

International Livestock Research Institute

# A review of the literature: gender, food safety and the pork value chain in Vietnam

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# Table of contents

Table of contents.....	3
Abbreviations and acronyms.....	4
Acknowledgements .....	5
Introduction.....	6
Materials and methods.....	6
Results and discussion .....	7
Gender and livestock; gendered roles and responsibilities .....	7
Who are the pork value chain actors? .....	8
Gender, assets and resources .....	8
Food risks and consumption behaviours .....	10
Conclusion.....	10
References .....	11

# Abbreviations and acronyms

ACIAR	Australian Centre for International Agricultural Research
FMD	Foot and mouth disease
ILRI	International Livestock Research Institute
MARD	Ministry of Agriculture and Rural Development
PPRS	Porcine reproductive and respiratory syndrome

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# Introduction

Realising the importance of considering gender-based inequities in livestock research and development projects is becoming an increasing priority of research institutes and donor agencies. Gender and gender relations influence the dynamics and interactions women and men engage in and have agency within the pork value chain. By addressing the inequities and tailoring interventions to ameliorate and empower actors' agency, uptake of and the sustainability of the intervention are more likely to be successful.

In Vietnam, strengthening the capacity for pork value-chain actors to produce, prepare and provide safe pork meat is a current development priority for the government. As the country's population income and demand for animal sourced foods increases, as does the demand for pork and pork products rises [1, 2]. The pork value chain in Vietnam is highly complicated and fragmented with majority of pork distributed through informal market chains. Pork sold in traditional or wet markets are supplied by smallholder farmers who make up to 80% of the pork production sector [1]. Pork is one of the most commonly consumed meat in Vietnam where most is sold in traditional markets by women retailers [1, 3]. Women pig producers in Vietnam face considerable challenges in reaching optimal production, including access to land ownership and credit, thus limiting readily available resources for pig production [3].

Foodborne disease is largely associated with animal sourced foods or vegetables sold in traditional markets [4]. Food poisoning outbreaks in Vietnam are drastically underreported with official data from the Ministry of Health reporting outbreak data come from catering centres, schools and festival occasions and not from sporadic community cases [5]. Research by the International Livestock Research Institute (ILRI) has shown that one in ten pork consumers may be infected with Salmonella each year [6]. The health risks associated with animal sourced foods, its production and processing differs for men and women working in the value-chain and consumers. Contamination of pork and growth of foodborne pathogens may arise due to consumer behaviour during food storage and preparation or during the production, processing and retail of pork productions [7].

Despite the focus of international organisations efforts at promoting gender equity and gender mainstreaming, there are considerable gaps in the literature of gender relations in the Vietnamese livestock sector and how these are affected by change. This paper presents literature exploring the gender dimensions within the pork value chain in Vietnam and how gendered aspects may influence value chain actor's defined labour roles, access to resources and land ownership. Further, the examination of food safety along the pork value chain, with a specific focus on the differential aspects of food safety risks and where in the value chain are likely benefits from food safety interventions could be engendered are explored.

## Materials and methods

Literature was gained through a broad systematic review of peer reviewed publications and grey literature on gender, livestock and Vietnam over a six month period from December 2018 to May 2019. Using Web of Science, Science Direct and Google Scholar the key words \*Gender, \*women, \*livestock, \*pig and/or pork, \*Asia and/or \*Vietnam \*value chain were used on different attempts to gather as much data and information available. Other criteria included \*agriculture, \*rural women \*aquaculture. A secondary search was conducted using Web of Science, Google Scholar and Scopus with the key words \*food safety, \*foodborne, \*pork and/or pig, \*Vietnam to obtain information on the current pork safety situation in Vietnam. Other secondary data was obtained from the World Bank, The Food and Agriculture Organization of the United Nations, ILRI websites and colleagues. Bibliographic references in each reviewed paper were also examined to identify additional papers to the relevant scope of this review.

To improve understanding of how gender dynamics may improve the gender appropriateness of food safety interventions, this review focuses the following issues: gendered roles and responsibilities in livestock production, with a particular focus on the pork-value-chain in Vietnam; gender dynamics that may influence nutrition and health outcomes of men and women and gender dimensions in agriculture value chains in Vietnam, including the gender implications of technology and innovation adoption.

## Results and discussion

### Gender and livestock; gendered roles and responsibilities

An individual's recognition of gender dynamics may be apparent from the attitudes towards a society's recognition and the perspectives of individuals of their entitlement [8, 9]. Gender and social norms may frame women and men's interaction within the value chains and thus influence their agency and scope of decision-making power [9]. Due to long standing gender inequities and social and cultural norms within informal and formal livestock sectors, the activities and terms under which women and men interact within the value chain and across value chains will differ [10].

Gendered division here, refers to the segmentation of tasks undertaken by men and women [9]. A person's roles and responsibilities, access to resources and assets and decision-making power is influenced by social and gender norms as well as government rules and regulations [9, 11]. In livestock value chains the roles and responsibilities of men and women are dynamic and can change due to the economic value of the animal or family migration.

The gendered division of roles and responsibilities of actors and their behaviours in production, processing and preparation of pork meat are highly influenced by the social-cultural norms. Women in Southeast Asia are perceived to be more empowered as they have higher decision-making power in the household and have financial control of their earnings [12-14]. In Vietnam, the roles of women in the agricultural sector has increased since the introduction of the economic reforms under Doi Moi in the late 20th century. Women's share of agriculture has steadily decreased from 50.4% in 2016 to 49.7% in 2017 [15]. Congruently, men's overall contribution in the agricultural workforce has steadily decreased; however, men are more likely to migrate to cities for work or take on off-farm work [16]. The perceptions of women's ability to undertake tasks or fulfil specific duties may limit women performing different roles. The Vietnamese cultural norm of "women inside, men outside" is reflective where women who participate in off farm activities more likely to be around the home and men migrating further and longer [16]. Cultural norms have deemed that women will fulfil the reproductive roles, such as household management and food provisioning, may hinder their ability to participate in paid economic opportunities [17]. Women's empowerment and agency may be influenced by aspects of the normative environment with a woman's limitation on physical mobility directly impacting their agency [18, 19]. Research suggests that men can be seen to have a higher degree of freedom to move around places and physical spaces, whereas women were more accustomed to being around the home [19]. Research in intensification of agricultural value chains in Vietnam showed how men could withdraw their labour and withhold use of family finances if they are not happy with the women's choices or behaviour. Under this normative environment, women would deploy negotiation and defence strategies [19].

The Vietnamese Ministry of Agricultural and Rural Development (MARD) promote the development of livestock systems in Vietnam to increase productivity, animal and human health and food and nutrition security. Gender-equitable value chain development guides often advocate for economic growth and gender equality as mutually supportive goals. Value chain development guides focusing on the transformation of the individual's engagement through theories of change and not the collective action or jointness between the actors or intrahousehold decisions. By signalling the focus on women's participation in the value chain through the development of women's capacities and skills or participation in collective enterprises, it may recreate the gender discriminations [10].

## Who are the pork value chain actors?

The Vietnamese food system can be characterized through formal and informal food systems. As the economic development of the country continues to increase, there is increasing demand for animal sourced foods with pork dominating the market. Vietnamese diet is diverse, with each province specialising in a wide variety of dishes. In addition to pork being an important source of nutrients and micronutrients, pigs are often required for special festivities in some areas of Vietnam.

Although there is a marked increase of supermarkets emerging in Vietnam, predominantly, traditional marketed continue to dominate the market in providing fresh animal sourced and plant- based foods. The smallholder pig-value chain is critical for women and men farmers to sustaining their livelihood in Vietnam as well as providing access to affordable animal sourced foods [4]. Retailers of pork meat and plant-based food are referenced as those selling at fixed spaces within traditional markets within the literature [20]. In Hanoi, they are predominantly women whose families have long resided within the capital city and have extensive family networks. Women working at the retail level have key relationships with the community and customers with many repeat customers having a high level of trust in their retailer to provide safe foods [21]. Research by Kawarazuka et al (2018) has shown that there are inequities amongst women and men working within informal food system in Vietnam, particularly around Hanoi. Certain opportunities to enter and to be profitable in vegetable and meat trading largely depends on personal networks, which are predominantly built on men's social networks [20]. Where women vendors will be dependent on families' labour support and connections; men vendors, are not reliant on collaboration or supportive relationships when establishing their food retail business [20].

Consumer purchasing behaviour and beliefs will have significant influence on the pork retailers selling behaviour. With a high consumer demand for fresh meat, pork meat is delivered to the markets in the early hours of the morning after being processed that evening. Perceptions of how to present meat as fresh, women retailers believe that using wooden benches to present the sale of pork meat over other surfaces means that meat will "*look drier and less rancid*" [22].

Traceability of pigs and pork products through the informal food system is considered to be near impossible. Food safety production models such as co-operatives, community-based certification schemes and safe agricultural zoning have been supported by government and non-government agencies [23]. Khuu et al (2019) reported that, consumers are willing to pay a premium amount for pork with (some) traceability information [24]. Their study reported that, men are more willing to pay higher price for pork with information on traceability. From the researchers observation, women in the area were likely to spend majority of their time participating in household activities and the researchers believed they may not have access to information on food safety; whereas, men had access during social activities to learn or gain information [24].

Delivery of fresh meat to retailers is predominately supplied by small slaughtering facilities in poor hygiene conditions [23]. To understand levels of bacteria in pork products, testing is conducted at different nodes of the value chain. The levels of Salmonella spp. will vary on the practices and conditions within the slaughterhouse [7]. Transport from the slaughterhouse to traditional markets is typically on motorbike in bamboo to traditional markets which operate in ambient temperatures [7]. Slaughtering and collection activities are dominated by men than women, whereas women are predominately responsible for processing and retail [4]. In a slaughterhouse in Vietnam, women are primarily responsible for cleaning and processing the meat; whereas, men will be tasked with butchery. Research by Sinh et al., (2016) showed, how the "*informal rules*" guided slaughterhouse employees and employers to work together and maintain cleanliness [6]. Food safety education amongst slaughterhouse workers in Hung Yen showed the influence of 'learning by doing' and from colleagues rather than formal training [6].

## Gender, assets and resources

Globally, women have been attributed to be primarily responsible for the smaller livestock animals, including poultry, goats and chickens whereas male farmers are more involved with larger ruminants, such as cattle and buffalo (REF). Poultry and Livestock farms account for 14.7% of farms in Vietnam



behind annual crops [28.7%], perennial crops [16%] and aquaculture [30.1%] [25]. In Vietnam, there are gendered divisions of labour across all stages of the value-chain. At individual stages, one gender may dominate the stage of the value chain or be a shared responsibility. At the production stage, both women and men report to have joint ownership of pigs [4]. It is difficult to ascertain ownership within the Vietnamese context, as the definition of ownership of an animal may not specifically translate [3]. However; their participation within the pork value-chain is significant. Women Vietnamese farmers are reported to be responsible for up to 61.4% of livestock related work and over 50% of the work for cultivation of crops ([26]. Nguyen, et. al (2012) reported women will spend double the amount of time on pig farming compared to men [3]. However, despite their large contribution, participation of women in cultivation courses (10%) and animal husbandry (25%) remains low [26].

Land ownership is associated with women empowerment as it is believed to provide more bargaining power, control over assets and decision-making power [27]. Land-use rights provide women with household economic security and indicate a vulnerability to poverty [11]. Land ownership in Vietnam is predominately owned by the State whereby households are granted land use rights to rent/lease, mortgage, transfer, and inherit by the local village communities. The Vietnamese government implemented the Land Law (2013) in the attempt to increase women's formal land rights. Since, majority of households report land to be jointly owned between women and men, with majority of married women comprising the dual-headed households [28]. According to Vietnam law, both men and women have equal rights to land ownership however this may be impacted to cultural norms which can often place higher emphasis on male ownership in some Vietnamese societies [18]. According to Kerr (2017), land allocated by the State through contracts are predominantly of higher quality and is largely allocated to men [29].

Differential access to obtain credit, and the amount of credit obtained between men and women will differ on average 222,000VND. Socioeconomic factors such as education, ownership of land and participation in off-farm activities is correlated with an increased likelihood of obtaining credit for men. Women's involvement in cooperatives and producer associations, particularly the Women's union are associated with access to credit and training [30, 31].

Ensuring a women's name on a land-use certificate can provide increased decision-making power on a variety of economic, political and social scales in Vietnam [11]. The differences between men and women headed households' vulnerability to poverty, consumption patterns or exposure to shocks was found by Klassen et al (2015) to small. However, the heterogeneity of women headed-households do matter, whereby single-headed households are particularly vulnerable to poverty and consume less [32].

Access to training for farmers in Vietnam will differ for women and men. Men will have access to training as through their membership with a farmers' association; whereas women will be limited to the Women's Union.

Sobieszczyk (2018) argues that the reliance on the Women's Union to fulfil training in the agricultural sector reiterates that a women's role is in the field and not participating in the economic sector. Gender in livestock development and agricultural research has identified the difficulty of accessing women in training programs due to women's heavy work burden and access barriers. Training may not be context specific or align with the needs of the community. For smallholder farmers, women may desire training that relates to on and off-farm practices to enhance capacity building [33]. Research by Ha et al, (2016) highlighted that, although innovations to improve rural livelihoods have brought benefits, they may also be counter-productive, due to unintended consequences of job loss and changes in ownership shifts. Within the diverse cultural and social environments of Vietnam, different cultural and social barriers may also lead to poor adaption of these innovations [33].

Despite gender stereotypes, livestock innovations were only perceived to be important by male farmers if it was in reference to larger domestic animals [19]. Livestock in Vietnam are highly valued by Vietnamese women farmers for income generation. To purchase an animal, women in the GENNOVATE RTB-HT team, (2017) study, reported an increased level of agency in managing their pigs in comparison to a higher cost animal, such as a cow or water buffalo. The women stated that the more expensive the animal, their husband's permission must be obtained [19]. Perceived as an

insurance mechanism, a small poultry flock provide economic security for the household [31]. Buffalo's and cows are placed as highly important to insure by men, whereas pigs (-5%), chickens (-26%), and goats (-43%) are perceived as less important. Congruently, women also placed buffalo as the most important; however, pigs (13%) and cows (11%) were rated highly important to insure.

## Food risks and consumption behaviours

A risk is defined as chance of a person being exposed to a given hazard. Within the context of food safety, this adverse human health effect may be long or short term (Nguyen-Viet et al., 2013). In Vietnam, there is a divergence between pork value chain actor's perceptions of risks of foodborne disease which may also differ by gender. Research by Sinh et al, 2016 showed that slaughterhouse workers perceive pig diseases such as, foot and mouth disease (FMD) and porcine reproductive and respiratory syndrome (PPRS) to be the main causes of poor-quality pork and pork safety [6]. Women pork retailers identified that quality of pork is often determined by the slaughtering process which is predominantly conducted by men [6].

In addition to their role in the production of pigs, women working in the pork value chain are acting as risk managers against foodborne illness for themselves, their families, as well as the consumers [4]. Food safety is a high concern in Vietnam. Commonly, consumers in Vietnam are highly concerned with the levels of chemical contamination (particularly the overuse of pesticides and antibiotics on farm); however, research has shown that biological hazards are a high health risk [34]. The high concern of food safety amongst many Vietnamese is influencing many to change shopping behaviours and move from purchasing at traditional markets to the supermarket [35].

Food preferences and behaviours may change during pregnancy and infant feeding which may in turn influence levels of food safety [36, 37]. In rural Vietnam, cultural influence regarding women's consumption of animal-sourced foods may change from the distribution of animal sourced foods within households. Cultural habits may limit women's consumption of animal sourced foods and thus increase the risk of micronutrient deficiency during pregnancy. [38, 39]. In the post-partum period, a common food consumed is pig trotter with a plant-based food as it is believed to stimulate lactation. Traditionally, to restore a woman's balance, there is the practice of eating large quantities of food and to consume 'warm' or 'hot' foods for a month after birth [40].

At the butcher stage and consumption of pork products are associated with cultural events and traditional family celebrations. The cultural contributions of pork productions, such as *tiet canh* (raw pig blood) may be served at weddings where the family hosting the celebration will be charged with slaughtering the pig. The slaughtering of pigs may also be participated by many men who report of their pride in their association to prepare for these special events [41]. In Laos, men felt that consuming raw blood was a way of showing off their masculinity and even though they understood the adverse health risks, did not want to change their practices [42]. Although the risk of *S. suis* is primarily highest amongst those working in pig production or processing, infection may also be through consumption of raw, undercooked and fermented pork [7].

## Conclusion

The paper highlights a knowledge gap in relation to the gendered roles and responsibilities, access to resources, including resources and credit and the gender dimensions within value chain development in Vietnam. This neglect of exploring how gender aspects influence actors in the pork value chain is a missed opportunity to learn and engage in to improve food safety interventions.

The literature presented in this paper demonstrates the gendered roles and responsibilities of men and women along the pork-value-chain. Despite women's large contribution to the value-chain they face substantial barriers that limit optimal benefits. The literature suggests that there are marked differences for women and men in Vietnam to access credit and resources, including accessing animal husbandry and agriculture training.

The pig industry is an important sector for women. Their role in risk management against foodborne illness is evident in their large responsibility of maintaining hygiene at the pork meat preparation and

retail stage. Women's low participation in animal husbandry and agricultural training is largely due to women's extensive household duties and time constraints. In the aim of improving the pork-value chain whereby both men and women value-chain actors have access to and will benefit from interventions, a gendered sensitive approach may assist in the likelihood of an equitable and successful adoption. This may include ascertaining the appropriate times of women actors availability for training programs and holding training in accessible areas. To date, there is little information available in English that explores the gendered dimensions of pig k value chain in South East Asia, and fewer still in Vietnam. However, the literature presented here demonstrates the importance of exploring the gender dynamics in livestock value chains and the need for further research to reduce the gap in data. Inclusion of gender aspects into development projects are needed to ensure an equitable and successful adoption of the intervention whereby both women and men can benefit.

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