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Marketing Margins and Market Efficiency for Vegetables in Malaysia

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Abstract

The vegetable industry of Malaysia plays an important role in meeting the domestic food requirements of the population. While per capita consumption of vegetables has increased from 54.1 kg in 2008 to 57.3 kg in 2013 and the country's self-sufficiency level is estimated to have increased to 91.3% in 2014 compared to 58.4% in 2012, the efficient distribution of the food is an important consideration so that food security is ensured. This study examined the marketing costs, margins and returns for ten types of vegetables. Primary data was collected from five states that represented the various regional zones of Malaysia. Face-to-face interviews were conducted with 450 respondents consisting of farmers, wholesalers and retailers. The study showed mixed results with marketing efficiency existing for five of the vegetables studied. The farmers' share of the consumer ringgit ranged from 32% to 60% while the wholesalers' margin varied from 17% to 29% and the retailers' margin was between 18% and 30%.

Keywords: Marketing Margins, Food Marketing, Food Security, Market Efficiency

Introduction

The vegetable industry is an important contributor to food security in Malaysia. However, the industry faces various challenges towards the achievement of food sufficiency, including small-scale production, high production cost, an ageing farmer population, and intensified competition from imported vegetables of lower cost producers such as China and Thailand.

The National Agro-Food Policy 2011-2020 (Ministry of Agriculture Malaysia 2011) envisages transformation of the vegetable industry through increased productivity, expansion of commercial planting, reduction of post-harvest losses and strengthening marketing. According to Ministry of Agriculture Malaysia (2011), the per capita consumption for vegetables is expected to increase 2.6% annually from 55 kilogram in 2010 to 70 kilogram per annum in 2020. Meanwhile, the Federal Agricultural Marketing Authority (2014) estimated that there was an overall increase of 5.9% in per capita consumption of vegetables from 54.1 kg in 2008 to 57.3 kg in 2013. The self-sufficiency level for vegetables stood at 91.3% in 2014 compared to 58.4% in 2012, an impressive increase of 32.9% over a two-year period (Ministry of Agriculture Malaysia 2014).

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Vegetable production area increased 27% from 53,582 ha in 2012 to 68,053 ha in 2014 while production increased 48% from 973,536 tonnes in 2012 to 1,439,478 tonnes in 2014 (Ministry of Agriculture Malaysia 2014). Vegetables that had the highest production in 2014 included cabbage at 129,820 tonnes, chillies at 59,989 tonnes and spinach 56,935 tonnes (Department of Agriculture Malaysia 2014). There were 1,677,000 people employed in the agricultural sector in 2014 (Ministry of Agriculture Malaysia 2014), comprising 12.4% of the labour force. The Department of Agriculture (2014) reported that there were 46,040 vegetable farmers in Malaysia in 2013.

Food security is an important issue in the global environment today. The World Food Summit of 1996 defined food security as existing "when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life" (FAO 1996). The Food and Agriculture Organization (FAO) defines food security as existing when people have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life (FAO 2015). This definition places emphasis on consumption, that is, the demand side, and the issues of access by vulnerable people to food. While availability is determined by food production, stock holding and food marketing (Von Braun et al. 1992), the efficient distribution of the food is an important aspect for consideration so that continuous availability is ensured (Babatunde & Oyatoye 2005).

According to Aiddoo et al. (2012), many development agencies and governments recognize that efficiency in agricultural markets would improve the bargaining position of farmers and that their income would increase. Improved efficiency in markets would also have the benefits of lower transaction costs, increased trade volume, lower food prices and increased food security (FAO 2003).

Although food marketing is a very important aspect of agricultural development, it is often given little emphasis as countries usually focus on policies to increase food production; as a result there is not much consideration on efficient food distribution to encourage improved productivity Olayemi (1982). In Malaysia, almost 30% of food is lost through poor post-harvest practices; thus reducing post-harvest losses could be an important means to improve food security.

Literature Review
Previous studies on marketing margins have found that the marketing system for fresh produce is inefficient. Onyemauwa (2010) analysed the net margin of marketers of watermelon in Niger Delta of Nigeria and found that the watermelon marketing system is inefficient with a net margin of about 42% in the area. It was found that the statistically significant variables that had positive relationship with the net marketing margin were marketing experience, depreciation cost of marketing equipment, cost of produce and marketing cost. The study also stated that marketing in Nigeria is ineffective and inefficient due to inadequate infrastructure and social amenities such as transportation facilities, communication system, good storage facilities and good pricing systems.

Aidoo et al. (2012) found that yam marketing among producer-sellers was inefficient with an efficiency ratio of about 86%. The main constraints that affected yam marketing were

identified as poor road network, limited financial resources, poor storage facilities and high cost of transportation.

Hassan et al. (2012) found that the producer's share of the consumer price for a majority of fruits and vegetables was around 25% and noted there was a need to bring reform in marketing operations and networks in the country to transfer the real benefits to farmers.

Pokhrel & Thapa (2007) in their study on mandarin marketing in Nepal found that although farmers in the study area were receiving a fair share of the benefit accruing from the marketing of mandarin, market intermediaries were harassing and cheating them in other ways by taking advantage of their weak bargaining position and poor economic condition.

Fatimah (2010) points out that in Malaysia, small farmers are in danger of being marginalised because marketing at the farm level has not kept pace with the the rapid growth of food retailing in the country. It was pointed out that the vegetable and fruit industries in Malaysia are lagging on issues such as productivity and value added creation partly due to institutional and structural constraints.

The marketing of vegetables in Malaysia is usually carried out in a traditional way and involves several market intermediaries resulting in high marketing costs (Norsida et al. 2009). In addition, the producers are usually at a considerable distance from the marketing centres and lack market information. Inadequate marketing infrastructure also aggravated their marketing problems.

According to Kohls & Uhl (1998), the marketing margin is the portion of the consumer's food dollar that accrues to food marketing firms. It can also be said to be the difference between what the consumer pays and what the farmer receives. The cost of performing a multitude of functions and profits accruing to the firms are usually included in this price.

The size of the marketing margin is often misconstrued to relate to the efficiency of food marketing (Kohls & Uhl 1998). It is often believed that a small margin is desirable because it denotes greater marketing efficiency. In many developing countries, high retail prices and low farm prices have often been attributed to excessive profits, inefficiency, unnecessary services, and high marketing costs.

In Malaysia, the Ministry of Agriculture and Agro-based Industry has embarked on a campaign to reduce the role of the middlemen. With the tagline *Jihad Memerangi Orang Tengah* (War against Middlemen) (Sabri 2014), the campaign aims to reduce the manipulation of middlemen in the marketing chain and ensure remunerative returns to producers as well as fair prices to consumers. Sabri (2014) pointed out that the returns to farmers were often below 40% of the consumer dollar, and together with high post-harvest losses, resulted in returns to farmers being not commensurate with their efforts.

However, the size of the marketing margin cannot be used as the sole criterion to judge efficiency (Kohls & Uhl 1998). Marketing margins may vary widely among different agricultural commodities and these variations have been attributed to differences in processing, perishability, bulkiness and the seasonality of production (Adekanye 1988). It is not possible to conclude that high marketing margins mean that marketers are taking

advantage of producers or consumers, and likewise, low marketing margins may not mean greater marketing efficiency (Eze 2007). A comparison of marketing margins with the marketing services provided is necessary for any deduction to be drawn. Marketing efficiency is said to exist if the marketing margin is commensurate with the marketing services provided and value added (Leftwich 1979).

Another aspect to consider is whether producers are better off when the farmer's share of the consumer dollar has increased. The increased farmer's share of the retail price could arise from increased production costs rather than improved returns to farmers. Farmers would be better off only if production costs declined and their net profit margins improved (Zainal Abidin & Mad Nasir 1986).

This study was conducted to examine the marketing costs, margins and returns for vegetables in Malaysia. The study also aims to compare the net returns to marketers and the value of services provided in order to determine whether marketing efficiency exists in the sector.

Methodology
This study was carried out in five states that represented the various regional zones of Malaysia, i.e. Penang (Northern Zone), Pahang and Terengganu (Eastern), Perak (Central), and Malacca (Southern). The field survey was undertaken from 11 to 24 November 2013, lasting two weeks.

Primary data for the market survey was obtained through face-to-face interview with selected respondents consisting of farmers, wholesalers and retailers using structured questionnaires. Respondents at the farm level were selected from major producing areas with the criteria that they had been involved in cultivating vegetables for at least two years and that their planted area exceeded one acre. Meanwhile, at the wholesale and retail levels, respondents were selected from the major wholesale markets and wet markets, respectively, at each state capital. Convenience sampling was employed using a list of farmers, wholesalers and retailers supplied by the FAMA state offices. A total of 450 respondents were interviewed during the survey, comprising 150 respondents at each marketing level.

The survey was conducted by trained Federal Agricultural Marketing Authority (FAMA) research officers from the headquarters and assisted by FAMA field officers at the state level. Two questionnaires were designed: the first for farmer respondents, and the second for wholesalers and retailers. The questionnaire comprised three parts. Part A consisted of information on the profile of the respondent. Part B was for recording information on transactions for the varieties of produce handled or transacted while Part B detailed the marketing costs.

The focus of the study was on 10 types of commonly consumed vegetables in Malaysia, i.e. leaf mustard (*Brassica chinensis* L. var *oleifera* Makino), Chinese Spinach (*Amaranthus* spp.), cabbage (*Brassica oleracea* var *capitata* L), red chillies (*Capsicum annum* var. *acuminatum* L.)(Kulai variety), long beans (*Vigna sinensis* L.), French Beans (*Phaseolus vulgaris* L.), cucumber (*Cucumis sativus* L.), tomatoes (*Lycopersicum esculentum* Mill), brinjals (*Solanum melongena* L.) and pumpkin (*Cucurbita maxima* Duch ex. Lam).

Data Analysis

Descriptive and inferential statistics were used to analyse the data collected during the field survey. The descriptive statistics made use of frequency distribution, mean and percentage.

Marketing margins were obtained by using the definition given by Kohls and Uhl (1998). Therefore, the formula for marketing margin, net marketing margin, whole margin and retail margin can be stated as:

$$MM = RP-FP \tag{1}$$

$$NMM = MM-MC \tag{2}$$

$$MM = WM + RM \tag{3}$$

$$WM = WP-FP \tag{4}$$

$$RM = RP-WP \tag{5}$$

Where
MM = Marketing Margin
NMM = Net Marketing Margin
RP = Retail Selling Price
WP = Wholesale Selling Price
FP = Farm Selling Price
MC = Marketing Cost
WM = Wholesale Margin
RM = Retail Margin

In equation 2, the net marketing margin is the difference between the total marketing margin and marketing cost. Assuming that wholesalers buy directly from farmers and that retailers buy directly from wholesalers, the marketing margin can then be apportioned between the wholesale margin and the retail margin as given in equation 3.

Table 1 provides the average marketing margins and producers' share of the consumer ringgit for the ten types of vegetables studied. The analysis shows that the farmers' share of the consumer ringgit ranged from 32% to 60%, with the highest share for red chillies at 60%, followed by leaf mustard at 59% and brinjal as well as French Beans at 58%. The lowest farmers' share was for pumpkin at 32%. The wholesalers' margin varied from 17% to 29% while the retailers' margin was between 18% and 30%.

Based on the survey results, the marketing costs that are frequently incurred at the various marketing levels are as given in Table 2.

Table 1: Marketing Margins and Marketing Efficiency for Vegetables in Malaysia

Vegetable Type	Farm-gate Selling Price (RM/kg)	Wholesale Selling Price (RM/kg)	Retail Selling Price (RM/kg)	Farmers' share of the Consumer Ringgit (%)	Wholesale Margin (%)	Retail Margin (%)
Leaf Mustard	2.35	3.25	3.95	59	23	18
Chinese Spinach	1.65	2.65	3.8	43	26	30
Cabbage	1.5	2.5	3.5	43	29	29
Long Beans	2.2	3.35	4.65	47	25	28
French Beans	4.3	5.8	7.45	58	20	22
Red Chillies	5.15	6.9	8.65	60	20	20
Cucumbers	1.2	1.85	2.4	50	27	23
Brinjals	2.9	3.75	5	58	17	25
Tomatoes	2.65	3.8	5	53	23	24
Pumpkin	0.8	1.45	2.5	32	26	42

Note: Prices refer to average prices from 11 to 24 November 2013.

Source: Field Survey, FAMA, 2013

Table 2: Components of Marketing Costs at Wholesale and Retail Levels

Components	Examples of Activities Carried Out
Labour Costs	Loading and unloading, cleaning, grading, packaging, labelling and selling.
Packaging Costs	Plastic, cartons, netting, styrofoam, string, rubber band, old newspapers, plastic and rattan baskets, weighing machines, trolleys and machines.
Storage Costs	Freezers, chillers, cold rooms, stores and warehouses.
Transportation Costs	Purchase or rental of lorries, four-wheeled drive vehicles, vans, motorcycles; fuel, tolls, insurance, road tax and maintenance.
Administrative Costs	Business license, rental, utilities, communication, workers' levies and visa charges.

Post-harvest Losses	Weight loss, damage during handling and unsold quantities.

Source: Field Survey, FAMA, 2013

Discussion

In order to arrive at a measure of marketing efficiency, it is necessary to make a comparison of net margins and marketing costs (Olukosi and Isitor, 1990). Accordingly, the formula was specified as:

$$\text{Marketing efficiency} = \frac{\text{Net Margin}}{\text{Marketing Costs}} \times 100\% \qquad (6)$$

The average prices during the survey period were obtained from the respondents at the various levels, and where necessary, were converted to RM/kg equivalent in order to arrive at marketing margins and marketing efficiency calculations.

Table 3 presents the estimates of marketing margin and marketing efficiency in ten varieties of vegetables during the study period. The estimates are based on simple averages of prices and costs in the five states surveyed.

Table 3: Marketing Margins and Marketing Efficiency for Vegetables in Malaysia

Vegetable Type	Farm-gate Selling Price (RM/kg)	Wholesale Selling Price (RM/kg)	Retail Selling Price (RM/kg)	Farmers' share of the Consumer Ringgit (%)	Wholesale Margin (%)	Retail Margin (%)
Leaf Mustard	2.35	3.95	0.93	1.60	0.67	72
Chinese Spinach	1.65	3.80	0.83	2.15	1.32	159
Cabbage	1.50	3.5	1.18	2.00	0.82	70
Long Beans	2.20	4.65	0.92	2.45	1.53	166
French Beans	4.30	7.45	1.44	3.15	1.71	119
Red Chillies	5.15	8.65	1.33	3.50	2.17	163
Cucumbers	1.20	2.40	0.67	1.20	0.53	79
Brinjals	2.90	5.00	1.67	2.10	0.43	26
Tomatoes	2.65	5.00	1.26	2.35	1.09	87
Pumpkin	0.80	2.50	0.42	1.70	1.28	305

Note: Prices refer to the average prices from 11 to 24 November 2013.

Source: Field Survey, FAMA, 2013

The net marketing margin ranges from RM0.43 per kg for brinjals to RM2.17 for red chillies. The marketing cost ranged from RM0.42 per kg for pumpkin to RM1.67 per kg for

brinjals. Marketing efficiency is found to be highest for for pumpkin at 305%. This is followed by long beans at 166% and Chinese Spinach at 159%.

Marketing efficiency exceeding 100% is considered to be efficient using the Olukosi and Isitor (1990) definition since value addition (as represented by net marketing margin) exceeds the marketing costs incurred. Five of the vegetables studied have marketing efficiency ratios exceeding 100% and are considered efficient, i.e. pumpkins, long beans, red chillies, Chinese Spinach, and French Beans. In contrast, five vegetables have marketing efficiency ratios below 100% and are considered inefficient, i.e. brinjals, cabbage, leaf mustard, cucumbers and tomatoes. The differences in results for the different vegetables may be an indication of the intricacies in handling each vegetable type.

Conclusion

This study analyses the marketing margins and marketing efficiency for vegetable marketing in Malaysia. Based on marketing cost and net marketing margin comparison, it was found that the marketing of five types of vegetables was efficient while another five vegetables were inefficient. The analysis shows that the farmers' share of the consumer ringgit ranged from 32% to 60% while the wholesalers' margin varied from 17% to 29% and the retailers' margin was between 18% and 30%. The net marketing margin showed a wide range from RM0.43 per kg for brinjals to RM2.17 for red chillies. There were also big differences in the marketing cost that was from RM0.42 per kg for pumpkin to RM1.67 per kg for brinjals.

It was assumed that a single marketing chain involving, producers, wholesalers and retailers existed. Further study is needed to examine the marketing efficiency when different marketing chains are involved, e.g. when producers market their own produce, when local collectors and agents are involved, and when selling through farmers' markets. Also, the distribution of the marketing margin among the various players could be analysed further.

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