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Value Chain Study for Holistic Development of Herbal Industry

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Abstract. The herbal industry has been identified as one of the economic drivers that could potentially make a significant contribution to the economic growth of Malaysia to achieve the status of a developed country by the year 2020 under the Economic Transformation Programme (ETP). To date, information on the herbal industry is scattered. There is yet to be a single database containing comprehensive information. This paper highlights the census conducted in 2014-2015 on herbal industry consists of planting material suppliers, planters, processors/processing, wholesalers and retailers of herbs and herbal products in Peninsular Malaysia. To date, information from a total of 6,346 units of herbal industry were gathered and compiled. The findings show that government programmes and initiatives for herbal industry provide a platform for rural development with the involvement of small planters in contract farming activities. Most of herbal planters are in Pahang, Selangor, Perak and Johor. The Findings from this study will be used as baseline information for further strengthen the development of herbal industry through holistic point of view.

Keywords: Value chain, herbal industry, development.

1. Introduction

Traditional herbal medicine has been used by mankind for centuries. According to the World Health Organization (WHO), about 80% of the world's population depends on herbal-based medicines for their basic needs. FRIM's study in 2013 indicated that 74% of consumers in Peninsular Malaysia are using herbs and herbal based products. The growth of the herbal industry is affected by changes in household economic condition, lifestyle, emphasis on health, and increasing cost of synthetic medicines (Norani *et al.* 2008). In the aftermath of the 2007 economic downturn, herbal products have been highly demanded due to their lower costs compared with modern medicine. The role of herbal products in national wealth creation has been recognized and identified for further development by the Malaysian Government. The herbal industry has been identified as one of the economic drivers that could potentially make a significant contribution to the economic growth of Malaysia to achieve the status of a developed country by the year 2020 under the Economic Transformation Programme (ETP).

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Planning for the development of a herbal product industry requires data and statistics about the status of the resources, production and market distribution. While some herbal species have been scientifically proven useful for household and industrial uses, the lack of information and statistics on the potential availability for mass production and commercialization has hindered their development and promotion.

To further develop the herbal industry, studies related to the herbal industry value chain is very important and it includes the aspect of demand and supply. Value chain of herbal industry includes planting material suppliers, planters, small processors, manufacturers of herbal products, wholesalers, retailers and consumers.

The initiatives undertaken by FRIM in 2011-2013 attracted the interest of the Agriculture National Key Economic Area (NKEA) Steering Committee which approved a special project under NKEA Research Grant Scheme (NRGS) to complete the herbal value chain study. The main activities include conducting a census of planters, producers/manufacturers, wholesalers and retailers of herbal based products, and further enhance the comprehensive database. This paper highlights the methods and process which are using in this project and preliminary findings on availability and distribution of herbal industry.

2. Materials and methods

Since data on herbal species are scattered and scanty, two types of data were gathered:
Secondary data on the herbal industry from the Ministry of Agriculture and Agro-based Industry Malaysia, the Ministry of Health Malaysia, SME Corp. Malaysia and Department of Agriculture.
Primary data on the distribution, extent, production and problems of herbal industry using focus group discussions, stakeholders' consultation and survey methods.

The collection of primary and secondary data involved focus group discussion, stakeholders' consultation and a survey of the herbal planting material suppliers, planters, processors/manufacturers, wholesalers, retailers and herbal-related agencies were carried out by a team of experienced researchers and research assistants from FRIM.

2.1. Collection of secondary data

Since there was no centralized information on herbs, the research team had to communicate with all possible herbal-related agencies and a lot of efforts were made to ensure information gathered was comprehensive. The information was used as baseline information to conduct the census.

2.2. Focus group discussion (FGD)

A focus group discussion is a method used to gather information and discuss a specific topic of interest from similar backgrounds or experiences. FGD was used starting from beginning of the project until end of the project including development of questionnaires for census and survey. The discussion involved the participants from different agencies. This method was used to ensure the study covers various aspects from difference agencies and perspectives.

2.3. Stakeholders' consultation

A stakeholders' consultation is a method used to gather information and discuss a specific topic of interest from various stakeholders related to herbal industry. It provides a platform to all parties meet together and discuss in group their strengths, weaknesses, opportunities, threats and suggest the strategies for further develop the herbal industry.

2.4. Census/Survey

Herbal value chain actors consists of planting material suppliers, planters, processors/manufacturers, wholesaler and retailers were surveyed based on the information gathered from various agencies such as the Ministry of Agriculture and Agro-based Industry Malaysia (MoA), the Ministry of Health (MoH), the Federal Agricultural Marketing Authority (FAMA), the Rubber Industry Smallholders Development Authority (RISDA) and other agencies. Besides, the research teams have to go thru all streets in Peninsular Malaysia by using Global Positioning System (GPS) to check and verify every entity which are related to herbal value chain actors. Questionnaires were designed, tested, amended and conducted via personal interviews with all respondents.

2.5. Data analysis

Even though the total number of herbal chain actors is 6,346 units, data analysis only focuses on actual valid information from the respondents. Three types of analysis were conducted as follows:

2.5.1. Descriptive analysis

Descriptive analysis was used to explain the characteristics of the herbal chain actors, namely ethnicity, gender, years of establishment, number of workers and nature of business.

2.5.2. Analysis of variance (ANOVA)

Analysis of variance (ANOVA) was used to test whether or not the means of several groups were all equal. For this study, ANOVA was used to know either there were significant differences between different nature of business, ethnics, number of workers and involvement in herbal industry. The hypothesis for this study was as follows:

$H_0 : \mu_1 = \mu_2 = \mu_3 \ldots\ldots = \mu_n$
H_A : At least the mean of one nature of business was not equal

The F-test was used for comparing the means between groups. In one-way or single-factor ANOVA, statistical significance was tested by comparing the F test statistic:

where,

I = number of treatments

n_T = total number of cases

Pearson's Chi-Square

Pearson's Chi-Square was used to test correlation between two variables. This analysis was used to understand the correlation between two variables such as nature of business, year of establishment, ethnicity and gender. The value of the test-statistic is

where,
X^2 = Pearson's cumulative test statistic, which asymptotically approaches a distribution;
O_i = an observed frequency;
E_i = an expected (theoretical) frequency, asserted by the null hypothesis;
n = the number of cells in the table.

3. Results and discussion

3.1. Incentives and programme

To promote herbal industry development, the government-related agencies have provided various incentives to herbal planters and herbal processing entrepreneurs. These incentives include funding, loan, technical knowledge, processing and marketing. Table 1 shows several incentives provided by various agencies.

3.2. Distribution of herbal industry

To date, a total of 6,346 units of actors in herbal value chain were gathered and compiled. The findings show that government programmes and initiatives for herbal industry provide a platform for rural development with the involvement of small planters in contract farming activities. Most of herbal planters are in Pahang, Selangor, Perak and Johor (Table 2). Most of the herb planters dominated at Pahang with a total of 108 planters, followed by Selangor, Perak and Johor with the total planters of 74, 63 and 61 respectively. While for planting material supplier can be easily found in Selangor which has 19 planting material suppliers. Perak is the second state that contributes 18% in this chain actor, followed by Pahang with contribution of 12%. In term of herbal processors/manufacturers, Kedah recorded the highest with a total of 74 companies. It is followed by Selangor and Kelantan which is have 62, 59 and 53 herbal product manufacturers respectively.
The findings show that distributive activities are very active in three states which are Selangor, Johor and Kuala Lumpur. It is because these three states have metropolitan cities with high cost of living. The highest wholesale activity for herbal products is in Selangor. It contributes 20% from the total number of wholesalers in Peninsular Malaysia, followed by Johor and Kedah with contribution of 14% and 13%. The equivalent scenario happen in retailing activity which are 50% dominated by 1,136 in Selangor, 984 in Johor and 578 retailers in Kuala Lumpur.

Table 1: Government programmes and initiatives for herbal industry.

No	Agency	Focus
1.	Ministry of Agriculture and Agro-based Industry (MOA)	To promote the implementation of large scale commercial and high-tech agriculture projects, including the herbal cultivation and processing industry. To provide fund, loan, input, technologies and advisory to assist herbal industry. To provide herbal research grant scheme to qualified candidate.
2.	Ministry of International Trade and Industry (MITI)	To provide the platform for entrepreneurs in the cosmetic and herbal industry to develop their products under Groom Big programme
3.	Federal Agricultural Marketing Authority (FAMA)	To assist herbal entrepreneurs to access local and global markets.
4.	Malaysian Agricultural Research and Development Institute (MARDI)	To develop technologies for commercial production of herbaceous plants. To help in the phytochemical research, toxicology and development of food and non-food products.
5.	The Federal Land Development Authority (FELDA)	To introduce herbs to community and help to commercialize herbal products.
6.	Federal Land Consolidation and Rehabilitation Authority (FELCRA)	To implement integrated herbs plant in the wasteland.
7.	Rubber Industry Smallholders Development Authority (RISDA)	To create additional economic activities other than the main crop grown to increase family income of smallholders through herbal cultivation.
8.	East Coast Economic Region (ECER)	To invest, operate and manage integrated development projects herbal group To encourage and provide a platform to the local communities involve in herbal cultivation through contract farming approach
9.	National Herbal Council	To monitor, supervise and provide advisory services to herbal entrepreneurs.
10.	Southern Kelantan Development Authority (KESEDAR)	To help raise the standard of living and quality of life of settlers through herbal cultivation and processing.
11.	Terengganu Tengah Development (KETENGAH)	To provide funding aimed at increasing the productivity and quality of herbal products as well as to develop new entrepreneurs.

Source: Rohana, A.R., *et al*, 2012.

Table 2: Distribution of herbal chain actors by state, 2015

	Planting material supplier	Planter	Manufacturer	Wholesaler	Retailer
Perak	12 (18)	63 (14)	53 (11)	36 (9)	617 (11)
Selangor	19 (28)	74 (17)	59 (13)	84 (20)	1,136 (21)
Pahang	8 (12)	108 (25)	25 (5)	16 (4)	290 (5)
Kelantan	2 (3)	30 (7)	53 (11)	35 (9)	29 (6)
Johor	5 (7)	61 (14)	62 (13)	58 (14)	984 (18)
Kedah	5 (7)	20 (5)	74 (16)	52 (13)	401 (7)
Melaka	7 (10)	27 (6)	29 (6)	17 (4)	173 (3)
Negeri Sembilan	(0)	27 (6)	21 (4)	16 (4)	294 (5)
Pulau Pinang	2 (3)	14 (3)	51 (11)	24 (6)	338 (6)
Perlis	0 (0)	5 (1)	8 (2)	4 (1)	65 (1)
Terengganu	7 (10)	7 (2)	11 (2)	19 (5)	190 (4)
Kuala Lumpur	1 (1)	2 (1)	24 (5)	49 (12)	578 (11)
Total	68 (100)	438 (100)	470 (100)	410 (100)	5,395 (100)

Source: FRIM's survey, 2014-2015
Note: Figures in parentheses refer to percentage value

Market for herbal product has a long history in Peninsular Malaysia. In this study, the earliest retail activity started in 1904 with a traditional chinese medicine shop in Perak. Despite this, most of the herbal chain actors were relatively young in terms of the number of years in establishment. A total of 3,421 (69%) out of 4,948 actors had operated after 2000. Chi-square test indicates that starting years of establishment and category of chain actors correlate with each other. The test result shows Pearson Chi-Square = 235.946with p-value = 0.000 and statistically significant at 1% (Table 3).

Table 3: Year of establishment by category of herbal chain actor

	before 1986	1986-1990	1991-1995	1996-2000	2001-2005	2006-2010	after 2010	Total
Planting material suppliers	0	2	2	5	13	20	14	56
Planters	5	2	8	17	30	173	97	332
Manufacturers	31	12	26	36	29	59	36	229
Wholesalers	8	2	4	8	20	38	27	107
Retailers	136	66	127	280	537	1,314	1,412	3,872
Combination	13	6	19	31	52	131	100	352
Total	193	90	186	377	681	1,735	1,686	4,948

Source: FRIM's survey, 2014-2015
Note: Pearson Chi-Square =235.946, with p-value=0 .000, statistically significant at 1%

Out of a total of 5,694 respondents, 2,992 (53%) were male entrepreneur and 2,702 cultivators (47%) female. The finding shows that herbal value chain in Peninsular Malaysia is generally a male-dominated economic activity (Table 4). The test analysis of Pearson Chi-Square = 210.900 with p-value = 0 .000, indicating statistical significance at 1%. It indicates that is significant relationship existing between the gender of owner and the category of herbal chain actor.

Table 4: Gender of main owner by category of herbal chain actor

	Male	Female	Total
Planting material suppliers	50	14	64
Planters	272	77	349
Manufacturers	184	65	249
Wholesalers	82	48	130
Retailers	2,170	2,356	4,526
Combination	234	142	376
Total	2,992	2,702	5,694

Source: FRIM's survey, 2014-2015

Note: Pearson Chi-Square =210.900, with p-value=0 .000, statistically significant at 1%

In Peninsular Malaysia, herbal value chain involves the three main ethnic groups, Malays, Chinese and Indians. Of the total of 5,763 actors, 3,287 (57%) were Malays, 2,219 (39%) Chinese, 199 (4%) Indians, 38 (1%) other ethnics and 20 (0.4%) were foreigner (Table 5). It was observed that even though the Orang Asli, especially those in remote areas, also used herbs in their daily healthcare, these herbs were collected from the natural forest or planted around home compounds. None of the Orang Asli cultivated herbs for commercial purpose.

Table 5: Ethnicity of main owner by category of herbal chain actor

	Malay	Chinese	Indian	Others	Foreigner	Total
Planting material suppliers	34	23	0	7	0	64
Planters	243	38	69	1	0	351
Manufacturers	175	69	5	1	2	252
Wholesalers	68	57	5	0	0	130
Retailers	2,471	1,967	112	23	16	4,589
Combination	296	65	8	6	2	377
Total	3,287	2,219	199	38	20	5,763

Source: FRIM's survey, 2014-2015

An average number of labour forces engaged in herbal manufacturing is 24 workers, while only 3 workers involved in herbal cultivation (Table 6). ANOVA test shows that statistically there is significant difference in numbers of labour forces in terms of category of herbal chain actor. The statistical test shows F-value = 68.456 with p-value = 0.000 and statistical significance at 1%. This clearly shows that herbal cultivation and processing in Malaysia are still at an infancy stage, where the size of labour force involvement was still small in 2015.

Table 6: Numbers of labour force by category of herbal chain actor

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Planting material suppliers	60	3.92	3.775	.487	2.94	4.89	1	25
Planters	330	2.67	3.570	.197	2.28	3.05	1	35
Manufacturers	213	23.93	78.823	5.401	13.28	34.58	1	1,000
Wholesalers	110	25.46	52.986	5.052	15.45	35.48	1	400
Retailers	4,317	3.17	3.480	.053	3.07	3.27	1	102
Combination	352	12.20	47.280	2.520	7.24	17.15	1	550
Total	5,382	5.01	22.074	.301	4.42	5.60	1	1,000

Source: FRIM's survey, 2014-2015
Note: ANOVA =68.456, with p-value=0 .000, statistically significant at 1%

5. Conclusion

Malaysia has aimed to produce high-value herbal products through the establishment of the Malaysian Herbal Development Council in 2011. The main objectives are to achieve a gross national income (GNI) of RM2.2 billion by 2020, to produce safe, high quality and efficacious high-end herbal products, to strengthen the supplies across the value chain, to enhance R&D in herbs and to secure the intellectual property rights (IPR) from local herbs. For long-term development of the herbal industry in Malaysia, it is important to reduce import dependence and to create new employment opportunities and wealth among the local population as well as the country. The findings from this study will be used as baseline information for further strengthen the development of herbal industry through holistic point of view.

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7. References

ADENAN, M.I. 2003. Malaysian herbs and herbal products. A two and half day course of herbal and phytochemical processing, CEPP short course notes. Chemical Engineering Pilot Plant, UTM Skudai. 7–9 January 2003.

BERNAMA. 2008. Local herbal industry expected to grow 8–15 percent annually. Business Section. November 14, 2008. Retrieved July3, 2011 from http://www.bernama.com/bernama/v3/news_lite.php?id=371751

FARNSWORTH, NR. & SOEJARTO, DD. 1991. Global importance of medicinal plants. Pp. 25–51 in Akerele O., Heywood V. & Synge H. (Eds.). *Proceedings of an International Consultation, "The Conservation of Medicinal Plants*", Chiang Mai, Thailand. 21–27 March 1988. Cambridge University Press, Cambridge.

KRUEGER, R.A. 1988. Focus Groups: A practical guide for applied research. Sage, UK.

NORANI, N., NOOR HIDAYAH, A. & RUZINOOR, C.M. 2008. Technology implementation barriers in Malaysia's herbal industry: a case study. *Malaysian Management Journal* 12 (1&2): 81–90.

ROHANA, A.R., AINU SHUHADAH, B., LIM, H.F. & ISMARIAH, A. 2012. Herbal cultivation for wealth creation in Peninsular Malaysia. Forest Research Insitute Malaysia, Kepong. 157 Pp.

ZAINAL AZMAN, A.K. 2007. Herbal biotechnology development—the way forward & market access opportunities. Paper presented at EUM–BIO Business Partnering Seminar, MATRADE Exhibition and Conference Centre, Malaysia, 25 October 2007.