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Agri-Food Chain Analysis of Economic Development Processes of Kyauktan

Khin Khin Soe

Abstract

In this paper, economic development processes of the Kyauktan Township are analyzed in terms of the agri-food chain. The development of the Kyauktan Township before and after the introduction of the market-oriented economy, along with the construction of the two bridges and the new inter-village roads, is compared in this study. Interrelationships between three economic sectors (primary, secondary and tertiary) are studied. The development of the Kyauktan Township changed with the changes of the above three factors (market policy, bridges and roads, technology). The analysis of secondary data was carried out in order to show the development. To understand the economic development process, three cases of commodity chains were studied. The primary data was the analysis using an input-output model along the network of commodity chain and interviewing key players. Findings indicated that the development is not only due to improvement in infrastructure and technology, but also due to the introduction of the market-oriented economy.

Keywords:
Commodity chain, wholesalers, retailers, infrastructure, interrelationships

1. Introduction

"Development economy means the study of how economies are transformed from stagnation to growth and from low-income to high-income status." (Todaro and Smith 2002: 95).

Transportation is essential for the flow of agricultural commodities. It is also essential for regional development, as it facilitates the flow of commodities from one place to another. By promoting the mode of transport, the flow of people and goods will be easy, and complementarities between urban and rural areas will be higher. The government promoted the use of modern technologies, especially the use of inputs such as special seeds (high yield varieties) etc., in the agriculture sector. It also allows agro-chemical firms to participate in the private sector.

Credits and loans are still provided by the government. Cropping patterns of farmers have changed recently. Due to the opening of the export market, farmers now grow green gram after the harvesting of paddy. The Kyauktan Township was connected with Yangon by a waterway only before the construction of the bridges. But after the opening of the Yangon-Thanlyin and Dagon-Thanlyin bridges, local products have a wider choice of market. Now, commodity chain patterns of local products are extended to a large area.

The economy of the study area depends heavily on the agricultural sector. Recently, farmers could earn more income by using multiple cropping systems and practicing intensive cultivation with changes in crop patterns and farming methods. Agricultural inputs are now distributed by private companies due to the development of transportation and communication networks. Physical factors are directly related to the types of crops, seasonal changes of cropping patterns and cropping intensity. In addition, social factors relating to settlement patterns and the workforce, which are the major forces influencing economic development for each sector, are presented.

This study focuses on temporal and spatial changes of economic conditions in rural areas. The temporal changes during the period 1985–2006 are emphasized and spatial variations are measured according to cropping intensity. Staff of three rice depots were interviewed, along with an investigation of the networks of their connections using commodity chain analysis or an input-output model.

1.1. Research Questions and Objectives

The paper investigates these research questions: Which sectors change significantly? How are they connecting with each other within commodity chains?

The objectives of this paper are as follows:

(a) To investigate the dominant sectors in the economy of the Kyauktan Township.
(b) To explore the economic sectors that have sprung up in the Kyauktan Township
(c) To examine the processes of economic development using commodity chain analysis

1.2 Literature Review

There are many articles concerning economic development. Linkages are the connection between firms involved in the same line of production or service. The linkages are of two kinds: backward or input linkages (where the firm "receives") or forward or output linkages (where the firm "supplies"). The advantage of a linkage chain is that it results in the reduction of costs and in greater efficiency

(Small and Witherick 1995). In this study, commodity chain analysis is used by connecting the same line of production or services. Todaro and Smith (2002) used an input-output model as the formal planning model, dividing the economy into sectors and tracing the flow of inter-industry purchases (inputs) and sales (outputs). For this study, the commodity chain is presented using an input-output pattern based on interviews. Rubenstein (2003) mentioned that "development" is a process of improvement in the material condition of people through diffusion of knowledge and technology. The United Nations Human Development Index (HDI) uses economic indicators, including gross domestic product (GDP) per capita, economic structure, workers' productivity, access to raw material and the availability of consumer goods. Although the researcher will use the same economic indicators, the emphasis for this paper will be on the pattern of commodity flows and the spatial variation pattern of agriculture, trade and manufacturing. The economic structure is represented by three types of sectors (primary, secondary and tertiary) according to the UN's HDI method. Myat Thein (2004) presented the economic development of Myanmar, showing sequential development by period (from the Socialist Period to the Market-Oriented Economic Period). But for this presentation, the author has dealt with the period 1985–2006. According to Mi Mi Kyi (2005), the establishment of a model farm is carried out through seven development works. Basic infrastructure improvement is needed for social development activities, especially for sustainability. After studying these books and articles, economic development was analyzed in detail using factors from field surveys and knowledge from studying this literature. This paper shows two types of methods for understanding the above objectives. The first method is the analysis of secondary data to show the development of the Kyauktan Township (Fig. 1). The second method is the analysis using an input-output model along the network of commodity chains for economic development processes.

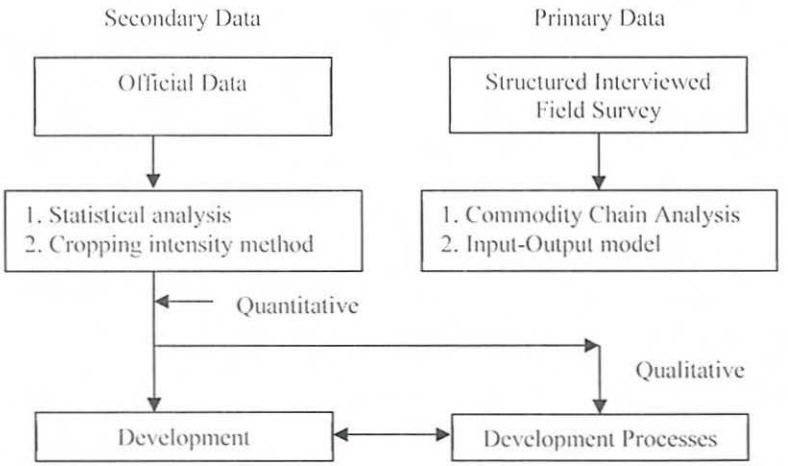

Fig. 1: Conceptual work flow of the research (Source: Khin Khin Soe)

2. Sources of Data and Method

2.1 Secondary Data Collection

To investigate the dominant sectors in the economy with the GDP data, secondary data were obtained from many relevant offices. Objective (a) is "To investigate the dominant sectors in the economy", while (b) is "To explore the economic sectors that have sprung up". To evaluate the agricultural development, data concerning cultivated land, yield per unit area and paddy production were collected. To evaluate the development of the manufacturing sector, data concerning numbers, types, location and capacity of rice mills and cold storage etc. were gathered. To evaluate the development of services and trade, the number of services and both retail and wholesale trade, along with the numbers of transportation routes, were taken from the respective departments.

2.2 Primary Data Collection

Field observation of the study area was conducted in order to understand the situation of the last 20 years, as well as the present situation and problems of the study area. To collect primary data, village tracts were divided according to the objective of field observations, i. e. to understand the agricultural factors such as double cropping, the use of agricultural implements, changes in farming systems, use of input, types of paddy and pulses, production and yield per acre in different village tracts. Commodity chain analysis was applied in economic development processes using structured interviews with data case study actors, included questions about the network between actors such as farmers (land owners), rice millers, rice and pulses depots, rice and pulses retailers, agro-chemical shops. This was in order to achieve objective (c) To examine the processes of economic development using a commodity chain.

3. Geographical Background of the Study Area

The processes of economic development mainly depend on the nature of the physical features. The Kyauktan Township is situated in the southern part of the Yangon Region. It lies between 16°30′ and 16°42′ north latitudes, and 96°22′ and 96°30′ east longitudes. The Kyauktan Township includes 9 wards and 43 village tracts. The total area is about 325.75 square miles (208,485 acres). It is about 20 miles from Yangon City and 12 miles from the Gulf of Mottama (Fig. 2). The population of the Kyauktan Township has increased gradually. Good communication, proximity to Yangon City and favorable weather support a large concentration of the population. The reclamation of cultivated land as well as the closeness to the sea is an opportunity for agricultural jobs and increases the population. In the 1901 census, the Kyauktan Township had an area of 304 sq miles (194,559.2)

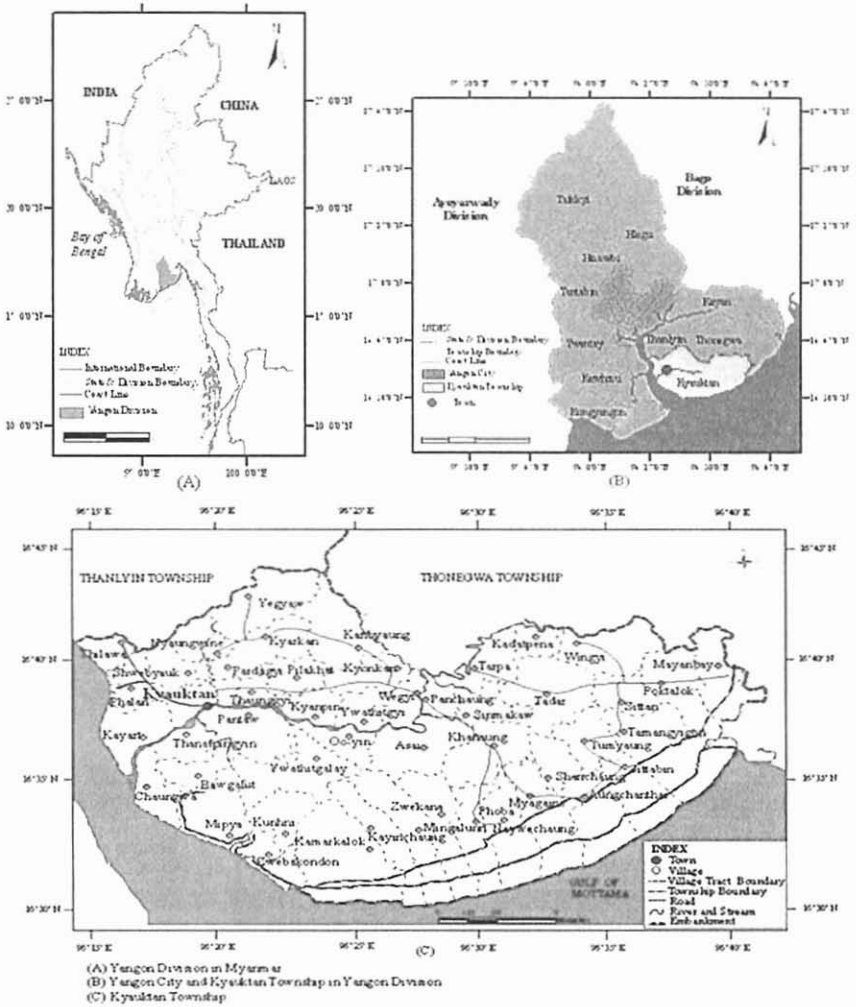

Fig. 2: Location map of Kyauktan Township (Source: Town, Villages and Boundaries are based on Topographic Map (1 : 63360), Water bodies are based on Land sat TM 7 Image (2000), Spectral Resolution is (30x30) meter)

acres and a total population of 61,875 persons. In 1911, the population had increased to 68,887. The increase within one decade was 7,012, and thus the annual growth rate within that period was 1.13%. Within five years from 2001 to 2006, the increase was 0.07% per year (Fig. 3) (Khin Khin Soe 1996). The average density of the population increased slightly from 353 persons per square mile in 1983 to 400 person per square mile in 2001 and 411 persons per square mile in 2006. This is due to change in the natural growth of the population (Fig. 3).

Year	Area (Sq. miles)	Population	Rate of Change Per Year	Density (Per Sq. miles)
1901	304	61875	-	203
1911	304	68887	+1.13	227
1921	350	51510	-2.52	147
1931	337	57235	+1.11	170
1941	n.a	n.a	n.a	n.a
1953	n.a	n.a	n.a	n.a
1963 *	325.75	72354	+0.88	222
1973	325.75	90510	+2.28	278
1983	325.75	115053	+2.71	353
1995 **	325.75	128931	0.95	396
2001 ***	325.75	130360	0.18	400
2005 ***	325.75	133915	0.67	408
2006 ***	325.75	134012	0.07	411

* Immigration and Manpower Department of the Kyauktan Township

** Immigration and Manpower Department the Kyauktan Township

*** Kyauktan Township Peace and Development Council

Fig. 3: Population growth and density of the Kyauktan Township (Source: Census of Myanmar)

4. Market Policy, Infrastructure, Technology Change and Economic Development

With the introduction of the market-oriented economy, many changes occurred in every sector. New technologies were introduced in agriculture, with the development of agriculture causing economic impacts such as secondary (manufacturing) and tertiary (depots, wholesales and retails) effects. Until 1990, there were only two roads – the Kyauktan-Thanlyin and the Pardagyi-Thilawa road – and after 1996, many new inter-village roads were constructed. The process of economic development could be conceptualized as shown in (Fig. 4). In 2006, the sector grew which is due to reclamation projects and green gram becoming an export crop. Therefore, income earnings from the agricultural sector were the highest of all sectors. The increase in economic sectors is reflected in the gradual increase of total GDP (Fig. 5).

In Figure 6, the production sector was growing at an increasing rate from 10.0% in 2002–03 to 11.5% in 2004–05, with the rate decreasing to 10.9% in 2005–06. This was due to a decrease in the fishery sector. With the high demand for fishery products, the number of fishermen increased, which resulted in competition for available resources and overfishing (Fig. 6). The growth rate of the trade sector increased from 0.05% in 2002–03 to 21.8% in 2003–04 and 22.6% in 2004–05, but decreased again to 19.2% in 2005–06. This was due to the increase in retail

and wholesale shops. The services sector increased from 11.1 % in 2002–03 to 40.6 % in 2003–04, but decreased again to 9.6 % in 2004–05 and 2005–06.

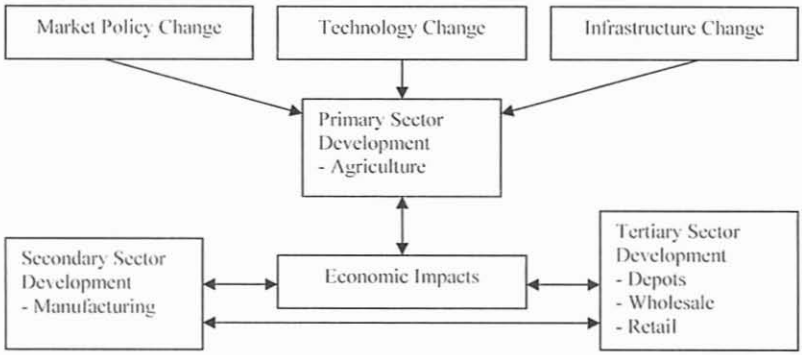

Fig. 4: Conceptual framework of economic development process (Source: Khin Khin Soe)

Year	Total	Growth Rate
2001–02	15962.7	n.a
2002–03	17126.3	7.3
2003–04	18702.9	13.8
2004–05	21347.5	14.1
2005–06	24058.0	13.0

Note: Figure is shown at 2000-01 Constant Prices

Fig. 5: Development of gross domestic product 2001–2006 (Source: Planning Department, Kyauktan Township)

Year	Production		Trade		Services	
	Value(Kyats)	Growth rate	Value(Kyats)	Growth rate	Value(Kyats)	Growth rate
2001–02	11130.4	n.a	4415	n.a	417	n.a
2002–03	12247.8	10.1	4417.3	11.1	463.2	0.1
2003–04	13524.3	10.4	4527.4	40.6	651.2	21.8
2004–05	15084.7	11.5	5549	9.6	713.8	22.6
2005–06	16623	10.9	6651.5	9.7	783.5	19.2

Fig. 6: Development of each economic sector in Kyauktan Township (Kyats in million) (Source: Planning Department, Kyauktan Township)

In the production sector, agriculture, fishing and manufacturing are distinctly expanded. This is due to the following factors:

(1) Most of the land in the study area is a vast alluvial plain with suitable types of soil for paddy cultivation; the hot and moist climate with average annual rainfall above 3130.46 mm (123.246 inches) favors cultivation of paddy and other crops.
(2) Its location in the coastal area and the many creeks and rivers provide both for inland and offshore fishing industries.
(3) After the construction of the new bridge, the Kyauktan and Yangon markets were greatly improved, with a new channel opened for investment in aquaculture. Based on the development of agriculture and fishing, other sectors also grew. Manufacturing activities such as rice milling, ice production and cold storage facilities expanded, leading to the increase in trade, both retail and wholesale, for local as well as foreign markets (Fig. 7).

Year	Agriculture		Fishing		Manufacturing		Trade	
	Value	G.R	Value	G.R	Value	G.R	Value	G.R
2001–02	7772.9	n.a	1522.5	n.a	1262.5	n.a	4415.3	n.a
2002–03	8484.7	9.2	1923.9	26.4	1262.5	n.a	4417.3	0.05
2003–04	8957.0	5.6	2603	35.3	1710.4	35.3	4527.4	21.8
2004–05	9743.2	8.8	3117.2	19.8	1998.5	16.8	5549.0	22.6
2005–06	10198.7	6.9	3523.4	11.7	2671.8	28.5	6651.5	19.2

Note: Figures are at 2000-01 Constant Prices

Fig. 7: Development of major sectors of production during 2001 to 2006 (Kyats in million) (Source: Planning Department, Kyauktan Township)

5. Nature of Economic Development

The major economic sectors that generate the economic development of the township are agriculture, trade, fishing and manufacturing. Of them, agriculture plays a major role in the development.

5.1 Cropping Intensity and Economic Development (1998 and 2006)

Cropping intensity is used as a criterion to measure the agricultural development. Myanmar achieves successful crop intensification programs for crops such as rice and pulses through the use of inputs and improved seeds (HYVs), capital and technology. Farm mechanization has proved to be time-saving as well as labor and money-saving, which are the essential components for increased cropping intensity (Toe Aung 2005). The cropping intensity method was calculated

using the formula from the Myanmar Agriculture and Irrigation Department. This method is sown acreage under all crops divided by net sown acreage under village tracts multiplied by 100.

Cropping Intensity = Sown acreage under all crops / Net sown acreage x 100

Cropping Intensity for all village tracts is presented in (Fig. 8, Fig. 9a and 9b). There are 8 wards and 44 village tracts in the study area. Farmers tried to extend their cultivated areas and practiced intensive cultivation with mixed and multi crops for the purpose of gaining extra income, with cropping intensity therefore becoming higher. In the Kyauktan Township, 25 village tracts and wards have higher intensity, with a 150–200% intensity in 2005–06 (Fig. 8). They are located in the northern part of the township. This area has high intensity due to the following factors:

(1) Most of the double cropped areas grow green gram.
(2) The income of farmers in these areas is more from green gram than from other sources due to it being an export crop. Consequently, fertilizers, pesticides, high yield varieties and other farming equipment are used more for the increase in income of green gram.
(3) As the area is located away from the Mottama Sea, it has no intrusion of marine water and has no soil erosion by marine effect. The soil is mostly meadow alluvial soil, and the method has changed to mechanized farming from traditional farming since 2001.

Years	Total wards and village-tracts (% in intensities)		Total
	(100%–150%)	(150%–200%)	
1998	38	14	52
2006	23	29	52

Fig. 8: Changes in cropping intensities of wards and village tracts (1998 and 2006) total and percent (Source: Calculation, based on Land Records Department Data)

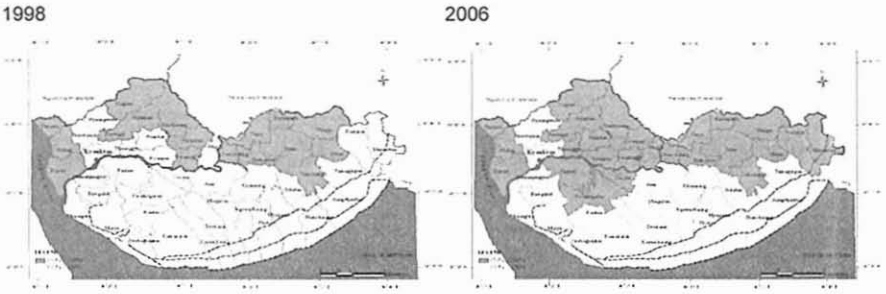

Fig. 9a, 9b: Changes in cropping intensities of wards and village tracts (1998 and 2006) (Source: Calculation, based on Land Records Department Data)

6. Commodity Chain Pattern and Economic Development Processes

Whatmore (2002: 58) said that "agribusiness is agri-food chain "complexes", and "regimes" are complementary as they throw light on different aspects of the institutional structure of the contemporary agri-food system." This paper is based on Whatmore's method. This network chain includes primary, secondary and tertiary sectors.

6.1 Agri-Food Chain Analysis of Rice Millers

For agri-food, chain analysis was focused on three rice mills out of the total of 154. The actors connecting the networks, such as rice millers, farmers and rice depots, were interviewed (Fig. 10). Rice mill (1) is the Tabin Shwehti rice mill, established in 1991. The mill is located on Strand Road, Shwegon Ward. It was previously the Aung Mingalar rice mill, started by three shareholders. But in 1994, it became the Tabin Shwehti rice mill (1), with only one owner. He wanted to establish a rice mill due to the areas of high paddy production. With the opening of Yangon-Thanlyin Bridge, there was an increase in demand. It could mill up to 15 tons of rice per day in 2005. With a technology improvement and an increase in milling power, it could mill 15–25 tons in 2006. This mill has more change because it is near both the creek and the road. Water transport is cheaper than transport by car.

6.1.1 A Case Study of Rice Mill (1): Tabin Shwehti Rice Mill

When the mill was first established, there were only 7 workers, but it has now increased to 14 workers. The milled rice was sold to retail shops in Kyauktan Town and his business gradually expanded in 2001. Tabinshwehti (2) is owned

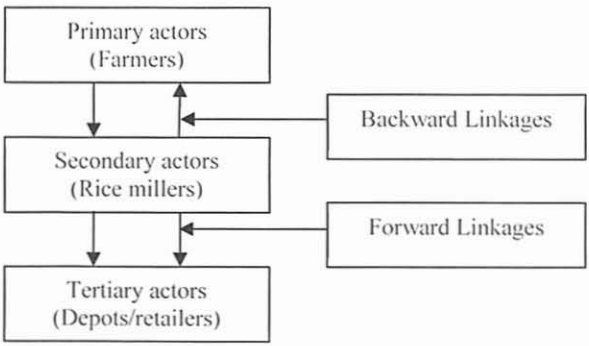

Fig. 10: Commodity chain pattern of agriculture (Source: Khin Khin Soe)

by the same owner. Farmers depending on this mill are from nine village tracts (Fig. 11 and Fig. 12). About 70% of the milled rice is for sale. The price for milling a basket of paddy was 200 kyats by electricity before 1985. In the study period, the price for milling a basket of paddy was 400 kyats by electricity and 600 kyats by diesel engine.

When milling paddy, only paddy husk is obtained by the rice miller. Rice and broken rice are sent to Kyauktan Town for sale, while bran is bought by fish farms of Twantay Township. The milled rice bags were sent mostly to the Myat Thida Rice Depot and a small amount to other rice distributors. When the mill was first established, the required machinery was bought from Yangon. But now, the required parts are obtained locally (Kyauktan). Food and clothes for the mill workers are obtained from retail shops in Kyauktan Town. There are 40 farmers connected with the mill. Three of them were also interviewed.

Farmer (A1)

Farmer (A1) started farming in 1993 at Kanbyaung Village. The size of the farm is 12 acres. He had previously been a casual laborer for the last 12 years. Sunflowers were grown as a secondary crop. The cultivation of sunflower started with 2 acres, but it was not grown in 1995 anymore.

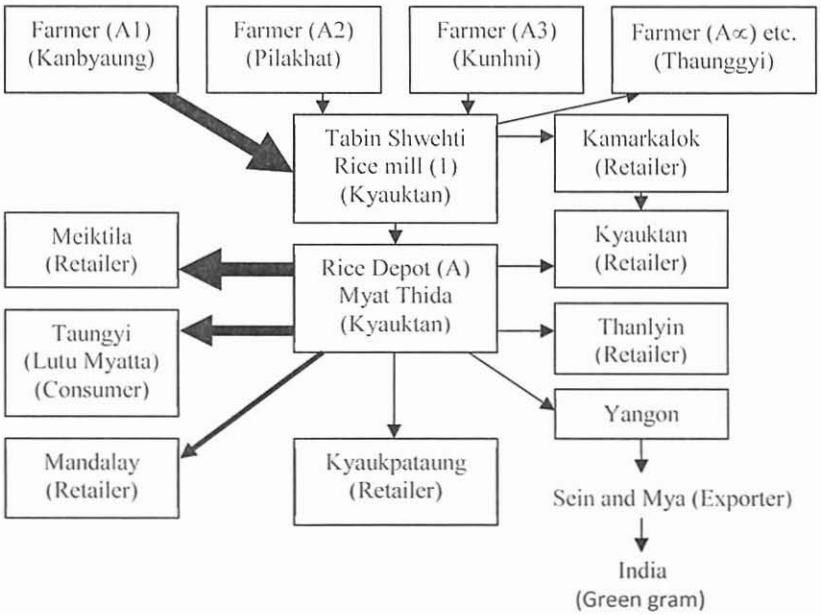

Fig. 11: Commodity chain of rice mill (1) (Source: Personal Interviews 2006 and 2007)

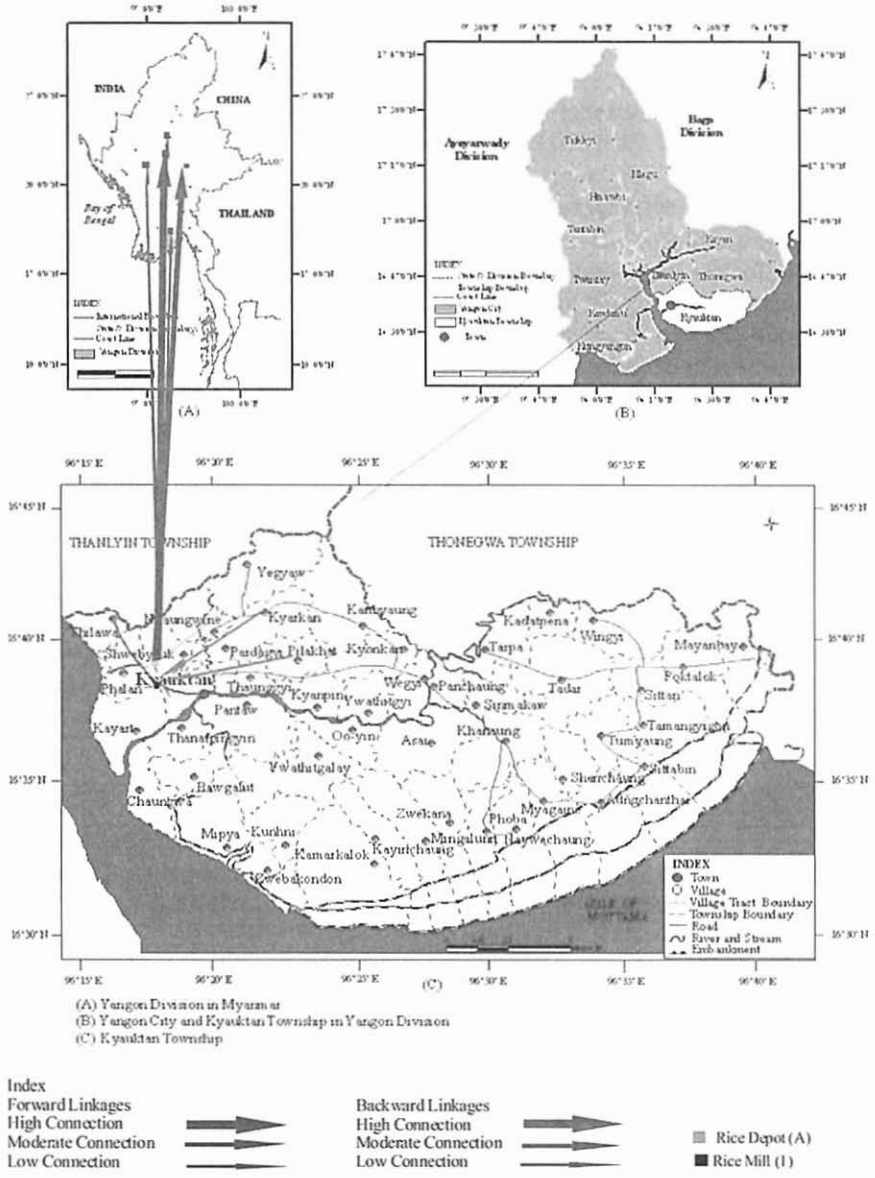

Fig. 12: Linkages of rice mill (1) and rice depot (A) (Source: Personal Interviews 2006 and 2007)

Sunflower was cultivated with the encouragement of the state for self-sufficiency in edible oil. After the introduction of the market-oriented economy, a large amount of foreign income was channeled into the agricultural sector. But

due to high investments and low profit for sunflower, the state encouraged the farmers to grow green gram as an export crop. In 2001, the cultivation of green gram was started with 3 acres, but the area of cultivation has now increased to 5 acres. The income from pulses cultivation was 3 times higher than that of sunflower. Farming techniques for both paddy and green gram were changed from traditional methods to modern farming techniques. The required machinery could be directly bought from Yangon. The farmer has to buy from various companies and agro-chemical shops from Kyauktan or Yangon. Therefore, it is found that the change to a market–oriented economy, the construction of inter-village roads and the opening of the new bridge all encouraged farmers to make improvements in farming. Therefore, it can be said that the development of farming encouraged the development of related industries and commercial activities.

Farmer (A2)

Farmer (A2) started farming in 1958 at Pilakhat Village with 20 acres. Previously, apart from rice, cultivation of sunflower had started with only 4 acres from 1980 up to 2006 for self-sufficiency of edible oil upon the encouragement of the government. But sunflower needs more care and uses more fertilizers, and although more fertilizers are used, sunflower is often destroyed. Green gram emits nitrogen. In 2000, he started to cultivate 3 acres of green gram at a risk. Income from green gram is 3 times more than that from sunflower. The cultivated acreage has now increased to 5 acres. Farming techniques changed from being cattle-driven to machinery-driven since 2003. He previously owned 10 cattle. But now, due to the use of mechanized farming methods, the number of cattle has decreased. Fertilizers and pesticides are purchased from Kyauktan. A bag of fertilizer was previously used for 1 acre, but with the cultivation of green gram, which emits nitrogen, the amount of fertilizers used decreased. So the farmer invested more with the hope of high benefit. Therefore, it can be said that with the development of the economy, the farmer can now use more basic needs and luxury goods, which are obtained from Kyauktan Town and Yangon.

Farmer (A3)

Farmer (A3) started farming in 1983 at Kunhni Village with 28 acres. Only paddy was grown on that land. The farmer did not grow green gram due to the fact that the underlying rocks are lateritic. So the farmer practiced an intensive cultivation system. He had 12 cattle in 1990, but now there has been a decrease in the number of cattle. Farming techniques changed from cattle-driven to machinery-driven, using more inputs since 2001. Therefore, cropping intensities have increased. It can thus be said that the development of farming encouraged the development of related manufacturing, services and complementary activities.

A Case Study of Rice Depot (A)

The owner of the Myat Thida Rice Depot was interviewed as a part of the rice commodity chain. The depot is located on Strand Road, Eastern Ward. The business was started in 1982. The owner's previous job was working on the farm owned by his parents at the Asai Village Tract. The business was started with about 5 laborers, and 12 workers are now employed. He started with just 50 bags of rice. But after the opening of the bridges, he received increasing demand and can now send the rice to Bayintnaung Rice Depots. With the success in the distribution work, he extended his business to Taungyi, Mandalay, Meiktila, Kyaukpadaung and Yangon (Fig. 13). Most shipments are sent to the Meiktila Rice Noodles Shop and Taunggyi (Lutu Myitta Rice Noodles Shop). The turnover of the depot amounts annually to Kyats 1000 lakhs with Meiktila and Kyats 300 lakhs with Taunggyi.

Mandalay and Meiktila can grow only the Sinshweli strain of rice. If they wish to acquire other types of rice, they obtain them from the Kyauktan depot. At present, it deals with 3000 bags of rice monthly. In 2002, this depot started to work with green gram, with about 2000 bags of green gram per month. In 2005–06, the green gram was exported to India through (Sein and Mya Company). 70% of the gram sent to the various depots is received by Myat Thida Depot, which has now extended its complementary depots to Taungtha, Myingan and Mahlaing.

6.1.2 A Case Study of Rice Mill (2): Chan Myae Rice Mill (Kyauktan Town)

Chan Myae rice mill was established in 1998. It was formerly known as Sein Kala. It could mill 15 tons of rice per day. The mill is located in Kanbyaung Village Tract. The name of this mill was changed from Sein Kala to Chan Myae in 2002. When the mill was first established, there were only 5 workers, but it has now increased to 12 workers (Fig. 14 and Fig. 11). About 50 farmers come and mill their rice from Kyarkan. The price for milling a basket of paddy was Kyats 250 by diesel in 2003, Kyats 1000 in 2006, and is Kyats 700 by paddy husk now.

The milled rice bags were sent mostly to the U Chan Sein Rice Depot and a small amount to other rice retailers and rice depots. When the rice mill was first founded, the required machinery was bought from Yangon. But now, the machinery required can be bought in Kyauktan. The owner connects with 8 farmers, 4 of whom were also interviewed.

Farmer (B1)

He started farming in 1982 at Kanbyaung Village with 10 acres of land. In 2001, this farmer started to grow 5 acres of green gram. But with the increase in the

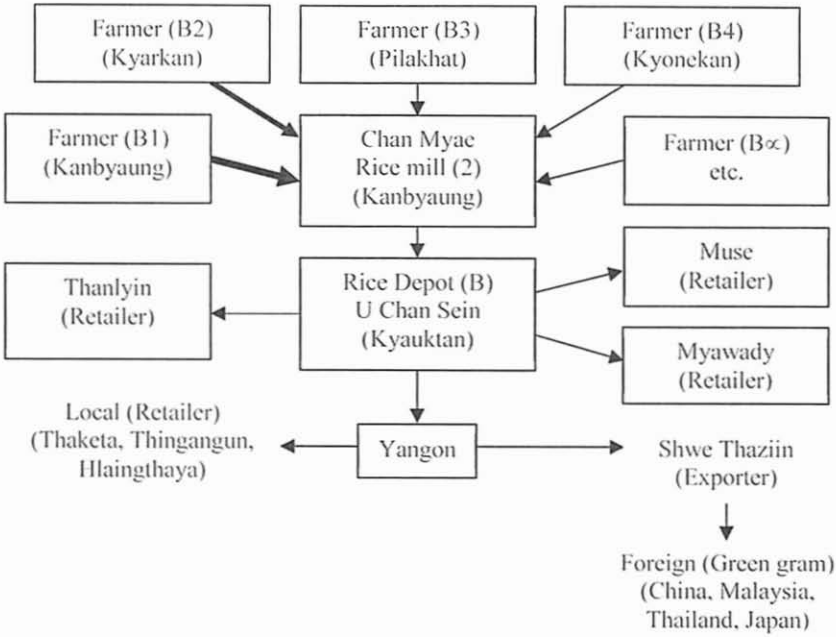

Fig. 13: Commodity chain pattern of rice mill (2) (Source: Personal Interviews 2006 and 2007 July.)

price of pulses, the sown acreage increased to 8 acres, and seeds for green gram were bought from Thonegwa and Khayan. Income from green gram is about three times higher than that of sunflower. In 2006, this farmer was not only successful in paddy cultivation, but also in green gram. In the same year he exported green gram to India via the U Chan Sein Rice Depot.

Farmer (B2)

Farmer (B2) started farming in 1999 at Kyarkan Village. The total size of the farm is 20 acres. This is a traditional business. The state encouraged the farmers to grow green gram as an export crop. In 2000, the cultivation of green gram was started with 6 acres. It was started with seeds from Thonegwa, but now uses only local seeds. With the increase of demand in foreign markets and the rise in the price of green gram, the cultivated acreage increased to 12 acres. Before 1980, all paddy produced could be sold to the market, except for home consumption. But after 1980, the government bought the paddy at the rate of 12 baskets per acre from the farmer and the surplus could be sold to the brokers or merchants. Since 2001, farming has changed from traditional methods to modern mechanized farming methods. Farmer (B2) also grew betel vines, for consumption as well as to sell in the local market. So this farmer earns extra income. Therefore, it can be said that, agricultural surplus contributed to the development of the economy.

Farmer (B3)

Farmer (B3) started farming in 1970 at Pilakhat Village with 14 acres. In 1998, the cultivation of green gram was started with 8 acres. But with the rise in the price of green gram, the acreage increased to 14 acres. The farmer previously owned 8 cattle but as the cultivation of green gram involved higher income, farming techniques in both paddy and green gram were changed from traditional to modern methods, so the number of cattle was decreased to 4. Since 1999–2000, a Model Farm Project has also been implemented. In the first year of the project, 12 village tracts of the township area were designated as a Model Farm Zone 1 (Mi Mi Kyi 2005). Pilakhat Village was included in this first Model Farm Zone. In order to implement the objective, a crop rotation system was started and cultivation technology was transferred to the farmers. Consumer goods were bought from the Kyauktan Township, but luxury goods were obtained from Yangon. The farmer could thus use improved farming implements, and related industries and complementary activities also developed.

Farmer (B4)

He started farming in 1975 at the edge of Kyonekan Village near Kanbyaung Village. The size of the farm is 12 acres. The farmer grows paddy and green gram alternately on these 12 acres. When green gram became an export crop in 2001, he started to grow it. He had previously bought seeds from the Thonegwa Township. With a change of technology, the farming method was changed from transplanting to broadcasting in 2003. Previously, one bag of fertilizers was used for an acre of paddy cultivation. But at present, as the price of fertilizer has risen, only a small amount of fertilizer can be used. As the economic conditions have improved, luxury goods are now bought from Yangon and consumer goods from Kyauktan.

A Case Study of Rice Depot (B)

The U Chan Sein Rice Depot is located in Lan Thit Street in Eastern Ward of Kyauktan Town. The business was started in 2000. Previously, the owner had operated in the dried fish industry. His rice depot not only caters to rice, but also deals with pulses and agro-chemicals. With a change to a market–oriented economy and an increased demand for pulses in foreign markets, more agro-chemicals were needed. After the opening of the bridge, delivery from various village tracts to his depot was easier, as was forwarding them to retailers and consumers as well as to other local and foreign markets. The business was started with 6 workers, but now 15 workers are employed. After the construction of inter–village roads, most of the mills from various village tracts and town send rice to the cities. He started with just 25 bags of rice. He sent the rice to Thanlyin, Yangon, Thaketa and Thingangyun Township. But in 2005, he started to send green gram

to foreign markets, especially through (Shwe Thazin Export Company) to India, Malaysia and Thailand. Now, he has become a large distributor and sends the rice to China through Muse. At present, it deals with 3000 bags of rice monthly. Of these, 20% are sent to Thanlyin and 80% to Yangon. With a change of technology, many rice mills have changed their milling capacity. Therefore, local farmers can easily and quickly mill their rice. Hence, many rice depots, brokers and many retailers have grown in Kyauktan Town.

6.1.3 A Case Study of Rice Mill (3): Aung Thukha Rice Mill

Rice mill (3) is the Aung Thukha Rice Mill. It was established in 1998 and could mill 15 tons of rice per day. It is located on the Strand Road of the Eastern Ward (Fig. 14). He established a workshop at the rice mill. The mill was established as a traditional business. When the mill was first established, there were only 10 workers, but it has now increased to 20 workers. As it is near the river and with an increased number of boats, villagers can easily transport paddy from various villages to the mill. This mill was thus in high demand for milling rice. Therefore, the number of workers increased. 70% of those who came to the mill were brokers. Some milled the rice for home consumption, while 30% milled it for sale. The price for milling a basket of paddy is different for towns and villages. This is a fact, and an incentive and invitation to mill there. The milled rice bags were sent mostly to Ko Htay Lwin and Brothers Depots and a small amount to other rice

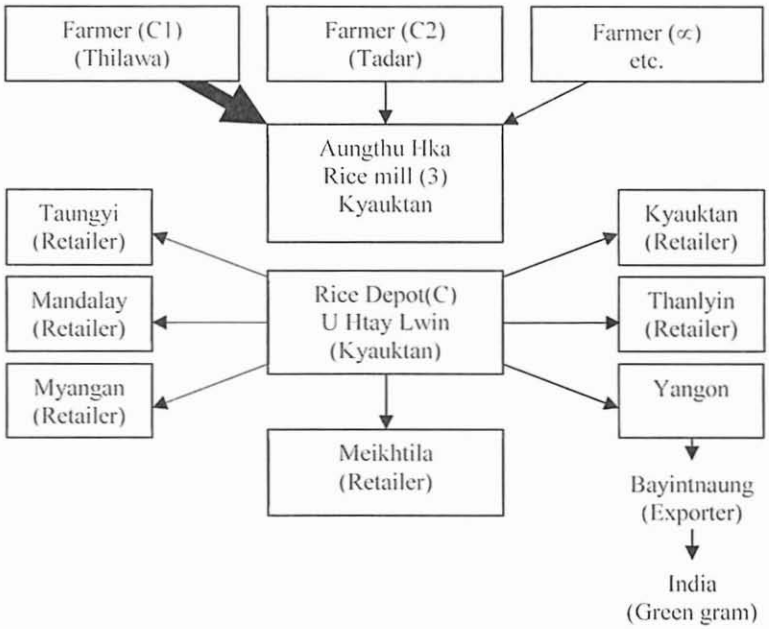

Fig. 14: Commodity chain pattern of rice mill (3) (Source: Personal Interviews 2006)

depots and retailers. This mill connected with about 30 farmers, three of whom were also interviewed.

Farmer (C1)

Farmer (C1) started farming in 1990 at Thilawa Village. The size of the farm is 23 acres. The farmer grew only paddy. Green gram and sunflower were not grown due to unsuitable soil. The farmer is faced with the intrusion of salt water. The state distributed fertilizers and pesticides to the farmers until 1994. The transportation network improved, and with the systematic use of HYVs seeds, fertilizers and pesticides, many agro-chemical shops sprang up in this area and the product could be easily obtained. Since the farmer owns a large acreage, his family could thus survive on income from farming. With a change of farming methods from traditional to the use of mechanized techniques, the yield per acre increased. Therefore, it can be said that the development of farming has led to an improvement in the economy of the farmer.

Farmer (C2)

Farmer (C2) started farming in 1995 at Tadar Village with 26 acres. Apart from rice, various vegetables were grown for domestic consumption. The transportation and communication system of Tadar Village has greatly improved. It is thus easy for the farmer to trade with other neighboring villages and towns. In addition, the farmers in Tadar Village have more knowledge, as they are served by good infrastructure such as telephone, newspapers and various journals. Farmer (C2) started to grow green gram as a pioneer once he knew about its high price and importance as an export crop. Green gram started to be grown in 1999 with 10 acres. The yield per acre increased to 13 baskets in 2005. With the increase in the yield per acre, the sown acreage of green gram increased to 20 acres in 2007. He has the highest yield per acre within the township. He sells all his products to the U Htay Lwin and Brothers Rice Depot in Kyauktan Town. With an improvement in the economy of the family, he can now afford to buy luxury goods from Yangon. It can thus be said that the economy of Farmer (C2) is based on agriculture.

A Case Study of Rice depot (C)

The U Htay Lwin and Brothers rice merchant was interviewed as a part of the rice commodity chain. This Rice Depot is located on Lan Thit Street, Ale Paing Ward. The business was started in 1995 with a capital of Kyats 5 lakhs and was extended to Kyats 10 lakhs in 1996. His rice depot not only caters to rice but also deals with pulses and agro-chemicals. The business was started with 5 workers, but in 2003 the number of employed workers increased to 20 due to the expansion of his business, with an increased investment of Kyats 500 lakhs. Now there

are 30 workers. Rice from other rice mills is also bought, but only if it is up to the standard. It is connected with the Aung Thukha, Tabin Shwehti (1), (2) and Shwe Naga rice mills. This depot sells rice, beans and agro-chemicals both retail and wholesale. At the beginning, only 1000 bags per month were sent to Yangon, but it has now increased to 20,000 bags per month. Of them, 80 % are sent to Yangon (Bayintnaung Wholesalers), 10 % to Myingyan, 3 % each to Mandalay and Taunggyi, and 2 % each to Thazi and Meiktila. In 2003, green gram became an export to China through the Bayintnaung Wholesale Centre. The opening of the rice depot has been of great benefit to the local people. It provides jobs to the local people as well as neighboring villagers. The network according to commodity chain of receiver (backward linkages) and supplier (forward linkages) is shown in (4.5). It includes actors such as rice millers, rice depots, farmers and rice retailers.

There is no significant difference between the trade networks of rice mills (1), (2) and (3). However, there is a great difference in the trade networks of rice depots. The trade networks of the Myat Thida Rice Depot (A) and the U Htay Lwin and Brothers Merchant (C) are mostly connected with Central Myanmar (Mandalay, Meiktila and Kyaukpadaung). Foreign market export is through the Sein and Mya Exporting Company and Bayintnaung Wholesale Center. The trade networks of the U Chan Sein Rice Depot (B) are mostly connected with Lower Myanmar (Yangon, Thanlyin and Myawady). Foreign market export is through the Shwe Thazin Export Company. Most of the trade networks are for the export of green gram to foreign markets, but these trade networks have different connections between depots and exporting companies. Therefore, the Kyauktan Township is closely interrelated with the other parts of Myanmar through the commodity chain. Therefore, it can be said that the economy of Kyauktan Township expands year by year.

7. Conclusion and Findings

The main economic activities practiced in the Kyauktan Township include production, services and trade. Of them, production and trade are significant in the economy of the township. Agriculture is a major economic sector of the Kyauktan Township. More than 75% of the township area is used for agriculture. Agriculture accounted for Kyats 1098.7 (in millions) or 42.4% of GDP in 2006. The farmers now grow rice as well as green gram and betel vines. The farmers depend more and more on the income earned from green gram. Due to the construction of the Yangon-Thanlyin and Dagon-Thanlyin Bridges, infrastructure has greatly improved. Hence the farmers have changed from using draught animals to mechanized farming. There has been an increase in cropping intensity. Cropping intensity increased from 100%–150% in 1998 to 150%–200% in 2006. The government has now stopped providing farm inputs except for agricultural loans, with agro-chemical shops thus having sprung up. According to the development of rice mills, the number of traders and brokers also increased. Manufacturing

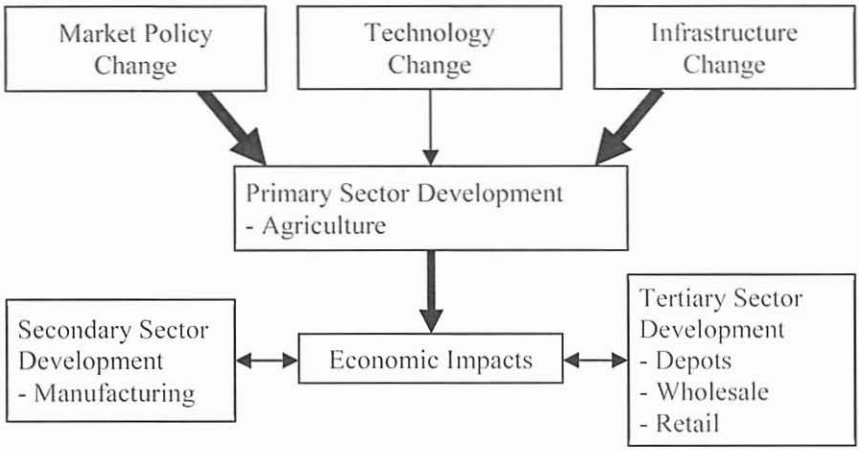

Fig. 15: Economic development processes of Kyauktan Township (Source: Khin Khin Soe)

activities are based upon the locally produced raw materials, making up 11.1% of GDP in 2006, which is about Kyats 2671.8 (in millions). Most of the trade networks are connected with the export of green gram to foreign markets. Therefore, the Kyauktan Township is closely interrelated with other parts of Myanmar through the commodity chain. Finally, it is worth mentioning the three objectives set out in the introduction. The first objective was to investigate the dominant sectors in the economy. According to GDP, production and trade are the major contributors of economic development. The second objective was to explore the economic sectors that have sprung up. With the development of the agriculture and fishing industries, the manufacturing industry also accelerated. The third objective of the study of this research was to examine the processes of economic development using commodity chain analysis. It is assumed that it is necessary to analyze the interrelationships of linkages between the three major economic sectors to fully understand the development processes. Hence, economies of the township expand year by year not only within the township, but also throughout the whole country and to foreign markets.

Suggestions

For agriculture development, it is necessary

- To control soil erosion and soil depletion
- To manage the use of fertilizers and pesticides systematically.
- To distribute the knowledge of using modern farming methods and handling machines.

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