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THE MARKET STRUCTURE, CONDUCT AND PERFORMANCE OF PLYWOOD IN THAILAND

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บทคัดย่อ

การศึกษาครั้งนี้มีวัตถุประสงค์เพื่อศึกษาโครงสร้างตลาด พฤติกรรมตลาด และผลการดำเนินงานตลาดของไม้อัดเพื่อเป็นแนวทางในการวางแผนการตลาดของไม้อัดในอนาคต ใช้แบบสอบถามเป็นเครื่องมือในการเก็บข้อมูล จากการศึกษาพบว่าตลาดของไม้อัดเป็นตลาดผู้ขายน้อยรายมีค่าสัดส่วนความเข้มข้นอยู่ระหว่าง 10-100 เปอร์เซ็นต์ มีความแตกต่างของสินค้าในด้านแผ่นปิดหน้า ประเภทของการใช้ประโยชน์ ขนาด ความหนาและคุณภาพ อุปสรรคของผู้ประกอบการรายใหม่ที่จะเข้ามาทำธุรกิจได้แก่ต้นทุนการผลิตสูง และขาดแคลนวัตถุดิบ ผู้ผลิตไม้อัดแบ่งออกตามอายุของโรงงานได้เป็น 2 กลุ่มคือ ผู้ผลิตไม้อัดโรงเก่า และโรงใหม่ ผู้ผลิตไม้อัดโรงเก่าผลิตไม้อัดที่มีคุณภาพสูงและขายไม้อัดราคาแพงกว่าผู้ผลิตโรงใหม่ ส่วนเหลื่อมการตลาดของไม้อัดมีค่าต่ำ ในขณะที่ส่วนแบ่งผู้ผลิตประสิทธิภาพทางราคาของไม้อัดมีค่าสูง ชี้ให้เห็นว่าผลการดำเนินงานของตลาดมีประสิทธิภาพ นอกจากนี้พบว่าอัตราส่วนของต้นทุนต่อกำไรของผู้ผลิตค่อนข้างสูงซึ่งเป็นตัวกระตุ้นที่จะทำให้ผู้ประกอบการรายใหม่เข้ามาทำธุรกิจไม้อัดมากขึ้น

ABSTRACT

The objectives of this study were to determine the plywood market structure, conduct, and performance of plywood in order to formulate the action plan for plywood marketing in the future. The study was conducted by using questionnaires. The results of the study indicated that market type of plywood was identified to be an oligopoly this mainly due to the concentration ratio of the top four largest plywood producers was ranging 10-100 percent and the products differing in it's face, utilization type, size, thickness and quality. The barriers of the new firms for entering into the business were the high production cost and raw material shortage. The entrepreneurs of plywood production were classified by aged of the mills into namely the old and the new mills. The quality and selling price of the products were produced by the old entrepreneur was higher than the new ones. The marketing margin was quite rather low while the producer's share and pricing efficiency were rather high. This indicated that the performance of the market system was good enough. Moreover, the profit cost ratio of producers was rather high, this indicated that the producers could gain a rather high profit from their business and this will be an effective incentive for the new comers to entering into the business.

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INTRODUCTION

Forest industries produced the various wood products for domestic consumption and exportation and play an important role in proving input in other sectors of the economy. The plywood manufacturing process is unique in the sense that a highly variable raw material is manufactured into products that is stronger and more versatile than the wood from the original tree. There were totally 21 plywood mills in Thailand. Most of the mills situated in Bangkok, surrounding Central, and South province (Information office, 1996). The total capacity of plywood mills is about 450,000-5000,000 m^3. Individual mill annual capacity ranges from 200-50,000 m^3 the average being 21,000 m^3. Raw material of plywood industry has been dependent on imported log since logging ban. About 75 percent of plywood consumed was used in construction, 20 percent in furniture manufacture and 5 percent in others used such as containers and advertising boards. Plywood demand is expected to grow at 4.3 percent per annum and to reach about 1,276,000 m^3 in 2007 because continued GDP and population growth will boost demand in construction and furniture manufacture (Royal Forest Department, 1993). However, the plywood always plays an important role in Thai economy.

The objective of this study were to determine the plywood market structure, conduct, and performance of plywood in order to formulate the action plan for plywood marketing in the future.

METHODOLOGY

Data collection

1. Primary data. The field survey of plywood mills and personal contracts were carried out during October 1999-July 2000 period by employing the designed questionnaires for interviewing the targeted entrepreneurs, this comprises 21 mills which distributed in Nonthaburi, Samut Sakhon, Pathum Thani, Bangkok, Phra Nakhon Si Ayutthaya, Samut Prakan, Phang Nga and Yala province.

2. Secondary data. The secondary data were collected through literature acquisition published and from other related government and private agencies.

Steps in data collection

The first step will be started from review of literatures and interview the relevant informants and then the field surveys were carried out collecting the primary data for as the steps represented below :

1. Study of field areas, collecting preliminary information from government and private agencies concerning with plywood industry. The designed questionnaires will be pretested with Thai Plywood Company Limited. Then the questionnaires will be revised to suit for the further use.

2. To employ the revised questionnaires for interviewing the targeted plywood entrepreneurs.

3. Recheck the accuracy and reliability of the collected data.

Data analysis

A framework of analysis of this study has designed for systematic way of finding and organizing the facts to reach a consistent conclusion. The scheme of analysis for marketing system for plywood in Thailand is as follows:

1. Market structure. The marketing structure analyses are as follows:

1.1 Concentration ratio. The concentration ratio could be computed by starting from the totaled production of the top four largest plymills and the proportion of their total production to the total production of the industry in term of percentage. If the concentration ratio of the leading firms is 100 percent indicated that the market structure is monopoly. In the other hand, if

the concentration ratio of the firms is ranging 5-10 percent indicated that the industry is competitive. If the concentration ratio is ranged between the mentioned two values the industry is classified as oligopoly (Caves, 1982).

1.2 Product differentiation. The difference between products will be considered by type of utilization, size, and quality.

1.3 Barriers to entry. Barriers to entry of the new firms.

2. Market conduct. Analysis method of market conduct consists of price and product policies.

3. Market performance. The market performance of plywood could be determined from the marketing margins, producer's share, pricing efficiency and profit cost ratio are as follows:

Marketing margins (MM) $= P_r - P_m$ or
$= (P_r - P_m / P_r) \times 100$
Producer's share $= (P_m / P_r) \times 100$
Pricing efficiency $= (P_r / MM) \times 100$
Profit cost ratio = (Profit / Total cost) x 100

where

P_r = average retail price at Bangkok and Nonthaburi (baht/m^3)
P_m = mill price (baht/m^3)

RESULTS AND DISCUSSION

Market structure of plywood

Market structure is an indicator of firm behavior. In this study, the market structure of plywood can be divided into 3 categories namely concentration ratio, product differentiation and barriers to entry are as follows.

Concentration ratio

The concentration ratio of producers is the proportion of the total production of the top four large-scale plywood mills to the total production of the industry. Table 1 showed that the concentration ratio of the top four largest plywood producers during 1996 to 2000. The highest and the lowest concentration ratio were 50.22 percent in 1996 and 36.28 percent in 1998, respectively. Plywood market during the 5 years period (1996 to 2000) could be classified as oligopoly.

Product differentiation

Product differentiation determined by consumer. Kinds of plywood could be classified by face and type of utilization into 4 and 3 categories respectively, namely, yang, teak, rubberwood and others; and exterior, interior and temporary use, respectively. There are 3 sizes of the panel including 4 x 8, 3 x 6.5 and 3.5 x 6.5 ft. Mostly is 4 x 8 ft. and with 7 levels of panel thickness, namely 4, 5, 6, 7, 10, 15 and 20 mm., which suit for furniture making and construction material. While the plywood with the size of 3 x 6.5 and 3.5 x 6.5 ft. and having 10 mm. in thickness, which suit for floor bed making. The quality of plywood in the market can be divided into two grades: high and low quality. Thai Plywood Company Limited, which is the old mill, produces the high quality, all produced panels with every thickness classes were stamped with the manufacturer brand for standardization. The rest were called as the new mills, the quality of their mostly

produces were low and with the cheap selling price.

Barriers to entry

Barriers to entry of new firms are rather high this mainly due to the high production cost and shortage of raw material. About 71.43 percent of producer's lack of raw material, especially veneer logs. In 2000 the percentage of plywood production was 55.76 percent of capacity. After logging ban in 1989, most plywood factories were forced to dependency on imported logs. Excluding rubberwood logs, in 1999 about 88.96 percent of logs were imported from oversea, which caused high production cost.

Market conduct of plywood

The study on market conduct is divided into 2 parts: pricing and products policies. The details are explained as follow.

Table 1. Concentration ratio of the four largest plywood producers in Thailand, 1996-2000

Year	Concentration ratio (percent)
1996	50.22
1997	43.49
1998	36.28
1999	38.43
2000	38.80

Pricing policies

A price setting method is a vital importance to the plywood marketing system. Factors which producers use for price determination are current price, production cost, and species of log to be used as the raw material. All producers obtained information about plywood market price from salesmen and distributor of the firms for setting the price. Producers could be divided into two groups; the old and the new one. The quality and price of the products produced by the old plymill was higher than those of the new plymills. Table 2 showed that the gate price of yang plywood by thickness: 4, 5, 7, 10, 15 and 20 mm. which produced by the old mill was 320, 390, 590, 755 1,110 and 1,470 baht per sheet, respectively. Whereas, the products price of the new mills by thickness: 4, 6, 10, 15 and 20 mm. were 160 - 190, 240 - 280, 320 - 400, 540 - 630 and 780 - 840 baht per sheet, respectively.

Table 3 showed that the lowest gate price of rubberwood plywood with 10, 15, 20 mm. in thickness were 250, 440, and 605 baht per sheet, while the highest price were 300, 480 and 610 baht per sheet, and their average prices were 272.22, 468.75, and 608.75 baht per sheet, respectively. For the gate price of pine plywood with 6, 10, 15 and 20 mm. in thickness were 210, 260, 470 and 600 baht per sheet, respectively (Table 4). In addition, the mill prices of old mills for grade 1 teak plywood with 4 mm. in thickness was 750 baht per sheet, whereas the mill price of the new mills for grade 2, 3, and 4 were 400, 360 and 300 baht per sheet, respectively (Table 5).

Table 2. Mill price of yang plywood by thickness and mill type

Mill type	Price of plywood (baht per sheet)						
	4 mm.	5 mm.	6 mm.	7 mm.	10 mm.	15 mm.	20 mm.
Old plymill							
1	320	390	-	590	755	1,110	1,470
New plymill							
1	170	-	240	-	370	550	-
2	170	-	270	-	390	600	-
3	175	-	-	-	380	580	-
4	-	-	-	-	340	570	840
5	160	-	-	-	-	-	-
6	-	-	-	-	-	-	-
7	190	-	-	-	385	600	810
8	180	-	-	-	370	630	830
9	180	-	260	-	380	580	780
10	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-
12	n.a.	-	-	-	n.a.	n.a.	n.a.
13	180	-	255	-	-	-	-
14	185	-	265	-	395	610	820
15	170	-	-	-	340	-	-
16	-	-	-	-	-	-	-
17	190	-	280	-	320	540	-
18	175	-	250	-	400	600	800
19	165	-	252	-	375	-	-
20	165	-	-	-	n.a.	-	-
The lowest price	160	-	240	-	320	540	780
The highest price	190	-	280	-	400	630	840
Average price	175.36	-	259.00	-	370.42	587.00	813.33

Table 3. Mill price of rubberwood plywood by thickness and mill type

Mill type	Price of plywood (baht per sheet)		
	10 mm.	15 mm.	20 mm.
New plymill			
7	265	465	605
8	300	470	610
9	270	470	610
12	250	480	-
13	285	475	610
16	275	470	-
17	280	480	-
18	250	440	-
19	275	-	-
The lowest price	250	440	605
The highest price	300	480	610
Average	272.22	468.75	608.75

Table 4. Mill price of pine plywood by thickness and mill type

Mill type	Price of plywood (bath per sheet)			
	6 mm.	10 mm.	15 mm.	20 mm.
New plymill				
10	210	260	470	600
11	210	260	470	600
Average	210	260	470	600

Table 5. Mill price of teak plywood for the thickness of 4 mm. by grade and mill type

Mill type	Price of plywood (baht per sheet)			
	Grade 1	Grade 2	Grade 3	Grade 4
Old plymill				
1	750	-	-	-
New plymill				
6	-	400	360	300

Product policies

Product policies will be considered in term of brand name and type of plywood. The principal reasons for using the brand name is to provide more information for the buyers to be able to identify the differentiated of the products, before making the decision to buy. In this study, there are 12 producers or 57.14 percent stamped the brand names, this included 8 producers or 38.10 percent stamped their brand name strengthen their competition in the market. Only one entrepreneur produced the high standard products and received the industrial standard commodity from the Ministry of Industry, whereas, the rest of 4 manufacturers or 19.05 percent stamped their brand names depending on the purchaser demanded. There are 9 entrepreneurs or 42.86 percent produced no brand name products.

For plywood types, there are 12 mills produced only one type of plywood this comprising of 8 yang plywood mills, 2 pine plywood mills, and 1 each for teak and rubberwood plywood mill. There are 8 mills producing both of yang and rubberwood plywood and only one mill produced yang and teak plywood.

Market performance of plywood

This section determined the performance of plywood marketing system in Thailand. There are four methods used for testing the marketing performance, namely, 1) analysis of the marketing margin, 2) analysis of pricing efficiency, 3) analysis of producer's share and 4) analysis of profit cost ratio. The findings are represented as follows:

Analysis of the marketing margins, producer's share and pricing efficiency

The results of the study on marketing margin, producer's share and pricing efficiency analysis of plywood products could be divided into 3 categories by kind of raw material used, namely, yang, rubberwood and teak as follows:

Yang plywood. Average retail price of the new plywood mills by thickness of 4, 6, 10, 15 and 20 mm. are 194.09, 291.36, 425.00, 651.67 and 850.00 baht per sheet, whereas their average mill price are 175.36, 259.00, 370.42, 587.00 and 813.33 baht per sheet, respectively. The average marketing margin, which determined from the difference between retail price and producers price (farm gate price). In addition, the average marketing margin of the products are varied by thickness of 4, 6, 10, 15 and 20 mm. were 18.73, 32.36, 54.58, 64.67 and 36.67 baht per sheet or 9.65, 11.11, 12.84, 9.92 and 4.31 percent, respectively. Moreover, the average producer's share was 90.35, 88.89, 87.16, 90.08 and 95.69 percent, respectively. For the average pricing efficiency of plywood by such thickness level were 1,036.25, 900.37, 779.67, 1,007.69 and 2,318.97 percent, respectively. This indicated that the plywood' with thickness of 20 mm. was higher efficiency than the plywood with thickness of 4, 15, 6 and 10 mm., respectively. (Table 6)

Table 7 showed that the average retail price, mill price, marketing margin, producer's share and pricing efficiency of the yang plywood of old mill's. Average retail prices of plywood with thickness of 4, 5, 10, 15 and 20 mm. were 342.50, 435.00, 810.00, 1,190.00 and 1,575.00 baht per sheet, whereas the mill prices were 320.00, 390.00, 755.00, 1,110.00 and 1,470.00 baht per sheet, respectively. The average marketing margin and producer's share of plywood were 22.50 baht per sheet or 6.57 percent, 45.00 baht per sheet or 10.34 percent, 55.00 baht per sheet or 6.79 percent, 80.00 baht per sheet or 7.21 percent and 105 baht per sheet or 6.67 percent; and 93.43, 89.66, 93.21, 92.79 and 93.33 percent, respectively. In addition the pricing efficiency of the products with such thickness were 1,522.22, 966.67, 1,472.73, 1487.50 and 1,500.00 percent, respectively,

Table 6. Average retail price, mill price, marketing margin, producer's share and pricing efficiency of yang plywood of new plymills in Thailand, 2000

Item	Plywood's thickness (mm.)				
	4	6	10	15	20
1. Average retailed price (baht/sheet)	194.09	291.36	425.00	651.67	850.00
2. Mill price (baht/sheet)					
2.1 The lowest	160.00	240.00	320.00	540.00	780.00
2.2 The highest	190.00	280.00	400.00	630.00	840.00
2.3 Average	175.36	259.00	370.42	587.00	813.33
3. Marketing Margin (baht/sheet(%))					
3.1 The lowest	4.09(2.11)	11.36(3.40)	25.00(5.88)	21.67(3.33)	10.00(1.18)
3.2 The highest	34.09(17.56)	51.36(17.63)	135.00(31.76)	111.67(17.14)	70.00(8.24)
3.3 Average	18.73(9.65)	32.36(11.11)	54.58(12.84)	64.67(9.92)	36.67(4.31)
4. Producer's share(%)					
4.1 The lowest	82.44	82.37	68.24	82.86	91.76
4.2 The highest	97.89	96.60	94.12	96.67	98.82
4.3 Averages	90.35	88.89	87.16	90.08	95.69
5. Pricing efficiency(%)					
5.1 The lowest	569.35	567.29	314.81	583.57	1,214.29
5.2 The highest	4,745.48	2,564.79	1,700.00	3,007.25	8,500.00
5.3 Average	1,036.25	900.37	778.67	1,007.69	2,318.97

Table 7. Average retail price, mill price, marketing margin, producer's share and pricing efficiency of yang plywood of old mill in Thailand, 2000

Item	Plywood's thickness (mm.)				
	4	5	10	15	20
1. Average retail price (baht/sheet)	342.50	435.00	810.00	1,190.00	1,575.00
2. Mill price (baht/sheet)	320.00	390.00	755.00	1,110.00	1,470.00
3. Marketing Margin (baht/sheet(%))	22.50(6.57)	45.00(10.34)	55.00(6.79)	80(7.21)	105(6.67)
4. Producer's share(%)	93.43	89.66	93.21	92.79	93.33
5. Pricing efficiency(%)	1,522.22	966.67	1,472.73	1,487.50	1,500.00

this means that the plywood with thickness of 4 mm. was the higher pricing efficiency than the others.

A comparison between plywood pricing efficiency of the old and the new mills by thickness indicated that products with the thickness of 4, 10 and 15 mm., the pricing efficiency of the old plymill having higher pricing efficiency than the new ones. While the new mills having more efficiency in production than the old one, but only in case of the products with the thickness of 20 mm.

Rubberwood plywood. In this section will examine exclusively on plywood' with thickness of 10,15 and 20 mm. of the new mills. The average retail prices were 306.25, 490.00 and 640.00 baht per sheet, while the average mill price were 272.22, 468.75 and 608.75 baht per sheet, respectively.

The average marketing margins were 34.03 baht per sheet or 11.11 percent, 21.25 baht per sheet or 4.34 percent and 31.25 baht per sheet or 4.88 percent, and producer's share were 89.89, 95.66 and 95.12 percent, respectively. For the average pricing efficiency were 899.94, 2,305.88 and 2,048.00 percent, respectively. This means that the products with thickness of 15 mm. having higher pricing efficiency than the products with the thickness of 20 and 10 mm. respectively (Table 8).

Table 8. Average retail price, mill price, marketing margin, producer's share and pricing efficiency of rubberwood plywood of new plymill in Thailand, 2000

Item	Plywood's thickness (mm.)		
	10	15	20
1. Average retail price(baht/sheet)	306.25	490.00	640.00
2. Mill price(baht/sheet)			
2.1 The lowest	250.00	440.00	605.00
2.2 The highest	300.00	480.00	610.00
2.3 Average	272.22	468.75	608.75
3. Marketing margin(baht/sheet(%))			
3.1 The lowest	6.25(2.04)	10.00(2.04)	30.00(4.69)
3.2 The highest	56.25(18.37)	50.00(10.20)	35.00(5.47)
3.3 Average	34.03(11.11)	21.25(4.34)	31.25(4.88)
4. Producer's share(%)			
4.1 The lowest	81.63	89.80	94.53
4.2 The highest	97.96	97.96	95.31
4.3 Average	89.89	95.66	95.12
5. Pricing efficiency(%)			
5.1 The lowest	544.44	980.00	1,828.57
5.2 The highest	4,900.00	4,900.00	2,133.33
5.3 Average	899.94	2,305.88	2,048.00

Teak plywood. Table 9 showed that the average retail price, mill price, marketing margin, producer's share and pricing efficiency of teak plywood' with 4 mm. in thickness of the new mills. Average retail price of plywood grade 2 and grade 3 were 425.00 and 392.50 baht per sheet, and their mill prices were 400.00 and 360.00 baht per sheet, respectively. For the marketing margins were 25.00 baht per sheet or 5.88 percent and 32.5 baht per sheet or 8.24 percent, and producer's share were 94.12 and 91.76 percent, respectively. Pricing efficiency were 1,700.00 and 1,207.69 percent, respectively, these indicated that the grade 2 products having more market efficiency than grade 3.

Teak plywood's with 4 mm. in thickness of the old mill, their average retail price, mill price, marketing margin, produce's share and pricing efficiency were 800.00 baht per sheet, 750.00 baht per sheet, 50 baht per sheet or 6.25 percent, 93.75 percent and 1,600.00 percent, respectively (Table 10).

Table 9. Average retail price, mill price, marketing margin, producer's share and pricing efficiency of teak plywood of new plymill in Thailand, 2000

Item	Plywood's thickness 4 mm.	
	Grade 2	Grade 3
1. Average retail price (baht/sheet)	425.00	392.50
2. Mill price (baht/sheet)	400.00	360.00
3. Marketing margin (baht/sheet(%))	25.00(5.88)	32.50(8.28)
4. Producer's share (%)	94.12	91.72
5. Pricing efficiency(%)	1,700.00	1,207.69

Table 10. Average retail price, mill price, marketing margin, producer's share and pricing efficiency of grade 1 teak plywood of the old plymill in Thailand, 2000

Item	Baht/sheet	%
1. Average retail price	800.00	-
2. Mill price	750.00	-
3. Marketing margin	50.00	6.25
4. Product's share	-	93.75
5. Pricing efficiency	-	1,600.00

Remark: for plywood with thickness of 4 mm.

The comparative study between plywood marketing efficiency of the new and the old plymills showed that for the grade 2 products of the new mills' having higher pricing efficiency than grade 1 products of the old mill' and grade 3 products of the new mills', respectively.

Analysis of profit and cost ratio

From the study found that the highest, lowest and average of profit cost ratio of yang, rubberwood, pine and teak plywood were 13.92, 78,08 and 37.25 percent; 46.28, 86.39 and 59.29 percent; 35.22, 36.39 and 35.80 percent; and 70.63, 70.63 and 70.63 percent, respectively (Table 11). This indicated that profit cost ratio of plywood was rather high, hence the producers could gain a rather high of profit. Such high excess profit will be the effective incentive for the new firms to entering into the plywood business.

Table 11. Total cost, income, profit and profit cost ratio of plywood

Types of plywood	Total cost (bath/m^3)	Total income (bath/m^3)	Total profit (baht/m^3)	Profit cost Ratio (%)
1. Yang plywood				
1.1 The lowest	8,565.68	12,891.00	1,609.81	13.92
1.2 The highest	12,440.58	18,123.48	6,785.17	78.08
1.3 Average	10,362.01	14,221.47	3,859.46	37.25
2. Rubberwood plywood				
2.1 The lowest	6,354.98	10,096.00	3,141.79	46.28
2.2 The highest	7,626.45	11,844.75	5,489.77	86.39
2.3 Average	7,023.33	11,187.60	4,164.27	59.29
3. Pine plywood				
3.1 The lowest	8,220.96	11,212.50	2,920.21	35.22
3.2 The highest	8,292.29	11,212.50	2,991.64	36.39
3.3 Average	8,256.62	11,212.50	2,955.92	35.80
4. Teak plywood				
4.1 The lowest	17,565.26	29,971.93	12,406.67	70.63
4.2 The highest	17,565.26	29,971.93	12,406.67	70.63
4.3 Average	17,565.26	29,971.93	12,406.67	70.63

CONCLUSIONS

The results of the study indicated that market type of plywood was classified to be as oligopoly because of the concentration ratio of the top four largest plywood producers ranging 10-100 percent and products differing in face, utilization type, size, thickness and quality. The barriers of new firms entering into the business were serious this because of the high production cost and raw material shortage. There were two groups of plywood entrepreneurs by mill aged; the old and the new ones. The old mills produced high quality of plywood, and with the high selling price whereas the

new mill produced the low quality and with the low selling price. Factors which producers employ for price determination are current price, production cost and species of using logs. Product policies, there are 12 producers or 57.14 percent stamped the brand names, this included 8 producers or 38.10 percent stamped their brand name on every panel of products, the rest of 4 producers or 19.05 percent stamped their brand names depending on the purchaser demanded. There are 9 entrepreneurs or 42.86 percent produced no brand name products. The marketing margin was quite rather low while the producer's share and pricing efficiency were rather high. This indicated that the market system showed the good performance. Moreover, the profit cost ratio of producers was rather high, this indicated that the producers could gain a rather high of profit from their business and this will be the effective incentive for the new firm to entering into the business.

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