



Master's Degree Thesis for Msc in logistics

At

Molde University College

**Supply chain Challenges in Dairy Development
Corporation, Nepal**

(A perspective of buyer seller relationship)

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Abstract

This thesis explores the problem in managing buyer seller relationship in dairy business in Nepal. In this thesis we have tried to analyze buyer seller relationship based on porter's model, Kraljic purchasing portfolio, resource dependence theory and transaction cost economics to suggest appropriate governance structure for long term availability of materials (milk). Under this study, 6 chilling centers and 25 *MPCSs* (Milk Producers' Co-operative Society) were observed personally and informal discussion has been conducted with concerned parties (farmers, cooperative staffs and focal firm staffs). This thesis is qualitative in nature and limited to upstream suppliers of milk only. Our findings show that partnership convenience strategy (joint venture, co-development) is effective to minimize supply risk of such natural raw material milk where many suppliers with low production capabilities are available.

Key words: Buyer-seller relationship, purchasing portfolio, supply chain challenges, governance structure.

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List of Abbreviations

DDC = Dairy Development Corporation

BMSS = Biratnagar Milk Supply Scheme

MPCS = Milk producer Co-operative Society

CC = Chilling Center

TCA = Transaction Cost Analysis

RDT = Resource Dependence Theory

MPPRC = Milk Pricing Policy Review Committee

MSNF = Milk Solid Non Fat

TS = Total Solid

NCCI = Nepal Chamber of Commerce and Industry

Part - 1

1. Introduction

1.1 Background

Supply chain management is the management of information, process, goods and funds from the earliest supplier to the ultimate customer, including disposal (Ellram et.al. 2004). In supply chain the company (focal firm) stays at the middle of upstream supplier and downstream consumer and manages the activities of different supply chain members according to the information acquired from the downstream customer. The goal of supply chain management (SCM) is to ensure the effective and efficient movement of materials and information from the supplier through to the end customers (Lee and Billington, 1995). This phenomenon shows the interdependence and chain link between the supply chain actors. However, the supply chain is not just a chain of business with one to one, business to business relationship, but a network of multiple businesses and relationship (Lambert et.al.1998). Such chain and multiple relationships among the supply chain actors have made the supply chain management more complex and challenging. Furthermore, in dairy business the nature of input (raw milk), output (processed milk), frequency of transaction, relation specific investment by the parties and present market structure have added more challenges. These phenomenon shows that firm should think about the appropriate governance structure and the types of relationship with the supplier.

Our research is concerned with ‘supply chain challenges in dairy development corporation (DDC), Nepal’, a leading public enterprises. This research study has tried to explore supply chain challenges from the perspective of buyer (Biratnagar milk supply scheme) - supplier (Milk producers cooperative society) relationship. We have used Porter’s five forces model, purchasing portfolio management, resource dependency theory, and transaction cost analysis and governance structure as unit of analysis to analyze our study on more specific way as suggested by our supervisor Bjørn Guvåg and considering the suggestion of Professor Arnt Buvik’s during the proposal presentation. As the degree of asset specificity and frequency of exchange is high in dairy business (in this case); these tools of analysis helps to explore the real situation of buyer-seller relationship. In order to collect data for our study, we did two month field work from June second week to August first week, 2008. During the field visit we

met Biratnagar Milk Supply Scheme's (BMSS) chief project officer Rajgovinda Raj Rajkarnikar and other staffs and discussed with them on the above mentioned issues and got valuable information and publications. We also observed six chilling centres (collection centre) out of 11 chilling centres and 25 milk producers' cooperative society (MPCSs) out of 120 MPCSs and about 50 cattle farmers and discussed with them (see appendix-A). We also visited DDC central office, Lainchaur, Kathmandu and got DDC publications but could not get opportunity to discuss with officials. Due to the political instability at that period most of the time there was strike so we could not observe more than this so it may be the weakness of this study. As mentioned above our study is concentrated on upstream supplier of raw milk and BMSS, so this study only focuses on the challenges with upstream relationship.

This research is qualitative research based on case study and exploratory research design. We have started our study by explaining the value chain of DDC (see fig.-1).

1.2 Overall DDC value chain

Nepal is under developed country located in South Asia. The area of Nepal is 147,181 square kilometre and population is 23,151,423 (CBS, 2001). For the administrative purpose, Nepal is divided in to 5 development regions, 14 zones and 75 districts. Geo-politically, it is divided as the Mountain districts (Northern part), the Hill districts (Mid part) and the Tarai (plain) districts (southern part). Mountain districts covers 35%, Hill districts 42% and Tarai 23%. The capital of Nepal is Kathmandu. *(See picture in appendix-B1,B2)*

Poor road infrastructure and transportation facility, unorganized and traditional cattle farming, insufficient cold storage facility, low price, lack of third party logistic support, traditional supply and distribution system, unstable government policy, influence of bureaucracy, lack of hi-tech production technology, insufficient information technology etc are the common features of supply chain challenges in dairy business in Nepal like other developing countries. The major challenges in developing and carrying supply chain management in these countries are stretched infrastructure, fragmented markets and inefficient distribution (Zubrod, et.al. 1996).

In this competitive world company's supply chain must be cost efficient, responsive, flexible and agile to meet customer requirements. But the supply chain management (SCM) in these countries are affected by various country specific factors such as geographical features, socio-economic forces, politico-legal system, cultural realities, degree of industrial development and resource endowment (Razzaque, 1997).

After the restoration of democracy in 1991, Nepal government followed the policy of liberalization and privatization. This mean foreign investment as well as private sector were encouraged to invest in different sector. As a result it not only led the country towards the industrialization but also brought competition. In the field of dairy, before restoration of democracy there was only one **Dairy Development Corporation (DDC, Nepal)** to serve the dairy product in the country. After the restoration of democracy, due to the changes in the government policy private sector also entered in this field but they are still emerging and operating in small scale.

Dairy Development Corporation (DDC, Nepal) is one of the leading public enterprises (Government owned) which collects milk, produces diary product and distributes them to the customers. Dairy Development Corporation (DDC) was established in 1969 with the main objectives of providing guaranteed market and fair price to the rural milk producers and supplying hygienic pasteurized milk and other standard dairy products to the urban consumers. This corporation was established by the government to fulfil the following objectives (DDC, 2000):-

- Provide a guaranteed market for milk to the rural farmers with fair price.
- Supply pasteurized milk products to urban consumers.
- Develop organized milk collection system to meet increasing demand for pasteurized milk and milk products.
- Develop an organized marketing system for milk and milk products in urban areas.

To fulfil these objectives DDC collects milk from farmers and diary cooperatives processes it and distributes it through its own retail chain and other independent distributor.

At present DDC is facing some problems in collection of milk to fulfil the increasing demand due to the lack of strategic supply management. Dairy faces two types of seasonal challenges, one is *lean season* (April-July) when milk production is low but demand is high and another is *flush season* (August-March) when milk production is high as compared to lean season. In lean season DDC is not getting sufficient milk from the dairy cooperatives where as in flush season DDC doesn't buy all the milk as supplied by the cooperatives. This is a main problem. At present, under DDC there are seven milk supply schemes in different parts of the country (see table- 1).

The *figure-1* given below shows the supply chain relationship between actors from upstream suppliers to downstream suppliers of BMSS. The *second tier upstream suppliers* are the farmers who are the producer of raw milk. They produce milk in small quantity and supply it to nearest dairy co-operatives. In Nepalese context milk farmers are concentrated in northern hilly area but they are scattered and doing their business in *unprofessional way*. Most of them are uneducated and they have taken livestock farming as their side job as a result milk production is very low. Whatever is the milk production, first they try to sell it in nearer market instead of dairy cooperative because they get better price from local consumers as compared to dairy cooperatives and they also save transportation cost. Here, *pricing* is the main de-motivational factor to the farmer which forces them to sell in local market not to dairy cooperatives as a result BMSS/MPCS has failed to get sufficient quantity of milk from farmer to meet its requirement. On the other side, many consumers from rural area as well as urban area prefer raw milk as compared to processed milk because they are not conscious about the processed milk is good for their health. So this phenomenon has also increased easy market access to the farmer in their local market.

Moreover, whatever is the surplus milk after selling in local market farmers bring it in Milk Producer Dairy Co-operative Societies (MPCS). It is the *first tier upstream supplier* of BMSS operated by local farmers independently. These MPCSs collect milk from the farmers and use porter, cycle and horses as means of transportation to transport milk up to chilling centres and other collection centres. Firstly, Dairy cooperatives also prefer to sell milk in local market and then only whatever is the surplus they sell it to BMSS because they get better price from those buyers as compared to BMSS. Most of the local customer (institutional and individual) who don't have direct contact to the farmer they purchase milk from local dairy cooperatives

because they think that this raw milk is more pure with fat as compared to processed milk. This phenomenon has also increased easy *market access* to the dairy cooperatives in their local market. Dairy cooperatives are many in numbers but no one is capable to supply the sufficient quantity as required by BMSS.

BMSS is our focal firm which produces pasteurized milk and milk products and supply it through its own and independent distributors to the ultimate customers. It collects milk from its collection centres and chilling centres scattered in different places, mostly in hilly area from three hours drive to 6 hours. Although it uses *two layer down-stream suppliers* there is no *channel conflict* because production of milk and milk product is very low as compared to market demand. (See pictures in appendix-C)

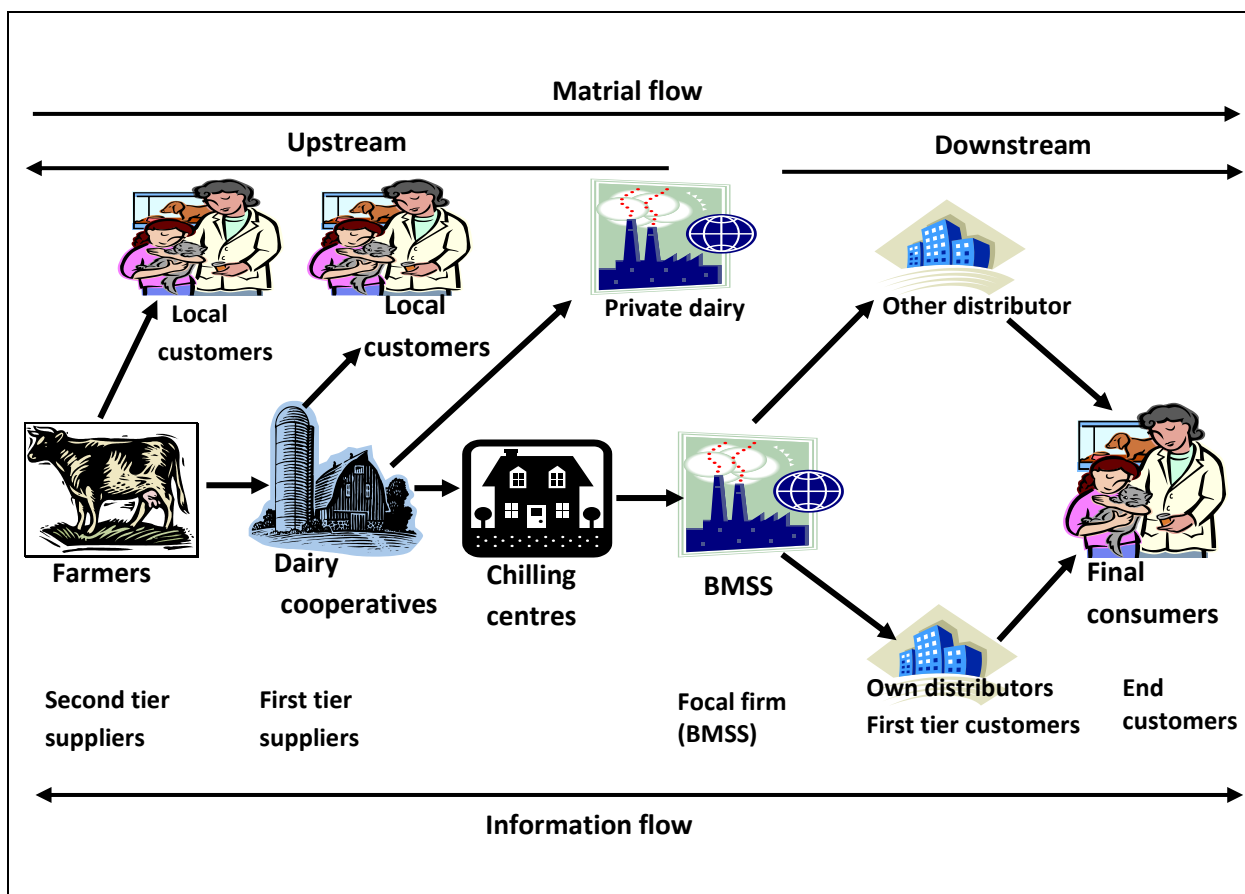


Figure-1: BMSS supply chain relationship (modified from Harrison & Hoek, logistics management and Strategy, 2nd edition, page-8, 9).

This picture shows the interesting and challenging scenario faced by the supply chain actors. Especially the relationship between MPCS and BMSS is deteriorating due to lack of strategic supply management. These situations encouraged us to do research work in this field so that we focused our study to explore the relationship between buyer (BMSS) and supplier (MPCS) and to suggest measures to overcome it.

1.3 Framework of the research

We have carried out a number of tasks to complete the proposed research because our study concern with examining the real situation of relationship between BMSS and MPCSSs and provide some suggestive measures to overcome the challenges based on research findings. Basically framework of this research covers following chapters:

- Introduction; Background and overall value chain
- Dairy development in Nepal
- Review of literature
- Research methodology
- Analysis and discussion
- Conclusion and recommendation

Part -2

2. Dairy development in Nepal

In Nepal dairy development activities begin in organized way in 1952 with an experimental production of Cheese. It led to the establishment of Yak Cheese factory in Langtang of Rasuwa district under *Food and Agriculture organization (FAO)* assistance in 1953. In 1954 a dairy development section was established under the department of agriculture (DOA) and also a small scale milk processing plant was started on experimental basis in Tusal, a village in Kavre Palanchowk district in the central region. In 1956, a central dairy plant with an average milk processing capacity of 500 LPH was established in Lainchaur, Kathmandu with the financial assistance from *New Zealand* and technical assistance from FAO.

A Dairy Development Commission was formed in 1955. The Dairy Development Commission converted into the dairy development board in 1962 and this board was converted to the Dairy Development Corporation (DDC) in July 1969 under the corporation Act 1964.

Gradually DDC set up more milk supply schemes to meet the growing demand of processed milk and milk products. They are:-

Table-1: Name of milk supply schemes in Nepal

S.N.	Name of supply Scheme	Established on:
1.	Kathmandu Milk Supply Scheme (KMSS)	1956
2.	Biratanagar Milk Supply Scheme (BMSS)	1973
3.	Hetauda Milk Supply Scheme (HMSS)	1978
4.	Dairy product production and sales and distribution scheme*	1979
5.	Pokhara Milk Supply Scheme (PMSS)	1980
6.	Lumbini Milk Supply Scheme (LMSS)	1990
7.	Mid-Western Milk Supply Scheme (MWMSS)	2000

Source: DDC (2000)

*Dairy product production and sales and distribution scheme produces only milk products such as cheese, Paneer, mozzarella, chhurpi etc and does not sales milk.

A Skimmed Milk Powder Plant (SMP) was established in Biratnagar in 1991 which relieved DDC from problem of *Milk Holiday*; (the word coined to refer the days on which milk is not procured from the farmers by the DDC).

2.1 Milk Collection Programme

DDC have been collecting cow, buffalo and nak/ chauri milk from 33 districts. Milk is collected through the farmers owned organizations: Milk Producers` Cooperative Societies (MPCS). Its present milk collection network has spread from Illam in the East to Surkhet in the West. The table below shows the number of milk supply schemes currently running under the DDC, the number of MPCS associated with the supply schemes and the district covered by these milk supply schemes. (See picture in appendix-B3)

Table-2: Name of milk supply schemes, no of MPCS and district covered

S.N.	Schemes	No. of MPCS	Districts covered
1.	Kathmandu Milk Supply Scheme(KMSS)	484	Kathmandu, lalitpur, Bhaktapur, kavre, Sindhupalchowk, Dhading, Chitwan
2.	Biratanagar Milk Supply Scheme(BMSS)	140	Morang, Saptari, Sunsari, Jhapa, Ilam, Dhankutta, Terhathum
3.	Hetauda Milk Supply Scheme(HMSS)	127	Makwanpur, Bara, Rautahat, Sarlahi, mahottari
4.	Pokhara Milk Supply Scheme (PMSS)	58	Tanahu, Kaski, Lamjung
5.	Lumbini Milk Supply Scheme(LMSS)	63	Plapa, Nawalparasi, Rupandehi, Kapilbastu
6.	Mid-western Milk Supply Scheme(MWMSS)	52	Banke, Bardiya, Surkhet, Dang
7.	Dairy product production and sales and distribution scheme	32	Ilam, Panchthar, kavre, Ramechhap, Dolakha, Solukhumbu, Nuwakot
	Total	898	36

Source: DDC (2006/07)

2.2 Collection Network

The collection network under different Milk Supply Scheme is presented below. A total of 45 chilling centres (CC) established under the Milk Supply Schemes are in operation across the country for chilling the milk collected from the MPCs. The main purpose of these chilling centres is to preserve the quality of milk during the period of collection of milk from MPCs to delivery up to the DDC plant. Hetauda Milk Supply Scheme, Lumbini Milk Supply Scheme and Mid-Western Milk Supply Scheme tranship raw milk to Pokhara and Kathmandu Milk Supply Scheme to cater the demand of those areas because their sales volume is small in the local market. Besides these chilling centres DDC also collects milk directly in the factory gate.

Table-3: Name of milk supply schemes and no of chilling centres

S.N.	Schemes	No of Chilling centre
1.	Kathmandu Milk Supply Scheme (KMSS)	17
2.	Biratanagar Milk Supply Scheme (BMSS)	11
3.	Hetauda Milk Supply Scheme (HMSS)	8
4.	Lumbini Milk Supply Scheme (LMSS)	6
5.	Pokhara Milk Supply Scheme (PMSS)	3
6.	Mid-western Milk Supply Scheme (MWMSS)	3
	Total	48

Source: DDC (2006/07)

2.3 Production capacity

The table below shows the production capacities of different Milk Supply Schemes under the DDC.

Table-4: Name of milk supply schemes and their production capacity

S.N.	Scheme	Capacity: per shift/day (litre)
1.	Kathmandu Milk Supply Scheme (KMSS)	75000
2.	Biratanagar Milk Supply Scheme (BMSS)	25000 and 3 m. ton powder milk
3.	Hetauda Milk Supply Scheme (HMSS)	15000
4.	Pokhara Milk Supply Scheme (PMSS)	10000
5.	Lumbini Milk Supply Scheme (LMSS)	2500
6.	Mid-western Milk Supply Scheme (MWMSS)	8000
	Total	135500

Source: DDC (2006/07)

Since past few years, milk production in the milk shed areas of the DDC has been increasing to a great extent. Consequently, the DDC could not buy all the milk offered by the farmers especially during the flush season. As a consequence, it had to impose Milk Holiday on certain days during the period. On the other hand, during the lean season DDC had been importing skimmed milk powder to meet consumer demand. To mitigate this problem, with the assistance of Danish government, a Skimmed Milk Powder Plant was initiated in 1991 in BMSS and is in operation since December 1994. Capacity of this plant is 3 metric ton of milk powder per day from 40000 litres of milk.

2.4 Sales and distribution management

A goal of any producer is to ensure that the product reaches the ultimate customers. Therefore distribution of any product to their respective places must be considered seriously so that the products are available to the consumers at the right time in the right place with minimum cost. To achieve these objectives DDC has managed the different types of sales and distribution channels for its Milk Supply Schemes, which are as follows:

Table-5: Name of milk supply schemes and distribution channels

S.N.	Scheme	Franchise	Booth	Sales centre	Dealer	Distributor
1.	Kathmandu Milk Supply Scheme (KMSS)		1066			
2.	Biratanagar Milk Supply Scheme (BMSS)		122	2	36	3
3.	Hetauda Milk Supply Scheme (HMSS)		185	2	4	1
4.	Pokhara Milk Supply Scheme (PMSS)		109	1		
5.	Lumbini Milk Supply Scheme (LMSS)		47	1	9	
6.	Dairy product production and sales and distribution scheme	11		3		5
	Total	11	1529	9	49	9

Source: DDC (2006/07)

The DDC distributes milk through a network of milk parlour run by DDC itself and milk booths operated by milk vendor on commission basis in urban areas. The milk is made available in such milk booths for few hours during the early in the morning and afternoon, while in case of milk parlour it is open throughout the day and deals with both milk and milk products. The other strategy undertaken by DDC for its distribution of various milk products are, franchise, dealer and distributor. These channels are provided with a fixed commission based on the dairy products they have purchased but there is one condition attached to them is they have to purchase at least minimum quantities of milk products per month as prescribed

by the DDC, these channels also sales milk under the same commission basis; as applicable to milk booth.

2.5 Biratnagar Milk Supply Scheme (BMSS)

Biratnagar Milk Supply Scheme (BMSS) was established in 1973 at Kanchanbari, Biratnagar, in eastern development region of Nepal by the assistance of the government of Netherlands. After the establishment of BMSS, the milk producers of Morang, Jhapa, Ilam, Sunsari, Saptari, Dhankutta and Terhathum districts have got a regular market and the consumers of urban areas of Morang and Sunsari districts are getting hygienic pasteurized milk and milk products regularly. The table below shows the places of chilling centre, number of chilling centres under the BMSS, district from which it collects milk, number of MPCSSs associated with BMSS, capacity of each chilling centre and daily average milk collection (in litre). (*See picture in appendix-B4*)

Table-6: Name of BMSS's chilling centres, their location and capacity

S.N.	Name of Chilling centre	District	No. of chilling centre	No. of MPCSS	Capacity	Daily average milk collection
1.	Fikkal	Ilam	1	17	6000	3500
2.	Tinghare	Ilam	1	17	5000	5000
3.	Biblate	Ilam	1	16	4000	3000
4.	Kutidada	Ilam	1	10	3000	1500
5.	Puwakhola	Ilam	1	12	6000	5000
6.	Salakpur	Morang	1	3	1000	300
7.	Hile	Dhankuta	1	9	3000	1500
8.	Chitre	Terhathum	1	19	3000	6000
9.	Kanchanpur	Saptari	1	11	1000	300
10.	Surunga	Jhapa	1	6	1000	1500
11.	BMSS plant	Morang	1			600
	Total	6	10	120	33000	28200

Source: DDC (2006/07)

2.5.1 Production and sales of milk and milk products in BMSS

BMSS produces and deals with different types of dairy products. The table show the production and sales of milk and milk products during the different fiscal year.

Table-7: BMSS milk production and sales

		In metric tones					
S.N.	Particulars	Fiscal Year 2004/05		Fiscal Year 2005/06		Fiscal Year 2006/07	
		production	Sales	production	Sales	production	Sales
1.	Milk collection	8430	-	8417	-	8478	
2.	Processed milk	10754	3322	11716	3209	10955	3115
3.	Skim milk powder	529	-	548	-	505	-
4.	Ghee	283	96	334	96	389	127
5.	Butter	349	5	364	5	325	8
6.	Yogurt	331	330	516	512	815	812
7.	Paneer	2	2	5	5	10	10
8.	Ice-cream	-	-	0.52	0.48	0.58	0.54
9.	Cheese	-	3	-	3	-	3
10.	Lalmohan	-	-	-	-	-	5
11.	DDC fresh	-	-	-	-	-	6

Source: DDC (2006/07)

2.5.2 Distance between chilling centre and BMSS

BMSS collects milk from its collection centres situated in different places. The table below shows the distances from the BMSS plant to different collection centre. Salakpur, Kanchanpur and Surunga is situated in the plain area and connected to national highway where as other remaining places are situated in the hilly area connected with the link road. Transportation time in this hilly area takes longer time in comparison to plain area because road in the hilly areas are too steep and down as well as more bending. The table below shows the two way distance from BMSS plant Biratnagar to different chilling centres to BMSS Biratnagar plant.

Table-8: Distance between chilling centres and BMSS

From	To (chilling centres)	Distance in (Km)
Biratanagar	Fikkal (Ilam)	272
Biratanagar	Tinghare (Ilam)	292
Biratanagar	Biblate (Ilam)	356
Biratanagar	Kutidanda (Ilam)	344
Biratanagar	Puwakhola (Ilam)	396
Biratanagar	Budhabare (Jhapa)	230
Biratanagar	Salakpur (Morang)	52
Biratanagar	Hile (Dhankuta)	196
Biratanagar	Chitre (Terhathum)	240
Biratanagar	Kanchanpur (Saptari)	172
Biratanagar	Surunga (Jhapa)	196

Source: BMSS (2008)

2.5.3 Transportation

Transportation is concerned with moving the product from supplier's supplier to customer's customer with right amount at the right place at the right time. BMSS owns 13 vehicles for collection and distribution of milk. Besides these vehicles it also hires if necessary. The table below shows the per vehicle transportation capacity:-

Table-9: Transportation facilities in BMSS

S. N.	Types of vehicles	Number	Capacity
1.	Tanker (Milk collection)	8	6810 litre
2.	Minibus (distribution)	2	6000 packets
3.	Truck (distribution)	3	10000 packets

Source: BMSS (2008)

2.5.4 Warehousing facilities (Storage)

The table below shows the present storage capacity of BMSS. Butter and Ghee are stored for longer period up to six months where as milk and yogurt is stored for shorter period. During the festival season 50000-10000 litres of additional milk is stored as per demand.(see table 10)

Table-10: Warehousing facilities in BMSS

S.N.	Product	Capacity	Storage time
1.	Milk	30 MT	12 hrs
2.	Butter	50 MT	12 hrs
3.	Yogurt	10 MT	12 hrs
4.	Ghee	30 MT	12 hrs

Source: BMSS (2008)

2.6 Research problem

Supply chain management is more interesting, practical and emerging concept. Under the supply-chain management effective coordination between buyer and seller is an important determinant of firms' competitiveness under the changing market conditions. As we observed increasing *external uncertainties* and lack of *inter-organizational arrangements* BMSS is facing problem in efficient flow of milk. With view of this problem we are very much impressed, so we selected the research topic related with supply chain challenges in respect to buyer seller relationship.

Dairy market in eastern region is characterized by small number of buyers (dairy firms) and large number of scattered suppliers. Although suppliers are large in number but their quantity of supply is small; means each supplier's contribution on total supply is very low on the other hand demand of milk is high. Due to the entry of new players in this dairy business the present milk market seems more complex and challenging. So in this situation it is necessary to analyze present market structure of milk. We have used the *Porter's five forces model* to examine the present market structure.

Most of dairy cooperatives are operating independently but due to problems like; political instability, switching profession, low profit margin, government intervention etc. many MPCSS are shutting down. This phenomenon has increased supply market complexity but the BMSS is still adopting traditional supply strategy.

In absence of strategic supply management, BMSS has been gradually losing its control over milk suppliers and supply risk is increasing. So to explore this situation and to identify appropriate supply strategy we have used *Kraljic's model*. Its general idea is to minimize supply risk and make the most of buying power (Kraljic, 1983).

On the other hand, due to low supply capabilities, easy market access in local market, availability of alternative buyers (private dairy) to MPCSS, dependency of buyer on supplier has increased. But *BMSS* has no any specific organizational arrangement to structure relationship between suppliers. So to explore this situation we have used *resource dependence theory*. One implication of resource dependency theory for the organization of inter-firm

relationship is that firms facing different dependency condition will structure their relations to exchange partners in as favourable a manner as possible (Buvik, 2001).

Dairy cooperatives collect milk from local farmers and both farmers and MPCs prefer to sell milk in local market because they get better price than BMSS so that BMSS is not getting sufficient quantity. Moreover many MPCs are not following the contract while delivering the milk to BMSS and they show opportunistic behaviour. This situation is may be the result of share on transaction specific investment. If we look surfacely we can see that DDC has a huge supplier specific investment in comparison to MPCs. So we have used Transaction cost analysis to explore the present relationship between BMSS and MPCs in respect to specific investment and opportunistic behaviour because a fear of dependency may discourage some customers from establishing a close relationship in the first place. For example, customers that need to make investments in supplier- specific assets face the risk of subsequent supplier opportunism in the form of price increases (Williamson, 1996). Transaction cost consists of the costs of using the market to make a transaction and to gather the information to make those transactions. We have also tried to analyze the problem from the governance structure point of view because governance structure determines the degree of relationship between the parties. Following are the prime questions of under this research:-

- What is the present situation of milk market?
- What kind of supply strategy will be appropriate for milk product?
- What is the dependence position between buyer (BMSS) and supplier (MPCs)?
- How do buyer-seller relationships can be improved to ensure long term availability of milk?

Part -3

3. Literature Review

Under this chapter relevant theory has been discussed to explore our research problem. Porter's model has been discussed to explore situation of present milk market. Kraljick purchasing portfolio model has been used to analyze purchasing strategy of milk. To explore buyer seller relationship and their dependency resource dependency theory, transaction cost analysis and governance structure has been discussed. The brief of these theories has been presented below.

3.1 Market structure analysis

The core of the framework, drawing from the industrial organization tradition, is that in any competitive industry there are five basic competitive forces at work (see figure: 2). The collective strength of these five forces determines the fundamental potential for firms in the industry to earn returns on investment in excess of the opportunity cost of capital. Thus the collective strength of the five forces is essential determinant of industry attractiveness, one of the important building blocks in strategic planning (Porter, 1983).

According to Porter (1980), industries are comprised of firms that produce close substitutes; but the firm's competitive environment has a common structure, consisting of five competitive forces. These forces are:

1. Threat of new entry
2. Intensity of rivalry among existing firms
3. Pressure from substitute products
4. Bargaining power of buyers
5. Bargaining power of suppliers

The five forces determine industry profitability because they influence the prices, costs, and required investments of firms in an industry- the elements of return on investment (Porter, 1985).

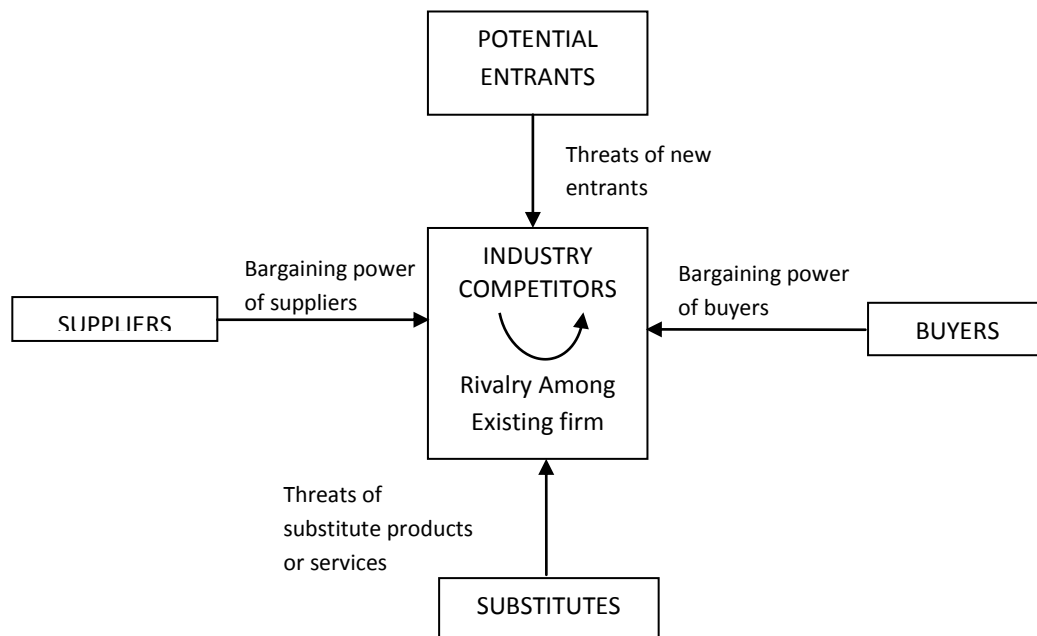


Figure 2: Forces Driving Industry Competition (Porter, 1980, pp 4)

According to Porter (1980) there are six major sources of barriers to entry: economies of scale, product differentiation, capital requirements, switching costs, access to distribution channels, and cost disadvantages independent of scale. Besides these factors government policy and expected retaliation of potential entrants are also the factors of entry barriers.

Rivalry occurs because one or more competitors either feels the pressure or sees the opportunity to improve position. In most industries, competitive moves by one firm have noticeable effects on its competitors and thus may incite retaliation or efforts to counter the move; that is, firms are mutually dependent (Porter, 1980). According to Porter intense rivalry is the result of a number of interacting structural factors such as; numerous or equally balanced competitors, slow industry growth, high fixed or storage costs, lack of differentiation or switching costs, capacity augmented in large increments, diverse competitors, high strategic stakes and high exit barriers.

Substitutes limit the potential returns of an industry by placing ceiling on the prices firms in the industry can profitably charge. Substitutes not only limit profits in normal times, but they also reduce the bonanza an industry can reap in boom times (Porter, 1980). Porter further argues that substitute products that deserve the most attention are those that (1) are subject to trends improving their price-performance trade off with the industry's product, or (2) are produced by industries earning high profit.

The power of each of the industry's important buyers group depends on a number of groups depends on a number of characteristics of its market situation and on the relative importance of its purchases from the industry compared with its overall business (Porter, 1980). According to porter in the following situation buyer group becomes powerful: if it is concentrated or purchases large volumes relative to seller sales, the products it purchases from the industry represent a significant fraction of the buyer's costs or purchases, the products it purchases from the industry are standard or undifferentiated, it faces few switching costs, it earns low profits, buyers pose a credible threat of backward integration, the industry's product is unimportant to the quality of the buyer's products or services, the buyer has full information.

But in views of Porter, as the factors described above change with time or as a result of a company's strategic decisions, naturally the power of buyers rises or falls.

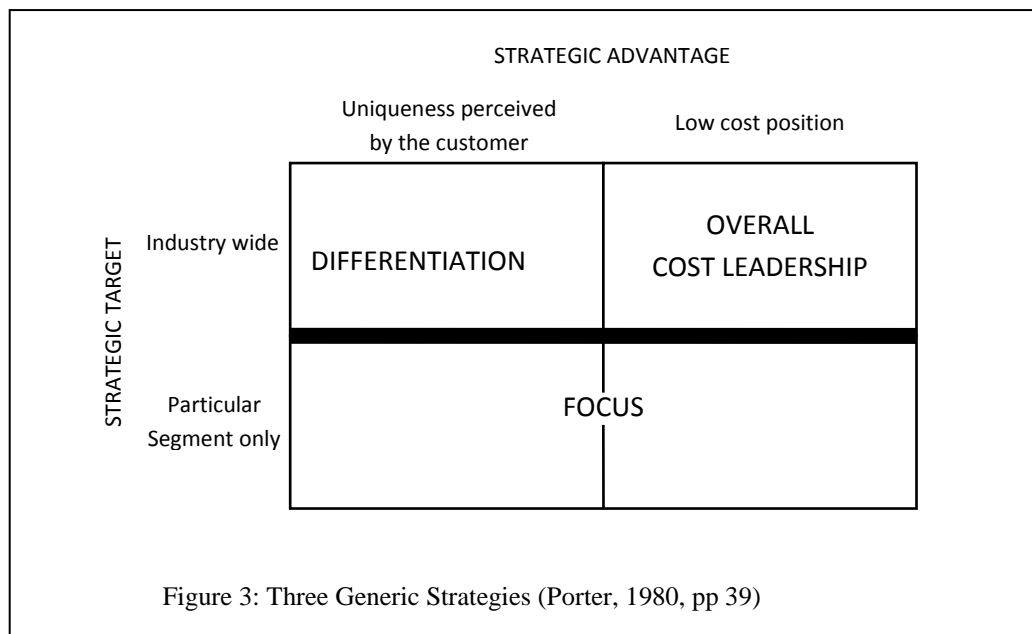
Supplier can exert bargaining power over participants in an industry by threatening to raise prices or reduce the quality of purchased goods and services. According to Porter (1980) a supplier group is powerful if the following apply: it is dominated by a few companies and is more concentrated than the industry it sells to, it is not obliged to contend with other substitute products for sale to industry, the industry is not an important customer of the supplier group. The suppliers' product is an important input to the buyer's business, the supplier group's products are differentiated or it has built up switching costs and the supplier group poses a credible threat of forward integration.

Besides the above mentioned five forces Porter (1985) has also indicated another forces; government as a force in an industry.

Government at all levels must be recognized as potentially influencing many aspects of industry structure both directly and indirectly. In many industries, government is buyer or supplier and can influence industry competition by the policies it adopts. Government regulations can also set limits on the behaviour of firms as suppliers or buyers. Government can also affect the position of an industry with substitutes through regulations, subsidies, or other means. Government can also affect rivalry among competitors by influencing industry growth, the cost structure through regulations, and so on. Thus no structural analysis is complete without a diagnosis of how present and future government policy, at all levels, will affect structural conditions.

At the broadest level, firm success is a function of two areas: the attractiveness of the industry in which the firm competes and its relative position in that industry. Porter argues that five underlying forces of competition determine the industry attractiveness. The collective strength of the five forces model determines the potential profit of an industry (Porter, 1998).

In this context Porter suggests to follow one of the three recommended strategies presented in figure: 3 because these are the options that would give firm the ability to secure a favourable position in industry, given the intensity of the five competitive forces.



Porter’s three recommended strategies are *lower cost*, *differentiation*, and *focus*. Focus can be of two kinds: *cost focus*, *differentiation focus*. Porter’s model of generic strategies encompasses the main strategic options that firms pursue regardless of the type of industry and the firm’s business.

One of the critical comments made of the five forces framework is its static nature, where as the competitive environment is changing turbulently (Karagiannopoulos et.al. 2005).

3.2 Purchasing portfolio management

Purchasing models have their foundation in Markowitz’s pioneering portfolio theory for management of equity investments. Since, then portfolio models have been widely used in strategic planning, essentially at strategic business unit level. Later one of the most famous portfolio models was introduced by Kraljic (1983) (see figure: 4). His model has greater applicability to classify resources and suppliers in procurement management.

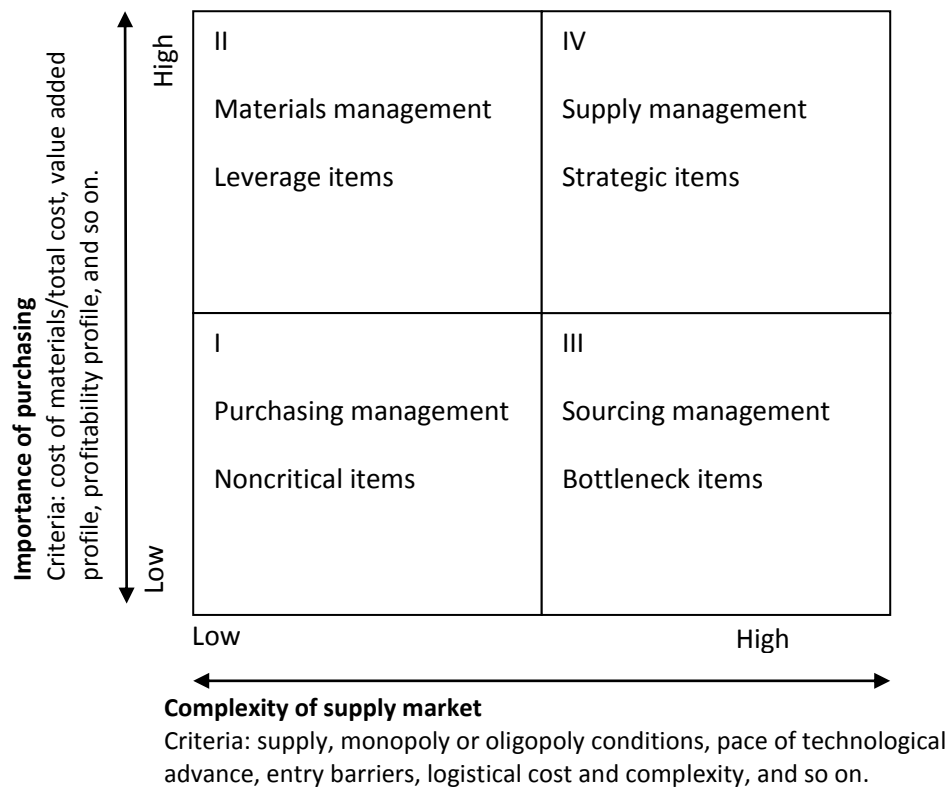


Figure 4: Purchasing portfolio model (Kraljic, 1983)

Whenever a manufacturer must procure a volume of critical items competitively under complex conditions, supply management is relevant. The greater the uncertainty of supplier relationships, technological developments, and/or physical availability of those items, the more important supply management become (Kraljic, 1983).

To ensure long term availability of critical materials and components at competitive cost, a host of manufacturers will have to come to grips with risks and complexity of global sourcing. Others that already source on a global basis must learn to cope with uncertainties and supply or price disruptions on an unprecedented scale. Instead of simply monitoring current developments, management must learn to make things happen to its own advantage (Kraljic, 1983).

According to Kraljic a firm's supply strategy depends on two factors: (1) strategic importance of purchasing (2) complexity of supply market (see figure: 4). In first step he suggested four types of strategy; purchasing management, sourcing management, materials management, and supply management for different kind of product categorized based on profit impact and supply risk. Purchasing management refers to non-critical products, sourcing management refers to bottleneck products, materials management refers to leverage products and supply management refers to strategic products. In second steps he suggested for mapping buyer's strength and supplier's strength for categories created in step1. In last step he suggested for developing action plans to diversify, exploit or enter in balanced relationship. The general key idea of Kraljic model is to minimize supply risk and to make the most of buying power (Kraljic, 1983, p.112).

Under the another model Olsen and Ellram (1997) have used two dimensions; difficulty of purchase situation and the strategic importance of purchase to classify products into four groups; leverage non-critical, strategic and bottleneck (*See figure: 5*). The first dimension difficulty of purchasing situation will depend on a ranking of different items such as product novelty and complexity, supply market characteristics and environmental characteristics such as risk and uncertainty. As for second dimension, the strategic importance of purchase will depend on competence factors, economic factors, and image factors such as brand and safety. This first normative step represents an ideal situation correspond to the distinctive groups. In second step they suggested to analyze the supplier relationships for categories created in step

1 on two dimensions: strength of buyer-supplier relationship and supplier attractiveness. According to them, supplier attractiveness will depend on financial factors, performance (delivery, quality, and price), technology and innovation, and organizational culture and strategic factors. Strength of relationship will depend on economic factors, exchange relationships, co-operation and distance between the buyer supplier (social, cultural, technological and geographical distance). In third step they proposed following strategies and action plans for different categories (Nellore and Söderquist, 2000):

- In case of low attractiveness, the strategy could be to change supplier if the relationship is weak. With a strong relationship, it might be recommended to develop the suppliers' capabilities.
- With high attractiveness and strong relationship, the strategy could be to reallocate resources among different activities in order to maintain a strong relationship and to continue to encourage the supplier to develop state-of-the-art performance, thus maintaining attractiveness.
- Low to average strength of relationship together with high or moderate attractiveness implies long term resource allocation in order to strengthen the relationship. In short term, improve relationship by improving communication.

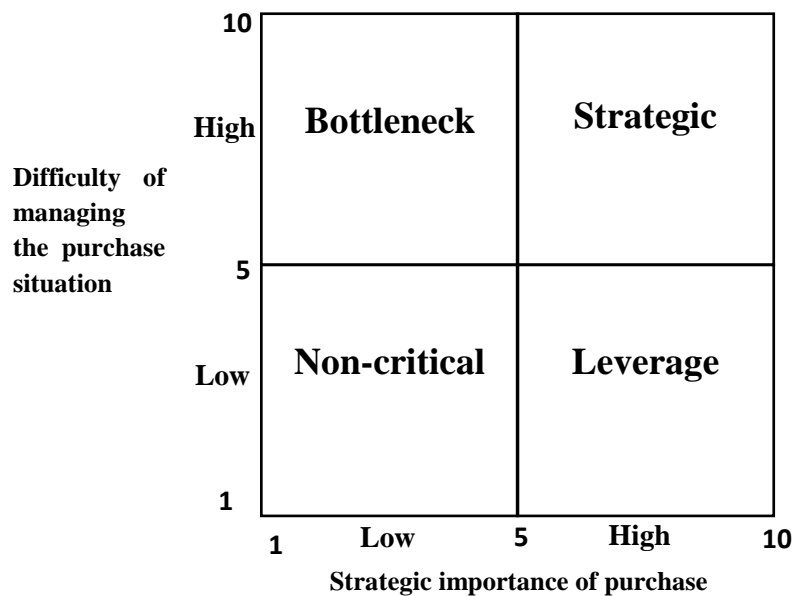


Figure 5: Portfolio model (from Olsen and Ellram, 1997)

The purchasing portfolio matrix plots company buying strength against the strengths of the supply markets and can be used to develop counter strategies (Kraljic, 1983).

Under the portfolio approach, almost all author use basically same steps:- (Nellore and Söderquist, 2000):

- Analysis of the products and their classification;
- Analysis of supplier relationships required to deliver the products; and
- Action plans in order to match the product requirements with the supplier relationships.

3.3 Resource dependency theory

On early work on social exchange theory Emerson (1962), it was suggested that after agreeing to exchange product for money, buyers and suppliers enter a state of interdependence in which each party is in a position to facilitate or hinder the satisfaction of the other's resource needs and wants. As a result each party to exchange enjoys power based on the degree of dependence experienced by the other. This dependence derives from two different factors. A buyer's power stems from a combination of the attractiveness of their own resources and the supplier's freedom to obtain resources from other organizations, while a supplier's power derives from the attractiveness of their own resources and the buyer's freedom to obtain resources from other organizations (Ramsay, 1996).

Resource dependency theory says that those organizations that depend on other organizations or environments for resources are controlled by those organizations on which they are dependent. In such process of dependency, the behaviours of dependent organizations are regulated by the organizations on which they depend (Pfeffer and salancik, 1978). As organizations cannot be self-dependent and autonomous, they have to depend upon their organizations. In this way, the dependent organizations need to balance their dependency with other organizations in order to get rid of the control of the other organizations on which the dependent organizations rely (Pfeffer and salancik ,1978).

Resources include money, materials, personnel, information and technology. All these resources are important ingredients of organizational resources so that all organizations need

to effectively function. If organizations lack any of these resources, they must effectively interact with others who control the resources (Pugh & Hickson, 1997). Pfeffer and salancik (1978) think that interdependence with other lies in the availability of resources and the demand for them. This interdependence may take the form of direct dependence of the seller organization or its customers of mutual dependence of seller organizations on potential customers for whom they compete (Pugh & Hickson, 1997).

According to the resource dependency theory, three conditions are responsible for defining the extent or degree of dependency of an organization (Pfeffer and salancik, 1978). *First* condition is the importance of resource in the organization. The importance of resource in organization is determined by taking into account the demand and the supply of resources or by assessing the severe consequence if resources are not available. The *second* condition is how much discretion those who control a resource have over its allocation of use. This condition also suggest that if those who control resource have completely free access to it and can make the rules about it, then an organization that needs it can be put in a highly dependent position. The *third* condition is the degree to which those who control a resource enjoy a monopoly. Whether an organization that needs resources has an alternative source or substitute is also vitally important.

Pfeffer and salancik (1978) has suggested four possible strategies to balance its dependencies. They are:

- Adaptation to or altering external constraints
- Altering the dependencies by merger, diversification or growth
- Negotiating the environment by interlocking directorship or joint venture with other organizations or by other associations; and
- Changing the legality or legitimacy of environment by political action.

Some author has introduced trust and commitment as important factors to manage dependence. SCM requires the presence of trust and commitment between suppliers-manufacturers. However, it can also increase manufacturer relative dependence on their suppliers (Ellram, 1991). If manufactures feel vulnerable as a result of this relative

dependence they may respond in ways that undermine trust and commitment, which form the foundation of SCM. (Joshi, 1998).

Cox (2001) has suggested power matrix as different way to understand power of buyer and suppliers. The power matrix is basically constructed around the idea that all buyer and supplier relationships are predicted on the relative utility and the relative scarcity of the resources that are exchanged between the two parties (Cox et al, 2000). The *figure-6* shows the power matrix to locate four basic power positions.

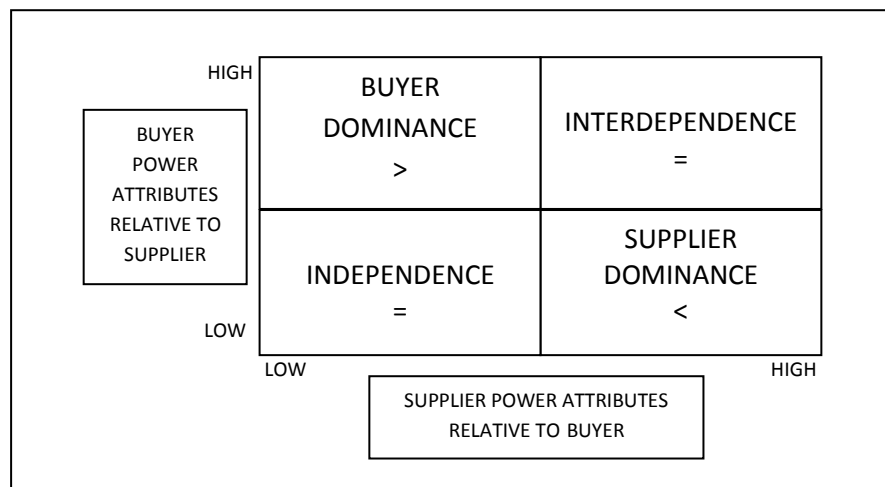


Figure 6: Power matrix (from Cox A., 2001)

In this way resource dependence theory explains the way to manage dependence by establishing inter-organizational relationship. A basic premise for resource dependency theory is that firms which are confronted with external dependency will try to establish inter-organizational arrangements as strategic responses to actors in their external environment (e.g. suppliers). One implication of resource dependency theory for the organization of inter-firm relationship is that firms facing different dependency condition will structure their relations to exchange partners in as favourable a manner as possible (Buvik, 2001).

3.4 Transaction cost analysis

Transaction cost consists of the costs of using the market to make a transaction and to gather the information to make those transactions. It includes costs incurred in searching for a supplier, negotiation, arranging for delivery and monitoring the quality of inputs (Waldman and Jensen, 2007). A firm is likely to rely on internal production rather than use the market when transaction costs are high. A firm considers the frequency of the products needs, amount of uncertainty associated with transactions and the asset specificity while making decisions regarding make or buy the products (Waldman and Jensen, 2007). Because of the above mentioned causes, a firm needs sound information system in order to grab the opportunity and overcome threats from the environment.

Transaction cost economics as developed by Williamson is based on the assumption that human beings are boundedly rational and sometimes display opportunistic behaviour. Bounded rationality refers that the capacity of human being is limited, so she/he cannot solve all the complex problems oneself due to constraints on knowledge, foresight, skill and time. During the period of transaction many problems may arise and to solve these problems they need help of others. Similarly by nature human being are selfish so they try to exploit a situation to their own advantage during the transaction. They try to do their best for their own benefit, and it cannot be detected easily because when and how they show such opportunistic behaviour one cannot predict ex-ante. Transaction costs for a particular transaction depend on the critical dimensions of that transaction. There are three critical dimensions of transactions: asset specificity, uncertainty/ complexity, and frequency (Douma and Schreuder, 2002). In simple; assets which is primarily valuable to one firm only is known as asset specificity. Asset specificity can arise due to geographic location, physical characteristics, or specialized human capital. Such specific assets cannot be redeployed to an alternative use without losing in the value of asset. As the circumstances changes, no one can predict the future perfectly similarly due to the lack of detail know how and bounded rationality situation may become more complex and it is difficult to write a contract in advance. The higher the degree of uncertainty/complexity the higher are the transaction costs. Frequency of transaction determines the transaction cost. If the frequency of exchange is high, the transaction costs of using the market will be high because of the frequent renegotiation costs. So it is suggested that in case of repeated transaction it is better to go for internal production.

In general sense, transaction cost theory (TCA) views governance in terms of designing particular mechanisms for supporting economic transactions (Heide, 1994). TCA takes the transaction constituting the economic exchange between buyer and seller as the unit of analysis. Specific assets, the frequency of exchange and the uncertainty surrounding the transaction represents the core dimensions of inter-firm trade and the composite of these dimensions determines the way business to business relationship can be effectively coordinated (Williamson, 1981). As asset specificity becomes substantial, bilateral dependence is deepened and coordinated adaptation is needed to support business to business trade. If the buyer is able to exercise opportunistic behaviour, for instance when negotiating prices and service performance the supplier is vulnerable because the invested specific assets cannot be redeployed for other purposes without a comprehensive sacrifice of productive value. At the same time this luck in situation offers the supplier the option to take unilateral advantages upon this situation, for instance when change orders of excess supplies are demanded by the buyer (Rubin, 1990). Such circumstances provide grounds for opportunistic behaviour if not properly maintained relations.

According to transaction economics, asset specificity, the frequency of economic exchange and the uncertainty associated to the exchange of resources between the buyer and the seller represent the core dimension of the transaction. (Buvik and Grønhaug, 1999).

The asset specificity of a transaction refers to the degree to which the transaction needs to be supported by transaction-specific assets. An asset is transaction-specific if it cannot be redeployed to an alternative use without a significant reduction in the value of the asset (Douma and Schreuder, 2002).

Williamson's version of transaction cost economics is built on the assumption of opportunism. According to Williamson some people might behaves opportunistically some time but it is difficult to say in advance when this people show such type of behaviour. It has been argued that the tendency of a certain person to behave in an opportunistic way depends on two things: the immediate net benefit of such behaviour and 'disposition toward the transaction partner (Douma and Schreuder, 2002). If you trust your trading partner and he trusts you, you can develop a long-time mutually profitable relationship. Trust is an important lubricant of relationships, which binds parties and has an important future orientation

(Ganesan, 1994). In business trust is considered an essential element of buyer-supplier relationship.

Transaction specific investments are rather customized and idiosyncratic assets, which can bring benefits and threats to the focal relationship (Heidi and John, 1990). It is true because unless and until there is no alternative or competitor it brings benefit to the owner of such transaction specific investment and in some situation possess high bargaining power. On the other hand if other parties get alternative or if their products are only the input of focal firm than the situation may become different and encounter threats.

In a dairy business, dairy plant, chilling centres, means of transportation, specialized manpower are the transaction specific assets of dairy firm where as cattle, means of transportation, and other dairy equipments are the transaction specific assets from the side of dairy cooperatives and farmers. The output of dairy cooperatives is the input of dairy firm and dairy firms are the ultimate market of dairy cooperatives. It shows the reciprocal relationship between dairy firms and cooperatives. The frequency of exchange between these two parties are also very high, there is a daily transaction. As far as uncertainty and complexity is concerned, dairy business is affected by seasonal variation. In flush season there is high milk production and in lean season milk production is low, so in this situation both the parties may have a chance to show opportunistic behaviour. This phenomenon led us to study the supply chain challenges of DDC from the transaction costs analysis view point.

3.5 Governance structure

Williamson and Ouchi (1981) have defined the term *governance* as a “mode of transactions”. This definition seems very broad and vague because it doesn’t clear about what are the modes of transaction. Palay (1984) has defined the term governance in more clear way, as “a shorthand expression for the institutional framework in which contracts are initiated, negotiated, monitored, adapted, and terminated.” This definition clearly states that it is a set of rules, regulations, guidelines, contracts and understanding that maintains the relationship between the transacting parties. In literature, we can find the different views regarding the governance; in general sense governance is a matter of establishing and employing power, subject to the overarching goal of coordinating the efforts of different channel members (Heidi, 1994) whereas resource dependency theory views inter-firm governance as a strategic

response to conditions of uncertainty and dependence (Pfeffer and Salancik, 1978). Such views are initiated to minimize the risk of uncertainty between the exchange partners, because no firms possess self sufficiency and are dependent with other. Transaction cost theory views governance in terms of designing particular mechanism for supporting economic transactions. The main premise of transaction cost theory is that there are potential costs associated with carrying out safeguarding, adaptation, and evaluation processes (Heidi, 1994). The original framework as developed by Williamson (1975) views; a choice between ‘market’ and ‘hierarchy’ as a governance structure; where ‘price’ and ‘authority’ are the coordination mechanism respectively. In one side there is price mechanism only and in other non-price mechanism only. However, that most organization use a combination of these mechanism. In the real world, therefore, we usually encounter ‘hybrid’ types of organization (Douma and Schreuder, 2002). Hybrid governance works as motivational factors to safeguard the assets at risk of both the parties because it is based on interdependence and mutual coordination. Empirical research demonstrates that attributes of hybrids vary considerably, but a central measure of governance forms in between market and completely vertical integration, is the degree of vertical coordination and cooperation between buyer and seller, often labelled relational governance (Heidi, 1994). Vertical coordination is the “purposive organization of activities and information flows between independent firms” (Buvik and John, 2000). Vertical coordination constitute joint decision making (Heide and John, 1990; Dyer and Singh, 1998), information sharing (Noordewier, John and Nevin, (1990) and joint action on core activities between buyer and seller (Heide and John, 1990). Transaction cost economics is mainly concerned with the governance of contractual relations. Governance does not, however, operate in isolation. The comparative efficacy of alternative modes of governance varies with the institutional environment on the one hand and the attributes of economic actors on the other (Williamson, 1993).

Choice of good governance mechanism becomes essential when transaction specific investments are substantial and bilateral dependence is high, although it is equally important to all form of organization. To safeguard the interest of transacting parties’ governance form can play a good coordination mechanism. Which form of coordination mechanism is best suitable to the firm depends upon the nature of the product, frequency, number of buyer and supplier, capacity of the parties, uncertainty and complexity related to transaction etc. The

extant literature suggests many hybrid governance structure and coordination mechanism such as, relational contracting, buyer control, long-term agreements, contractual safeguarding, joint ventures, franchising, complete merger, information sharing, self enforcing agreements and joint decision making etc. Heidi (1994) discusses about market and non-market (unilateral/hierarchical and bilateral) forms of governance. The table-11 shows the dimension and forms of inter-firm governance.

Table 11: Dimensions and Forms of Interfirm Governance

Governance Form		Non market governance	
Dimension	Market Governance	Unilateral/Hierarchical	Bilateral
1. Relationship initiation	No particular initiation process	Selective entry; skill training	Selective entry; value training
2. Relationship maintenance			
2.1 Role specification	Individual roles applied to individual transactions	Individual roles applied to entire relationship	Overlapping roles; joint activities and team responsibilities
2.2 Nature of planning	Non existence; or limited to individual transactions	Proactive/ unilateral; binding contingency plans	Proactive/ joint; plans subject to change
2.3 Nature of adjustments	Non existence or giving rise to exit or immediate compensation	Ex-ante/explicit mechanism for change	Bilateral/ predominantly negotiated changes through mutual adjustments
2.4 Monitoring procedures	External / reactive; measurement of output	External/reactive; measurement of output and behaviour	Internal/ proactive; best on self control
2.5 incentive system	Short-term; tied to output	Short and long term; tied to output and behaviour	Long term; tied to display of system relevant attitudes
2.6 Means of enforcement	External to the relationship; legal system/ competition/ offsetting investments	Internal to the relationship; legitimate authority	Internal to the relationship; mutuality of interest
3. Relationship termination	Completion of discrete transactions	Fixed relationship length, or explicit mechanisms for termination	Open ended relationship

Source: (Heide, 1994, pp 75)

Market governance views inter-firm relationships as nothing more than a series of discrete exchange episodes in which each transaction constitutes a completed event, whereas hierarchical and bilateral governance both view relationships as having a time dimension beyond individual transactions (Heidi, 1994).

In dairy business (upstream) there are two parties one is buyer, dairy firm and other seller, dairy cooperative. Milk is a critical item for both because it cannot be preserved for long time and without it dairy firm cannot run. The frequency of exchange is also very high and due to the nature and importance of product, it needs uninterrupted daily supply. Similarly investment of dairy firm on plant, machinery and others and the investment of farmers and cooperatives on cattle, dairy equipments and other are transaction- specific investment. So to safeguard their interest appropriate governance structure helps to maintain good coordination. Heide and John (1988) found evidence that agents who had made principal specific investments tended to bond themselves closely with their end customers to safeguard their investments and enforce relationship obligations.

Part- 4

4. Research Methodology

4.1 Research design

This research is qualitative research based on case study and exploratory research design. Qualitative research is conducted when the research problem requires exploring concepts and establishing relationship in raw data and organizing these concepts and relationships into a theoretical explanatory scheme (Stern, 1980).

The objective of this research is to explore supply chain challenges under the perspective of buyer seller relationship and present governance structure to strengthen firm's ability to control the flow of resources under the environmental uncertainties. In this research, we have used *Porter's model*, *Kraljic portfolio model*, *transaction cost analysis (TCA)*, *Resource-dependence theory (RDT)* and *Governance structure* as relevant theories to analyze the scenario of buyer seller relationship.

Mostly we have used secondary sources of data to explore our problem but in some of the cases we have used primary sources of data which is collected through direct interview.

4.2 Sources of data

In this research we have used both sources of data; primary and secondary data. *Under primary source* relevant information has been collected mostly from direct interview with unstructured questionnaire; informal discussions with concerned parties (DDC staff, MPCSS, and farmers) and through observations of milk collection and distribution centres. For our convenience, first we prepared questionnaire in Nepali language and later it translated into English. (*See interview guide in appendix-A*)

Under secondary source, relevant information has been collected through reviewing records and publications of DDC, website of DDC, journals, magazines and research papers and central bureau of statistics (CBS).

4.3 Sampling of the research

Under this study, non-probability (convenience sampling) sampling technique has been used while selecting sample unit and selected dairy cooperatives, farmers, staffs and other supply chain members are the sample unit of this study.

Out of 11 chilling centre and 120 MPCSSs we observed 6 chilling centres and 25 MPCSSs personally and informal discussion has been done with concerned parties.

4.4 Limitation of the research

It is observed that most of the public enterprises in Nepal do not have sufficient information about the factors that are essential in managing supply chain challenges effectively and efficiently and BMSS is also not an exception.

Although the title for this research is '*Supply chain challenges in Dairy Development Corporation (DDC), Nepal: A perspective of buyer seller relationship*' seems very vague but we have focused our study on Eastern Development Region of Nepal, covered by a unit of DDC, *Biratnagar Milk Supply Scheme* (BMSS), Biratnagar due to the possible difficulty in collection of data, observation, time and cost factor. We have also limited our study only on relationship with upstream supplier of *milk* not other suppliers.

Part- 5

5. Analysis and discussion

This chapter is divided into five parts. In the first part we have discussed about the situation of the milk supply market under Porter's model, in the second part we have discussed about the purchasing strategy of milk under Kraljic matrix, in the third and in the fourth part we have discussed about the buyer-seller relationship under resource dependency theory and transaction cost analysis respectively.

5.1 Market structure analysis

We have chosen to concentrate on Porter's model for market structure analysis of BMSS because we also view it 'as an insightful and convenient approach to the analysis of firm's competitive behaviour because of model's popularity, well defined structure, feasibility, clarity, simplicity and presumed generality (Ormanidhi and Stringa, 2008).

It is a general phenomenon that, if there are substantial barriers to entry, the firms in the industry will do better than if barriers are weak. Similarly, if the rivalry among competitors is more intense, it is more difficult to compete in an industry. If customers have a large number of alternatives to substitute their demand, obviously, there will be a negative impact on the firm's revenue. Buyers' bargaining power on price and extra services also influence the firm's overall performance. If the supplier has the ability to force up the price and other terms and conditions of what the firm has to buy, then the firms have to face the worst situation.

By analyzing an industry from the five forces model point of view, it will help the firm to identify its strengths and weaknesses in relation to the actual state of competition. Porter (1980) argues that if the firm knows the effect of each competitive force, it can take defensive or offensive actions in order to place itself in a suitable position against the pressure exerted by these five forces. Porter (1980) further argues that not only the existing firms in the industry are, actual or potential competitors, but also additional competitors may arise from "extended rivalry"- customers, suppliers, substitutes, and potential entrants. That is why firms can affect the competitive forces by their own actions.

From the Porters model we analyzed the BMSS and found the following outcomes:

5.1.1 Threat of new entry

Entry and exit conditions are important determinants of existing firms' market power. Theory tells us that entry in to an industry can facilitate adjustment to changes in demand and input prices, increase competition, and put pressure on existing firms to operate as efficiently as possible (Waldman and Jensen, 2007). Many potential entrants (firms) look not just at the level of current profits but also at the trend in profits over recent years and future growth. The empirical work on entry has focused primarily on two incentives: expected profitability and market growth (Waldman and Jensen, 2007).

An entrant could try to attract a customer by differentiating the quality of its product and services offering from the incumbent supplier (Porter, 1980).

The introduction of modern dairy processing plant is not a new event for eastern development region of Nepal. Biratnagar Milk Supply Scheme (BMSS) was established in 1973 at Biratnagar. BMSS was only the sole firm to distribute pasteurised milk and other milk products until the 1995 in eastern region (NDDB, 2001). Development of dairy processing plant has also increased in the last few years. After the restoration of democracy in 1991, government introduced the policy of liberalization and privatization which encouraged a number of private investors to establish dairy processing plants. At present there are five private dairy firms operating in eastern region- *Nobel dairy, Kasturi, Luv Kush, Kamdhenu and Janaki* but most of them are is still in its early stage of development and deals in small scale. This situation shows that now there is no more substantial barrier to entry in the dairy field. Abolishment of entry barrier has created threat to the government owned public enterprises BMSS.

From the supplier perspective if we see there is no entry barrier from the legal point of view. Many new cattle farmers have been emerged with high breed cattle in this field and they have handled it in professional way but they are very few in number. On the other hand, many small farmers are leaving this field due to the lack of competitive price; lack of grazing facility and so on says Laxmi Prasad Ghimire of Chanchaladevi cooperative of Hile,

Dhankutta. They think that cattle farming are unattractive profession from economic view point.

5.1.2 Intensity of rivalry among existing firms

It (BMSS) has hardly included any amount on research and development and sales and promotion activities. Research on consumer behaviour, market fund, market segmentation, brand and sales management have not yet been used effectively (Cares, 1992).

Although most of the private dairy firms are still in developing stage; but the characteristics of the rivalry among competitors in an industry can be realized. We found that basically they are competing on procurement of milk from the cooperatives and farmers not on the market share of milk. Price paid for raw milk by BMSS to farmers are based on composition of milk such as milk fat, milk solid non fat (*MSNF*) and total solid (*TS*). On the contrary to BMSS some private dairy firms has introduced *flat rate* on the purchasing of milk ignoring the fat content. This policy has attracted many cooperatives and farmers towards these private dairy firms. Till now the intensity of rivalry among existing firms are not vicious because these private dairy firms are still in the developing stage but in future the intensity of rivalry may increase. From another point of view local milk vendors are seen as the rival to both BMSS and private dairies; because these vendors are also in large number and collects milk from the farmers' doors and also pays better prices. Milk vendors usually collects milk from number of local farmers from their doors, it is then delivered (unpasteurized milk) to urban household consumers, hotels, tea shops on monthly contract basis. Taste, easy availability, fat content, purity (belief) are the main reasons for buying milk from milk vendors and farmers. Whereas DDC's consumer comprises of general household, institutional buyers like schools, hospitals, hotels etc. of urban areas. Hygiene, cheaper rate, regular supply, quality are the major reasons for buying milk from the DDC.

Apart from competing with rivals, most organizations also co-operate with other organizations (Porter, 1985). Such collaboration is contrary to Porter's five forces analysis (Karagiannopoulos et.al. 2005). However, co-operation between organizations and others in their industry environment is also important to achieve sustainable competitive advantage.

5.1.3 Pressure from substitute product

As far as pressures from substitute products are concerned milk powder and condensed milk are available in market for household use. Due to the shortage of domestic milk production Nepal relies on imported powder milk. This powder milk is mostly used by dairy firms. In year 2007; Nepal imported eight thousand metric tonne powder milk (DDC, 2008).

5.1.4 Bargaining power of buyers

In this paper we have taken our focal firm BMSS as buyer. Until 1995 BMSS was a sole buyer of raw milk in organized way from the MPCSSs and farmers. The main objective of BMSS was to provide a guaranteed market for milk to the rural farmers with fair price, supply pasteurized milk products to urban consumers, and develop organized milk collection system to meet increasing demand for pasteurized milk and milk products. To meet these objectives it introduced fat contained pricing policy and the different pricing policy within the same supply scheme depending upon the distance it is located from the main processing plant, topography structure, mode of transportation system available etc. such pricing policy indicates that DDC used to exercise high bargaining power in one hand and principle of accommodation by creating win-win situation on the other hand.

Since past few years, milk production in the milk shed areas of the DDC has been increasing to a great extent. Consequently, the DDC could not buy all the milk offered by the farmers especially during the flush season due to the logistical constraints such as storage and transportation facilities in the collection centres. As a consequence, it has to impose *Milk Holiday* (period on which DDC does not procure milk from cooperatives) on certain days during the period. Purchasing price is also different for *flush season* and *lean season*. In lean season price is higher than in flush season. This picture shows that BMSS had a great bargaining power as buyer of milk. At present its bargaining power has decreased to some extent because of entries of new players in the industry. But still it poses some bargaining power because new entrants are still in developing stage.

Porter's framework emphasizes that ultimately own companies can create prosperity by achieving market prices for their output in excess of the costs of providing this output. At a broad level, Porter (2004) distinguishes between two sets of factors that impact

competitiveness: The social, political, macroeconomic, and legal context on the one hand and the microeconomic foundations on the other hand. Porter's focus on microeconomic foundations reflects the view that these factors have traditionally been neglected by policy makers. Without microeconomic improvements macroeconomic reforms fail to achieve sustainable improvements in prosperity. Because the costs of exchange depend on the institutions of a country: its legal system, its political system, its social system, its educational system, its culture, and so on. In effect it is the institutions that govern the performance of an economy (Coase, 1998). If we analyze the situation from this viewpoint, it seems true in the case of BMSS. Because DDC fixes price for raw milk to milk producing farmers and standardized pasteurized milk for general public. This fixing of price is subject to approve by government. In 1987, government instituted a permanent body, Milk Pricing Policy Review Committee (MPPRC) to review the prevailing milk price on a regular basis and to make appropriate recommendations to the government. Pricing policy of DDC (BMSS), which attempted to meet two completely conflicting objectives of providing remunerative price to farmers and low price to consumers for pasteurized milk and milk products, has adversely affected the BMSS's financial performance. The government's interference and political pressure in management and pricing decisions has also effect on the operational performance of BMSS as well as its bargaining power.

The entry of new dairy firms in the market, regular strike and other political issues have made bad impact on collection of milk that is why the present milk collections are less than the previous fiscal years (*see table: 7*). Milk collection of BMSS shows negative trend due to different external factors especially political issues.

5.1.5 Bargaining power of suppliers

Suppliers of BMSS are MPCSSs and farmers. Over seventy per cent of all milk in BMSS is produced in the northern hilly region (part), due to the greater availability of fodder supplies (DDC, 2002). Part of the problem is that most of the Nepali farmers keep domestic cattle breeds that produce, on average, only 30 % of the milk volume of hybrid cows (NDDB, 2001). The average milk production per cow is 5 litres says Ramhari Karki (farmer) of Terhathum. Many farmers consume their own milk and sell surplus milk in the nearby village market. Farmers with more than three cows generally sell their milk to cooperative collection

societies (NDDDB, 2001). These cooperatives serve milk both to local market as well as BMSS. Whatever milk is collected by the cooperative societies, first they sell it to local customer and remained milk to nearest collection centre of BMSS (See figure-1). However, larger commercial farms sell direct to consumers in nearby towns, as direct sale milk prices are higher than selling to cooperatives, only remained milk after direct sale is provided to the DDC.

However, a strong trend has been remarkably changing the nature of relationships in this industry. Over the last 8 years, MPCSSs have substantially increased the bargaining power (DDCWA, 2004). In recent past few years the bargaining power of MPCSSs has increased because of the entry of new players in this field. Due to the liberalization and privatisation policy of government, in these year five more dairy firms has been emerged. Now they are not totally dependent on BMSS only. Milk market is expanded. These suppliers have got the four more new alternative buyers. These MPCSSs has also started to equip themselves with modern technologies. The recent example is MPCSSs of Dhankutta and Terathum district has established milk chilling centre in Sidhuwa in between Hile and Chitre. Now they can preserve milk for longer period and may supply directly to other dairy firms and customers. This shows they are moving towards the *fundamental transformation*. Fundamental transformation is a situation where experienced gain by the supplier puts them in a position of a monopolist. In this case, the MPCSSs of this region gained knowledge and experience about the preservation technology and milk market as a supplier of milk to BMSS and now they themselves united and established chilling centre, the situation of large number of supplier is changed in to a small number of supplier. This situation has also increased the bargaining power of supplier in recent year. Especially in lean season the MPCSSs doesn't provide sufficient milk to BMSS according to contract. Domestic dairy processing has slowed down in the last few years, owing to limited local milk production and supply and partly caused by the political instability (*see table: 7*). Introducing high milk yield foreign cattle breeds will be necessary to increase raw milk production. Implementing such a program will require government support.

We examined the supply chain challenges of BMSS from the Porter's five forces model and found that there is no substantial barrier to entry in the dairy business, so there is always threat of new entry. In the past few years five private dairy firms has emerged. Yearly

increased population of urban areas and awareness about pasteurized milk is better for health than raw milk; there will be more demand of pasteurized milk says chief project officer of BMSS Rajgovinda Raj Rajkarnikar. Dairy business seems attractive market in future as well, so maybe there will be more entry of new players. This situation is threat to the focal firm BMSS. As there is sufficient market of pasteurized milk, there is no intense rivalry among the dairy firms regarding the market. They have a competition on procurement of raw milk from cooperatives and farmers. There is not only competition between the dairy firms but also with the local vendors who pays better price for milk than dairy firms and sales raw milk directly to the ultimate consumers. Awareness programme for pasteurized milk through the media should be launched jointly by the dairy firms and government says Rajgovinda Raj Rajkarnikar, a chief project officer of BMSS. He further adds that if it is done, dairy firms get sufficient input and people get hygienic milk. Both business and social responsibility is fulfilled. There is no pressure from substitute product; powder milk is imported to fulfil the shortages of milk through government approval. Earlier BMSS was only the major buyer of milk and had a high bargaining power. It used to declare 'Milk holiday' in flush season. Still it is following two different type of pricing policy for flush and lean season. We asked question to chief project officer, regarding 'milk holiday' and 'pricing policy', in this regard, he told, although BMSS has sufficient processing capacity to adjust the supply of milk in flush season by producing powder milk but due to logistical constraints it has to implement milk holiday. Pricing and other policies are decided by the central DDC office with government approval. During the field visit in June and July (2008); we observed 25 MPCSSs and talked with 50 farmers. We found that there is a large number of MPCSSs (see table-6) and each MPCSSs consists at least 25 farmers but their milk supply capacity was very low. In the language of farmer Laxmi Prasad Ghimire associated with Chanchaladevi Cooperative of Hile, Dhankutta and Dambar Prasad of Pathibhara Cooperative of Fikkal, Ilam it is due to the traditional cattle farming and local breed of cattle. Due to the entry of many new private firms in dairy business in the last few years the bargaining power of PMCSs has increased says Madan Raj Sharma of Janjiwika Cooperative of Barbote, Ilam. In early years low fat content (less than 3.2) was not accepted by DDC but now private dairy firms has started to accept low fat content milk as well. In the discussion with officials of chilling centre and MPCSSs we found that in lean season MPCSSs doesn't supply milk according to the contract. Why? One reason is production of milk is low in this season, and another is milk vendors gives better

price than BMSS, or to sell directly to customers is more benefited says Harka Rai of Janata Cooperatives of Chitre, Terhathum.

This picture shows that both BMSS and MPCs are interdependent to each other so that there must be cordial long-term relationship between these two parties. Moreover the supply side of BMSS is dominated by the cattle farmer of northern region. Milk is a critical item for BMSS. Failure in good relationship with these suppliers can be critical to a firm's operation.

5.2 Analysis of purchasing strategy

To ensure long term availability of critical materials and components at competitive the firm should analyze risk and complexity of supply market and should adopt appropriate supply strategy. As per Kraljic (1983) a company's need for a supply strategy depends upon two factor (1) *strategic importance of purchasing* (2) *complexity of supply market*. So here first we want to discuss importance of purchasing of milk product and complexity of milk supply market for BMSS.

5.2.1 Importance of purchasing

Milk is basic raw material for BMSS from which it produces pasteurized milk and other milk products. Out of total cost of processed milk of BMSS about 63 % is cost of raw milk so it shows the high percentage of raw materials in total cost. On the other hand if we look at the profitability profile about 80 to 90% of income out of total income is from sell of pasteurized milk which also shows the relative importance of purchasing of milk to BMSS is very high.

5.2.3 Complexity of supply market

MPCSs are main supplier of milk to BMSS. But increasing external uncertainties supply risk of milk is gradually increasing. As per Kraljic (1983) complexity of supply market is gauged by supply scarcity, pace of technology and /or material substitution, entry barriers, logistics cost or complexity, and monopoly or oligopoly conditions. If we look the present supply market of milk supply scarcity is not so extreme but production capability of MPCSs is very low although they are many in numbers which indicates low level of availability. On the other hand technology used in supply market of milk is not changing rapidly. Most of MPCS are not using high technology to collect milk; simply they are using traditional way of collection. As milk is natural raw material there is no possibility of material substitution for BMSS. If we look at the entry barriers, there are no entry barriers from the side of government policy as they adopt liberalization and privatization policy after restoration of democracy in Nepal. But increasing political instability, strike, low profit margin, government intervention and shifting in profession, people are not encouraged to enter in this milk supply market. A present report prepared by *Nepal Chamber of Commerce and Industry (NCCI)* showed there was about 24 days strike within last three months. (*Kantipur march 7, 2009*)

Moreover if we look at the logistical cost and complexity, about 15% of total cost is transportation and storage cost which is caused by location of MPCSs. Most of MPCSs are located in hilly area and distance between BMSS and MPCS is about 52 to 396 km and no third party logistics are available. This phenomenon also shows the high level of logistics cost and complexity. Although at the present supply market of milk seems to be oligopoly condition as there are few buyer (5 firms) and many suppliers but in reality having small scale capabilities of MPCS it seems to be bilateral oligopoly or supply-side monopoly.

With this analysis of importance of purchasing and complexity of supply market we can categorized milk product as strategic product. If we look at the supply market of milk it does not seems to be supply risk is in extreme position. With view of this situation of changing supply market complexity, it is difficult to categorize one product exactly in one quadrant as suggested by Kraljic (1983). So, we categorized this milk product as leverage product forwarding towards strategic product. (*See figure: 7*)

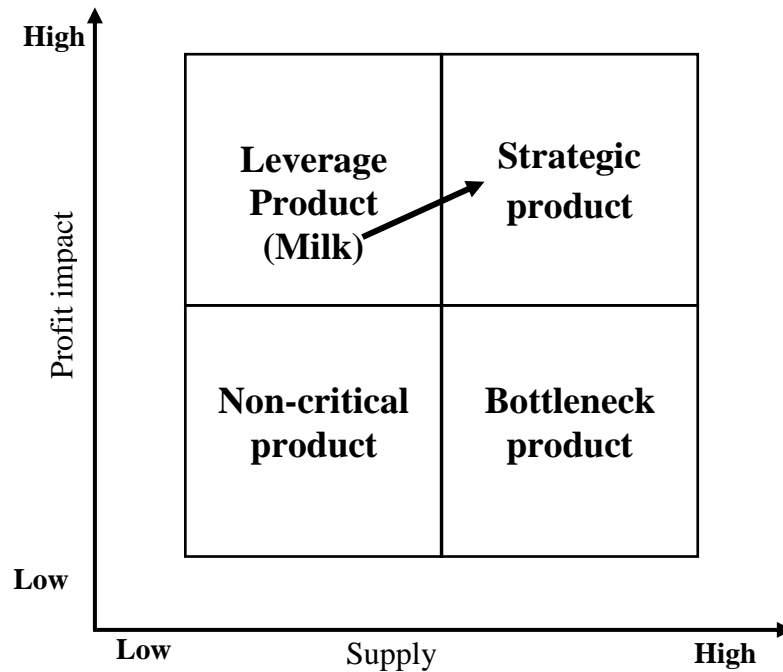


Figure 7: Purchasing strategy for milk product (modified from Gelderman & Van Weele, 2002)

For leverage item Kraljick (1983) has suggested *exploit power* strategy through tendering, target pricing and product substitution. But the situation is different for BMSS. Although the supplier of milk MPCs are many but they are in small scale and they don't have capability to sell their product in competitive price. On the other hand, Gelderman & Van Weele (2002) has suggested *strategic partnership* if supplier has the proper capabilities for co-design and move from leverage to strategic is feasible when only a limited number of suppliers appear to have required capabilities and qualifications. But in short term, this is not possible for BMSS because no suppliers are technologically advanced to meet quality and quantity requirement of BMSS. On the other hand, it takes much time and money on supplier development and sufficient trust is needed to invest in such relationship. So a *partnership convenience strategy* (joint venture, co-development) may be feasible for BMSS as a tactical solution to operational problem (logistics, quality and quantity).

Moreover, Gelderman & Caniëls (2005) has examined the power and dependence position of buyers and suppliers for the various purchasing strategies that have been identified in each quadrant of the portfolio matrix. Under *exploit power* strategy, buying power is actively used to get better deals with interchangeable suppliers. This situation applies when situation is characterized by buyer dominance. But the situation is different for BMSS and relative

dependency of buyer is higher than supplier so exploit power strategy does not contribute anymore and close cooperation with supplier will lead to reduce supply risk.

5.3 Analysis of buyer supplier dependency

The buyer's dependence on supplier is a source of power for supplier and vice versa. A well known definition is that the relative power of an organization over another is the result of net dependence of the one on another. If A dependence on B more than B depends on A, then B has power over A (Pfeffer, 1981). To analyze buyer and seller dependency we have used different aspects that compose buyer's dependence and supplier's dependence as suggested by *Gelderman & Caniëls (2007)*.

Table 12: Aspects that compose buyer's dependence and supplier's dependence

Buyer's dependence	Supplier's dependence
Logistical indispensability	Financial magnitude
Need for supplier's technological expertise	Need for buyer's technological expertise
Availability of alternative suppliers	Availability of alternative buyers
Switching costs buyer	Switching costs supplier
Overall buyer's dependence	Overall supplier's dependence

Relative financial magnitude of transaction is most important aspect of organizational dependence. Obviously when a lot of money is involved the buyer has a powerful position in negotiation. But this situation holds true when alternative suppliers are available. In case of scarce situation, switching cost between suppliers is more important for buyer than the relative amount of money involved in transactions. If we look at the this aspect in BMSS about 63 % of total cost is cost of raw milk purchased which shows high amount of money involved in transaction but due to unavailability of alternative supplier *switching cost* between supplier is very high. Presently BMSS total milk supply by MPCs is 27600 litres which is quite less than daily requirement of 33000 litres per day. But if we look at the side of supplier

(MPCS) about 40 to 60 % of milk collected is purchased by BMSS which also shows the relative financial magnitude of supplier is also high. In this way due to unavailability of alternative supplier to BMSS and high level of financial magnitude to both buyer and seller show the *mutual interdependency* between buyer and supplier.

If we look at the availability of alternative buyers from the side of supplier (MPCS), there are about 5 private firms involved in this dairy industry which shows the availability of alternative buyer to the supplier. Some of the MPCSs which were supplier of BMSS have now become a supplier of private firm. One of the major supplier (MPCS) located in Saptari district has been supplying milk to Janaki dairy. This situation shows the BMSS is gradually losing their milk suppliers and emerging private dairy and easy access in local market to MPCS has been created alternative buyers to MPCS. In this way, emerging alternative buyer to MPCS and decreasing source of supply to BMSS has increased buyer dependency on supplier.

More over if we look at the logistical indispensability from the side of buyer, most of difficult logistical part of milk collection is performed by MPCS. MPCSs collect milk from farmers scattered in different geographical mostly in hilly region. Even though most of MPCS located in hilly area sends milk to BMSS Chilling centres far from 4 to 6 hours walking distance. Due to unavailability of road infrastructure and appropriate means of transport they use porter, cycle and horses as means of transportation. This situation shows the *logistic-based dependence* of buyer on supplier.

The need of technical expertise is also critical to parties, buyer and supplier. If we look at the need of buyer's expertise is negligible to the supplier (MPCS) because they just collect the milk from supplier and they don't involve in other value creation activities.

But if we look at the need of supplier's technical expertise to buyer (BMSS), the logistical expertise of supplier (MPCS) is prime concern to the buyer for correct delivery of milk which shows buyer dependence on the specific assets of supplier. On the other hand, most of chilling centres are owned by BMSS. This kind of relation specific investment also shows the high switching cost and buyer dependency. In this way, as above analysis we can say that the overall buyer dependence is quite higher than overall dependence of supplier so that BMSS should adopt different strategy to manage and control its dependency on supplier. To analyze

probable strategy to be applicable to BMSS, we have used four buyer's dependence reduction actions as suggested by Emerson, (1962).The following table: 13 show buyers dependence reduction actions and its feasibility in BMSS.

Table 13: Buyer's dependency reduction actions (modified from Emerson, (1962).

Strategies	How?	Feasible/unfeasible	Causes
Reduce the buyer's interest in the resources possessed by supplier.	Change technology	infeasible	Natural raw material
	Substitution of material	Infeasible	Natural raw material
	Modify/develop new product	infeasible	Natural raw material
Increase the buyer's availability of alternative sources.	Multiple sourcing	Infeasible	Small suppliers
	Internal production	Infeasible	Entry barrier
	Supplier development	Feasible	Increasing substantial supplier investment
Increase supplier's interest in the resources possessed by buyer.	Long term contract joint venture	Feasible	Mutual dependency
	Extend relationship with new process	Feasible	Mutual dependency
	Develop leverage strategy	Infeasible	Unavailability of big suppliers
	Establish buying consortia	infeasible	Lack of symbiotic relationship with other buyers
Decrease buyer's availability of alternative sources.	Develop long term relationship	Feasible	Increasing substantial supplier investment
	Increase control over supplier's customers	Infeasible	Government interference

5.4 Transaction cost analysis

The transaction costs framework predicts a positive association between asset specificity and bilateral governance (Williamson, 1991). The underlying assumption for this line of reasoning is that the transaction parties are both motivated and able to incur safeguarding arrangements in order to protect assets at risk and to economize on transaction costs (Buvik and Reve, 2002). In this research we have tried to explore two specific aspects- *asset specificity* and *opportunistic behaviour* in buyer-seller (BMSS and MPCSSs) relationships.

Milk is a perishable product and it cannot be stored for more than a day, because of lack of cooling system transporting milk over long distances is not feasible. As a consequence milk has to be processed in to butter in traditional way (milk-curd-butter) or sell to BMSS. Still the farmers of Nepal don't use the technology of separating cream from milk. As a result farmers who sell their milk to BMSS through MPCSSs are in a situation where they have only one customer because there is no local market for milk. Their investment in cattle seems as a transaction-specific investment. These farmers have no alternative market for their milk in northern hilly region. Farmers were powerless against opportunistic behaviour (milk holiday) of BMSS.

From the cooperative perspective, the situation is different: here MPCSSs are as dependent on the farmers as the farmers are dependent on them. BMSS doesn't take milk directly from the farmers. This prompted more and more farmers to become members of the nearest MPCSS. The investment by the farmers in cattle is transaction-specific, but so is the investment by MPCSSs in their customer base and means of distribution.

BMSS has established 13 chilling centres in different part of the eastern region in order to preserve the collected milk from the MPCSSs. These chilling centres are well equipped with modern cooling systems and technical manpower. These chilling centres are fully owned by the BMSS. The milk collected by MPCSSs passes to nearest CC to get milk chilled and then sends to the processing plant Biratnagar. The reason behind the establishment of these chilling centres is to collect and preserve milk and send to the BMSS plant from the milk shed areas. The investment of BMSS on these chilling centres is a transaction specific asset because these chilling centres can be used only for transactions with MPCSSs since there is no other use of these chilling centres other than preserving milks. Here, the transaction between BMSS (CC)

and MPCs is characterized by *asset specificity* in the language of transaction cost economics. The investment of MPCs and farmers on cattle and means of distribution is also a transaction specific asset since there is no other collection centre in this milk shed areas and since it is very costly to transport milk to towns. Similarly milk cannot be stored by these farmers for more than a day because of lack of cooling system, lack of local market, and if processed in local way to make butter it takes long time and also not profitable than selling milk to BMSS. This means both BMSS and MPCs are locked into a *bilateral monopoly* because they both have a monopoly position towards the other with respect to certain assets. So it is suggested that both the parties of this supply chain relationship have to work together to achieve mutual goals.

In Williamson's view human beings sometimes display opportunistic behaviour which means they try to exploit a situation to their own advantage. Although both the parties are in locked in situation but in the course of study we found that both parties have been displaying their opportunistic behaviour. BMSS has shown such behaviour by introducing different pricing policy for *lean* (higher) and *flush* (low) season on purchasing milk and declaring milk holiday in the flush season. On the other hand MPCs have been showing opportunistic behaviour by not supplying agreed upon quantity of milk to BMSS in lean season. During the study we found that in lean season these MPCs used to supply milk to private dairy firms and local commercial distributors, because of higher price than BMSS. Similarly they used to demand higher prices and threatened not to supply milk to BMSS. A buyer's decision to remain with an incumbent supplier or switch to a new one is influenced by (1) certain aspects of the pre-existing relationship with the incumbent and (2) the new competitor's marketing program (Wathne et.al. 2001).

In the past few years it is seen that scenario is changing due to the removal of entry barrier. Many private dairy firms have been emerged in this area and MPCs has also started to equip themselves with modern cooling equipment by establishing their own chilling centres. It seems threaten to BMSS, so it has to reconsider about present policy otherwise have to faces huge loss.

Joint action creates enough ground for bilateral governance in the buyer supplier relationship, which helps to reduce opportunistic tendencies that might erode the value of specific assets

(Heide, 1994). The fundamental concern of transaction specific investment is to develop satisfactory safeguards against the potential opportunistic behaviour. This safeguard can be ensured through collaborative joint effort between buyer and suppliers (BMSS and MPCSSs).

A firm may safeguard its investment by purposely developing longer-lasting relationships with the relevant exchange partner (Heidi and John, 1990) but establishing close relationship is not a universally desirable strategy and should be made in a deliberate fashion, based on close attention to specific performance dimensions (Heidi and Stump, 1995). It is suggested to select a combination which will have the desired impact on the market and also will be cost effective.

5.5 Analysis of governance structure

Because of the short product life cycle (milk) and high frequency of exchange (daily transaction) has made buyer (dairy firm) and supplier (dairy cooperatives) more dependent with each other. Especially the relation specific investment from the side of both the parties has increased the bilateral dependence highly. Moreover, transaction specific investment of BMSS is very high in comparison to MPCSSs in this case. Procurement of necessary quantity of milk, with prescribed quality on precise timetable is a crucial element of supply chain management to the BMSS. In long term buyer supplier relationship, greater interdependence among the parties, could lead to conflict on account of opportunistic behaviour, misaligned incentives, etc.-as all future contingencies cannot be foreseen and provided for in the contracts (Salanie, 1998). Especially when relation specific investments are substantial and bilateral dependence is high, disturbances usually become highly consequential (Williamson, 1996). This shows necessity of appropriate coordination mechanism in the form of governance structure. Coordination between firms can be organized in various forms of governance structure such as- *relational contracting, buyer control, long-term agreements, contractual safeguarding, joint ventures, franchising, complete merger, information sharing, joint decision making etc.*

Biratnagar Milk Supply Scheme (BMSS) is a part of Dairy Development Corporation (DDC) a fully government owned public enterprises. BMSS cannot formulate and implement any policy independently, it has to follow the policy and guidelines as prescribed by the DDC,

central office, and DDC central office has to take preapproval of government especially in the pricing policy of milk. If we look in to a buyer (BMSS) - supplier (MPCSs) relationship from the governance perspective, we find *unilateral* governance structure. Unilateral governance can be viewed as, by means of an authority structure that provides one exchange partner with the ability to develop rules, give instructions, and in effect impose decision on the other (Simon, 1991). DDC makes all the policy regarding, price, collection time, standard of milk, quantity, fare and modes of payment and impose it by means of contract to MPCSs. Nature and content of the contract between the DDC and MPCSs all over the country are the same can be taken as an example in this respect. Although it seems unilateral governance, but in reality especially in the cases of price, standard of milk and fare National Dairy Development Board (NDDB) conducts meeting with the representative of farmers, dairy cooperatives, dairy firms and government representatives and decision of this board is undertaken by the DDC says chief project officer of BMSS Rajgovinda Raj Rajkarnikar.

During the field visit in July/ August we examined that there was a simple contract letter between BMSS and MPCSs for one year, renewable each year. All the provisions were same, only purchasing price and fare was different, because, as mentioned above DDC has followed differential pricing policy within the same supply scheme depending upon the distance it is located from the main processing plant, topography structure, mode of transportation system available etc. It seems that BMSS is still following old traditional policy of buyer dominance which may be harmful in long run. Now the scenario of dairy business is changing, many new private dairy firms have been emerged and emerging. In this situation, it is very difficult to say, such type of unilateral governance and short term contract works properly. Now time has come to enter in to a long-term bilateral relationship where closer cooperation can be built and economic incentive can be gained by both the parties through exchange and sharing of information. As mentioned above in this case relation- specific investments are substantial and bilateral dependence is high; hybrid governance seems appropriate to safeguard assets at risk in long run.

Part- 6

6. Conclusion and recommendation

This chapter attempts to provide an overview of the study conducted. The purpose of this research study was to explore the supply chain challenges in BMSS. To fulfil this objective we concentrated our study on the buyer-seller relationship, means relationship between BMSS and MPCSSs. We chose Porter's five forces model, Kraljick's portfolio purchasing model, resource dependency theory and transaction cost analysis (asset specificity and opportunistic behaviour) as the unit (variables) of study to examine the situation.

In this global competition only those companies are going to be success that are able to provide good and services to the customer in right time, at right place at right price. So in order to cope in the changing environment they have to equip themselves modern supply chain elements and appropriate governance structure.

We have examined the market structure of BMSS from the Porter's point of view; there is no more entry barrier in buyer side that is why new players has entered in this market but there is no vulnerable competition between the BMSS and private dairy firms due to the sufficient market of milk but they are competing on procurement of raw milk. As far as substitute product is concerned, powder milk is imported by the consent of government and there is volume restriction as well, so it doesn't seem threats to both buyer and supplier. If we look from the supplier side due to the low margin farmers are not interested to invest in this field, they are shifting in another profession. However some professional farmers are emerging but they are very few in number. Because of the entry of private dairy firm in the market in one aspect bargaining power of MPCSSs has been increased and *switching cost* of supplier has been decreased. It is a common phenomenon that all buyers and suppliers relationship operate in an environment of relative buyer and supplier power. In this respect over the last years the bargaining power of BMSS is decreasing respectively but still it is a large buyer of raw milk.

Recommendation

- An important concern of supply chain management is to improve relationship coordination among the supply chain partners. Over the last years, the nature of buyer-supplier relationships has been undergoing some significant changes in dairy business

in Nepal. It is not unusual to read that buyer firms are looking to their suppliers and supplier to their buyers to help them achieve a stronger competitive position. So it is suggested to BMSS to make a long-term and more highly collaborative relationship with its supplier. Co-operation between supply chain partners is important to achieve sustainable competitive advantage.

- Efforts are also needed to increase cattle farmers' bargaining power and specialization. A starting point would be to encourage cooperation between farmers, cooperatives and in between DDC and cooperatives. Various farm support programmes may be established to foster specialization in cattle farming. Such efforts will promote the development of a more effective and efficient dairy supply chain in Nepal but it needs government support.
- Government intervention regarding the purchasing and selling price of milk should be abolished so that BMSS can independently fix the price according to market situation.

As per analysis from the Kraljic perspective the milk product of BMSS seems to be leverage product but this situation holds true if alternative sources of supply is available but the situation of BMSS is quite different. Increasing scarcity of milk shows it as a strategic product but If we look the present supply market of milk supply scarcity is not so extreme but production capability of MPCs is very low although they are many in numbers which indicates low level of availability so that we categorized milk product as leverage product forwarding towards strategic product.

Recommendation

- Due to unavailability of alternative source of supply BMSS cannot use *exploit power strategy*. Moreover, BMSS also can not adopt *strategic partnership strategy* because this strategy is also feasible when only a limited number of suppliers are available with required capabilities and qualifications. So in this situation, *partnership*

convenience strategy (joint venture, co-development) may be feasible for BMSS as a tactical solution to operational problem (logistics, quality and quantity).

If we look at the dependency position from the power dependence perspective, switching cost between suppliers, unavailability of alternative supplier, logistical indispensability of buyer, huge supplier specific investment shows buyer (BMSS) dependency on supplier (MPCS). Moreover, financial magnitude of supplier, easy access in local market, availability of alternative buyers, and low investment in specific assets shows supplier dependency on buyer. Although this situation shows the somehow mutual interdependency between buyer (BMSS) and supplier (MPCS) but as a natural raw material increasing scarcity of milk and unavailability of substitute product indicates relative dependency of buyer (BMSS) is higher than supplier (MPCS). So in this situation BMSS should try to reduce supplier dependency to minimize supply risk.

Recommendation

- Increase the buyer's (BMSS) availability of alternative sources through supplier development increasing substantial supplier investment.
- Increase supplier's (MPCS) interest in the resources possessed by buyer (BMSS) through long term contract joint venture.

If we look from the TCA perspective considering the asset specificity and opportunistic behaviour we find that both BMSS and MPCSs are in locked in situation and sometimes specially in lean season MPCSs has been displaying opportunistic behaviour. BMSS is still in a position of structural dominance over its extended networks of supplier because of fragmented sources of supplier but if we look from another angle there is interdependence with the extended network of suppliers because buyer specific investment from the supplier is less than the supplier specific investment from BMSS, if we compare. Since milk is a critical item for BMSS, failure in good relationship with these suppliers can be critical to a firm's operation. On the other hand, still there is no other ways than to supply milk to BMSS for

MPCSs, although there are private dairy firms but their capacity is not enough to collect all the milks of MPCSSs. This picture shows the interdependent relationship between the BMSS and MPCSSs.

Recommendation

- Why suppliers are dissolving the relationship by displaying opportunistic behaviour with BMSS is a key question to achieve a strategic advantage. By understanding the causes, BMSS can identify the issues that must be addressed in order to maintain cordial relationship in future.
- Furthermore BMSS have to improve supplier and supply chain performance through proactive supplier development activities. In this situation BMSS should try to increase supplier (MPCS) investment in buyer specific investment by encouraging them.

From the extant literature we know the form of governance structure plays a vital role as coordination mechanism in buyer-supplier relationship. We know that all organizations have downstream supply relationships with their customers, as well as buying relationships with their upstream suppliers. In order to understand competence in procurement and supply management, it is essential to understand these two sides of the coin of business strategy (Cox, 2001). In the case of BMSS the degree of asset specificity is so high and frequency of exchange is also very high so short term unilateral contract doesn't assure each party in the long run; it is because both buyer-dependence and supplier-dependence are associated with the present level of specific assets, because the economic outcome of employing specific investment is associated with the economic advantage for both actors (Williamson, 1985). In this situation vertical integration seems appropriate tools of coordination in the buyer seller relationship between BMSS and MPCS. Through a long-term relationship, the supplier will become part of a well managed chain and will have a lasting effect on the competitiveness of the entire supply chain. Researchers have empirically documented how relationship commitment and trust foster greater cooperation, reduce functional conflict and enhance

integration as well as decision-making under condition of uncertainty and ambiguity (Morgan and Hunt, 1994).

Recommendation

- Because of the nature of the product, frequency of exchange and degree of relation-specific investment, we suggest BMSS to follow hybrid governance to maintain long-term relationship in the form of *vertical coordination* such as joint decision making, information sharing and joint action on core activities between buyer and seller

Finally, this study may prove guidelines to the concerned actors (farmers, cooperatives, DDC) to take due attention in their respective field. Furthermore it also provides valuable guideline and reference to the researchers who are interested in conducting further research in this field.

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Appendices

Appendix-A

Interview guide to BMSS

1. What is your daily requirement of milk?
2. How many liters of milk do you collect per day?
3. Is your daily collection meet demand (requirement)? If not why?
4. How many numbers of MPCS are your suppliers?
5. Are they increasing or decreasing? If decreasing why?
6. What is the average milk production of each MPCS?
7. Are they supplying all quantity whatever they produced? If not why?
8. How much time do you collect milk?
9. What are the major problems in collecting milk?

Interview guide to MPCS

1. How many liters of milk do you collect per day?
2. How many members are there in this cooperative?
3. Are they increasing or decreasing? If decreasing why?
4. What is the average milk production of each member?
5. Are they supplying all quantity whatever they produced? If not why?
6. How much time do you collect milk?

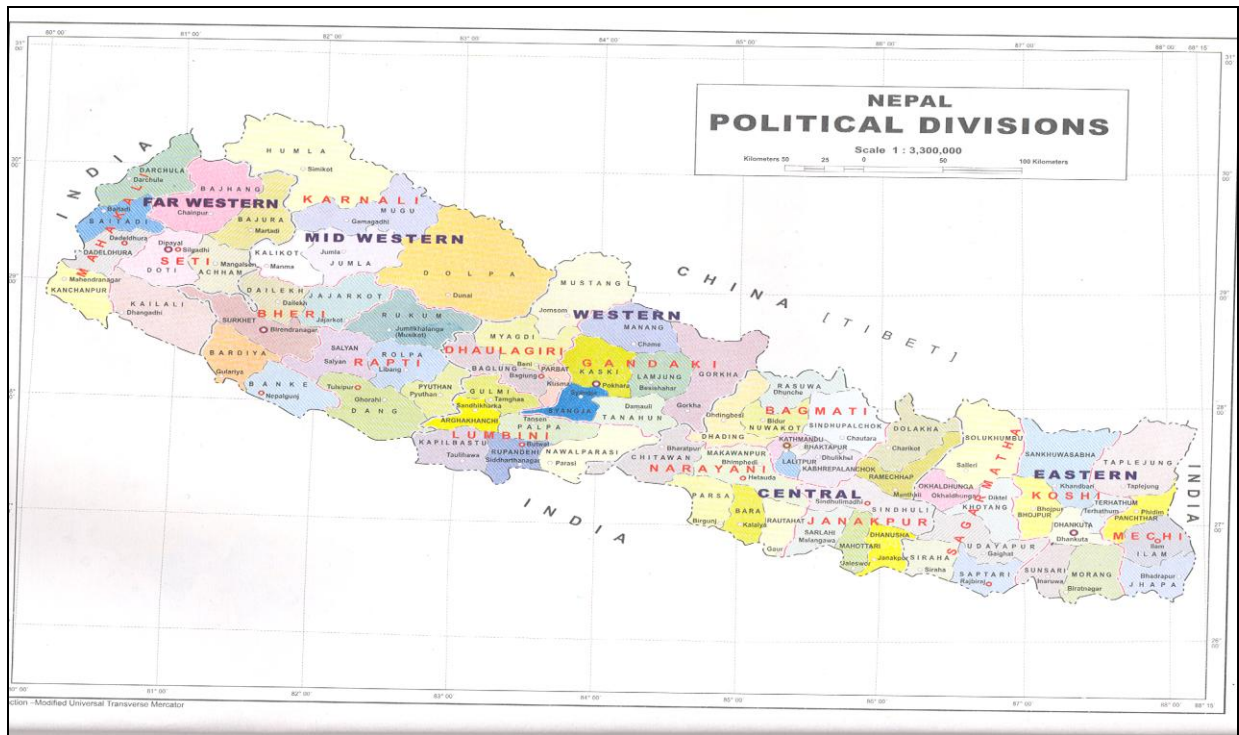
7. How much liters do you supply to BMSS?
8. Are you supplying all collected milk to BMSS? If yes, why? If not, why?
9. What are the major problems in this milk profession?
10. What types of supports are you getting from BMSS?
11. Is there any specific investment from the side of BMSS to operate your MPCs?

Interview guide to Farmers

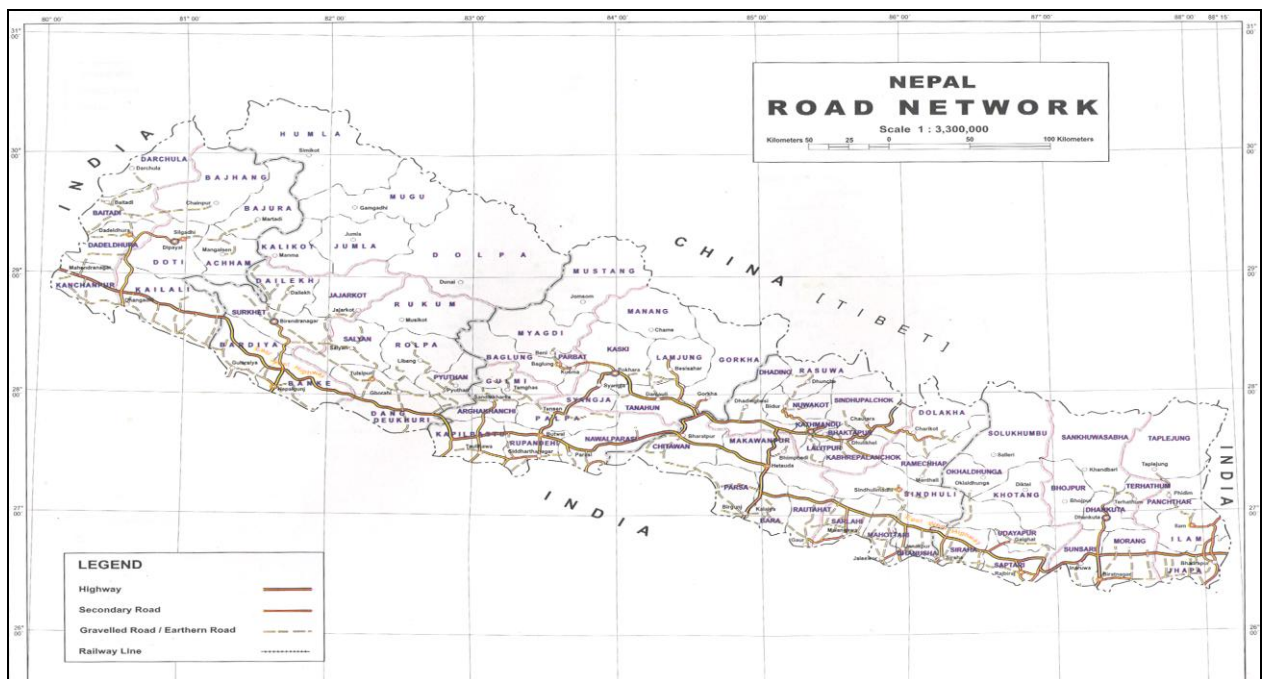
1. How much milk do you produce per day (liter)?
2. How many numbers of cattle do you have?
3. What type of breed do you have?
4. Is a cattle farming your major occupation?
5. Are you a member of cooperative? If yes, what are the major motivational factors to be a member of MPCs?
6. If no, why you are not interested to be a member of MPCs?
7. Do you sell all the milks to cooperatives? if not why?
8. What are the major problems in cattle farming?
9. What type of support are you getting from other institution (BMSS, MPCs)?

Appendix-B

Appendix-B (1)

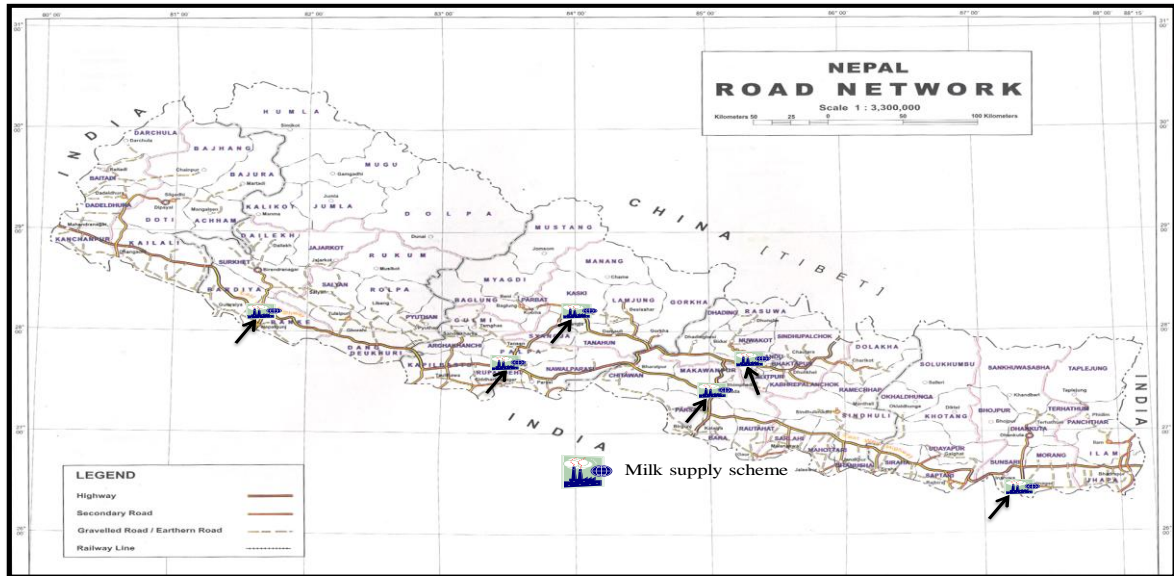


Appendix-B (2)



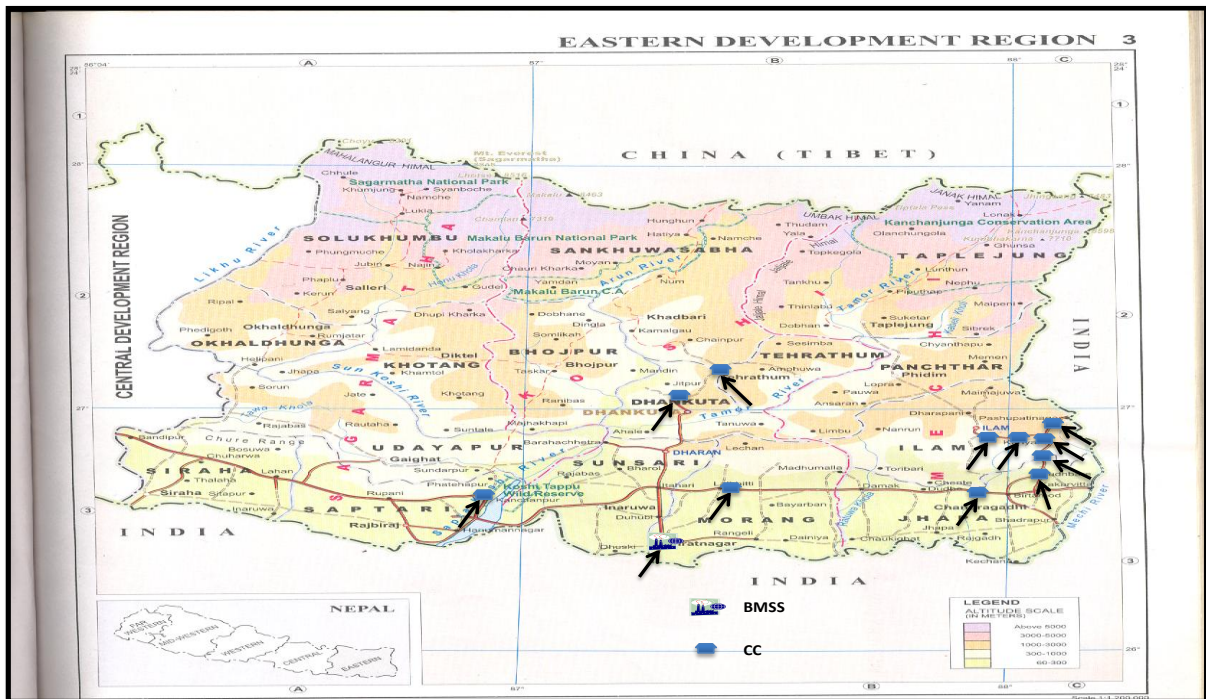
Appendix-B (3)

Milk supply scheme in different region



Appendix-B (4)

Chiling centers of BMSS



Appendix-C

Traditional cattle firm



A farmer milking cow



Farmer Carrying milk to MPCs



Farmer Carrying milk to MPCs



Collecting milk by MPCs



Spot selling by MPCs to local consumer



Porters carrying milk from MPCs to CC



Carrying milk from MPCs to CC using horse



Carrying milk from MPCS to CC by Rikshaw



Bringing milk from MPCS to CC by porters



Checking quality of milk by CC



Chilling center at Chitre



Empty Milk cans outside CC



BMSS tanker collecting from CC



BMSS Biratnagar



BMSS's own Dealer at Biratnagar



Milk Packets



Retailers selling milk

