiene and changing traditional unsafe slaughter practices. Since the training, the slaughter team has shifted from slaughtering pigs on the floor to using grids and tables for handling pork and keeping the slaughtering areas cleaner.

Ban pig products from the Da Bac Cooperative were certified as a collective trademark by the Department of Intellectual Property at the end of 2020 under the support from SafePORK project. The project also connected the cooperative with Happy Mart, a convenient food store chain in Hanoi. Happy Mart paid a visit to the cooperative and the two parties signed a memorandum of understanding on price, order quantity, pork handling and deliver services. An agreement between the cooperative and Happy Mart on the ways of dressing pork at the slaughterhouses, preserving pork before and during transport to the food stores as well as introduction of branded pork at the food stores was also signed. Only heavier pigs of 50–60 kg are traded between the two parties to meet the demand of consumer in Hanoi. The smaller pigs less than 30 kg are traded on order as speciality dish in parties, events. These arrangements have paved the way for the cooperative to establish a safe pork value chain with a certified collective trademark. In a subsequent visit to Happy Mart by the director of Da Bac Cooperative trade of small Ban pigs was proposed and is under consideration.

Five board members of the cooperative also visited three food stores (Big Green, Happy Mart and Oanh Hung) and a VinMart in Hanoi. The cooperative members understood the added value of processed pork products in the high-quality pork value chain. They saw first-hand how good quality pork that meets the needs and tastes of consumers is traded in urban markets.

The visitors also realized that very high-priced Ban pork has been sold at the store. They exchanged trading ideas with store owners on the potential and challenges of their cooperation and how to grow it. In addition, the cooperative leaders also visited a Ban pig collection point in Da Bac to explore opportunities for profitable trading Ban pig and cooperation. Following these learning exchange the leaders of the cooperative highlighted the following as important areas to improve the Ban pork value chains:

Processing increases the product's value. However, the cooperative cannot meet the requirements of industrial processing in the immediate future, some hand-made products can be produced such as sausages, pre-processed offal.

The number of customers in Hanoi is very large, an apartment block has the same population as the whole commune, and they are willing to spend money on delicious pork.

Fresh and good quality products can penetrate various markets.

Sorted pork products e.g. belly meat, ribs, shoulder meat, pig legs, tongues, heart, and kidney can be sold in food stores at a high price. The rest can be sold in local markets at more affordable prices for local farmers. However, food stores tend to pay money at end of trading month, which is not attractive to farmers.

More consumers in urban areas are willing to pay higher prices for safe Ban pigs/and pork compared to local consumers and are an important market for cooperatives.

Business plan for the cooperative

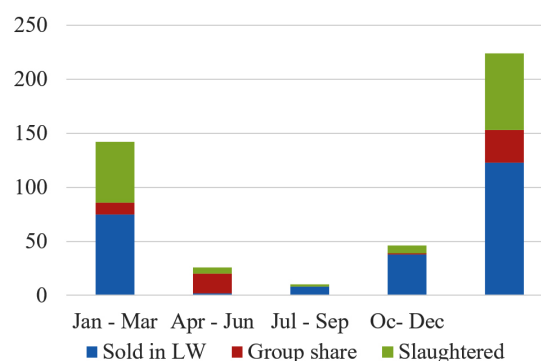
Before market interventions by the SafePORK project, farmers of the Da Bac cooperative sold small pigs to other farmers or sometimes culled sows in local markets. Data on production and productivity of local Ban pigs collected from cooperative members are presented in Table 1.

Table 1. General local pig production situation in smallholders of Da Bac Ban pig cooperative before market intervention

Criteria	Value
Number of households keeping Ban pigs	63
Average number of sows/household	1.3
Average of litter/sow year	2.0
Average number of piglets/litter	7.7
Number of weaned piglets/litter	7.2
Number of pigs at slaughtered age/litter (5–12 months of age)	6.9
Total number of pigs at slaughtered age/household/year	17.9
Percentage for home consumption	10.4
Number of sold pigs/sow/litter	6.2
Average weight of pig at sold (kg)	16
Total number of pigs sold/household/year	16

After branding and interventions with the support of the project for the cooperative, the two slaughters now function as Ban pig selling points. Branded Ban pigs were mainly sold to Hanoi, Hai Duong, Hai Phong provinces, and Da Bac town and Hoa Binh city at higher price. The demand by consumers for local Ban pigs was mainly in Spring (Jan-Mar), both in a live pigs and slaughtered pigs (see Figure 3). Orders were mainly made via Facebook and Zalo by individuals and consumer groups. Food stores and consumers could ask for live stream of

pigs at stable and at slaughter. Different pig products were sold with added value compared to the value before market interventions as summarized in Table 2. High added value could be seen from slaughtering pigs, especially heavy pigs, however, this was still limited in number due to the selling points not preferring the late (end to month) payment by food stores.

**Figure 3. Numbers of pigs sold by two cooperative's slaughterhouses for 12 months with interventions**

Business plan: as shown in Table 1, if the added value is distributed, 70% for member household, 30% contributed to the cooperative, and the owner of the two slaughterhouses got VND 150, 000 (USD 6.38) per pig for their wage at slaughtering, the distribution of the added value is presented in Table 3.

Table 2. Different pig products sold by two slaughterhouses (selling points) in last 12 months

Ban pig products	40 kg in LW (n=10; 10%)	70 kg in LW (n=43; 20%)	18 kg in LW (n=47; 22%)	15 kg in LW (n=23; 11%)	62 kg shared (n=30; 14%)	17 kg LW in Slaughtered (n=55; 26%)	57 kg LW in slaughtered (n=6; 3%)
Price (VND 000 /kg LW)	100	88	118	113	72	118	114
Price per pig (VND 000)	4,000	6,133	2151	1,727	4,452	2,045	6,481
Added value/ pig (VND 000)	400	1,025	162	206		385	2,478
Added value/kg LW (VND 000)	10	15	9	14		21	43

Table 3. Business plan for Da Bac Cooperative

Based data: 63 household members keeping local Ban pigs; 1.3 sows; 18 pigs at selling age; slaughtering cost of VND 150,000

Business plan:

- All pigs of cooperative are sold to the two cooperative's slaughterhouses to urban markets
- Current rations of pig product as in Table 2
- Added value is distributed 70% for member and 30% for the cooperative. Slaughterers get wage from slaughtering

Criteria	Added value (VND 1,000)
For a household member per year	5,219
Cooperative got added value from one household per year	2,237
Each slaughterer of the two slaughterhouses got wage from a household/year	783
Cooperative got added value from 63 households per year	140,924
Each slaughterer of the two slaughterhouses got wage from 63 households/year	24,665

Conclusions

There is significant opportunity for ethnic smallholder Ban pig producers to create new market linkages, market share and profits when they work in a cooperative.

Ban pork branding supported by the local government is essential in facilitating greater market access.

Information on Ban pigs' origin was significant to food stores' owners and consumers.

Online marketing, tasting events, and the establishment of consumer groups were the most preferred options for marketing Ban pigs.

Food safety deficits have been addressed by the SafePORK project through training and the provision of low-cost equipment which considerably contributed to changing behaviours of the cooperative's slaughter team members.

Creating new market linkages requires time. The used approach included training, mentoring, model visits, provision of low-cost equipment, facilitation of engagement with private sector partners, and the development of a business plan.

Some challenges remain such as late payments of producer cooperatives by private sector actors and limited scope of pork supply by the cooperative.

For the sustainability, the allocation of added value for cooperative and market actors needs to be transparent and have buy-in of all players.

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