

## BUYERS' PREFERENCES AMONG PEPPER FARMERS IN SARAWAK

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### ABSTRACT

*Pepper (Piper nigrum) is a popular culinary spice besides being one of the most important spices traded internationally. Pepper contributes significantly to the agriculture sector as well as to the economy of Malaysia. Sarawak is the main pepper-producing state accounting for 98% of the country's annual production in 2011. Most of the pepper in Sarawak is being cultivated by smallholders who generally use different marketing channels to sell their produce. The Malaysian Pepper Board (MPB) is the sole government agency involved in the marketing of pepper in Sarawak; however, there are also private firms that are primarily profit-oriented buyers. From the farmers' perspectives, selecting the best marketing channel is important to improve their pepper-marketing activities as well as to increase farm income. The aims of this study are to investigate the existing marketing channels for the pepper farmers, to determine factors that influence farmers' preferences toward the marketing channel, and to compare their income based on their preferred marketing channel. Face-to-face interviews were conducted using structured questionnaires. Data were analysed using statistical analyses such as descriptive analysis, chi-square analysis, factor analysis, and t-test. The results revealed that farmers sold their produce using both the public channel through MPB as well as private middlemen. The farmers' selection of marketing channels was influenced by several factors such as price, quantity, services, and distance.*

**Keywords:** Marketing channel preferences, pepper, Sarawak, smallholder farmers

### INTRODUCTION

Pepper is one of world's important and valued spices besides salt (Det, 2008). Pepper (*Piper nigrum*) is a plant that produces berries and grows in grapelike clusters. It originated from South West India (Library of Sarawak Pichin Country Village, 2010). Black, white, and green peppercorns are all products of the same plant, but the flavour is determined by where and how the pepper is grown, at which stage it is harvested, how it is cleaned, processed, and stored. The most popular form of pepper in the commercial market is black pepper. Black pepper, famously known as 'Black Gold' or 'King of Spices', is one of the

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important agricultural commodities in the world. This crop has become one of the main sources of income and employment for rural households in Malaysia, especially in the state of Sarawak (Library of Sarawak Pichin Country Village, 2010). Pepper is an important agricultural crop and is being cultivated in Malaysia for more than 100 years. It has put Malaysia as one of the leading pepper producers in the world. Semongok I, Semongok II, Semongok III, Semongok Perak, Kaluvally, Kuching, Belantung, and Djambi are some of the pepper varieties grown in Malaysia.

Prices of white and black pepper hit their historical high of RM28,000 and RM16,000 per tonne, respectively, in 1999 because of projected decline in world production (The Miami Herald, 2011). In 2010, black pepper price soared about 30% from RM9,350 per tonne recorded in 2009. The high price has remained firm in 2011 and 2012 (Wong, 2011). This decline in world production has made Malaysian farmers better off financially and enabled them to retain their produce for better prices. The environmental factors such as stable temperature and fewer droughts have also contributed to greater production. Harvest yields increased to around 282 kg per hectare, which was slightly lower than that of India (one of the leaders in world pepper production), which produced around 300 kg per hectare (Hema, Kumar, & Singh, 2007). Nevertheless, farmers cannot rely only on external factors for gaining profits in the long term. Marketing has been identified as one of the areas where profits could be improved. The Technical Centre for Agricultural and Rural Cooperation (CTA) (2008) listed five aspects of marketing that could bring positive impacts on the agricultural sector, one of the crucial aspects being transparency of market chains. As reported in several studies (Garibay & Jyoti, 2003; Sáenz-Segura, D'Haese, & Speelman, 2009; Tejero, Valdellon, & Maron, 1981), there are many instances of unfair trading practices that resulted in lower income to the farmers. Farmers often do not know they have alternative marketing channels, and sometimes, because of various reasons, they operate via one marketing channel only. Using the wrong marketing channel is one of the reasons why farmers fail to obtain a higher income. It is believed that if the farmers choose the correct marketing channel, they would be able to generate more income and subsequently improve their production activities. Therefore, this study is carried out to achieve three objectives. The first objective is to investigate the existing marketing channels for the pepper farmers. The second and third objectives of this study are to determine factors that influence farmers' preferences toward the marketing channels and to compare their income based on their preferred marketing channel.

## **PEPPER INDUSTRY IN SARAWAK**

Malaysia is the fifth largest pepper producer in the world with total exports of 14,040 tonnes (RM190 million) in 2010, a 7% increment from 13,122 tonnes (RM156 million) in 2009 (Rasid, 2011). The major black pepper cultivation areas in Malaysia are located in Sarawak, Johor, and Sabah. There are more than 14,100 hectares of pepper farms in Malaysia, of which 14,000 hectares are in Sarawak. Pepper cultivation began in Sarawak in 1856, but more extensive planting began in the 1900s. Today, pepper is one of the important cash crops supporting the livelihood of about 67,000 rural dwellers in upland

areas of Sarawak. Pepper is normally planted by smallholder farmers primarily in fertile hill slopes. The smallholder farms are concentrated mostly in Kuching, Samarahan, Sri Aman, Betong, and Sarikei. Sarawak is the largest producer as it contributes to about 95% of total production of pepper in the country. Therefore, the trade name, Sarawak Pepper has been chosen and commercially used to promote Malaysian peppers, especially those produced in Sarawak (Chennakrishnan, 2012). This brand name has been registered by the Malaysian Intellectual Property Organization under ‘geographical indication’. It is the first agricultural product from Malaysia that has gained this acknowledgment.

The early history of pepper cultivation in Malaysia shows that it was dominated by Chinese smallholder farmers. The history can be traced back to the time when the Chinese workers initially came to work in the gold mines operated by the Sultan of Sambas in Larak, Sarawak. Later, when the White Rajah came into power, and the Chinese responded to the White Rajah’s concessions, they started to lease land to grow pepper, gambier, and vegetables (Leng, 2008). Currently, pepper cultivation is monopolized by Sarawakians on a commercial basis and it has become a significant source of income to them. Over 90% of the 25,000 tonnes produced annually is exported to 40 countries around the world (Malaysian Pepper Board, 2011). Sarawak pepper has gained international recognition from chefs and gourmets as one of their favourite ingredients because of its distinctive flavour and taste. This product development effort is also complemented with state-of-the-art pepper cleaning and steam sterilization plants to meet the global quality requirements. Sarawak pepper is now packed for three major user segments comprising the household, food service, and industrial food-processing sectors with full-range packaging developed to accommodate all the major end users (Goh, 2012). Traditionally, 80% of the pepper is processed into black pepper and the remainder into white pepper. Currently, pepper processing has taken a different approach with the introduction of green pepper pickle, black pepper sauce, green pepper sauce, *asam pedas* paste, green pepper vinaigrette, and five-spice seasoning (Goh, 2012). Given the vast potential in the health markets, product development work on spice extracts such as essential oils is now being carried out. Essential oils from pepper can be used as flavours in beverages, sauces, and dressings. Besides, it can also be used as a fragrance in perfumes, toiletries, detergents, and air fresheners as well as in aromatherapy.

In Malaysia, the pepper industry contributes substantially to the local socioeconomic situation. Around 45,000 farming families and more than 115,000 workers are involved in the pepper industry. The crop has generated about a third of Sarawak’s agriculture export earnings since the year 1990. Pepper has secured a pivotal position in food, pharmaceuticals, perfumery, and cosmetic industries (Nybe & Peter, 2002). It has occupied a position that is supreme and unique and is today a foreign exchange earner for several countries, including Malaysia (Kiong, Rahim, & Shamsudin, 2010).

Most of the farmers are smallholder, and the amount of pepper production is small. Similar to other crops, these farmers have very little or no choice at all in determining the buyers for their products and subsequently on the prices these buyers offer (Technical Centre for Agricultural and Rural Cooperation, 2008). In this regard, one of the ways to help these

pepper farmers to increase profits and enhance market competitiveness is to inculcate the market-oriented mindset in them (Kiong et al., 2010).

Selection of efficient marketing channels could contribute to farmers' successes. A marketing channel consists of individuals and firms involved in the process of making a product or service available for use or consumption by consumers or industrial users (Kerin, Hartley, Berkowitz, & Rudelius, 2005). Marketing channels are subject to two aspects namely vertical integration and disintegration. Pepper-marketing channels include growers, intermediaries, assembling markets, terminal markets, exporters, and domestic markets (Kiong et al., 2010). Under the present system, farmers can sell their produce in several ways. The most widely practiced marketing channel involves collection of the produce directly from the producers by the local merchants and wholesale traders and selling to retailers, local manufacturers, or exporters who are the final link in the channels. Private-sector operation is mainly through middlemen such as a profit-oriented company or private agencies who collect the peppers from smallholder farmers and sell the produce to the traders at a price determined by demand and supply (Chennakrishnan, 2012). This study focuses on the role of marketing channel from the perspective of intermediaries.

The Malaysian Pepper Board (MPB) represents the government marketing channel for pepper and the private channel normally consists of profit-oriented agencies. Under the MPB, Pepper Marketing Board (PMB) functions as a buyer and exporter, and regulates the practices of private traders and exporters with respect to quality assessment. Besides, the MPB has been authorized to issue an export license to companies such as Borneo Agro Specialty Food Sdn. Bhd., LHC-SK Sdn. Bhd., Lim Lian Hua (Sarawak) Sdn. Bhd., Nguang Aik Sdn. Bhd., Syn Min Kong Sdn. Bhd., Sarawak Produces Industries Co. and Wan Zhang Food Industries Sdn. Bhd. Besides the government agency's efforts to assist in improving farmers' income, the private agencies also have a role to play in the pepper market and all the activities that contribute to farmers' income.

## **METHODOLOGY**

The list of black pepper farmers was gathered from the Malaysian Pepper Board Association (MPBA). A survey was conducted to collect data from the sampled pepper farmers in the state of Sarawak. Face-to-face interviews were conducted with the farmers using a structured questionnaire that consisted of four sections. Section A consisted of questions regarding farmers' socio-demographic profiles such as age, gender, race, religion, marital status, household size, income, occupation, and level of education. Questions on each farm's profiles such as years of operation, farm size, and number of workers were in Section B. The questions in Section C were related to black pepper marketing activities. Section D was established to elicit farmers' responses toward factors that influence them to choose a particular marketing channel. A five-point Likert scale question was established in Section D to determine the level of 'agreement' and 'disagreement' among the farmers toward several factors such as price, services, quality, quantity, and distance.

The study was carried out in Kuching, which covered areas such as Serian, Bau, and Simunjan. Kuching was selected because it is the largest pepper producer in Sarawak and the setup price for pepper in this area is quite competitive as compared to other areas such as Samarahan, Sri Aman, Betong, Sarikei, Bintangor, and Sibul. Based on the MPBA list of farmers located in areas within Kuching (Serian, Bau, and Simunjan), a simple random sampling method was used to determine the sample size and 105 farmers were identified who were willing to be the respondents and to participate in this study.

Data were analysed using descriptive analysis, chi-square analysis, factor analysis, and t-test. Descriptive analysis was used to investigate socio-demographic profiles of the farmers in the study. Chi-square analysis was used to investigate the relationship between farmers' socio-demographic profiles and their preferences toward selecting marketing channels. Factor analysis was used to identify factors that influence farmers in selecting marketing channels for black pepper and t-test was used to investigate if there is a significant difference in terms of farmers' income with the marketing channels they preferred.

## FINDINGS

### Farmers' Socio-demographic Profiles

The summary of the farmers' socio-demographic profiles is shown in Table 1. The result showed that 44.8% of the pepper farmers were between 51 and 65 years old. The production of pepper in Kuching was dominated by female farmers (61.9%), who also carried out the marketing function. In terms of ethnic distribution, currently, the Bidayuh formed the majority of farmers (67.6%), which was once dominated by the Chinese. The remaining farmers were Iban who constituted 32.4%. The results also showed that all farmers were Christians and 95.2% of them were married. A majority of the farmers (50.5%) had less than three family members and most of the farmers (45.7%) had only primary school education. Ninety-five farmers were full-time growers and about 50.5% earned less than RM500 per month.

**Table 1: Socio-demographic Profiles of Farmers**

<b>Item</b>	<b>Frequency (N)</b>	<b>Percentage (%)</b>
<b>Age</b>		
20-35	16	15.2
36-50	25	23.8
51-65	17	11.8
66 and above	17	16.2
<b>Gender</b>		
Famale	65	61.9
Male	40	38.1
<b>Race</b>		
Iban	34	32.4
Bidayuh	71	67.6

Table 1 (continued)

Item	Frequency (N)	Percentage (%)
<b>Religion</b>		
Christian	105	100
<b>Marital status</b>		
Single	5	4.8
Married	100	95.2
<b>Number of household</b>		
Less than 3	53	50.5
3 - 6	9	8.6
7 - 9	17	16.2
10 - 12	18	17.1
13 and above	8	7.6
<b>Level of education</b>		
Never been to school	34	32.4
Primary school	48	46.7
Secondary school (PMR)	23	21.9
<b>Occupation</b>		
Full time grower	95	90.5
Business	4	3.8
Private sector	4	3.8
Government	2	1.9
<b>Income</b>		
Less than RM500	53	50.5
RM500 - RM1000	36	34.3
RM1001 - RM1500	13	12.4
More than RM1500	3	2.9

Note: N = 105

### Farm Profiles and Farmers' Preferences on Marketing Channels

Table 2 shows farm profiles and farmers' preferences in marketing channels. Majority of the farmers (38.1%) have been involved in black pepper production for 10–15 years and only 15 farmers (14.3%) had less than 5 years' experience in pepper production. Most of the farmers (60%) used between 1 and 2.5 hectares of land for planting pepper. About 59% of the farmers chose private agencies as their intermediaries, whereas only 41% of the farmers favoured the government agencies.

**Table 2: Farm's Profiles and Preferences on Marketing Channels**

<b>Profiles</b>	<b>Frequency (N)</b>	<b>Percentage (%)</b>
<b>Year of Operation</b>		
Less than 5	15	14.3
5 - 10	30	28.6
11 - 15	40	38.1
More than 15	20	19.0
<b>Farm Size (hectares)</b>		
1 - 2.5	63	60.0
2.51 - 5	33	31.4
5.1 - 7.5	4	3.8
7.51 -10	4	3.8
10.1 -12.5	1	0.9
<b>No of Workers</b>		
Less than 5	80	76.2
5 - 10	20	19.0
More than 10	5	4.8
<b>Preferences on marketing channels</b>		
Government agencies (MPB)	43	41.0
Private agencies	62	59.0

*Note: N =105*

### **Chi-Square Analysis**

Chi-square analysis was used to investigate the relationship between farmers' socio-demographic profiles and preferences in selecting black pepper marketing channels. The hypothesis established for the study was as follows: -

Ha: There is a significant relationship between farmers' socio-demographic profiles and preferences in selecting marketing channels.

Table 3 shows the summary of the results of the chi-square analysis between the two variables. The results indicate that farmers' socio-demographic profiles such as race, occupation, and income have a significant relationship with preferences toward marketing channels. These variables had 5% level of significance. In this study, Bidayuh and Iban formed the majority of farmers in Sarawak. Furthermore, most of these farmers were full-time growers and had income less than RM500 per month.

**Table 3: Chi-Square Result on the Relationship between Socio-demographic Profiles and Marketing Channel Preferences**

Variable	Chi-square ( $X^2 = 0.005$ )	df	Significant	Decision
Gender	1.909	1	0.167	Fail to reject $H_0$
Race	4.361	1	0.037*	Reject $H_0$
Marital status	0.788	1	0.375	Fail to reject $H_0$
Level of education	3.16	3	0.368	Fail to reject $H_0$
Occupation	5.13	1	0.024*	Reject $H_0$
Income	9.735	4	0.045*	Reject $H_0$

Note: \* Significant at 5% level of significance

### Factor Analysis

Factor analysis was carried out on the 14 items related to factors that influence farmers in selecting marketing channels for black pepper. Before factor analysis was carried out, the Kaiser-Meyer-Olkin (KMO) was used to measure the sampling adequacy and to predict if the data was likely to factor well; this was based on correlation and partial correlation ranging from 0 to 1, which should be greater than 0.6 (Garson, 2009; Hair, Anderson, Tatham, & Black, 1998). The result revealed that the KMO score was 0.804 indicating intercorrelations between the factors, whereas the Bartlett's Test of Sphericity was significant (Chi-square = 2163.54,  $p < 0.01$ ). Therefore, the data are suitable for Principle Component Analysis (PCA) (Field, 2010).

According to Ogunleye and Oladeji (2007) there are a few factors associated with the choice of different marketing channels among farmers. Among the identified factors are time of payment, mode of payment, price of product, distance from farm, transportation cost, and grading of product. Based on factors analysis results, only four factors have been recognized, which influence farmers' preferences toward different market channels (Table 4).

The first identified factor was price. Statements were related to pricing factors such as private sector's lower price offers; farmers preference to sell their products to MPB if the market price for black pepper is high; farmers preference to sell black pepper to private sector if they can cover transportation costs; farmers feel more comfortable with MPB selling price; and MPB's higher price offers. Price is considered as an important element by farmers in making a decision on the most preferred marketing channels.

The second factor that influenced the farmers to choose marketing channels for their products was quantity of production. The farmers who wanted to sell a large quantity of pepper preferred to choose private marketing channels as their intermediaries as there is no limitation particularly in terms of selling quantity, whereas MPB imposed quantity and quality restriction regulations. Therefore, quantity can be considered as one of the factors considered by farmers when marketing pepper, thereby helping to generate more profits.

The third factor revolved around the services rendered by buyers. The results from Table 4 show that the private sector do not provide any profitable schemes to farmers. Therefore, as the farmers have to pay for transportation costs, it translates to farmers' reluctance in choosing the private sector as their intermediaries. If MPB could provide transportation services, the farmers would prefer to choose MPB as their intermediate person. This will increase farmers' commitment to increasing black pepper production.

The fourth factor identified was distance. The statements such as the MPB selling centre is far from the farms; farmers need to cover transportation costs if they sell to private sector; and farm locations are near to private selling centre were loaded as distance factors. In Sarawak, the farms are mostly located far from the city, at a distance of approximately 60km. This means that the MPB selling centres are located far away and because of that, most farmers need to choose private sector selling centres to market their pepper. However, the disadvantage here lies in paying extra for transportation costs. Table 4 summarizes the factor analysis results.

**Table 4: Summary of Factor Analysis Results**

Items	Factor Loading			
<b>Factor 1: Price</b>				
Private sector offers lower price	0.952			
Sell to MPB if the market price for BP is high	0.912			
Sell to private sector to cover transportation costs	0.860			
Comfortable with MPB selling price	0.853			
MPB offers higher price	0.626			
<b>Factor 2: Quantity</b>				
Farmers focus on BP quantity not quality	0.789			
No quantity limitation if sell to private sector	0.707			
Farmers always want to sell BP in high quantity	0.643			
<b>Factor 3: Services</b>				
Private sector did not provide any profitable scheme to farmers		0.830		
Farmers need to pay cost of transportation if sell BP to private sector		0.811		
MPB provides transportation services		0.762		
<b>Factor 4: Distance</b>				
MPB selling center is far farm locations			0.756	
Farmers need to cover transportation cost if sell to private sector			0.730	
Farms' locations are near to private selling centre			0.678	
<b>Eigenvalues</b>	7.458	1.453	1.148	1.026
<b>% of variance</b>	35.516	20.918	8.226	4.886
<b>Cumulative % of variance</b>	35.516	56.434	64.66	69.546

Note: MPB = Malaysian Pepper Board, BP = Black pepper

The reliability analysis was conducted to ensure the internal validity of the items used for each factor. Cronbach alpha values from 0.6 to 0.7 are deemed the lower limit of acceptability. An alpha of more than 0.7 would indicate that the factors are homogeneous and reliable (Hair et al., 1998). Table 5 shows the reliability of the measurement scales. The Cronbach's alpha values for all four factors were over 0.6. This indicates that all of the factors derived from the analysis were reliable as an alpha value of 0.6 or higher indicates a sufficient internal reliability.

**Table 5: Reliability Analysis on Factors Influencing Marketing Channels Selection**

Factor	N of Item	Cronbach's Alpha
Price	5	0.700
Distance	3	0.882
Quantity	3	0.646
Services	3	0.639

Note:  $N = 105$

### T-Test

T-test was used to investigate the difference between two groups of farmers in terms of income and marketing channels they chose for marketing their produce. The first group consisted of 43 farmers who preferred government agency as an intermediary to market their produces. Sixty-two farmers who selected private agencies to be their middlemen was the second group of farmers. As most of the farmers in Sarawak work as full-time growers, income has been chosen as an important variable in this analysis. The hypothesis developed for this analysis was as follows: -

Ha: There is a significant different between level of farmers' income and types of marketing channel.

Table 6 shows the summary of T-test. The result showed that there was a significant difference between farmers' income and types of marketing channel with the level of significance at  $p < 0.05$  ( $p = 0.00$ ). The mean difference of income was on an average RM1,002.13 per month. The result indicated that the richer farmers tend to choose the MPB as their marketing channel as the MPB always offer the higher price, and consequently, on an average, the farmers' income was RM1,506.35 which is quite high compared to if they were selling to the private agencies. However, the result also showed that the number of farmers who chose to sell to private channel (62) was greater than the public sector (43). This was because no quantity limitation is imposed if the farmers sell to private sector, especially for farmers presumably having bigger production areas and therefore producing large quantity of pepper. Selling their products to the private channel is a better choice because it tends to be more flexible and efficient when compared with the public agency. Although the public agency (MPB) appears to offer higher price, distance and time become major barriers as the farms are located far away from MPB selling centres. Apart

from that, the transportation services of MPB are limited to specific timings, which limit the farmers' time to market their product making them choose the alternative marketing channel option. Hence, selection of the different types of marketing channel has been proved to affect farmers' income. Table 6 below summarizes the result.

**Table 6: Summary of Test Result: T-Test Analyses of the Difference between Two Market Channels Selection and Income of the Farmers**

Market Channel Selection	N	Mean	SD	T-value	Significant
MPB	43	1506.35	1533.87	4.874	0.00
Private	62	504.22	438.57		

*Note: Level of significance at  $p < 0.05$  (2-tailed)*

*MPB = Malaysian Pepper Board*

## CONCLUSION

This study shows that farmers' choices and preferences toward marketing channels are influenced by the following factors such as price of pepper, quantity of pepper produced, services, and distance of buying (marketing) centres from the farm. By conducting T-test, this study also reveals that selection between different types of marketing channels will affect income of the farmers. Results of the descriptive statistics show that most of the farmers in Sarawak preferred private marketing channels to sell their products simply because they are closer to the farms and the services they rendered to farmers are quite attractive especially in reference to transportation. Some of the private buyers collect pepper produced by the farmers at the farm gate itself. The marketing channel managed by the government is unable to attract more farmers because it is located relatively far from the pepper farms and the farmers have to transport their produce to the government centres. However, the presence of the government may help in preventing any form of exploitation of the farmers. Thus, appropriate actions must be taken by the government (Malaysian Pepper Board) to improve their services and facilities, particularly in terms of location and transportation. The MPB could also concentrate on providing consultancy or extension services to assist farmers in improving farm management practices and marketing, which may help the farmers to increase their income directly. Therefore, the MPB should not only improve marketing efficiency and offer competitive prices, but should also introduce schemes to improve pepper productivity. This scheme should ensure that the farmers continuously produce good quality black pepper and at the same time will have guaranteed buyers for their produce.

Finally, as this study dealt with marketing channels that commonly serve the domestic market of pepper, the findings indicate that the selection of marketing channels is influenced by specific factors in the marketing environment. Therefore, the challenge is to relate the marketing channel factors to other sectors because those sectors might have different players with different marketing systems and environment. Apart from that, the

findings can also provide a better understanding of the current marketing structures for agricultural crops and thus help to predict structural marketing changes that could take place in the challenging business environment.

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