



# An Analysis of the Linkages in the Fresh Milk Chain of Viet Nam

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## ABSTRACT

The dairy sector is a potential economic sector of Vietnam. However, it is facing some difficulties both in the milk's quality and quantity. One of the reason is the loosened linkages among actors and stakeholders in the fresh milk chain. Due to the differences in geographical, climatic and socioeconomic conditions, the state of these linkages vary among regions. This study aims to analyze, evaluate and compare the linkages among actors and stakeholders in the fresh milk chain in some important milk producing regions of Vietnam. Two chosen sites are in favorable conditions for dairy farming are Son La Province and Lam Dong province; and two sites having less favorable conditions namely Ha Nam, Ho Chi Minh City are chosen. Data was collected from questionnaire surveys distributed to 40 famers in each study site. The results have shown that the linkages in Son La Province seem to be the strongest because of the favorable climate conditions and longer experience in cattle raising of dairy farmers. Despite the favorability of climate condition, the linkages in Lam Dong are still loose. Linkages in Lam Dong are even looser than those in Ho Chi Minh city, which is an unfavorable area. Linkages in Ha Nam are likely to be the most loosened among four study sites. Linkages between dairy farmers and some types of stakeholders are quite tenuous. It is recommended for all actors and stakeholders to enhance the strengths of the fresh milk chain: Dairy farmers should be more actively join in the chain, dairy plants – the most powerful actors in the chain, should be more supportive in terms of providing loan, technique and traningng etc., and last but not least, it is the more intense of stakeholders' involvement in the fresh milk chain.

## 1. INTRODUCTION

Vietnam's fresh milk market is considered to be a potential market with the significantly increased demand. It was recorded that from 2010 to 2015, the raw milk demand risen by 61%. In 2010, each Vietnamese consumed approximately 15 liters of milk per year. By 2020, this figure is forecast to almost double, up to 28 liters per year (Dairy Vietnam, 2018) . This is great potential and good opportunities for the development of the dairy milk sector in Vietnam.

However, Vietnam's dairy industry is now facing some difficulties in terms of milk quantity and quality. The total milk supply of the whole industry has just satisfied 35% of the domestic demand and Vietnam has to import most of its dairy products (Dairy Vietnam, 2018) . Besides, as the awareness about health and food safety, consumers nowadays are more concerned about their consumed milk products but the problems of milk containing Melamine or unsafe milk remains a big problem which has affected negatively on the industry (Nga B.T. et al., 2011).

Besides the dispersal and lack of professionalism in the production of dairy farmer smallholders across the country, another reason is the loosened linkages of actors and stakeholders in the milk chain. Therefore, strengthening those linkages is very crucial to ensure both quantity and quality of the whole chain. Yet due to the differences in geography, climate and socioeconomic conditions, the state of linkages in the fresh milk chain vary among provinces. From reasons above, the research of "**An analysis of the linkages in the fresh milk chain of Viet Nam**" is crucial. This article aimed to analyze, evaluate, and compare the linkages among actors and stakeholders in the fresh milk chain in some areas of Viet Nam: Moc Chau district in Son La province, Ly Nhan and Duy Tien districts in Ha Nam province, Don Duong district and

Dalat city in Lam Dong province and Cu Chi district in Ho Chi Minh City, and provided some recommendations to strengthen the linkages, which in turn improve the benefits for dairy farmers in particular, and for all actors along the fresh milk chain as a whole.

## 2. METHODOLOGY

The choice of study sites was based on the real conditions of dairy production in Vietnam. Vietnam has a tropical monsoon climate with an average relative humidity of 84–100%. Vietnam also suffers from many natural disasters such as storms, floods, droughts, etc., often following an annual cyclical pattern. Natural conditions do not weigh in favor of the dairy industry.

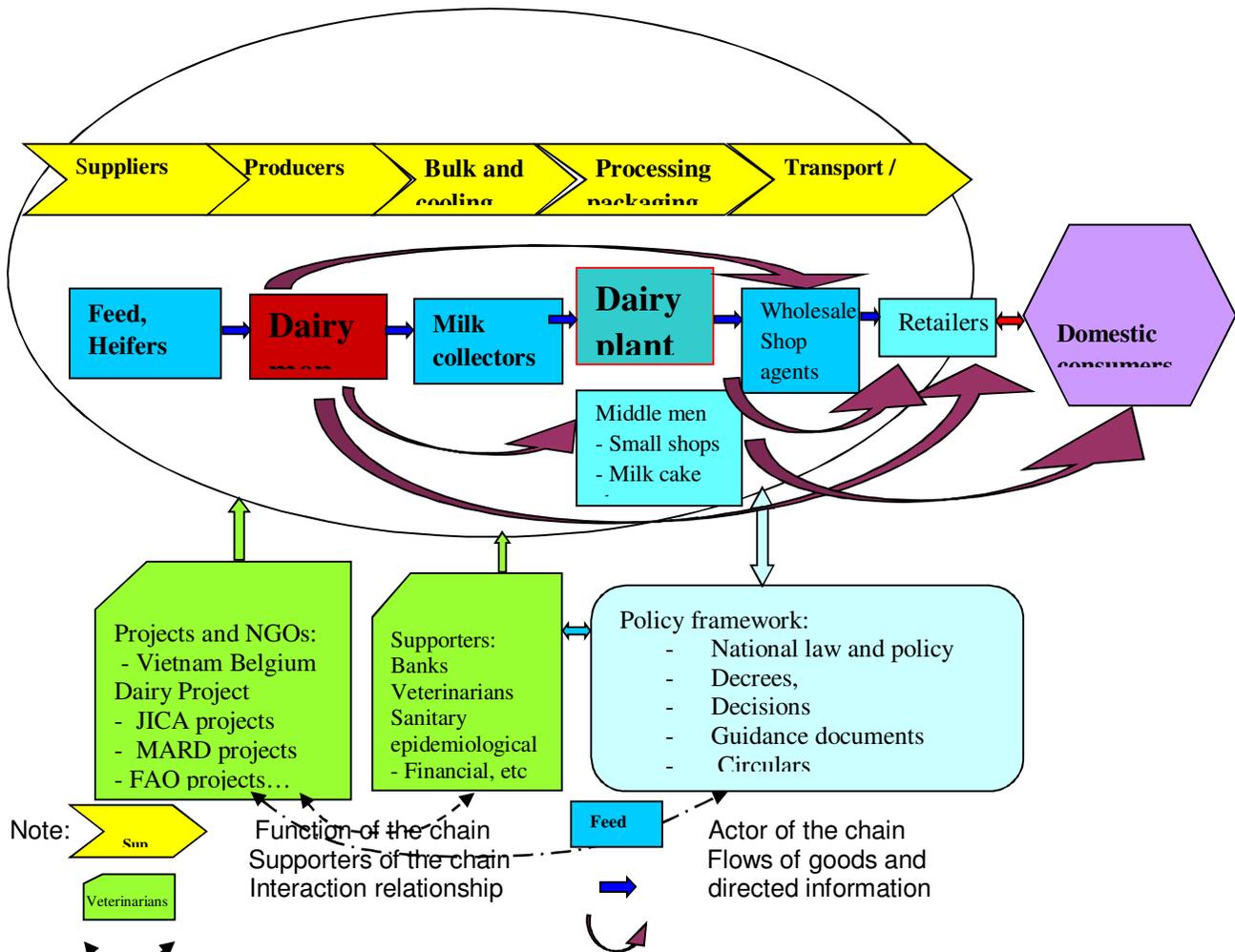
Regarding favorable geographic areas for dairy farming, Vietnam has only two main areas in the highland areas with quite cool climate namely Moc Chau district in Son La province in the north, and Don Duong district and Da Lat city in Lam Dong province in the south. Dairy farmers there also have long time experience in dairy production and are considered as getting high productivity in milk production. Therefore, they have developed a well-known trademark (Moc Chau milk and Da Lat milk). Therefore, these two areas were chosen to study.

Besides, we choose two other unfavorable geographic areas for dairy farming on the contrary: lowland areas with quite hot climate, dairy farmers having less experience in dairy production, and considered as getting low productivity and facing many difficulties in milk production: Ly Nhan and Duy Tien district in Ha Nam province and Cu Chi – a suburban of Ho Chi Minh city.

Standard questionnaires were distributed to 40 dairy smallholders in each province. Total 160 smallholder farmers were surveyed.

### 3. RESULTS

#### 3.1. The fresh milk chain in Vietnam



**Figure 1: Basic actors and stakeholders in the milk chain**  
 Source: Bui Thi Nga (2014) and illustrated from survey results, 2017

In Vietnam, the linkages among dairy farmers and other actors and stakeholders in the fresh milk chain are not strong. Dairy farmers are the main actor in the chain who directly produce fresh milk, then, milk collectors collect the milk and deliver it to the dairy plant. They work independently but unofficially are under the control of milk processing companies Bui Thi Nga, Tran Huu Cuong, Philippe Lebailly (2011). However, not so many farmers have signed the contracts (both oral and written contracts) with the milk collectors but with the processing companies (Bui Thi Nga, 2017).

Besides, there are some supporting organizations and projects which are useful to the dairy farmers such as Belgian Development Cooperation (BTC), The Japan International Cooperation Agency (JICA), Ministry of Agricultural and Rural Development (MARD), Department of Agricultural and Rural Development (DARD), National Institute of Animal Husbandry (NIAH). They have provided cattle raising

technique and training courses. However, in terms of financial support, some governmental banks have not provided sufficient loans for farmers to develop their production. Local educational institutions, extensions, veterinarians and authorities have not been working effectively for the chain.

#### 3.2. study sites

#### Milk production in the

The average number of dairy cows in Moc Chau district, Son La province is approximately 40 heads, which is the most among 4 regions. The average milk production in Moc Chau is about 22 kg/cow/day, also the highest among all. Although the average number of dairy cows in Cu Chi is about 23 heads per farm, higher than that in Ha Nam and Lam Dong, the average milk in Cu Chi district, Ho Chi Minh city is only 15 kg/cow/day which is the lowest production of all. Ha Nam has the smallest

number of dairy cows per farm (15 heads) but the average milk production is relatively high, about 19 kg/cow/day. The average number of cow heads and milk

of Lam Dong farms are about 23 heads and 15 kg/cow/day respectively.

**Table 1: Number of dairy cows and average milk production**

	Number of dairy cows (head)		Average milk production (kg/cow/day)	
	Mean	Median (Min; Max)	Mean	Median (Min; Max)
<b>Moc Chau</b>	39.82	42 (15; 59)	22.8	23 (12.5; 30)
<b>Ha Nam</b>	15.48	12 (3; 40)	19.92	20 (16; 26)
<b>Lam Dong</b>	20.5	20.5 (1;40)	17.8	18 (10; 25)
<b>Cu Chi</b>	23.7	22.5 (7;60)	15.2	15 (10;20)

Source: Survey results, 2017

### 3.3. Linkages of actors and stakeholders in the fresh milk chain in 4 study sites

#### 3.3.1. The linkages between dairy farmers and input suppliers

Input suppliers are the starter of the food chain. In the dairy industry, they provide dairy farmers with breeds, animal feeds, and equipment. A stable supply of input is essential to the achievement of stable output. It can be seen from the table above, signing contracts with input suppliers is extremely rare. In Moc Chau, the numbers of dairy farms signing contracts are only 14 out of 40 surveyed farms, accounted for 35%. Input suppliers have been supplying farmers with breeds (Heifers),

forage, concentrates, byproducts, fertilizer and machinery, and equipment. However, the number of farms receiving support (including loans, breeds, feeds, and facilities) is lower, at 11 out of 40 (27.5%). According to the surveyed results, 5 dairy farmers could receive loans along with technical training from the input companies only if they signed the contracts. The numbers of dairy smallholders having contracts with input suppliers in Lam Dong and Cu Chi are lower than that in Moc Chau, around 6-7 farms, occupying 15-17.5%. Also, only 1 farms in each district have received support from their input suppliers. Meanwhile, there is no contracts and supports among dairy farmers and input suppliers in Ha Nam.

**Table 2: The linkage between dairy farmers and input suppliers in the study sites**

	Farms signing the contract with input suppliers		Farms receiving support from input suppliers	
	No. (out of 40 farms)	%	No. (out of 40 farms)	%
<b>Moc Chau</b>	14	35	11	27.5
<b>Ha Nam</b>	0	0	0	0
<b>Lam Dong</b>	6	15	1	2.5
<b>Cu Chi</b>	7	17.5	1	2.5

Source: Survey results, 2017

#### 3.3.2. The linkages between dairy farmers and milk collectors

Previously, when the number of dairy cattle was still too small, and the consumption of milk buyers was simple, the selling-buying was all about self-supply and self-

demand. Dairy farmers usually used to sell their collected fresh milk to nearby refreshments or milk/cake shops for regular consumption needs. Another way to sell the milk is dairy farmers could group together and take turns to deliver milk to milk shops.

**Table 3: Number of dairy farms signing contracts with milk collectors**

	Signing contracts with milk collectors	
	No.	%
<b>Moc Chau</b>	17	42.5
<b>Ha Nam</b>	3	7.5
<b>Lam Dong</b>	0	0
<b>Cu Chi</b>	6	15

Source: Survey results, 2017

Currently, due to the dairy development of each subregion and region, milk collection network is expanding more and more. Most of the dairy farms in Vietnam are located far from milk processing companies, therefore, it is essential to form a system of milk collection, transshipment, and preservation. There are 3 types of members participating in the milk collection networks across the country: cooperatives (19%), companies (23%), and private collectors (58%) (Chu Khoi, 2007). Twice a day ( in the morning and in the afternoon), dairy farmers deliver their milk to collecting

centers normally by their motorbikes. Milk collectors are responsible for collecting and checking the fresh milk quantity and quality then deliver the milk to the processing plants.

The linkages between dairy farmers and milk collectors are quite loosened in the study sites. Except for Moc Chau's linkages ( with 17/40 surveyed farms signing contracts with milk collectors), the numbers of farms contracting with milk collectors are very small. Especially in Lam Dong, no surveyed farms had contracts with milk collectors.

### 3.3.3 The linkages between dairy farmers and dairy plants

**Table 4: The linkages between dairy farmers and dairy plants**

	Signing contracts		Receiving loan support		Receiving technique support		Trained by dairy plants	
	No.	%	No.	%	No.	%	No.	%
<b>Moc Chau</b>	40	100	28	70	32	80	27	67.5
<b>Ha Nam</b>	40	100	2	5	17	42.5	30	75
<b>Lam Dong</b>	39	97.5	0	0	9	22.5	1	2.5
<b>Cu Chi</b>	39	97.5	2	5	23	57.5	17	42.5

*Source: Survey results, 2017*

Most of the dairy farmers in the study sites have signed the contracts with dairy processing companies. This figure ranges from 97.5-100% in each region. In Moc Chau, 40 out of 40 surveyed dairy farmers stated that they all have sold their milk to Moc Chau Dairy Breedings Joint Stock Company because it provides

stable input and output along with supporting farmers in raising cattle technique. Meanwhile, in other districts, their dairy plants include Vinamilk, Dutch Lady (Friesland Campina Vietnam) (Table 6). 6 farms in Lam Dong sell milk to Lam Dong Milk Company.

**Table 5: Number of dairy farms signing contracts with each dairy plant**

	Dairy Plants				
	Moc Chau Co.	Vinamilk	Dutch Lady	LamDong milk	Others
<b>Moc Chau</b>	40	-	-	-	-
<b>Ha Nam</b>	-	18	22	-	-
<b>Lam Dong</b>	-	25	6	6	2
<b>Cu Chi</b>	-	20	16	-	3

*Source: Survey results, 2017*

There are 3 types of contracts between dairy farmers and dairy plants: dairy plants supplying inputs, dairy plants buying outputs and dairy plants both supplying inputs and buying outputs. In Moc Chau, it is known that all of 40 surveyed farmers are ensured both input and output by Moc Chau Dairy Breedings Joint Stock

Company. Each contract is signed within 1 year. In other areas, dairy plants usually just promise to consume fresh milk for farmers under the 1-year-contract. (Table 7). But in Ha Nam, some farms have the advantage of 5-year-contracts, which will be resigned after 6 months.

**Table 6: Contracting with dairy plants**

	Types of contracts			Time of contracts				
	Supplying inputs	Consuming output	Both	0.5 year	1 year	1.5 years	3 years	5 years
<b>Moc Chau</b>	-	-	40	-	40	-	-	-
<b>Ha Nam</b>	2	25	13	1	17	-	-	15
<b>Lam Dong</b>	0	34	5	2	34	1	1	-
<b>Cu Chi</b>	2	30	7	6	33	-	-	-

Source: Survey results, 2017

In terms of loan support, it can be seen from the Table 5 that dairy plants do not usually provide dairy farmers with loans. In Moc Chau, the number of surveyed farms receiving loan support is the highest, at 28 out of 40 (70%). The amount of loan varies from 40 million to 200 million VND, with the interest rate of 1-1.2% per year and the term is 12 - 24 months depending on the loan amount. However, only 2 farmers have received financial support from dairy companies in Ha Nam and Cu Chi, especially the figure for Lam Dong is 0.

Dairy processing companies back up farmers more in terms of technique and training support. They teach dairy farmers cattle breeding, raising and milking techniques. Those lessons are held in workshops, scientific conferences or short-term training courses. Even though the number of dairy farms supported is still the highest in Moc Chau which is followed up by Ha Nam and Cu Chi. The figure for Lam Dong is the smallest.

### 3.3.4 The linkages between dairy farmers and relevant stakeholders

Stakeholders, even though, are not included in the chain, they are the members in charge of creating a good environment for the chain. For example, governments can interact with the chain by providing priority loan/ funds for dairy industry, free tax for dairy products, support on price or subsidizing the dairy farms. In our case, Ha Nam was received support from the

State and local government the most among all 4 districts. 17.5 % of surveyed farmers said that they were prioritized in receiving loan/ funds for their dairy cattle raising which is followed by Cu Chi (15%). Meanwhile, the figures for Moc Chau and Lam Dong are only 5%. The percentage of dairy farms gained other kinds of support from Governments is relatively low. In some cases, dairy farms hardly ever received any support.

There are other financial organizations that dairy farmers can receive loans from such as Bank of Agricultural and Rural Development, Bank of Social Policies, Women Union etc. 45% of dairy farmers in Ha Nam stated that they have received financial support from those organizations which they used to buy new dairy cows, animal feeds and even new equipment and facilities. However, in other districts, dairy farmers could not approach these funds as much as they expected.

Besides, some dairy farmers in the study sites having linkages with the local farmers' associations, war veterans', veterinary service and insurance agents. Those organizations can be very supportive to farmers in terms of financial issues or market power (eg: help farmers to negotiate with dairy companies more easily). As can be seen from the Table 8, the linkages with farmers' associations and veterinary service in Lam Dong and Cu Chi are stronger than that in Moc Chau and Ha Nam. The linkages with war veterans' are quite loosened in all study sites. Dairy farmers in Moc Chau have the strongest linkage with insurance agents.

**Table 7: Percentage (%) of farms having linkages with State/ local government and financial organizations and others**

		<b>Moc Chau</b>	<b>Ha Nam</b>	<b>Lam Dong</b>	<b>Cu Chi</b>
<b>Supports from State and local government</b>	Priority loan/funds for Dairy cattle rising	5	17.5	5	15
	Free tax for Dairy products	0	0	2.5	5
	Price support	0	2.5	0	5
	Subsidy (feeds)	5	0	0	0
<b>Linkages with financial organizations</b>		10	45	7.5	12.5
<b>Other linkages</b>	Farmers' association	15	7.5	30	47.5
	War Veterans'	0	0	7.5	5
	Veterinary Service	12.5	2.5	37.5	55
	Insurance Agents	22.5	0	5	0

Source: Survey results, 2017

3.4 Affecting factors to the linkages

**Educational level**

Most of the dairy farm owners in 4 study sites do not have higher education programs. Most of them just

graduated from high schools. Especially, some of the dairy farmers finished only elementary schools. This figure in Cu Chi is the highest, accounting for 30%. The figure of farm owners having college degrees or others is very low.

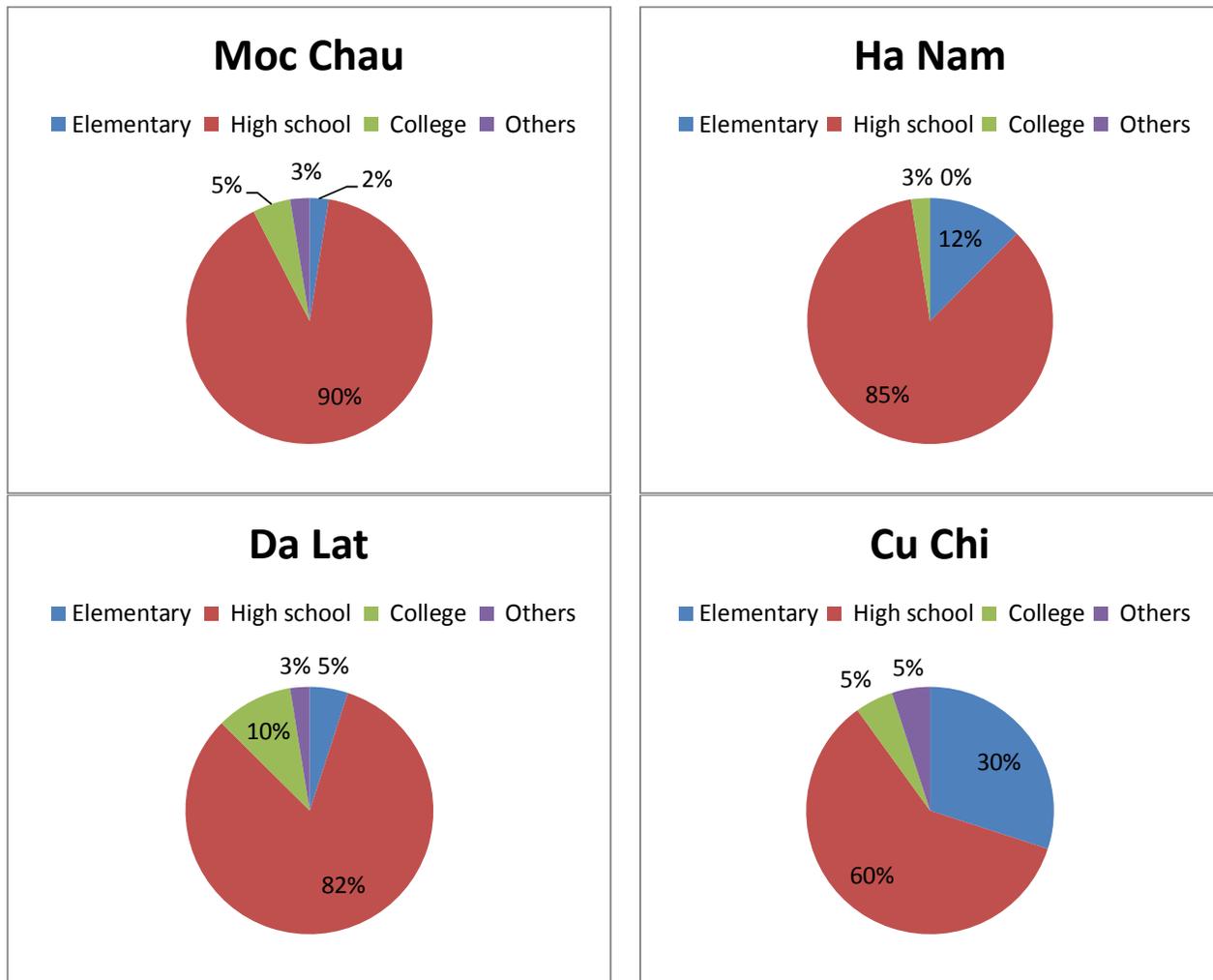


Figure 1: Dairy farm owners' education level in the study sites

Source: Survey results, 2017

**Experience in cattle raising**

Dairy farmers in Moc Chau seemed to be the most familiar with cattle raising, with the average years of

experience reached to about 14 years. The figure for Lam Dong and Cu Chi is about 11 years. Among all, Ha Nam dairy farmers have the least experience which is only about 4.5 years.

Table 8: Experience with cattle raising of interviewees in the study sites

	Experience with cattle raising (Years)	
	Mean	Median (Min; Max)
<b>Moc Chau</b>	14.35	13 (1; 37)
<b>Ha Nam</b>	4.684	3 (1; 14)
<b>Lam Dong</b>	11.13	10 (2;25)
<b>Cu Chi</b>	11.78	10(1;20)

Source: Survey results, 2017

#### 4 CONCLUSION AND RECOMMENDATION

Overall, Moc Chau' dairy farmers seemingly have the strongest linkages with actors and stakeholders in the fresh milk chain. The strength in linkages of Moc Chau's fresh milk chain can be explained by the favorable climate conditions and the long experience in cattle raising. In terms of the linkages with input suppliers and milk collectors, the percentage of dairy farms signing contracts with them in Moc Chau is the highest among all 4 study sites, 32.5% and 42.5% respectively. In terms of the linkages with dairy plants, the proportion of dairy farms having contracts with ranges from 99% to 100% in all study sites, but only in Moc Chau, dairy farms are promised not only to consume outputs but also provide inputs. The percentage of dairy farms receiving supports such as loan, technique, and training is also the highest in Moc Chau.

Lam Dong is considered to be a promising dairy production area with favorable climate conditions and dairy farmers' long-term experience but the linkages among actors in the chain is still loose, especially with the milk collectors (15% of surveyed farms contracting with input suppliers and 0% of surveyed farms having contracts with milk collectors).

Compared to Moc Chau and Lam Dong, Cu Chi does not have the advantage of climate conditions but with the experience in cattle raising, the linkages with actors in the chain are relatively better than those in Lam Dong. The percentage of dairy farms having contracts with input suppliers and milk collectors are higher than that in Lam Dong (17.5% and 15% respectively).

Ha Nam has the most loosen linkages of all study sites due to the unfavorable climate conditions and less experience of dairy farmers in cattle raising. The figures for dairy farms contract in Ha Nam signed the contracts with them to sell the output but the supports they received from dairy companies have been limited.

The linkages with stakeholders in 4 study sites are relatively tenuous, especially between the dairy farms and the State or local governments in terms of loan, price support and subsidy. Financial organizations have provided little loan to dairy farmers. Linkages with other organizations such as farmers' associations, war veterans' and veterinary service are stronger in southern areas than those in the northern areas. Only Moc Chau and Lam Dong's dairy farms have linked with insurance agents (22.5% and 5% respectively).

From the analysis above, to enhance the strengths of the whole chain, it is highly recommended

for all actors and stakeholders in the chain to get involved:

- Dairy farmers should be more actively join in the chain. They need to sign longer-term contracts with milk collectors and interact more with dairy plants and actively ask for support from relevant stakeholders.
- Dairy plants need to consider to provide more support in terms of technical support and training courses for farmers. Those are the long-term assets to help to boost the milk quantity and quality but they are affordable to the firms' resources. Also, dairy plants in Ha Nam, Lam Dong and Cu Chi should try to sell input and consume output from dairy farmers.
- Stakeholders should improve the links by providing essential supports for farmers, especially governments need to regulate and encourage all actors and other stakeholders to join in the chain.

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