SMALLHOLDER INVOLVEMENT IN VINAMILK SUPPLY CHAIN

Viet Nam

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SUMMARY

This case study reports on the latest dairy production development in Viet Nam where the government has been encouraging smallholder dairy production in order to respond to the increasing demand of the urban market. The supply chain of the Vinamilk company helps illustrate the challenges of supplying fresh milk from multiple smallholder farmers. This case shows that training on better production practices to enhance milking productivity and a payment scheme based on quality are the more effective means of attracting Vietnamese smallholder farmers into producing milk under contract for a large company determined to sell quality products.
1. Milk in Viet Nam: The Emergence of a Rapidly Growing Industry

There is no historical tradition in Viet Nam for the production or consumption of dairy products. For centuries, cattle were used for draught power, manure and meat production. Colonials brought the first dairy cows to Viet Nam at the end of the eighteenth century, with scattered imports of animals from various sources (Australia, China, Cuba, France and the United States of America). After the wars and during the nationalization and collectivization period, there emerged large state-owned dairy farms, mainly in the North and in the central region. The Doi Moi (economic reform) in 1986 initiated a new era of dairying in Viet Nam, with the privatization of the production (smallholder private farms) and marketing sector (emergence of the informal sector as well as the private and semi-private formal sector), accelerating a rapid development. The current dairy development in the country is rooted in the National Dairy Development Plan (NDDP) and reinforced by Government Decision No.167, with provincial authorities providing follow-up support.

Decision No.167 (October 2001) is a policy to develop milk cow husbandry to a production target of 350,000 tonnes of fresh milk by 2010, or about 40 percent of domestic demand, to reduce the dependence on the world milk market but also to save foreign exchange. Through the NDDP, the total dairy cattle herd population increased from only 35,000 head in 2000 to 113,200 head in 2006 and some 19,800 dairy farms, with an average of 5.3 head per household (MARD, 2007). National milk production has been significantly growing as a result, from 12,000 tonnes in 1990 to 215,900 tonnes in 2006, with variable annual milk gains. The largest jump in production was in 2002, with output rising over 60 percent, attributed to gains in both dairy cow numbers and productivity. High demand for fresh dairy products, particularly in Viet Nam’s big cities, drives production. In 2005 per capita fresh milk production reached 9 kg, a 29 percent increase over the year before, though it is still low in comparison with other countries in the region (FAO, 2006).

By region, the average number of dairy cows per household is 3.7 in the North, 6.3 in the South and 3.6 in the central area. Each region has one zone, set up by provincial governments with provisional support for initial phases of development, for concentrated industrial farms (with 1,000–2,000 head), such as Tuyen Quang in the North, Thanh Hoa in the Central area and Ho Chi Minh City in the South. There are two main dairy production systems in Viet Nam:

- Private production, which includes small- and medium-scale producers who are mostly private farms, private domestic or joint venture companies. This system generates 95 percent of the total milk production in the country.
- State-owned farms or stations generating the remaining 5 percent of the total milk production in the country.

Despite recent achievements, milk production remains significantly below consumption – domestic dairies met only about 22 percent of domestic demand in 2005. Imports of dairy products, mainly in the form of skimmed and whole milk powder, currently supply 80–85 percent of the domestic demand. In 2005 Viet Nam’s dairy product imports increased to more than US$300 million and further accelerated in 2006, with imports of $168 million in just the first six months. Viet Nam imports dairy products from various countries, including Australia, the Republic of Korea, the Netherlands and the United States of America. Viet Nam’s dairy product import growth is forecasted to continue in line with increasing living standards, especially in big cities.

In Viet Nam, dairy companies play a dominant role in the dairy sector, focusing primarily on milk procurement. Currently approximately 20 companies collect and process milk and dairy products, of which the three most relevant companies are VINAMILK, Dutch Lady and Nestlé.

1 Some of the information in this section was originally published in Morgan, N. (ed.) 2009. Smallholder dairy development: lessons learned in Asia. RAP Publication 2009/02, APHCA and FAO, Bangkok.
According to the Ministry of Agriculture and Rural Development (MARD), VINAMILK collects more than 60 percent of milk production, Dutch Lady takes 18 percent, Nestlé and the other 17 companies gather the remaining 22 percent.

1.1 Strong support from government and local authorities

Strong government commitment to the development of the dairy sector has greatly contributed to a rapid expansion of dairy activities throughout the country. The NDDP aims to: i) replace imports, ii) generate rural employment and iii) increase rural incomes. In 2005 the Ministry of Industry issued Government Decision No. 22 on “approving the master plan on development of the milk industry in Viet Nam till 2010 and planning to 2020”. It targets an increase of indigenous milk production to meet per capita consumption of 10 kg in 2010 and 20 kg in 2020, with a self-sufficiency proportion of 40 percent by 2010 (300 000 million tonnes).

Provincial governments also have generated dairy development policies that include provisions such as:
- free or subsidized artificial insemination and vaccine services;
- compensation of VND200 000 per male calf born (in the first three years of a provincial dairy project);
- subsidy (VND2–3 million) for the purchase of Laisind cows for artificial insemination with the dairy breed;
- subsidy (VND5–7 million) for the purchase of exotic dairy cows;
- interest-free bank loan (1–3 years) for the purchase of dairy cows;
- support for costs for cow shed improvements;
- support for grass production costs;
- support for milk collection and transportation.

In addition, some provinces have exempted taxes on agricultural land or prioritized land availability for fodder production.

1.2 Milk productivity is increasing steadily with an appropriate breed strategy

From 2000 to 2006 the average milk productivity of cross-bred Holstein-Friesian (HF) cattle increased from 3.8 tonnes to 4.7 tonnes in a 305-day period (MARD, 2007). This productivity is comparatively higher than that of other countries in the region (China at 3.4 tonnes, Thailand at 3.2 tonnes, Indonesia at 3.1 tonnes). The increase of Holstein-Friesian cross-bred cattle (through an artificial insemination programme) is considered the backbone of the NDDP and the main booster of milk production in Viet Nam. The breeding programme benefits farmers by increasing the body size and growth rate of local cattle and thus improving their productivity. The dairy breeding programme is then implemented by inseminating local improved cows with pure Holstein-Friesian bull semen to produce the cross-bred cows. As a result, 14 percent of total dairy cattle population currently is pure Holstein-Friesian cows, 85 percent is cross-bred (with a cross-bred proportion growing from 50 percent to 75 percent to 87.5 percent); only 1 percent is some other breed. Some 47 000 (41.5 percent) of the total 113 200 dairy cattle were carefully selected and recorded in the national cattle breed book, which can be accessed freely via the Internet. All the semen for inseminating is also selected from potential bulls, which can ensure greater milk productivity.

The average number of head per dairy cattle herd is increasing, and the proportion of herds with less than five heads is decreasing. The typical herd now consists of five to ten heads. Economies of scale are considered the most important reason for this change, with capital availability the biggest constraint to increasing the scale of their production, especially among the smallholders.
1.3 Dairy companies depend on imported milk powder rather than domestic fresh milk production

Import dependency has resulted in value chain segmentation among the milk producers, milk processors and milk consumers, each of whom has different priorities. Because domestic production meets only 22 percent of the total demand of dairy companies, international market developments influence the Vietnamese dairy sector. For instance, domestic milk powder price decreased in Viet Nam after its WTO accession in 2007. By importing milk powder to process “fresh milk”, milk companies have had greater profits than when using domestic fresh milk. And it partially explains why the price of fresh milk, which was mostly procured by the large-scale milk companies, remained constant (at least from 2002 to 2006) while the input costs rapidly increased. On the consumption side, fresh milk supplies are not highly appreciated by Vietnamese consumers, who seem to consider the short shelf life of pasteurized milk as an indication of inferior quality. In addition, the low prevalence of home refrigeration, especially in rural areas, makes UHT milk more convenient for consumers. However, as average income increases in Viet Nam, processors are expecting some shift of consumption habits, from UHT milk to pasteurized milk. Changes in habits are helped along by marketing and improving awareness on the quality of pasteurized milk in contrast to UHT milk, as Nestlé has discovered.

1.4 World price increases translate to opportunity for Viet Nam dairy farmers

From June 2007 two of the main dairy companies, Vinamilk and Dutch Lady, increased the farmgate price from VND4 600/kg to VND5 000/kg first, and then to VND6 400–6 800/kg at the end of June 2007. The world demand for milk in 2007 increased sharply (by 35–100 percent), pushing up prices, particularly in a context of drought and reduced fodder availability. Additionally, some European Union countries cut subsidies in the dairy sector, making the milk price rise closer to the real value of products. This is a real opportunity for dairy farmers in Viet Nam. The price gives farmers a profit of VND3 000–3 500/kg, or VND45 000–52 000 per day (US$2.8–US$3.25 per day) for 15 kg of average daily yield per dairy cow, a very valuable income for rural households. The cost of dairy calves also has decreased, from VND24 million per head as a result of the high demand at the peak period of the NDDP, to VND17–19 million per head (considered the “real” price of a calf).
1.5 Smallholder farmers move into dairy production

Most smallholders took up dairying as a result of government support, such as Government Decision No. 167, a policy that sought to increase domestic production and reduce dependence on the world market. The Government’s nationwide initiative encouraged provincial leaders to produce ways to help establish and expand dairy cow production, especially among smallholder farmers. Rural development projects and programmes have played a crucial role in the development of smallholder milk production. While the Government has provided support for entering the sector, the processors set the pricing and payment systems.

Smallholder dairy farmers can only enter the sector with financial support. Dairy production demands large capital input (high initial investment for cows and a shed) and technical capacity. In particular, prices for a dairy cow are high, usually exceeding the capital available to a smallholder farmer. Too often credit schemes proposed by the banks and supported by the Government do not
match people’s situation, such as the high transaction costs, strict collateral on land titles and other assets. Thus, smallholder farmers who typically lack liquidity capital took up dairying because of the supporting programmes and projects of the Government or dairy companies. However, the support has been problematic at times. In fact, it threatened the involvement of smallholder farmers in several provinces at one point due to the “fever” on prices of breeding stock and inputs. The strong support from provincial governments through subsidies for the purchase of cows or heifers “sparked a race between farmers to buy profitable imported breeds. [...] The buying spree guaranteed profits because the farmers were supported by their provincial and municipal officials to obtain fodder and diseases-resistant stock.” (Viet Nam News, 17 September 2005).

Consequently, provincial decisions and their “facilitating conditions” created a “fever” on prices of breeding stock and other inputs. In particular, the price for a dairy cow doubled or even tripled in 2003, to as high as VND30 million. In addition, although provincial and district subsidy and encouragement measures are important, they are often issued in haphazard ways. In Tien Du district, Bac Ninh province, for example, some farmers received subsidies twice to purchase two batches of cows, while theoretically only the first batch can be subsidized (to encourage farmers to raise their own progenies). The policy of subsidizing the purchase of cows, heifers or calves had a further perverse effect on the quality of breeding stock. In the value chain of dairy production, as many studies have pointed out, the smallholder farmer is the segment that bears all the increased costs but gains less in the increase of benefits (Figure 1).

Economies of scale contributed to exclude smallholder dairy farmers. According to Professor Le Viet Ly (2006), the optimal scale for dairy production is more than ten head, meaning that most smallholder farmers cannot meet the requirement for the most efficient production. Smallholder farmers are not experienced and knowledgeable about dairy production. Small-scale dairy producers receive government support, most of them lack the necessary information and technologies (such as breeding, feed supply sources, technology in storage and marketing skills). According to the MARD (2007), 22 provinces of the total 33 provinces with dairy production reported unsuccessful results with their dairy development plans. The NDDP rightly points out that the country lacks experience in dairy, the absence of any tradition common to most of the Southeast Asian countries. It would have been prudent for Viet Nam to learn early on from experiences of neighbouring countries – to avoid similar mistakes.

Despite the Government’s strong support for breeding, the veterinary services have remained inadequate to serve the requirements of the dairy sector. In Viet Nam, the state veterinary service network spreads down to the district level, with the District Veterinary Station. However, at the commune level, there are mostly private veterinary paraprofessionals, so called “paravets”. Even though dairy cattle are prone to various health hazards, the state veterinary services are not systematically used or available to dairy farmers. Overall, the deficit of veterinary practitioners with sufficient knowledge in dairy production is a critical problem for dairy development in Viet Nam.

Milk quality is considered a major bottleneck in the absence of any standardized milk-quality testing scheme for the country and with no independent quality-control agency carrying out regular checks at farms, collection centres and processing factories. This situation causes more difficulties for smallholder farmers. Usually, smallholder farmers are paid a lower price for their output due to untested quality of their milk at the collection centre.

In most provinces where the NDDP failed, milk basins were set far from the market, which requires larger expenditures for transportation as well as directly affecting the milk quality. As a result, it makes domestic dairy products non-competitive with imported milk products. Last but not least, the low procurement price of milk output was the most common driver of smallholder farmers out of the dairy sector during the 2004–2006 period. During that time, the farmgate price, which was set mainly
by large-scale milk companies, was VND3 200–4 100/kg, which did allow farmers to recoup their expenditure, but not to make a profit. Milk companies do not depend on fresh milk but on imported milk powder, while the dairy farmers depend on the companies. And with the milk procurement price set by those companies, not by the farmers, the dairy producers bear all the risk of production, especially the smallholders.

Contract farming and a vertical integration usually have positive effects on capacity-building and technical know-how development. The greatest danger is to create a “firm bind” with farmers (in certain cases, farmers lose their land if they give up dairying) and leave them virtually helpless and without advocacy rights. There are many reasons for the failure of contracts, usually caused by the lack of awareness and experience.
2. Participatory System Analysis of Vinamilk Smallholder Suppliers

Vinamilk is the largest dairy producer in Viet Nam in terms of market share, production capacity and distribution network. Vinamilk’s leading market position reflects a robust distribution network comprised of an estimated 180 distributors servicing more than 90,000 retail outlets across all 64 of the country’s provinces and the cities of Da Nang, Hai Phong, Hanoi, and Ho Chi Minh City. Vinamilk products are exported to a growing list of international markets including Australia, Canada, China, France, Germany, the Netherlands, Poland, Russia, and the United States of America, as well as countries in Africa, the Middle East and Southeast Asia. Interestingly, Vinamilk also relies on a large supply network of smallholder farmers and intermediary collectors who centralize the production of a large milk basin into tanks where the milk from several producers and collectors is mixed.

Vinamilk has 86 “collecting points” throughout the country and near its factories in Hanoi, Nghe An, Binh Dinh, Ho Chi Minh City, Long An, Tien Giang, Can Tho and Soc Trang. The collecting points belong to 3rd-party companies which own chilling facilities and transportation trucks for the deliveries to Vinamilk factories. There are two types of contracts in the Vinamilk system: farmers contract directly with the processing factories of Vinamilk to sell their raw milk; and milk collectors’ contract farmers to collect and sell on milk to processing factories (see Figure 2). However, all milk from all size of farms of both types of contract have to be sent to the collecting points and milk chilling centres before being delivered to the processing companies. Payment is made directly to farmers based on the result of the quality test by the processing company. The system tests and pays each farmer for the quality and quantity of milk delivered. This is in contrast to traditional milk payment systems, where farmers pool their milk and are paid proportionally according to the quantity they have delivered regardless of the quality. Milk prices are set by Vinamilk according to milk quality and for a given period (weeks or month). Milk prices are adjustable depending on the market price.

This process on the one hand is beneficial to Vinamilk by reducing investment into collecting points; the 3rd-party collection points help processors gain from the competition between raw-milk collectors. On the other hand, this process has also shown weaknesses from the 3rd-party collection points: the collectors have no training on quality control of milk and collectors still have opportunity to abuse the system.

Figure 2: Vinamilk supply chain

![Supply Chain Diagram]

**Note:** (1): Sending milk sample for testing; (2): Milk delivery and; (3): Payment for milk

*Source: Jaccar, 2009*
Vinamilk has conducted some training in feeding, heat-stress mitigation, or weed growing for contracted farmers based on the technical and financial support of the Vietnam–Belgium Dairy Programme, funded by the Belgium Technical Cooperation. This technical agency has also supported Vinamilk in training on milk quality control for collectors in collection points.

The farmers under the Vinamilk system are paid directly by Vinamilk twice per month for the milk delivered. Collection points receive only a collection fee. However, farmers and owners of the milk collection points think that the system is unfair because testing of the milk quality is done at the dairy plant and not at the collection point. Farmers are therefore unable to follow and check the testing process and the results, but have to accept the decisions and prices metered out by Vinamilk.

The Tan Thanh Dong Commune of Cu Chi District is one of the communes that has the highest dairy cow population in Ho Chi Minh City (see map in Figure 3). In 2008 Tan Thanh Dong had 1,265 households who were raising 10,871 dairy cows, producing 55 tonnes of milk daily. Farmers in the commune produce milk for both Vinamilk and other milk companies. Thus, it is very interesting to answer the question “Why are farmers producing or not producing milk for the Vinamilk company?”

The focus group discussions were established based on the permission and support of the Department of Agriculture and Rural Development (provincial authority) of Ho Chi Minh City and the People’s Committee of the Tan Thanh Dong Commune.

The farmer focus groups were established based on whether the farmers were supplying Vinamilk or not. The question was then raised and explained to extract the explanatory elements. Group A farmers were asked the question “What are the reasons that have made you decide to work with the Vinamilk Company?” They gave the following explanations for joining the Vinamilk supply chain. The definition of each factor was also given, based on an agreement within the group.
1. Household income. Increase in income from dairy production contributes to the increase of total household income.

2. Productivity. Potential to increase the milk productivity of the household dairy cows.

3. Product quality. Potential to produce higher quality milk.

4. Stable market. Able to sell directly to the higher-end market with higher and more stable price, and with lower transaction costs.


6. Training. Participation in training course for herd management, animal health care, milk quality control, etc.


8. Organization. Signing long-term contract with the company to supply milk daily.

9. Resources. Good natural conditions for dairy cow, experienced labour, near collection centre, near market, etc.

10. Infrastructure. Quality control, storage and cold chain of the company.

The PSA graph is shown in Figure 4. Symptom elements include product quality, productivity and stable market factors, indicating that these elements have a low importance to influence farmer's decision in participating in the Vinamilk Company. There are four motor elements: supporting system, training, organization and information, which are the main drivers encouraging farmers to participate in the company's supply chain. Buffer factors include infrastructure, resource and household income elements.

The farmers in Group B were asked to answer the question “What are the reasons that have made you decide NOT to work with the Vinamilk company?” The farmers agreed on the following explanatory factors. The definition of each factor is also based on an agreement within the farmers’ focus group.

1. Flexible market. Farmer can sell milk to collector with no strict quality control (milk quality, time to delivery, etc.).

2. Knowledge. Believe that all the training provided by the company is just common knowledge, which they can learn by practical experience and learn from neighbouring farmers.

3. Productivity. Farmers do not think that applying techniques which Vinamilk has extended to their contract farmers (e.g. feed ration, cooling system) could increase their productivity correspondingly to the cost expended.

4. Scale of production. Some farmers have only one dairy cow, they could not sign the contract with Vinamilk.

5. Infrastructure. Producers sell directly to the collector without any type of preprocessing. Storage and cold chain seem not to be important if they sell directly to collectors.

6. Quality control. Vinamilk has a very strict quality control system, which, according to farmers, lowers the price of milk compared with the price from collectors.

7. Market access. There are many collectors buying milk, it is easy to sell milk without a contract.

8. Information. Farmers are concerned only about information on price, which as they think, is available from collectors and neighbours.

The PSA graph is shown in Figure 5. The explanatory elements are located in all quadrants. Symptom elements are scale of production and infrastructure, which are easy to be influenced by other elements but have not much power to change the system. Buffer elements include information and market access, indicating that these elements are of low importance in influencing farmers not to work with the company. Productivity and knowledge are critical elements. Motor element includes flexible market and quality control, these elements could have discouraged farmers from participating as members of the Vinamilk Company supply chain.
Figure 4: PSA graph for participating group in Vinamilk supply chain

<table>
<thead>
<tr>
<th>No.</th>
<th>Elements</th>
<th>Activity ratio</th>
<th>Degree of inter-relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Household income</td>
<td>0.50</td>
<td>78</td>
</tr>
<tr>
<td>2</td>
<td>Productivity</td>
<td>0.75</td>
<td>90</td>
</tr>
<tr>
<td>3</td>
<td>Product quality</td>
<td>0.89</td>
<td>139</td>
</tr>
<tr>
<td>4</td>
<td>Stable market</td>
<td>0.96</td>
<td>88</td>
</tr>
<tr>
<td>5</td>
<td>Supporting service</td>
<td>1.85</td>
<td>71</td>
</tr>
<tr>
<td>6</td>
<td>Training</td>
<td>1.13</td>
<td>83</td>
</tr>
<tr>
<td>7</td>
<td>Information</td>
<td>1.77</td>
<td>41</td>
</tr>
<tr>
<td>8</td>
<td>Organization</td>
<td>1.10</td>
<td>82</td>
</tr>
<tr>
<td>9</td>
<td>Resources</td>
<td>1.00</td>
<td>30</td>
</tr>
<tr>
<td>10</td>
<td>Infrastructure</td>
<td>0.99</td>
<td>51</td>
</tr>
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</table>
### Figure 5: PSA graph for non-participating group in Vinamilk supply chain

<table>
<thead>
<tr>
<th>No.</th>
<th>Elements</th>
<th>Activity ratio</th>
<th>Degree of inter-relationship</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Flexible market</td>
<td>1.01</td>
<td>57</td>
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<tr>
<td>2</td>
<td>Knowledge</td>
<td>1.47</td>
<td>83</td>
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<td>3</td>
<td>Productivity</td>
<td>1.11</td>
<td>90</td>
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<td>4</td>
<td>Scale of production</td>
<td>0.82</td>
<td>68</td>
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<td>5</td>
<td>Infrastructure</td>
<td>0.94</td>
<td>68</td>
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<tr>
<td>6</td>
<td>Quality control</td>
<td>1.21</td>
<td>60</td>
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<tr>
<td>7</td>
<td>Market access</td>
<td>0.61</td>
<td>50</td>
</tr>
<tr>
<td>8</td>
<td>Information</td>
<td>0.93</td>
<td>46</td>
</tr>
</tbody>
</table>
3. **Analysis**

There are four reasons that mainly influence farmers to be members of the Vinamilk Company supply chain. The key active element is the "organization", which implies the signature of a long-term contract with the company to sell milk daily. Currently, Vinamilk is known as the leading company in milk producing and processing in Viet Nam, so the company is a secure outlet for fresh milk in the long term, which is the most concerning issue for milk producers. Supporting system, training and technical upgrade and information provided by the company are also motor elements, which actively influence other elements and have predictable impacts on the decision of farmers to join this quality-led supply chain. According to the farmers interviewed, information, training in herd management (e.g. feeding practices, optimal feed ration, cooling system for dairy cows, forage practices) significantly increased milk productivity of trained farmers. The training also helped farmers lower production costs due to reduced feed waste. More importantly, farmers can have sufficient forage based on the same area of grass cultivation area, which is always considered as the biggest constraint of the dairy sector in a suburban area like Tan Thanh Dong Commune.

Getting information on quality requirements and selling price encourages farmers to apply good practices for better products, which benefit not only farmers but the whole marketing chain. Supporting services such as credit, health care for dairy cows are also factors that provide an incentive for farmers to sign a contract with the company. Maintaining those activities will ensure the participation of farmers in the company’s supply chain.

On the other hand, the non-participating group identified quality control system and flexible market as the main reasons for not joining the Vinamilk Company supply chain. The flexible market, as reported by farmers, is the traditional milk selling system: farmers sell fresh milk to collectors or traders who collect the milk from farmers and then sell it (processed or unprocessed) to retailers and shops. The advantage of this model is that farmers can sell fresh milk without any quality test while the price is based on market price. Farmers in this group also thought that they were more flexible in selling milk as they could sell to many collectors in the region. That explained why market access was one of the buffer elements in the PSA graph with not much influence on the decision not to join the Vinamilk supply chain.

The quality testing system was considered as a major constraint that made the farmer decide not to join the company supply chain. In fact, as reported by farmers, an unclear quality testing system of the company sometimes degrades the quality of their milk, which reduces income from milk significantly.

The “flexible market” and inexistence of a quality control system in this case could encourage both farmer and collectors to cheat each other. Farmers were discouraged to produce good quality milk as “bad” farmers would not be identified. Collectors or traders have an incentive simply not to complete their payment once they have taken the milk. In addition, because of the delayed nature of the transaction and the lack of written contracts, farmers can expect subsequent higher offers from other sellers, resulting in hold-ups and renegotiation with their original buyers.

Additionally, collectors are not trained in quality control, which eventually results in a large spoilage of milk in this supply chain. Farmers sell milk without any contract, so in case of market fluctuations and collectors refusing to buy milk, farmers suffer. However, during the time of survey, milk demand was high and price was not fluctuating, so non-participating farmers were very confident about the advantage of the “flexible market” in which they were participating.
It is thus not surprising that farmers in this group considered productivity and knowledge as two critical elements. Though farmers in the non-participating group believed that all training and knowledge provided by the milk company was just common knowledge that they could learn by practical experience or from their neighbour, their milk productivity was still lower than that of trained farmers. The milk productivity of non-participating farmers is very “sensitive” in the fact that it fluctuates for many reasons. Many of these farmers did not know about cooling systems for dairy production and the advantage of this system. Feeding practices such as feed ration and storage, which play a significant role in increasing productivity and efficiency of milk production, were unknown to these farmers. As critical elements, knowledge of farmers in the non-participating group may change many things quickly but also may create many unexpected effects. So, if one could change their mindset from considering training as just “common knowledge” to understanding its important role in increasing productivity, this element would have a strong impact on developing farmers’ milk production.
4. CONCLUSION

The focus group discussion applying the PSA method has contributed to answering the question of why farmers had joined or not joined the supply chains of the Vinamilk processing company. In order to increase the number of farmers signing contracts, the Vinamilk Company needs to continue its supporting system, transferring technical training and providing information to farmers, given that the market demand for milk is sustainable and developing quickly in Viet Nam. Developing the company's reputation could also increase the incentive of farmers in contracting into long-term supply agreements with the company.

It is obvious that there are some barriers that constrain farmers to sell fresh milk to the Vinamilk Company. According to the farmers’ focus groups, an unclear purchasing mechanism with many collecting intermediaries is one of the most important constraints that reduce farmers’ incentive in supplying fresh milk to the company. A mixed tank of milk from many farmers with different quality standards would receive a very low price from the company and penalize all the farmers and small market intermediaries contributing to that tank. The linkage between farmers and market intermediaries would therefore become vulnerable and the supply source of the company would also be in a critical situation if the company does not change the purchasing system, which happens to be the original cause of the problems.

At national level, smallholders tend to disappear from dairy production in crisis periods. Typically, smallholders are more vulnerable because they are relatively new to dairying and they do not have enough time to gather sufficient resources to pay back their debts and enlarge their herd. Thus, some policy changes are needed to encourage smallholder dairy farming:

- All efforts should be made to strengthen the capacity of existing small- and medium-scale farmers who show a potential to enlarge their herd (enough land, interest, technical know-how). Smallholders should, whenever possible, be encouraged into interest groups in order to lower their production costs. The organizational approach should be addressed step by step, primarily by forming interest groups or clubs rather than cooperatives. Active exchange of experiences should be promoted by study tours to private farms and existing interest groups.
- In each zone, successful farmers with sound technical knowledge should be identified as possible farmer-to-farmer trainers. Farmers should be intensively trained on relevant topics (heat detection, calf raising, feeding, hygienic milking, basic detection of health disorders, etc.), possibly on their farm rather than at a station through an exchange of experience with successful farmers.
- To give more incentives for the smallholder dairy farmers, a new pricing system should be set up, based on a basic milk quality (fat, protein, total solid, bacterial count and absence of antibiotics). The basic payment system should be similar throughout the country, with private processors free to establish their own payment schemes.
- To overcome higher prices for bad quality paid by private agents and middlemen, a quality-based payment system should be implemented, similar to the Vinamilk system: the higher the quality, the higher the price.
- Proper guidelines on contract conditions (such as no firm binding of dairy production and land use rights) should be issued by the national authorities. Contract dairy farming should be discussed with the major processors and the relevant ministries in order to create a general framework.

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REFERENCES


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