



The Vietnam's food control system: Achievements and remaining issues

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ABSTRACT

Since the beginning of the twenty-first century, food safety has become a societal issue that has received considerable attention in Vietnam. Cases of food intoxication are copiously reported in the press, while scientific reports show that the risk is imminent and is particularly underestimated due to lack of statistics and appropriate knowledge regarding the food chain. This crisis forced the Vietnam government to adopt structural solutions and construct its national food control system. In 2010, the Parliament approved the Food Safety Law, thanks to which the country started applying modern principles of administration. It implemented regular food safety controls, allocated and relayed the responsibility to decentralized public agencies, and required food information. This article discusses Vietnam's food control system after the promulgation of the Food Safety Law. We show that in addition to the inherent problems such as credibility of risk analysis, the main challenges arise from the daily implementation of control activities. Rule enforcement is weak because of the informal economy in agriculture and food supply sectors. Improvements in rule enforcement are urgently required in this fast changing economy in the middle run.

1. Introduction

In 2016, Vietnam was shocked by a massive fish death scandal due to an environmental disaster along its 200 km coastline caused by erroneous industrial discharge (BBC, 2016). Fishing and fish consumption was banned at that time, which was later resumed without any proper risk analysis. This, along with many other scares and scandals, has made food safety one of the top concerns of Vietnamese citizens in recent years (USAID, 2015). Currently, a significant part of the population believes that what they consume daily is not safe (Figuié, Bricas, & Truyen, 2004); (Ha, Shakur, & Pham Do, 2019) and questions the credibility of food control activities.

Vietnam has shifted from a planned economy to the market system from 1986. At the beginning, the shift did not induce large changes in the food sector, which was under the control of national cooperatives and distribution state-run companies. However, from 1995, urbanization and demographic growth stretched this on-privatization system to its limits. Area of cultivated land is reduced while agricultural production is intensified (Lam, Pham, & Nguyen-Viet, 2018). Studies show that the volume of pesticides used for agriculture has increased from 100 tons per year in the 1950s, to 35,000 tons in 2002 and to about 105,000 tons in 2012 in Vietnam (Hoi, Mol, Oosterveer, van den Brink, & Huong, 2016). Production intensification but also industrial

development (by ripple effects) make food safety problems more frequent, while food chains have become more complex. Moving quickly from the status of “having enough food to eat” to that of “needing safe food”, Vietnam is confronted with serious problems of food control at present (Nguyen-Viet et al., 2018).

Many developing countries experiencing rapid changes in their food systems have also encountered similar situations (Reardon et al., 2019). Reports show that low- and middle-income countries in South Asia, South-East Asia, and Sub-Saharan Africa account for 41% of the global population, but are afflicted with 53% of all food-borne illness and 75% of related deaths (Jaffee, Henson, Unnevehr, Grace, & Cassou, 2019). Building the capacity to better assess and control the food system is definitively among the most important objectives of these countries for reaching the Sustainable Development Goals (United Nations, 2015).

The domestic market is not the only driver of change in Vietnam. Along with the adoption of the market mechanism, Vietnam has signed many trade agreements that aim to export agricultural and food products. The export to foreign markets such as the USA, European Union (EU), and Japan, is crucial for economic growth of the country, that also forces its farmers and food producers to comply with international standards. In particular, the Association of Southeast Asian Nations (ASEAN) Economics Community (AEC) agreement has been signed in 2015 (see Table 1 for the acronyms). This document envisions a

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Table 1
List of acronyms.

Acronyms	Full name
ASEAN	Association of Southeast Asian Nations
AEC	ASEAN Economics Committee
BRC	British Retailer Consortium
DAH	Department of Animal Health
EFSA	European Food Safety Authority
FAO	Food and Agriculture Organization
FSMA	Food Safety Management Authorities
HACCP	Hazard Analysis and Critical Control Point
IECT	Information, education, communication, and training
ILO	International Labor Organization
IPSARD	Institute of Policy and Strategy for Agriculture and Rural Development
IFS	International Food Standard
MARD	Ministry of Agriculture and Rural Development
MOH	Ministry of Health
MOIT	Ministry of Industry and Trade
NAFIQAD	National Agro-Forestry-Fisheries Quality Assurance Department
NIFC	National Institute of Food Control
NFCS	National Food Control System
PPD	Plant Protection Department
STAMEQ	Vietnam Directorate for Standards, Metrology and Quality
USDA	United State Department of Agriculture
VDMS	Vietnam Directorate of Market Surveillance
VFA	Vietnam Food Administration
VFSL	Vietnam Food Safety Law
VietGAP	Vietnam Good Agricultural Practices

common market between ASEAN countries, similar to the European Economic Community (EEC) in Europe. Trades of food and agricultural products within the AEC are expected to increase sharply. Implementation of enhanced and transparent activities related to food control is the first condition to meet international requirements and render this economic integration effective.

This study describes the National Food Control System (NFCS) of Vietnam and critically reviews its main evolution from 2010. It is crucial to understand how the system is organized and how it functions from a criticized standpoint to assess its real capacity. The year 2010 is an important milestone and has been chosen as the starting point of the study. This year marks the approval of the Vietnam Food Safety Law (VFSL), which opened the door to application of modern principles of food administration. Since then, important changes have been recorded, particularly in big cities such as Hanoi or Ho Chi Minh City. Vietnam's achievements in food control are now visible as mentioned later. However, the country is still facing challenges that cannot be solved using the current methods of control, that we will also discuss.

The article consists of three main sections. First, the aim, scope and methodology of the review will be defined. Next, the main characteristics of the Vietnam's system and its evolution will be described and analyzed, respectively in terms of legislation, food control management bodies, food inspection and risk analysis, and policy priorities. Finally, the article discusses the weaknesses and challenges of the system related to the problem of rules enforcement, and generally to that of managing informal agents in a market economy.

2. Aims and scope of the review, and the methodology used

2.1. Aims of the review

The paper was motivated by the need to thoroughly assess certain aspects of the NFCS of Vietnam and to provide a comprehensive overview of how it functions. The Vietnamese government has set up a food safety policy, following the experiences learned from developed

countries, especially the EU and the USA. However, development of a food control system does not involve only the drafting of regulatory documents or establishment of institutions responsible for quality control. A critical review is therefore needed.

In addition, as this is not an isolated case among developing countries encountering problems related to food control, this review may also be useful in other situations. Although each country is specific in its legislative setting and administrative organization, there are generic factors that may explain why and how a control system may or may not function. They are for example, the level of resources (technical and human) mobilized, clarity and transparency of control activities, or economic conditions in the food sector. Then, by analyzing these elements, helpful lessons could be learned and applied when the same problems are confronted.

2.2. Scope of the review

The concept of NFCS has been defined in Food and Agriculture Organization (FAO) "Guidelines for strengthening national food control system" as "*the integration of a mandatory regulatory approach with preventive and educational strategies that protect the whole food chain*" (FAO, 2006) which should include effective enforcement of mandatory requirements, training and education, community outreach programs, and promotion of voluntary compliance. Basically, it is an integration of regulatory regimens for providing safe and wholesome food to all concerned (Shukla, Singh, & Shankar, 2018); but the NFCS is not only related to the state's legislation: it also refers to other forms of mutual relationship between public authorities and the food chain's stakeholders (education and voluntary standards). However, the NFCS should be distinguished from a food quality system. Food control deals with issues of safety, which are compulsory and often non-negotiable, while food quality is more flexible and is related to customer satisfaction (Mainguy, 1989). Food quality can be assumed by private companies, while food control can only be implemented by, or under control of public agencies.

According to FAO (2006), a NFCS is formally composed of five blocs: (1) food law and regulation, (2) food control management, including a set of operational agencies or administrations in charge of implementation, (3) inspection service, (4) laboratory service, and (5) information, education, communication, and training (IECT). In practice, countries may pay attention to some of these blocs in a selective manner. For example, when studying the fish supply chain in Uganda (Bagumire, Todd, Muyanja, & Nasinyama, 2009), proposed to tackle four components of their NFCS: legislation, identified public authorities, laboratory system, and food inspection. Pham and Vergote (2017) showed that the EU food control system functions with three main components: (1) food administration (Directorate General Health and Food Safety - DG SANTE, and agencies of the state members' ministries), which promulgates law and regulations and are in charge of food inspection, (2) risk assessment, which is independently performed by the European Food Safety Authority (EFSA) and the food safety agencies of the state members, and (3) the food operators' responsibility regarding public regulation and inspection (for example, Hazard Analysis and Critical Control Point (HACCP) and traceability).

Risk analysis is an important principle of food control activities although it is not always mentioned explicitly as an operational bloc. The definitions and working principles for risk analysis have been developed for use by the Codex Alimentarius Commission. Since 2000, risk-based approach has been mobilized by most developed countries (Giorgi, 2013). For example, the EU clearly mentions three steps in risk analysis: risk assessment, risk management, and risk communication (Alemanno & Gabby, 2014). However, in developing countries, the scope of risk analysis is often reduced owing to the lack of capacity and

understanding for conducting risk analysis in appropriate manner. In the case of Vietnam, risk analysis becomes an emblematic point that merits mention.

To discuss the case of Vietnam in detail, it is decided to introduce certain adjustments. Instead of following the initial 5-bloc configuration suggested by the FAO guideline, the review focuses on four blocs:

- Law and regulation
- Food control management bodies
- Food inspection vs. risk analysis
- Policy, education, and training

Blocs 1 and 2 are not often communicated by the government, which usually leads to misunderstanding among the stakeholders. Bloc 3 maintains an ambiguity between food inspection and risk analysis, which will be discussed separately in a section. Regarding bloc 4, although these elements are at the core of Vietnam's food safety policy, they constitute objectives rather than actions of an operational program.

Finally, the review looks at the conditions of implementation of the NFCS. A good design is not sufficient for smooth functioning of a system. Equally critical are the manner in which they are implemented by the local authorities and the food chain's stakeholders who are supposed to comply with the rules, but do not actually cooperate for various reasons.

2.3. Methodology

The methodology used consist of reviewing documents, coupled with information collected from different interviews with public officers and experts. In the first step, analysis reports from experts having worked on the issue were studied. Limited in number, these reports come from World Bank (2017), World Bank (2016), Vietnam Government (2017), Ministry of Health (MOH) (2011), Institute of Policy and Strategy for Agriculture and Rural Development (IPSARD) (2016), and USDA (2013).

In the second step, all texts of law and regulations that are mentioned in the above reports have been identified. For the sake of coherence, only texts that have been implemented after 2010 were chosen. As the volume of juridical documents is still large, focus are made on most important ones, which are obtained thanks to the interviews with experts and public authority officers.

Finally, critical reviews were made by comparing result of desk studies with information collected from field surveys, which are carried out in parallel. Owing to the area of research of the authors, these surveys were limited to the meat and vegetable sectors. The authors have met with stakeholders and public officers in these fields and discussed the implementation of food control activities with them.

It's worth noting that a systematic review of the literature has also been performed. However, owing to the dearth of scientific writings in both English and the native language, the results will not be presented here.¹ Whereas, the article did not aim at establishing the causality between policy changes and the trend of food-borne diseases because of

¹ A search on two scientific databases, Web of Sciences and Science Direct, shows that the scope of these writings is limited. Two keywords "food safety" AND "Vietnam" returned 141 results in the Web of Science, and 835 in Science Direct, including conference papers. Regarding abstracts, the inventory provided only 10 and 11 relevant publications in the two databases, respectively. The papers focused on safety controls in different sub-sectors of the food system, for example Fisheries and Aquaculture, Meat, and Fruits & Vegetables. They also discussed the attitude and behavior of the food chain's stakeholders toward public regulation and standard promotion. Other keywords such as "food control" and "food protection policy" also returned similar results, but with a more modest scope. The latter are mostly included in the results from the two terms, "food safety" AND "Vietnam" as mentioned above.

lack of data. Access to data is one of the biggest challenges when dealing with food safety in Vietnam. The lack of transparency in the food chain statistics and risk communication has been mentioned by other researchers (World Bank, 2017). But data is still an important issue, and is discussed below (Box 1).

3. The food control system of Vietnam: major points

3.1. Food law and related regulations

3.1.1. The Vietnam food safety law 2010 (VFSL) and its most related regulatory documents

The VFSL² or precisely the Food Safety Law No. 55/2010/QH12 is the most important text in the legislative blocs. Adopted in 2010, it is a remarkable reform of Vietnam's regulatory framework in terms of food safety (USDA, 2013). It sets forth innovative approaches and principles aligned with international approaches (World Bank, 2017). In addition, it affirms that organizations and individuals participating in the food chain are obliged to ensure food safety. Although trivial, these principles are essential for ensuring that stakeholders are first persons who shall respect safety requirements.

The law defines mandatory technical regulations that should be respected by all. Procedures of food testing and inspection, and food safety risk analysis have been formally rendered. Traceability has been evoked and should be applied in case of identification of unsafe food or at the request of competent authorities. In terms of control, an ex-ante control step ("the certificate of compliance with food safety conditions") is required for food operators, with derogation for BRC (British Retail Consortium standard) or IFS (International Food Standard respectively) holders.

The VSFL delegates the state's responsibilities for food control and food safety management to the government. Specifically, three ministries share this important charge: the Ministry of Health (MOH), the Ministry of Agriculture and Rural Development (MARD), and the Ministry of Industry and Trade (MOIT). Three inter-ministerial regulations frame this cooperation, the most important one being the inter-ministerial circular number 13/2014/TTLT-BYT-BNNPTNT-BCT.

Some other issues were completed by subordinate regulation enacted by the government and concerned ministries. In particular, the decree 38/2012/ND-CP (today superseded by decree 15/2018/ND-CP) specified the procedures of certification and declaration of conformity with technical regulations, food safety controls for Genetically Modified Organisms (GMOs), state control of imported and exported foodstuffs, food labeling, and advertising.

3.1.2. Related laws and regulations

Vietnam's legislation framework on food safety is also concerned with other laws, which are connected to the VFSL in different manners. Among them, the most important ones are:

- a. Law on Quality of Products and Commodities
- b. Law on Standards and Technical Regulations
- c. Law on Inspection

Explanation is given in the Table 2. In addition, there are other laws and regulations regarding food control issues, such as the Law on Administrative Sanction, Law on Aquaculture and Fisheries, Ordinance of Veterinary Control, Ordinance of Plant Protection and Disease Control, Ordinance of Plant Varieties Protection, and Ordinance of Animal Species Protection. Compared to the three precedent laws, these texts are more sectorial, and not always associated with the control of food safety.

² Promulgated on 28 June 2010, this law replaces the Ordinance on Food Safety of 2003, which constituted the precedent regulatory framework.

Box 1

Dispersed data on Vietnam's food safety issues.

In 2011, a project of law based on a report from the Ministry of Health (MOH) provided the first data from 2004 to 2009 (MOH, 2011) regarding food safety issues. The document provides several statistics confirming problems with food safety. For example, from among the 60 breeding farms randomly selected for the study, 86% of the animal feed samples contained residual antibiotics higher than that approved by legal standards; 50% of the urine samples contained the prohibited growth hormone. These findings converged to an independent study by the International Livestock Research Institute (ILRI) (Hoang & Vu, 2017), according to which 60% of the meat samples in Vietnam's traditional markets do not follow the microbiological standards (90% in Hanoi) and 10% contain antibiotic residuals exceeding maximum residue limits (MRL).

Pham & Dao (2016) collated several dispersed food hazard-related studies regarding vegetables. One of them shows that 539 of 1050 vegetables (51%) sampled from Hanoi's traditional markets was contaminated with heavy metals and dangerous pesticides at levels surpassing the MRL. This study was performed by the international non-governmental organization (NGO) VECO (now Rikolto) in collaboration with Vietnamese research centers in 2010. Another 2010 study from the University of Health of Hanoi showed that 72% of the 660 analyzed samples of periurban vegetables contained *Escherichia coli* and Salmonella.

Publications focusing on the use of pesticides and antibiotics in agriculture (Hoi et al., 2016; Nguyen-Viet et al., 2019), safety issues in food sub-sectors (T. T. T. Tran, 2013), (Tran, Bailey, Wilson, & Phillips, 2013), (Luu, Dunne, Pearse, & Davies, 2016), (Dang-Xuan et al., 2017); and the impact of new practices of production and distribution (Moustier, Tam, Anh, Binh, & Loc, 2010); (Wertheim-Heck & Spaargaren, 2016); (Van Hoi, Mol, & Oosterveer, 2009) are available in the Web of Science from 2010 till date, the number of which is increasing slightly every year. Despite the originality and the quality of these studies, the publications are dispersed and their scopes are limited, considering the societal aspects of the issue. The most probable reason is the difficulty in accessing data, while the cost of collecting data itself is high.

The 2011 official report of the MOH mentioned 1058 food poisoning outbreaks during the period 2004–2009. The number of cases was 1007 between 2011 and 2016, with 30,395 victims and 164 deaths. In 2017, the World Bank reported considerably different statistics on food-borne diseases (VFA)—from more than 7000 outbreaks each year in 2006–2008 to 5500 in 2012–2013, and from 57 to 28 deaths in these two periods. Despite the differences in the results, both reports emphasize the involvement of microbiological agents. According to the Ministry of Health, these incidences were caused by pathogens (41%), followed by biological toxins (28%) and chemicals (4%), with 34% cases in the northern mountainous area alone.

Table 2

Important laws related to food control activities in Vietnam.

a. Law on Quality of Products and Commodities	This law governs the control and inspection of food as merchandise in the market. It focuses on market regulation, the most vulnerable stage in the Vietnamese food chain. Under this law, the decree No. 43/2017/ND-CP on product labeling requires information on food products. However, the decree covers only packed and processed food, and excludes fresh food and processed-but-unpacked food from its field of application.
b. Law on Standards and Technical Regulations	Legal framework for standards, technical regulations, and compliance assessment in general and for the food sector in particular. Technical regulations in Vietnam are not fully complied with the Codex Alimentarius; In 2016, Pham and Dao (2016) reported that only about 65% of food safety technical regulations are equivalent to the Codex norms.
c. Law on Inspection	This law has been modified to consider specialized inspection related to food safety control. It determines the conditions of inspecting food activities and food operators.

3.2. Food control management body

According to FAO (2006) food control management is the continuous process of planning, organizing, monitoring, coordinating, and communicating, in an integrated way, a broad range of risk-based decisions and actions to ensure the safety and quality of domestically-produced, imported, and exported food for national consumers and export markets, as appropriate. In Vietnam, this task is shared between three ministries: the MOH, MARD, and MOIT; the main and final responsibility lies with the MOH. Besides, it is important to mention that food control is also managed by local authorities. There are 63 people's committees at the provincial/city level, 678 people's committees at the district level, and sometimes several in the ward level, as in some of Vietnam's big cities or provinces.

3.2.1. Government level

Management competences are distributed among the three ministries based on two criteria: (1) the stage in the food chain and (2) the category of food. The MARD is responsible for controlling the production of agricultural products for human consumption. It also follows the first processing operation of fresh products (cleaning, slaughtering, and cutting) and their trading at the wholesale stage. The MOIT is responsible for processed foods, and especially the retail sale of all food products (including fresh food) in circulation at traditional markets, supermarkets, and food shops. Finally, the MOH is responsible for the food additives and chemical agents used in food processing. It is also in charge of the last stage of the food chain, which includes control at

restaurants, collective kitchens, and canteens (see Fig. 1 below). This is a clear improvement, as prior to 2010, the MOH had to control all the food products that were circulated in the market.

The coordination between the three ministries is realized via a national directive committee on food safety. The committee acts officially as a bureau of policy, under the lead of the vice prime-minister in charge of food safety. The role of the central committee is to provide policy guidance to assist the Government in decision-making. However, inter-sectorial coordination is rather weak. According to experts, no efficient exchange of information or resource has actually occurred in this instance.

Inside each ministry, responsibility allocation follows a vertical top-down configuration.

- The MARD scatters food control responsibility through its different departments. The main task belongs to the National Agro-Forestry-Fisheries Quality Assurance Department (NAFIQAD) whose missions are to manage the quality and safety of foodstuffs, to test and certify the safety of imported food, and to perform necessary tests in accredited laboratories. NAFIQAD is strongly supported by two other departments: the PPD (Plant Protection Department) and the DAH (Department of Animal Health or Department of Veterinary Sciences). In addition, its activities are related to more or less those of the three others departments under the MARD: Plant production, Animal husbandry, and Processing and Trade promotion (recently created in 2017).
- At the MOH, the responsibility rests with the Vietnam Food

Production phase	Processing and semi-processing, import-export	Distribution phase		
Cultivation, Livestock, Aquaculture and Fishing	Cereals	Wholesale	Retail sale (traditional markets, shops, supermarkets)	Restaurants, collective kitchens, canteens, street food vendors
	Fresh meats and processed meats			
	Aqua-products			
	Fruits, tubers, vegetables, garden's foodstuff			
	Eggs and egg-origin products			
	Raw milk			
	Honey and honey-origin products, Salt			
	Genetically Modified Organism			
	Other agricultural products (sugar, coffee, cacao)			
	Alcohol, beer, beverage	Wholesale	Retail sale (traditional markets, shops, supermarkets)	Restaurants, collective kitchens, canteens, street food vendors
	Processed milk			
	Vegetal oil			
	Powder and Starch based products			
	Food additives, processing catalyst substances			
	Bottled water, mineral water			
	Functional and nutritional foods			

Colour code	
Normal	Ministry of Agriculture and Rural Development (MARD)
Bold	Ministry of Industry and Trade (MOIT)
<i>Italic</i>	<i>Ministry of Health (MOH)</i>

Fig. 1. Distribution of food management competences in Vietnam, cited from (Pham and Dao, 2016).

Administration (VFA). The VFA is in charge of elaborating the safety standards and providing advice to assist the MOH in implementing state control and state legal application regarding food safety. It plays an important role in establishing the legal framework of food control. The MOH also created the National Institute of Food Control (NIFC), which is not involved in safety management but performs food inspection and risk assessment.

- The role of MOIT in safety control is rather modest. Their main mission is to control the legal circulation of foodstuff in markets. According to the report of MOH (2011), most of the non-compliance is related to the conditions of marketing of food. The Vietnam Directorate of Market Surveillance (VDMS) under the MOIT has then the important charge of controlling food label and food information. It controls all traditional markets, supermarkets, and food shops where foodstuffs are sold as merchandise.³ Besides, the Directorate for Standards, Metrology and Quality (STAMEQ) under the MOIT contributes to the elaboration of legal standards for products and processing schemes.

NAFIQAD (MARD) and VFA (MOH) are the two most important agencies in charge of food safety control management in Vietnam. They have antenna at almost 63 provinces. The PPD and DAH (both under MARD) also play important roles as upstream controls are primordial in Vietnam; many safety issues are detected at this stage.

3.2.2. Decentralized food control management bodies

Provincial and district agencies have progressively accepted new responsibilities of Vietnam's NFCS. They are decentralized services of the state, but mobilized to work together horizontally inside an inter-sectorial framework. Their coordination is ensured by the People's committee.⁴ The directive 13/CT-Ttg on 13 May 2016 reinforced the responsibility of local authorities by stating that the president of the people's committee should be responsible for safety issues in his/her territory of competence.

Concretely, there is an inter-sectorial directive committee, and different control groups operating in each province/city. A (provincial/city) inter-sectorial directive committee is similar to the central committee, albeit limited to the administrative boundary, and is led by the

president of the province. Its members are essentially from the three departments under the three ministries, DARD, DOIT, and DOH, and other different public and civil institutions. The latter structures continue to receive vertical guidance from their ministries. But, their day-to-day operations are decided horizontally by the people's committee of the city or province they belong to.

Control groups are units who implement field controls and do not participate in the management (Fig. 2). Next, they are organized at different levels, such as provincial, district, and commune levels. The multiplication of controls at many levels reduces risk and clearly increases the degree of compliance of stakeholders. This contributes to the success of Vietnam's NFCS (Government, 2017). The disadvantage is that overlapping controls disturb the food operator and lead to un-optimized use of resources.

The most advanced experience of decentralization was a pilot program implemented in 2017 in three cities: Ho Chi Minh, Danang, and Bac Ninh. The program created the city's Food Safety Management Authorities (FSMA) in each city. The FSMA is a public establishment, which has higher degree of freedom than the directive committee. It can apply new food management methods, for example, traceability of food using technology (QR code reader for consumers with smartphones) or the promotion of organic food items. The fledgling program is, however, too immature to be evaluated.

In overall, the decentralized solution is limited by the available workforce. With 10,805 rural and urban communes, Vietnam is clearly lacking qualified agents for ensuring controls at every administrative level. Rural communes do not have a control group, while many urban communes (wards) work with incomplete teams. For example, the control group may contain one agent from the MARD, one agent from the MOIT, but no one from the MOH. Lack of training capacity is also another challenge that retards the recruitment of food control agents.

3.3. Food inspection - risk analysis

3.3.1. Food inspection

According to the FAO (2019), inspection activities have focused historically on sampling and testing of end products to determine their compliance with regulations. Today, it focuses more on ensuring the compliance of systems for food safety management, implying implementation of the general principles for food hygiene and HACCP-based approaches. The aim of the new "preventive" approach is to reduce food safety risks. Food inspection in Vietnam still follows the historic configuration. It insists on verifying whether the food complies

³ According to the report of MOH (2011), most of the non-compliance is related to the conditions of marketing of food products.

⁴ Name of local governments in Vietnam.

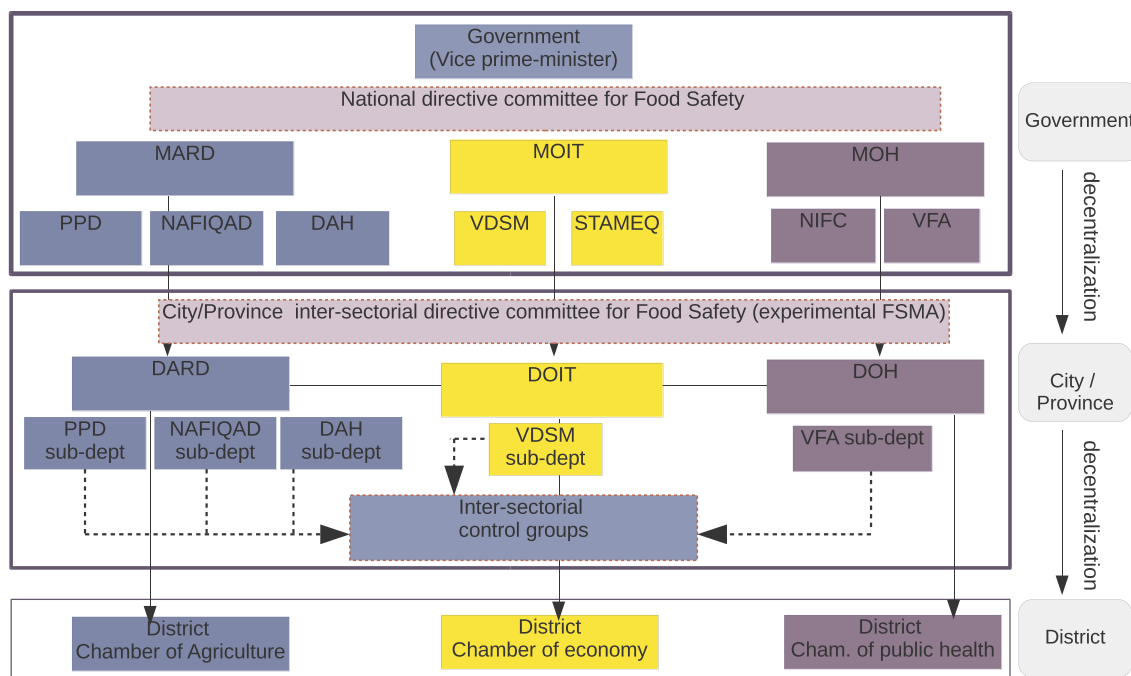


Fig. 2. Organization of food control management in Vietnam.

with legal safety requirements. Two tools of inspection have been developed in Vietnam: the certificate of compliance with food safety conditions and the safety test.

- Valid during a period of 2 year, the Certificate of compliance with food safety conditions is addressed to individual and legal persons, who operate in the food chain.⁵ The certificate does not certify the safety of foodstuffs, but only the capacity of food operators for complying with the legal requirements. In particular, it certifies that food operators have minimal knowledge regarding the physical conditions at work to ensure food safety. Inspection is performed to verify whether the stakeholders respect all the conditions. For producers, the scope of inspection includes all inputs such as soil and water conditions, pesticides, and animal feeds.
- The safety test is used to verify if food stuff follows the technical regulations. The principle is that food is sampled and then dispatched to laboratories for microbiological and chemical analysis. Sampling can be performed directly by public authorities such as NAFIQAD and VFA for hazardous controls. NAFIQAD has also developed rapid tests that can be used directly at the selling stalls at open wet markets. The VFA inspects imported food and performs sampling tests at restaurants, collective kitchens, and school canteens.

Test analysis is performed by accredited laboratories accredited by the government. In 2017, 37 certification bodies, including 13 from MOH and 24 from MARD, and 101 laboratories, both private and public, have been accredited. Among them, there are 19 laboratories from MOH, 6 from MOIT, and 76 from MARD, which are involved in the inspection of fertilizers, animal feed, and veterinary medicament (Government, 2017).

In 2009, the MOH created the National Institute for Food Control (NIFC), the most important structure in charge of food inspection in Vietnam. Its objectives include food hygiene testing for quality products and additives, providing processing aids for domestic food production and imports, and risk assessment of food. The NIFC also acts as a

national referee in the field of food inspection for safety and quality control. It offers professional guidelines and assesses the capacity of testing laboratories nationwide.

3.3.2. Food inspection vs. risk analysis

Food inspection, despite the fact that it received many attention from the Vietnam's government, should not be confused with risk analysis. In particular, it should be distinguished with risk assessment, the first component of the risk-based approach. According to the WHO (2019), risk assessment is the scientific evaluation of known or potential adverse health effects resulting from human exposure to food-borne hazards. The principle of independent risk assessment is fundamental (Jouve, 1998). Estimate of risk should be based on sound scientific studies to establish good management strategies.

In Vietnam, risk assessment is mentioned in official documents; however, there is an ambiguity between the definitions of this operation and food inspection. The article 50 of the VFSL defines that risk assessment consists of verification and inspection of risk to public health with respect to the presence of physical, chemical, and microbiological factors. The law states that the ministries can legally and separately perform risk assessment (the responsibility of VFA and NAFIQAD).⁶ In reality, assessments are outsourced to accredited laboratories in a contractual relationship, followed by discussion on the results only among concerned public authorities. Solution of management is given in a second phase, without any explanation. Then, risk communication is considered to be bad (World Bank, 2017) and the credibility of the entire process of risk analysis is at stake. Thus, there is not really assessment of risks to health, and most of the inspection activities are legal hazard tests for verifying the level of compliance.

A risk assessment taskforce was initiated in 2007 by universities, research institutes, and technical experts from MOH and MARD to initiate a risk-based approach in Vietnam, which has recently been evaluated (Nguyen-Viet et al., 2018). The results show that the process requires time to become accessible, mostly because its impact is not directly identifiable in terms of decrease in the frequency of food-borne

⁵ Smallholders are, however, exempted from obtaining this certificate.

⁶ Only the MARD has issued guidance on risk analysis (circular number 02/2013/TT-BNNPTNT in 2013) and the MOH is working on a draft of the circular.

diseases or better protection of the population. Such result is intuitively easy to understand: spending on risk assessment is important, but “returns” on the investment are not directly observable, that posits a challenge for low income countries who want to see policy’s results expressly.

3.4. Food safety strategy, education, and training

Food safety policy is important as it paves the way for the evolution of food control measures. As Vietnam’s NFCS is at an early stage of development, it can decide the evolution of the system. Hence, the following points are important.

3.4.1. The strategic vision to 2030

The most important food safety policy document is the decision approving the national food safety strategy in the period 2011–2020, vision to 2030. Released in 2011, the document focuses on five main objectives:

- Improve the understanding on food safety of different categories of stakeholders in the food chain (food producers, food processor, consumers, and state officers.)
- Building the capacity for the state’s food safety administration (application of ISO standard, constructing a rapid alert system, implementation of risk analysis for all cities with > 2 million inhabitants)
- Improve the use of standard and certification of food safety (application of HACCP, GMP, GHP, ISO 9001, ISO 22000, and VietGAP)
- Improve food safety conditions at commercial units (restaurant, collective kitchen, market)
- Reduce cases of food intoxication. Capacity to control along the whole food chain in 2030.

To summarize, the official vision is to reinforce the state’s control, improve the information and communication regarding food safety, and provide knowledge to increase citizen’s understanding. This policy was implemented by the government and its national inter-sectorial directive committee. This vision, materially translated in a national program of action, shall be respected by all local governments. Specifically, the program defines main actions as following:

- Develop volunteer safety standard (VietGAP, VietGAHP) and other private standards.
- Modernize traditional markets where food is sold under poor hygienic conditions.
- Use modern technologies in food production and food supply.

Then, the program of action envisions a modern food system, with a large place for private stakeholders, who can comply with the standard and manage the implementation of food control (Vietnam Parliament, 2017). These stakeholders are expected to invest in technological solutions to generate value-added products that meet the standard. For example, Vietnam is attempting to replace traditional markets by supermarkets and trade centers, which will be controlled by the operators (Wertheim-Heck, Vellema, & Spaargaren, 2015). This will empower private stakeholders (enterprises, supermarkets), who can establish self-control. At the same time, farmers and smallholders will obviously face increased challenges in this fast-changing economy.

Generally, the policy may conduct to a shift of control power from public authorities to private food companies. Such change presents a potential threat because the government of Vietnam is going to establish many food standards in collaboration with stakeholders. If a company engaging in this process obtain in addition the possibility of implementing self-control, it could generate unfair conditions of competition without necessarily improving food safety. It’s worth reminding that food control has the characteristic of a public good,

meaning that it requires public intervention because it is objectively not a profitable activity.

3.4.2. Traceability

Inspired by the EU, where traceability is obligatory in the feed and food chain, the Vietnam government is looking forward to implementing the concept of traceability, in the perspective of putting circular along the food chain. However, no clear regulatory framework has been defined. The VFSL itself is unclear on traceability as it requires only traceability of unsafe food. It states that “traceability for unsafe food should be implemented in case of request by competent authorities or when the food operator detects by himself a safety problem”. In these cases, food operators shall provide numbers of the affected batches and inform its business representatives about them. In 2011, the MARD issued the circular number 74/2011/TT-BNNPTNT requiring one-step-back-one-step-forward traceability. As the only regulation on traceability, the circular is to be applied by all producers and traders of food under the control of the MARD. But only hand-written tracking documents are required, which can be easily falsified.

In reality, traceability has already been implemented by modern food processing companies, not for the sake of compliance but for their own management requirements. The situation regarding smallholders is different, and unique methods of traceability in the food sector are not available. The MARD identified important disconnects between their management of farms, slaughterhouses, and market vendors inside their own system (IPSARD, 2016). For instance, for animal-origin products tracking, the ear notch, which is the basis of the animal identification system, has only been experimented in North Vietnam in 2016. That clearly shows that the MARD’s circular was not operational.

Traceability is a challenging issue for Vietnam, as many agents participating in the food sector do not possess any business licence. This implies that even if a national program on traceability is implemented, the government has to develop a new independent system of agent identification as it cannot use the system of business identification (see informal economy later).

3.4.3. Promotion of standards

The government is proactive in elaborating and disseminating standards both via standardization and regulatory processes. The most remarkable example is where 13 regulatory documents have been issued to regulate the production and commercialization of safe vegetables RAT (“rau an toan”) (Dinh, Phan, Marie-Vivien, & Bienabe, 2018). The national strategy on food safety expects that by 2020, 60% of tea and vegetable areas in Vietnam will be produced under standards of safe vegetable and tea.

State actors play central roles in promoting the standard. However, achievement of the standard-use policy is weaker than expected. The reason is that standards are considered signs of quality, which is not accessible to the low- and middle-income classes. Pham, Troussieux & Nguyen (2017) showed that the national surface of VietGAP in 2016 was less than 6% of the total vegetable production, mostly because of difficulties in identifying stable consumers with purchasing power. The objective of achieving 60% of production by 2020 as defined by the national food safety strategy appears to be a distant dream. Furthermore, evidence showing that the use of GAP might improve food safety is minimal (Nguyen-Viet, Tuyet-Hanh, Unger, Dang-Xuan, & Grace, 2017). Reports show that 72% consumers never purchased certified poultry and nearly 40% respondents regularly buying chicken with governmental certification do not view it as a credible certification.

Moreover, the management of food quality and food safety is a matter of permanent confusion in Vietnam. For example, both NAFIQAD and VFA have vocation to work on food quality, even though their main activities are control of food safety. Then, the distinction between mandatory legal standards and voluntary standard (of quality) is unclear for many food operators, not to say also for the consumer.

3.4.4. Education and support to the informal food sector

Education and training is the last important part of the food safety strategy of Vietnam. They help to consolidate the responsibility of food operators. Trainings are organized by different public institutions such as NAFIQAD and VFA. The beneficiaries are farmers and food businessmen. In Vietnam, a successful completion of training is the first condition to be reached to obtain the certificate of compliance with food safety conditions. The training is compulsory for all food operators, except farmers and smallholders, for whom it is optional. People who receive the brief training are asked to appear in a short control test such as a traffic code examination, where they should select good answer options. The government expects to generate large number of effective trainees every year. It expects that 100% of the food safety staff and 82% each of the food operators and consumers will be trained by 2020. However, the quality of training has not been thoroughly evaluated.

4. Remaining issues and challenges

With a fledgling NFCS, the achievements of Vietnam from 2010 are encouraging. Today, public officers are more familiar with the Codex Alimentarius and the harmonization with the Codex is on going. Control of production inputs (plant protection substances and animal feeds), as well as veterinary controls at different stages of the food chain, have been regularized. Vietnam is now looking toward implementation of food labeling and traceability. The results confirm that the country is on its way toward consolidation of NFCS. However, important issues and challenges persist, which require detailed discussion.

4.1. Challenge of the informal sector

The informal sector or informal economy is the part of the economy which is not regulated by the state. The adverse effect of informal economy is related to the protection of workers (ILO, 2018), lack of tax payment and smuggling. Such problems are endemic in many developing countries. The informal sector is also a challenge for food control activities, because regulations and controls first target the legal stakeholders, i.e., operators with a legal status.

Vietnam started legalizing the activities of private agents in the market economy from 1986 when it departed from the planned economy. However, a large part of Vietnam's agriculture and food economy involves informal stakeholders, who have worked before for national cooperatives. Today, farmers and many food distributors are still unknown to the administrator, because their activities have not been legally registered. The World Bank (2017) report states that in 2010, the country had 8.9 million agriculture-based households, but only 2536 agricultural enterprises (meaning with a legal status). The Vietnam government also inventories a number of 500,000 food processing establishments in 2017, of which 85% have the status of smallholder business. The latter is a special status in Vietnam reserved for small enterprises of less than 10 units of labor, which are exempted from declaring detailed activities. Only a lump sum tax is due after a declared general turnover. As a consequence, fresh food such as rice, meat, and vegetable, was sold in markets without any form of control, including fiscal controls.

From 2010, the VFSL is urging the government to strictly control food operators. The MARD was handed the important portfolio of food control, and have to deal with the large number of farm households, food semi-processors and food collectors, of which the activities are not registered. Concerning the MOIT, besides the control of formal sector such as industrial processing companies, supermarkets, and special food shops, they have the charge of controlling the wet markets which are the most important channel to access food in Vietnam. In 2017, the landscape was still dominated by traditional wet markets: 8600 official ones versus 700 supermarkets in all the country (Nguyen-Viet et al.,

2018). According to public officers, an important part of vendors operating in these wet markets are not registered. Moreover, many of them operate outside the official perimeter defined by the authorities. Then, the control of their activities is very difficult since these agents are unknown by the administration.

Vietnam has tried to solve the problem by decentralization of food control activities. Local agents can produce good results because they have better understanding of the field, and can design appropriate solutions to adapt the compliance framework to the local context. However, in the long run, combating informal economy via local solution may be expensive. Furthermore, the food chain today does not contain only localized stakeholders, but also collectors and wholesalers to whom local control is clearly not enough. These latter are extremely mobile and can obtain supplies from remote uncontrolled production areas. Without regulating their practices via a centralized management, it is difficult to have an efficient NFCS.

4.2. Rule enforcement in a fast changing economy

Generally, rule enforcement is a challenge for all control activities. The rapid economic development adds a new layer of difficulty. Developing countries experience mass concentration in cities where people can earn more. At the same time, the demand for food is high, while access to safe and good-quality food becomes difficult (Reardon et al., 2019). In this situation, food operators tend to overlook the rules for profit. Thailand, Cambodia, India, and China are facing the increasing problem of food safety parallel to economic growth (Jaffee et al., 2019). For example, in 2008, China was affected by the crisis of melamine-tainted baby formula, which claimed six lives and caused over 290,000 nationwide cases of renal disease (Zhou, 2016). This highlights that Vietnam is not an isolated case of faulty food control.

Experiences in different countries show that regulation is necessary, but it is the daily implementation of rules that matters the most (Ni & Zeng, 2009). Correct implementation of rules is as important, if not more, than the rules themselves. Training and information are helpful, but the core responsibility of a NFCS is that of control. To achieve this, clear rules should be established and should be backed by clear sanctions. At the same time, the institutional framework should be enhanced to take into account informal sector, without that it is difficult to establish correctly the target of control. Of course, this approach should not reduce the importance of cooperative solutions between the government and food chain's stakeholders, including informal ones who are numerous in developing countries. However, enforcement is the backbone of an effective NFCS, and appears to be the best way to bolster the system's efficacy.

4.3. SWOT analysis

To summarize, a SWOT analysis is provided hereunder, which will enable synthetic reading of the paper (See Table 3).

5. Conclusion

The article performs in-depth analysis on successes and caveats of the NFCS of Vietnam, that aims to provide information for policy makers and stakeholders of the food chain who are working in or with Vietnam. The system has started to operate after the promulgation of the Food Safety Law in 2010. It has made good progress, thanks to application of modern principles and reinforced allocation of responsibility to local authorities. One of the successes is the use of local governments for strictly controlling food chain stakeholders, including those in the informal sector. The use of standards, traceability, education, and modernization of the food system is underway. These achievements are due to the willingness of the government to fight against unsafe food products in the domestic market and to develop the agricultural product and food export sector.

Table 3
SWOT analysis of the Vietnam NFCS.

<p>Strengths</p> <ul style="list-style-type: none"> - Firm and complete regulatory framework for building good policy. - Strong local institutions in big cities/province capable of implementing control at the smallest administrative level. - Establishing testing laboratories throughout the country - Societal awareness for facilitating regulation implementation - Food control of export products (rice, sea-food, high-value fruits) is correctly done by big companies. <p>Opportunities</p> <ul style="list-style-type: none"> - Young system with potential to learn and adapt. - Clear policy focusing on food labeling, certification, and traceability. - Possibility to use shared knowledge and experience at low cost. Example: Adapting to the Codex and international standards instead of investing on risk estimate. 	<p>Weaknesses</p> <ul style="list-style-type: none"> - Lack of qualified agents for food control, mostly outside urban areas. - Not completely harmonized with Codex Alimentarius - No control along the whole supply chain. Essentially downstream control when the food comes to the markets. - Risk analysis is theoretical. Risk assessment has not been implemented. - Large number of informal operators participating in the food system. <p>Threats</p> <ul style="list-style-type: none"> - Ineffective “farm to fork approach”, as control efforts are only made in big cities for urban consumers, while production is realized in rural areas. - Lack of transparency in risk analysis, especially in risk assessment, resulting in bad policy in terms of health protection. - Shift of control power from public authorities to private food operators who are favored by the current policy.
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But at its early stage, the system is also facing serious structural problems. First is the lack of transparency in risk assessment, which was not considered during implementation of the policies. In addition, the absence of the status of stakeholders is worrying, because it directly affects the effectiveness of control in a market system. The informal sector is a matter of concern, considering their share in the Vietnamese economy. Finally, recent changes in the policy are in favor of private companies who have capacity of investment to comply with the rules, but the solution goes with the risk of losing public control in the hand of the companies. Such threats require progressive but determined solutions from the government in the future.

Declaration of interest

I declare having no conflict interest with any stakeholders who may concern in this scientific paper.

I understand that if I, my family members and close relatives and personal friends have any direct or indirect interest with any of them, I shall make a declaration to the Editorial Board of the Food control journal.

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