

Economic Analysis of Green Mung Bean in Selected Area, Myanmar

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Abstract: As mung bean is one of the income remunerative crops in Myanmar, this study was focus on economic analysis and market performance of green mung bean producers and market intermediaries along the supply chain in selected areas of Nay Pyi Taw and related market regions. The objectives are to understand the existing participants, marketing activities, and distribution channel in the marketing system of mung bean and to analyze the cost and profitability of mungbean producing farmers and market participants along the channel in the study area. Main marketing actors are farmers, village collector, local wholesalers, and wholesalers (exporter) in Mandalay and Yangon markets. Marketing activities analysis showed farmers still have lower standard of grading and standardizing and also limited source of market information as compared to other market participants been indication to upgrade an efficient market information system to all. In the marketing channel, farmers preferred to sell local wholesalers and only very few farmers sold to village collector and most of the farmers in the study areas have directly contact with the local (townships) wholesalers. Local wholesalers traded their goods to the main agents such as Mandalay and Yangon wholesalers/exporters. In the results of profitability analysis, Farmers got the benefit cost ratio of 1.97 in mung bean production in the study area implied that for every 1.00 MMK invested in mung bean production in the area, 0.97 MMK was returned, thus further confirming the profitability of the enterprise. Among the market intermediaries the calculated absolute marketing margins for exporters to some Asia and EU markets obtained the higher margin than the other market participants.

Keywords: Mung bean, Marketing activities, Marketing channel, Marketing margins, Profitability

1. Introduction

In Myanmar, pulses started grown under the British Rule (1885-1948) brought from India. Starting from these days, a significant proportion pulses exported to India and continued today. One of the major reasons of increased productions of pulses is that pulses can be planted at the leftover moisture of the monsoons after monsoon rice with not much requiring irrigation facilities in the absence of rain. This makes their cultivation undemanding and cost effective with no additional allocation of resources required. Furthermore, the shorter growing period from plantation to harvest and a ready market with a steady demand coming from neighboring India pushed the beans and pulses production further (Myanmar Insider, 2015).Pulses followed the second place of total crop sown area. Beans and pulses in Myanmar are normally grown immediately after the monsoon rice in the delta region (lower parts of Myanmar) and are grown as a monsoon crop in the central plain areas and Shan State (East part of country). About 70 percent of beans and pulses are grown during the winter season, with average yields ranging between 1.0-1.3 MT/hectare. There are about eighteen varieties of pulses being cultivated commonly in Myanmar; the most significant pulses are black gram (matpe), green gram (mung bean), pigeon pea (Toor whole), soy bean, chick pea and cow pea. Of these, black gram, green gram and pigeon pea, are the most important, accounting for over 80% of the total export value and 70-75% of total bean and pulse production.

Green mung bean (binomial name is *Vignaradiata*), also known as green bean are mainly cultivated in India, China, Thailand, Philippines, Vietnam, Indonesia, Myanmar, Australia, Iran, Eastern Africa and Bangladesh, but also in hot and dry regions of southern Europe and southern USA.

In Myanmar, green mung bean is mainly grown in two seasons such as monsoon and winter. Depend on the market demand; farmers grew different varieties of mung bean with different times (Pedi Shwewar: Jan-Feb, Anya Shwewar: May-Oct, TaungooShwewar: Oct-Nov, Pakokku green mung bean: Oct-Dec). Producing States and Divisions are Kachin, Kayin, Kayar, Sagaing, Bago (East and West), Magway, Mandalay (Nay Pyi Taw), Mon, Shan (North), Yangon and Ayeyarwady. Among them Yangon and Bago (east) Divisions mainly produced Pedi shwewar, Bago and Magwe produced AnarShwewar and others regions produce green mung bean, respectively. Table 1 presents the trend of green mung bean sown area, yield and production in Myanmar during 2007/08 to 2016/17. Highest sown area was reported at 1221 thousand hectare in 2016/17 with a production of 1597 thousand ton. This records an increase from the previous number of 1210 in 2015/16. Total sown area of mung bean is updated yearly, averaging 1066 thousand hectare from 2007/08 to 2016/17. The averaging yield per hectare reached a high of 1.32 ton in 2015/16 and a record low of 1.13 ton in 2007/08.

Table 1: Sown area, yield and production of green gram in Myanmar

Year	Sown acre (000' ha)	Yield (Ton/ha)	Production (000' Ton)
2007-2008	1066	1.13	1204
2008-2009	1039	1.21	1257
2009-2010	1076	1.21	1303
2010-2011	1121	1.29	1448
2011-2012	1098	1.22	1344
2012-2013	1087	1.28	1388
2013-2014	1123	1.29	1452
2014-2015	1173	1.31	1536
2015-2016	1210	1.32	1596
2016-2017	1221	1.31	1597

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Source: data from Ministry of Agriculture, Livestock and Irrigation (MOALI)

As a result of this diversity in geographic and seasonal production, mung bean offers a longer marketing season than other pulses. While most mung bean from Upper Myanmar gets sold through Mandalay for export to China, some finds its way south to Yangon for export to other Asian markets. The main flow of mung bean was from the producing areas to the respective town local markets and reached to the wholesale markets in Yangon and Mandalay. Besides, pulses are coming into the Yangon wholesale market (BayintNaung Crop Exchange Center) all year round so that old crops and new crops usually overlap. BayintNaung Crop Exchange Center was the focal point for the marketing of dry goods including pulses. Buying and selling wholesale prices of large scale and town wholesaler's distribution price are happening in this market. Then, Mandalay market (Mandalay Crop Exchange Center) which is the second largest one located in the central part of Myanmar acts as the distributor for the Upper Myanmar. Therefore, among the pulses markets, two important pulses markets were Yangon in Yangon Region and Mandalay in Mandalay Region. The price signal of mung bean from the international market concerned was the price of Indonesia, Malaysia, Singapore, EU markets and China market. Because, China is the neighboring country of Myanmar as well as the main importer of Myanmar pulses while Indonesia, Malaysia, Singapore and EU markets were also importing countries from Myanmar. The export prices of Myanmar pulses depended on the demand of the other importing countries. Therefore, Indonesia, Malaysia, Singapore and EU markets and China were the potential and promising markets for Myanmar.

The economics activities analysis has impact on the income of producers, village collectors, local wholesalers, wholesalers and exporters. This information could help farmers, market participants and others, who need the information for their respective purposes. Improving marketing facilities for agricultural crops and mung bean farmers in particular would enable to plan their production more in line with market demand, to schedule their harvests at the most profitable times, to decide which markets to send their produce. Therefore, it is necessary to find out the profitability and the market performance of mung bean production. The broader objective of the study is to investigate the economic performance of the green mung bean growers and market participants in the selected areas of Myanmar. The specific objectives are to: (i) understand the existing participants, marketing activities, and distribution channel in the marketing system of mung bean (ii) analyze the cost and profitability of mungbean producing farmers and market participants along the channel in the study area.

2. Research Methodology

Data for this study were collected mainly from primary and secondary sources information. The primary data were collected with two sets of questionnaires. The first set of questionnaires were administered on mung bean farmers information on socioeconomic information, mung bean

production and marketing data such as cost of production and output of marketable surpluses, sales, major buyers, prices, sales outlets etc. The second set of questionnaires were administered on market intermediaries collecting the marketing activities to generate information on costs, prices, returns, quantity, handling, transport, sales outlets, processing, packaging, and storage etc. Primary data was collected during the cropping seasons of 2017 and 2018 from the mung bean growing farmers and market intermediaries. Farm level primary data were collected and analyzed from 71 mungbean growing farmers in two villages at each of Tatkon and Pyinmana Townships and 22 related market intermediaries included in the Nay Pyi Taw, Mandalay and Yangon during October, 2017 to January, 2018. A total of 22 market intermediaries consist 1 village collector, 14 local wholesalers, and 7 wholesalers/exporters were interviewed with different set of structured questionnaires

Descriptive analysis was used to obtain the general characteristics of the sampled participants. As a basic analysis mapping is the identification of the actors participating in the production, distribution, marketing and sale of a particular product. A sequence of product flow from producers to consumers by using various marketing function is marketing channel. This mapping assesses the characteristics of actors, profit and cost structures, flow of good throughout the chain etc.

Enterprise budget analysis enables to show the differences in net benefits under several resources allocation in such a way as to help farm management decision. Therefore, this study applied the cost and return analysis, to determine the profitability of the mung bean production in the study area. Both cash and non-cash items were included in the estimation of material cost and labor cost. Non-cash items for material cost included seeds, family labor, owned working animals, farm yard manure and cost of inputs. Cash payment for labor included hired labor payment for production. Under the above categories gross benefit or total revenue is multiply output per unit area and the price received by the mung bean growers. Enterprise budget contains several cost components such as total variable costs were taken into account per unit basis of; (1) Material input cost, (2) Hired labor cost, (3) Family labor cost and (4) Interest on cash cost. Table (2) expressed the relative indicators used in the study. The first measurement was the deduction of the opportunity cost and total variable cash costs from gross benefit. This return was referred to as "*return above variable cost*" or "*gross margin*". The second measurement was the difference between total gross benefits or total returns and total variable cash costs, excluding opportunity costs. This value was referred to as "*return above variable cash cost*". The return per unit of cash cost could be calculated by gross benefits per total cash costs. The return per unit of capital invested could be calculated by gross benefits per total variable costs. Breakeven analysis for prices and yields is the useful information of enterprise budget. Breakeven analysis is a useful to calculate various combinations of price and yield that will cover anticipated costs (short-term production decisions). If anticipated receipts are greater than anticipated variable costs, you should continue the enterprise. If

anticipated receipts are less than variable costs, losses would be minimized by not continuing the enterprise. Benefit cost ratio was used as profitability measures for each crop enterprise computing total gross margin or return above variable cost and return above cash costs (Olson 2009).

Table 2: Relative Indicators used in the Study

Indicators	Unit	How to calculate
Return above variable cost	MMK/ha	RAVC=GB-TVC
Return above variable cash cost	MMK/ha	RAVCC= GB -TVCC
Return per unit of cash cost	MMK	GB /TVCC
Return per unit of capital	MMK	GB /TVC
Break - even yield	MT/ha	TVC/Average price per MT
Break - even price	MMK/MT	TVC/Average yield per hectare

Where;

GB = Gross Benefit

TR = Total Revenue

TVC = Total Variable Cost

TVCC = Total Variable Cash Cost

RAVC = Return Above Variable Cost

RAVCC = Return Above Variable Cash Cost

Identifying the distribution of benefits of actors in the chain is the marketing cost and margin analysis. Marketing margins reflect both the cost and the profit of marketing agents. Thus, marketing margins are differences between prices at different transactions in the marketing channel. The percentage share of the final price that is taken up by the marketing function is known as the marketing margin. As the theoretical concept of marketing margin, it may be defined in two ways: (1) as the differences between final price and what farmers receive and (2) as the price of marketing services provided. The price paid by the eventual exporter is thus made up of the amount of money paid to the farmer for their product plus all of the costs involved and a reasonable return to those doing the mungbean marketing and processing. In this analysis marketing margins of wholesalers and exporters were estimated by deducting the purchase price of mungbean from its sale price. The net margin (profit) was calculated by deducting marketing cost from the marketing (gross) margin. When marketing margins at different levels of the marketing channel are to be compared, it is common to use the exporter price as to common denominator for all margins (Guvheya 1998). The following are some commonly used indicators in the analysis.

(a) Total Gross Marketing Margin (TGMM) $TGMM = \frac{\text{Exporter Price} - \text{Farmer's Price}}{\text{Farmer's Price}} \times 100$
 Margin of Village Collector = $\frac{\text{Exporter Price} - \text{Village Collector's Price}}{\text{Village Collector's Price}} \times 100$

Margin of Local Wholesaler = $\frac{\text{Exporter Price} - \text{Local Wholesaler's Price}}{\text{Local Wholesaler's Price}} \times 100$

Margin of Wholesaler = $\frac{\text{Exporter Price} - \text{Wholesaler's Price}}{\text{Wholesaler's Price}} \times 100$

(b) Farmer's Portion of Producer's Gross Marketing Margin (PGMM) $PGMM = \frac{\text{Consumer Price} - \text{Gross Marketing Margin}}{\text{Consumer Price}} \times 100$

(c) Gross Marketing Margin = $\frac{\text{Average Selling price} - \text{Average Buying price}}{\text{Average Buying price}}$

(d) Profit = Gross Marketing margin - Total Marketing

3. Result and Discussion

3.1 Description of the study area

This study conducted in the selected area of Myanmar to investigate the economic analysis of marketing activities of green gram which is one of the important commercial crops for farmers in Myanmar. These study areas were selected based on the JICA-TCP project program in YAU under the group B: geological-research group. Under this research Nay Pyi Taw and Yangon, which included the main growing areas of mung bean and Nay Pyi Taw, Mandalay and Yangon, the local markets and main market centers of the commodity, were purposively selected. Nay Pyi Taw is one of the mungbean producing areas where ecological environment is favorable for mungbean production, which is made up of the two districts of Ottara and Denkkina, comprising 8 townships of Ottarathiri, Pobbathiri, Tatkon, Zeyathiri, Dekkinathiri, Lewe, Phyinmana and Zabuthiri. Nay Pyi Taw is situated between latitude 19° 76' north and east longitudes 96° 07'. Nay Pyi Taw altitude is estimated as 400 feet above the sea level. The total population was 1.22 million in 2016-2017. The total area of Nay Pyi Taw was 706,010 hectares and the cultivated area was 122,804 hectares (CSO 2017). Among the eight townships, the two townships such as Tatkon and Pinyinmana were selected as the most mungbean production areas in Nay Pyi Taw. Magyikon and Shoutkon villages from Tatkon Township and Katoeseit and AungTheidi villages from Pinyinmana Township were selected for this study. The maps of Pinyinmana and Tatkon Townships are shown in Appendix 1 and Appendix 2. The study area, Tatkon Township is situated between latitude 20°20' north and east longitudes 96° 30'. In Tatkon Township, there are 55 village tracts consisting of 176 villages. The total area of Tatkon Township is 180,310 hectares and the cultivated land areas are 44,819 hectares in 2017. Pinyinmana Township is located between latitude 19°45' north and east longitudes 96° 12'. In Pinyinmana Township, there are 29 village tracts consisting of 140 villages. The total area of Pinyinmana Township is 110,326 hectares and the cultivated land areas are 12,007 hectares in 2017 (DOA, 2017-2018).

3.2 Socio-economic characteristics of producers

Like any other areas of the country, the main activities of the farmers in Nay Pyi Taw Region are producing different commodities which gave them optimal profit with regard to the production areas. In the selected area of Nay Pyi Taw, Tatkon Township farmers produced various types of agricultural commodities such as mung Bean, Rice, Corn, Sesame, Cabbage, Cauliflower etc. while in Pinyinmana Township, they grew mung bean, rice, black gram, bean, groundnut, sesame etc. For this study 71 mung bean producers are analyzed as sample respondents from the consideration areas of four villages from Tatkon and Pinyinmana townships mungbean producing farmers. The majority (96%) of the respondents are male headed household while the remaining 4% were female headed household. This explicitly indicates that the vast majority of the household who are engaged in the production of the mung bean are male dominated. This could be strongly linked with the local traditional cultural justification. To

substantiate, in the rural part of Myanmar most of the agricultural practices are performed mostly by males.

Moreover, the majority of them (41%) are primary level education and 39% of them completed middle level education. Sampled household heads of 17% possessed high school and higher level of education while the rest of 3% are below primary level. Furthermore, most of the respondents are found on the age group of between 40 and 50, and their average family size is 5 per sampled households. About 62% of farmers only rely for their earning on agriculture alone while the rest of 38% have secondary job. Regarding the production experience of mung bean, 67% of the respondents replied that they have 20-39 years of experience, while 6% disclosed that as they had less than 10 years of experience. The remaining 8% of the respondents had 10-18 years and 7% is over 10-19 years of experience. From this we can figure out that the vast majority of the farmers/producers have long experience in producing and supplying mung bean to the market.

In the study area, most of the sampled farmers have both upland and lowland crop fields although very few farmers have either upland or lowland fields. The average total size of the cultivated area per household is 3.41 ha with 1.61 ha of upland and 1.8 ha of lowland. Green mung bean is mostly cultivated at upland fields with average area of 1.6 ha per household. Farmers keep farm equipment's and machineries for their farming operations. More than 50% of farmers possess plough, harrow, and bullock cart while over 40% have sprayer, water pump and warehouse. Each 17% of farmers hold power tiller and inter-cultivator and 7% have threshing machine plus only one percent have tractor in the study area.

3.3 Socio-economic characteristics of market participants

Along the mung bean marketing channel, farmers, village assembler, local wholesalers in Nay Pyi Taw, wholesalers/exporters (processors) in Mandalay and Yangon Townships were identified. Among these 22 samples of market participants, the majority (95%) of the respondents are male while the remaining 5% were female. About 45% the highest percentage of sample participants have the age range of 40-49 years followed by each of 18% has 52-59 and 62-68 years of age levels. The rest of 14% and 5% fall under the age category of 31-39 and 80 years respectively. Moreover, the majority of them (68%) are graduated from some universities and 23% and 9% of them completed high and middle level education. Regarding the experience of mung bean marketing activities, 32% of the respondents replied that they have 30-35 years of working experience, while 27% disclosed that as they had 20-27 years of experience. The remaining each of 18% had 13-15 years and 3-10 years experiences while the last 5% is 49 years of experience. From this the vast majority of the market participants have long experience in marketing of mung bean.

4. Analysis of Marketing Activities

4.1 Marketing activities of mung bean participants

Marketing activities of farmers, village assembler and local wholesalers, wholesalers/exporters are presented in Table (3) and (4).

Table 2: Marketing activities of market participants in Tatkon and Pyinmana Townships

Items	Farmers		Village assembler	Local wholesaler	
	Tatkone	Pyinmana	Pyinmana	Tatkone	Pyinmana
Types of buying	-	-	Cash down and advanced payment	Cash down and advanced payment	Cash down and advanced payment
Types of selling	Cash down and advanced payment	Cash down and advanced payment	Cash down and advanced payment	Cash down and advanced payment	Cash down and advanced payment
Weighting unit	20 viss/basket	20 viss/basket	20 viss/basket	20 viss/basket	20 viss /basket
Grading and standardization	Clean	Clean	Color, purity and size	Color, Purity and size	Color, purity and size
Mode of transport	Tricycle, horse cart and trailer-jeep	Bullock cart and trailer-jeep	Trailer-jeep and light truck	Truck	Truck
Sources of information	Local wholesaler	Village collector and Local wholesaler	Local wholesaler and friends	Friends, Internet, E-trade, TV, Journals and newspaper	

Source: Survey data, 2018

In the case of buying and selling activities of farmers and market participants in Nay Pyi Township used both of cash down and advanced payment systems. According to the survey results, weighting in buying and selling units are all the same unit of 20 viss/basket (1 viss =1.63 kg). Farmers said that they gave the extra weight of 0.25 viss for 1.5 basket of mungbean selling to the wholesalers as fee for bag or reducing weight of mung bean. Farmers can sell mung bean only the clean condition while the other market participants sold after grading and standardization of the products color, purity, size of mung bean, and weighting etc. Mode of transportation for farmers mostly used the traditional vehicles such as tri-cycle, horse/bullock cart, and

trailer-jeep whereas village assembler used trailer-jeep and light truck and local wholesalers mostly used the six to twelve wheels trucks. Market information such as the demand and supply conditions, and price of mung bean for farmers they collected mostly from village assembler and local wholesaler while the others collected from various sources of information.

Table 3: Marketing activities of market participants in Mandalay and Yangon regions

Items	Wholesaler (Exporter)	Exporter (Processor)
Types of buying	Cash down and advanced payment	Cash down and advanced payment
Types of selling	Cash down	Cash down
Weighting unit	20 viss per basket	20 viss per basket
Grading and standardization	Color, clean and size	Color, clean and size
Mode of transportation	Truck	Truck and ship
Sources of information	Friends, Internet, E-Trade, TV, Journals, Newspapers	Internet, E-Trade, TV, Journals, Newspapers
Export destination	China, Indonesia, Malaysia, Singapore and EU	

Source: Survey data, 2018

4.2 Mungbean marketing channel

After studying the movement of mung bean through various intermediaries, a flow chart of value chain in Nay Pyi Taw is shown in figure (1). The analysis of channel or distribution of the products is intended to demonstrate the mung bean flow from production to exporters in the study area. The major participants identified in Nay Pyi Taw are producers,

village assembler, local wholesalers, and wholesaler/exporter. Farmers preferred to sell local wholesalers and only very few farmers sold to village assembler because they received high price from local wholesalers. Although assemblers play an important role in the marketing system by pushing up the produce from the remote rural surplus markets to the towns, most of the farmers in the study areas have directly contact with the local (townships) wholesalers. Mung bean from village assembler marketed to local wholesalers in Pyinmana Township. Local wholesalers traded their goods to the main agents such as Mandalay and Yangon wholesalers/exporters.

Wholesalers in Mandalay sold their products to both of Mandalay and Yangon wholesalers/exporters according to the market demand. Mandalay wholesaler/exporters exported to China market through Muse Township while Yangon wholesalers/exporters sold their goods to others imported countries (Indonesia, Malaysia, Singapore, and EU markets). Mandalay and Yangon wholesalers/exporters exported as two types of processing produces such as polished green grain and mung dal to China and others imported countries. By-product got from processing as pulse powder and animal feeds was traded in domestic market but this amount is insignificant.

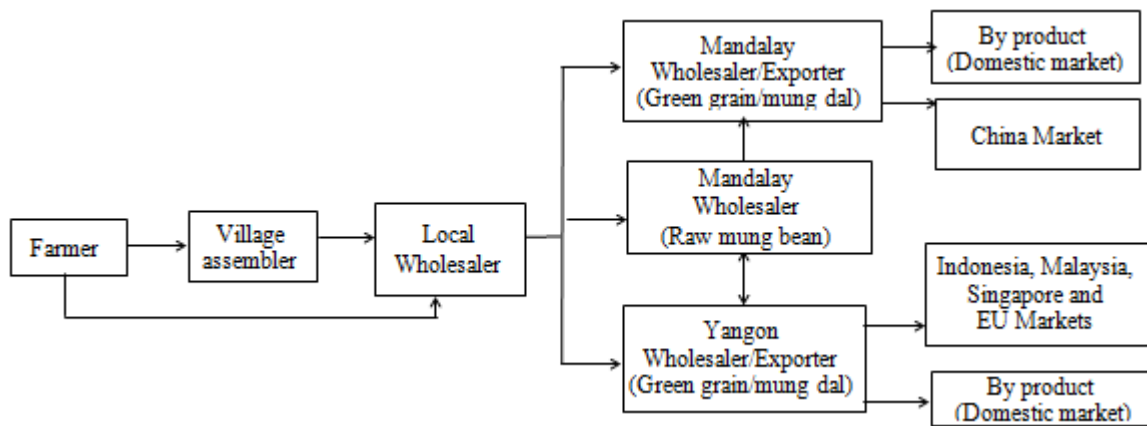


Figure 1: Marketing channel of mung bean in the study area

Source: Survey data, 2018

5. Analysis of Profitability

5.1 Enterprise budgeting analysis

To determine the profitability of mung bean production in the area, the enterprise budgeting analysis was shown in Table (5). Enterprise budget calculation is only based on the average variable cost per hectare. Average yield of the sample farmer was 1.13 MT with average price received by farmers was 1,004,896 MMK/MT. The total revenue from mung bean cultivation in the area was 1,137,460 MMK while total variable cost was 463,488 MMK leaving a gross margin or return above variable cost of 559,419 MMK. Return above cash cost, return above variable cost, return per unit of cash cost and return per unit of capital invested were used as the measurement of costs and returns analysis. The results showed that a return per unit of capital invested was 1.97. This implied that for every 1.00 MMK invested in mung bean production in the area, 0.97 MMK was returned, thus further confirming the profitability of the enterprise.

Moreover, break-even yield was 0.62 MT and break-even price was 513,236 MMK per metric ton which could cover the total variable costs of production.

The percentage of total cost structure of mung bean production in the area is also shown in the same table. From the table, the total variable cash cost of production for all the farms amounted to 578,041 MMK. The total variable cost (TVC) amounted to 463,488 MMK representing 80% including material cost, hired labor cost and interest on capital used of total cost of production. Hired labor cost was the highest cost item, amounting to 272,978 MMK representing 47% of total cost of production. The high labor cost in the study area represented to low level of mechanization and scarcity of laborers.

Table 5: Estimated costs and return of mung bean production

Item	Unit	Amount	Percentage of Total Cost
Gross Revenue (GR)	MMK/ha	1137460.46	
Total Material Cost (TMC)	MMK/ha	148375.09	26%
Total Family Labor Cost (TFLC)	MMK/ha	114553.47	20%
Total Hired Labor Cost (THLC)	MMK/ha	272977.63	47%
Interest	MMK/ha	42135.27	7%
Total Variable Cash Cost (TVCC)	MMK/ha	578041.47	100%
Total Variable Cost (TVC)	MMK/ha	463488.00	
Return above cash cost (GR - TVCC)	MMK/ha	673972.46	
Return above variable cost (GR - TVC)	MMK/ha	559418.99	
Return per unit of cash expensed (GR /TVCC)		2.03	
Return per unit of capital expensed (GR /TVC) or Benefit Cost Ratio (BCR)		1.97	
Break - even yield (TVC/Average price)	MT/ha	0.62	
Break - even price	MMK/ha	513236.64	

Source: Survey data, 2018
(Approximately 1USD= 1366 (Oct, 2017) and 1330 MMK (Jan, 2018))

5.2 Marketing Costs, Marketing Margins and Net Returns

In a competitive and efficient market, marketing costs determine the size of returns to farmers and middlemen. Besides, computations of marketing margins are largely dependent on marketing costs. These underscore the importance of their consideration in this study. The breakdown of average figures for costs and profit incurred in the marketing of green mung bean is shown in Tables 6 and 7.

Table 6: Breakdown of Marketing margin, costs and profit of market intermediaries (MMK/ton)

Item	Village assembler	Local wholesaler		Mandalay Wholesalers	
		(NPT-MDY)	(NPT-YGN)	(MDY-MDY)	(MDY-YGN)
1) Average buying price	998013	1057738	1057738	1135533	1135533
2) Average selling price	1057738	1135533	1135533	1219515	1219515
3) Marketing Margin (2-1)	59725	77795	77795	83982	83982
4) Total marketing cost	12251	19130	24577	11230	28586
• Cost of packaging	2042	2372	2372	3063	3063
• Cost of transportation	6126	12032	17101	2042	19398
• Cost of labor	2042	2684	3063	2042	2042
• Cost of cleaning/processing	2042	2042	2042	4084	4084
5) Profit (3-4)	47473	58666	53218	72752	55396

Note: NPT means Nay Pyi Taw, MDY means Mandalay, YGN means Yangon regions.

Source: Survey data, 2018

Table 7: Breakdown of Marketing margin, costs and profit of exporters based on product types, (MMK/ton)

Item	China market		Indonesia, Malaysia, Singapore and EU Markets	
	Green grain	Mung dal	Green grain	Mung dal
1) Average buying price	1219515	1219515	1219515	1219515
2) Average selling price	1399950	1493000	1495000	1620000
3) Marketing Margin (2-1)	180435	273485	275485	400485
4) Total marketing cost	86000	136000	110000	160000
• Cost of packaging	10000	10000	10000	10000
• Cost of transportation	46000	46000	60000	60000
• Cost of labor	10000	20000	10000	30000
• Cost of polishing	20000	-	30000	-
• Cost of processing	-	60000	-	60000
5) Profit (3-4)	94435	137485	165485	240485

Source: Survey data, 2018

The marketing costs of wholesaling consisted mainly of charges for transportation, packaging materials, and handling of the product. Here the levies imposed by government was omitted which is based on annual fee and the operations of market intermediaries was not only green gram but also other pulses and oil seed crops. Marketing margins were computed at different level of market participants based on their respective destinations. The final destination was exporters and the calculation based on the two product types of polished green grain and mung dal (making split type bean). In these tables, calculated absolute marketing margins for exporters to some Asia and EU markets were higher than the other market participants. Moreover the high margin can be found in the product type of mung dal. The marketing margins of village assembler were generally lower than those of wholesalers. This was probably because retailers typically bought and sold green mung bean in the same market, thereby incurring less cost.

6. Conclusion and Recommendations

In Myanmar, mung bean production stands one of the important commercial and income remunerative crops among the producers and market participants. Therefore this study was focus on economic analysis of mung bean production along the value chain in the selected study area. From the findings of this study, the marketing system of mung bean, on the average, can be regarded as efficient based on the demand from export market. Domestically mung bean is not widely consuming it leads to very limited demand in Myanmar. According to the results of marketing activities analysis, farmers should be encouraged not only to do the grading and standardization processes based on size, color and purity criteria but also systematic production practices such as seed selection, application of agrochemicals etc. in order to meet requirement quality standard of mung bean from the demand from foreign markets. Local wholesalers are the main source of market information for farmers while the market participants used various sources of market information. Farmers had less source of market information as compared to other market

participants been indication to upgrade an efficient market information system to all.

The need for improvement on the individual performance of market participants involved is also important. Green mung bean production in the study area, Nay Pyi Taw Region was profitable under the existing production practices considering the positive values of net farm income and net return on investment. But there is still low yield of mung bean production with high labor cost can be found. Therefore, farm mechanization should be supported to farmers who faced with labor scarcity and to reduce labor cost especially in harvesting time and more systematic and intensively guidelines of good agricultural practices to get more profit to improve the quality and quantity of mung bean. There can be seen not only the limited domestic market also international markets for Myanmar mung bean and current exporting countries are China, Indonesia, Malaysia, Singapore and EU markets. At present, EU market can get favorable the highest export price than the others although there are limited amount to export of mung bean. To meet their demanded quality of the product, local and regional government should arrange to access quality seed for farmers.

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Appendix 1. Maps of study area in Nay Pyi Taw

