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EDITORIAL

The time has arrived for me to say goodbye after helming the Journal of Agribusiness Marketing as Chief Editor since its inception in 2008. The eighth issue is the final issue of the journal that I am editing in my given capacity. The future of the journal is uncertain at this stage.

It has been a challenging nine years of managing the journal and a great learning experience for the editorial team as we were treading on new territory- something that the Federal Agricultural Marketing Authority (FAMA) of Malaysia had very little experience in. I am glad to say that the editorial team has performed reasonably well and managed to publish eight issues of the journal during the period. And in the process, we managed to organize the Agribusiness Marketing Conference in 2010, and the International Agribusiness Marketing Conference (IAMC) in 2013.

I would like to take this opportunity to thank the editorial board, comprising international and local members, who have been with us since the inception of the journal, and many editorial board members who joined subsequently, for assisting FAMA in the management of the journal. Of special mention are Alias Radam and Amin Mahir Abdullah from Universiti Putra Malaysia, who have played their roles as editors wholeheartedly. I am also grateful for the untiring efforts of the many reviewers who have played a major role in ensuring that the quality of the journal is maintained. And to the pioneer executive editors, Norhashila Mohd Ismail and Mohd Riduwan Mohd Hussein who have remained steadfast to the journal cause, thanks from the bottom of my heart for their commitment and willingness to learn. Finally, to the management of FAMA, especially to the previous Director-General, Dato' Mohd Shariff Abdul Aziz who conceptualized the idea of an in-house FAMA journal, and the present Director-General, Dato' Ahmad Ishak, thanks for this opportunity to serve FAMA and broaden my horizon.

The eighth issue of the Journal of Agribusiness Marketing presents five articles that discuss current issues related to the marketing of fresh and processed agricultural products. The first article by Sukhpal, **"Replicating Small Farms, Prosperous Farmers in India: Lessons for Policy and Practice"** makes evidence-based policy and practical recommendations for replicating the Small Farmer, Prosperous Farmer (SFPF) models of agricultural development in India. The empirical case studies of 35 small and prosperous farmers documented profiles of SFPFs in terms of their resources, costs and profits; provided evidence of success (in terms of net income and prosperity) given small holdings; identified major factors in prosperity/success; looked into the roles of policy and business environment, if any; and made inferences on possibilities of replicating of SFPF success given other contextual factors in other regions.

The second article, "**Marketing Margins and Marketing Efficiency for Fruits in Malaysia"** by Bisant, reports on a study on the marketing costs, margins, and returns for fruits in Malaysia. The study aimed to determine whether marketing efficiency exists in the fruit sector based on a comparison between net returns and value of services. The

study found that the marketing of six types of fruits was efficient, whereas that of five other fruits was inefficient. The farmers' share of the consumer ringgit ranged from 40% to 61%, whereas the wholesalers' margin varied from 30% to 59%, and the retailers' margin was between 15% and 28%.

Nik Rozana, Suhana and Mohd Tarmizi in the third article, **"Identifying the Nature, Issues and Challenges of Women Entrepreneurs in Agriculture: A Mixed Method Approach",** report on a study that had been carried out to understand the issues or challenges faced by women entrepreneurs in Malaysia. Female participants from three women development programs were involved in a survey conducted through focus group discussions and self-administered questionnaires. Factor analysis was used to identify the issues and problems faced by rural women entrepreneurs, especially those involved in agriculture-based businesses. The analysis found that the top three challenges among rural women entrepreneurs were marketing, human resource and financing. Overall, rural women had the potential of contributing to their household economy and raising its income if the issues and challenges they faced were managed well, with the support from development programs provided for them.

The fourth article by Oteh, **"Resource Use Efficiency on Cassava Production in Abia State, Nigeria: Implication for Agri-Food Marketing and Commercialization",** investigates the role of resource use efficiency on commercialization and food security of cassava farmers in Abia state. The study identified determinants and levels of commercialization among farming households based on resource use. Results indicated an inefficient utilization of resources employed in the production of cassava production. Inputs, adoption of modern technology, labour and household size returned as significant factors that influence resource use efficiency. The result of the food security status shows that farmers who are food insecure are greater in number than their counterparts who were food secure.

In the fifth and final article entitled **"Marketing Margins and Market Efficiency for Vegetables in Malaysia"**, Bisant notes that the efficient distribution of food is an important consideration toward ensuring food security. This study examined the marketing costs, margins, and returns for ten types of vegetables. Primary data were collected from five states and face-to-face interviews were carried out with 215 respondents consisting of farmers, wholesalers, and retailers. The study obtained mixed results, which indicated the existence of marketing efficiency for five of the ten vegetable types studied.

With that, I am signing off. Farewell everyone!

Bisant Kaur (PhD)

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REPLICATING SMALL FARMS, PROSPEROUS FARMERS IN INDIA: LESSONS FOR POLICY AND PRACTICE

Sukhpal Singh[*]

ABSTRACT

Small farm and small farmer viability has been a constant policy concern in India given its smallholder-dominated agriculture. Though there are different definitions of small farm in the literature, depending on local context, the term "smallholder" is a relative one in that it refers to the limited resource endowments of such farmers relative to those of other farmers in the sector in each local context. The Indian small farmers are in a state of agrarian distress, and the farmers' quest for earning enough from a small farm continues. It is in this context of academic and policy discourse that this article makes evidence-based policy and practical recommendations for replicating the Small Farmer, Prosperous Farmer (SFPF) models of agricultural development in India based on empirical case studies of 35 small (who were just 2 hectares or smaller farm operators) and prosperous farmers (earning at least one lakh (0.1 million)Indian rupees per acre per year) across three states of India—Punjab, Gujarat, and Maharashtra. Major objectives of the study carried out in 2012 were as follows: document profiles of SFPFs in terms of their resources, costs, and profits; provide evidence of success (in terms of net income and prosperity) given small holdings; identify major factors in prosperity/success—personal, institutional, and social; and understand the role of policy and business environment, if any; and infer on possibilities of replicability of SFPF success given the other contextual factors in other regions. The study identifies sources of success and policy relevance of such factors for making inclusive agricultural development possible.

Key Words: Small farmers, India, viability, high value crops, inclusive agriculture, Asia, size of farm

INTRODUCTION

More recently, questions are being asked about the relevance of smallholders for achieving higher agricultural growth and raising food production to meet growing demand for it (Murphy, 2011). The term "smallholder" is a relative one in that it refers to limited resource endowments of such farmers relative to those of the other farmers in the sector in each local context. Thus, the definition of 'small farm' can differ across countries and agroecological zones within countries, like irrigated plains and hill areas where 1 hectare can be small versus dry land or rainfed regions where even 10-hectare farm may

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be considered small (Vermulen & Cotula, 2010). Though globally, farming is dominated by smallholders, with 500 million of them supporting two billion people (Vorley, Cotula & Chan, 2012), the global polices and processes of change indicate a large farm focus (Dev, 2012), agricultural policies and programs are biased against smallholders, and the emerging investment climate supports only a small fraction of the smallholders (2-10%), who are resourceful or have access to assets and can be attractive to large private buyers (Vorley et al., 2012). Also, generally, "one size fits all" polices are recommended and implemented which do not help small farmers, rather put them at a disadvantage against the other categories. However, the role of the small farmers in poverty reduction is well recognized, and there are evidences to that effect in terms of the agricultural growth being twice as effective as growth outside agriculture (Dev, 2012; Vorley et al., 2012).

However, small farmers are not a homogenous group. There are small farmers who are fully commercialized and buy and sell in markets. There are others who participate in the market in a limited manner to buy inputs and sell some part of their output. There are still others who are subsistence farmers consuming most of their farm production while selling labor in the market or buying food grains from the market to meet their total consumption needs, thus becoming net buyers of food. Within the commercial agriculture, from a markets perspective, there are again specific segments of farming community, including small farmers: first, there are small farmers who are into high-value export markets directly or indirectly through Primary Marketing Organizations (PMOs) and other exporters, like grapes and baby corn or gherkins, respectively. Second, there are small farmers who are fully commercialized and operate in domestic high-value markets, for instance, in vegetables, like potato, onion, and other vegetables, who supply wholesale markets or modern domestic retail or wholesale "cash n carry" players. Third, there are small farmers who are into cereals and oilseed or pulses and sell at domestic open markets locally or in Agricultural Produce Market Committee (APMC) or regulated markets. Finally, there are small farmers in Green Revolution regions and even elsewhere who produce for the state and depend on the Minimum Support Price (MSP) policy, that is, for wheat, paddy, cotton, and some oilseeds. Further, there is an emerging segment of small organic producers who are either into export markets directly or through private agencies or non-government organizations (NGOs) or cater to domestic fresh and processed food markets. Besides small farmers, other rural poor whose fortunes are linked to agriculture and its markets directly or indirectly are: landless agricultural labor, pastoralists, and artisans.

Small farmers in India

India, being smallholder-dominated (85% of all operated holdings being marginal or small, i.e., less than 2 hectares with 63% holdings being smaller than 1 hectare each), has an agricultural economy that cannot be discussed without bringing into focus the issues of such small operators of the land. Given that the average size of holding in India is decreasing over the years, it is even more compelling to examine smallholder issues and concerns in the increasingly globalized agricultural market context. Small farms are more irrigated than their larger counterparts, though more from groundwater and many times

with water bought from other farmers under some arrangement. They also contribute 19% (in Punjab) to 86% (in West Bengal) of farm output across the Indian states, but overall, they contribute 51% of output with 46% of operated land share in India and a much higher share (70%) in high-value crops, such as vegetables and milk. However, small farmers are less literate and are from more marginalized castes and communities, like Scheduled Castes and Scheduled Tribes, and are generally excluded from modern market arrangements, like contract farming or direct purchase (Dev, 2012; Singh, 2012). Recent studies (Chand, Prasanna & Singh, 2011; Gaurav & Mishra, 2011) show that small farms produce as much as or higher value of output on average per unit area than the medium or large farms, which refutes the argument that small farms cannot be the future of Indian agriculture.

Also, it is important to recognize that the viability of a small farm and that of a small farmer are two different issues. Small farms may produce more output per unit relatively but that income may not be adequate in many situations of farmer family livelihoods (Chand et al., 2011). Therefore, nonfarm sources of income are suggested to be crucial for small farmer families to escape poverty or earn a decent livelihood. However, it is clear that if majority of the Indian smallholders are going to remain dependent on farming for some time to come, then it is crucial that the ways and mechanisms of making small farms deliver livelihoods are debated and discussed, and the role of policy is assessed so that appropriate policy and practical ways could be discerned.

OBJECTIVES AND METHODOLOGY

It is in this context of academic and policy discourse that this article makes evidence-based policy and practical recommendations for replicating the Small Farmer, Prosperous Farmer (SFPF) models of agricultural development in India based on empirical case studies of 35 small (defined as operators of 2 hectares or less of land) and prosperous farmers (defined as earning net income of at least one lakh (0.1 million))Indian rupees from each acre annually) across three states of India—Punjab, Gujarat, and Maharashtra. Major objectives of the SFPF case studies carried out in 2012 were as follows: document profiles of SFPFs in terms of their resources, costs, and profits; provide evidence of success (in terms of net income and prosperity) given small holdings; identify major factors in prosperity/success—personal, institutional and social; and understand the role of policy and business environment, if any, and infer on possibilities of replicability of SFPF success given other contextual factors in other regions. These observations are based on case studies of SFPF farmers across Punjab, Gujarat, and Maharashtra who were just 2 hectare or smaller farm operators. Of these, five were located in Malerkotla region of central Punjab in the well-known Green Revolution state of Indian Punjab, 26 in the Pune region in Maharashtra state (a dry land state) and four in Saurashtra region in Gujarat state (another dry land state). These farmers were interviwed personally by the author in their places of residence or farm with a set of questions meant for the case study which were in the nature of exploring the processes of the farmers and the reasons for their prosperity. These data from the interviews were supplemented with observations in the field.

The next section highlights major findings from the case studies followed by a section (3) on the role of policy, farmer agencies, and financial institutions in facilitating a smooth multiplication of SFPFs in India before concluding the discussion in section 4.

SFPF profile and profitability

Whereas most interviewed farmers in Punjab and Maharashtra were into vegetable crops with some of them also into spices in Maharashtra, in Gujarat, it was more of spices and other high-value crops like cotton, castor, peanut, sesame, cumin, *ajwain*, and guar. Most of these SFPFs in Maharashtra were Hindu Marathas by caste and traditionally into farming. They were/are into other businesses as well like *Hundekari* (transporting and selling produce on behalf of farmers in local or distant wholesale markets for commission), goods transport, people transport, APMC market employment, bus conductor, sport goods retailing, and *Hamaali* (loading/unloading services). Tractors were not so common (or were lower Horse Power), but pickup trucks were more common in Maharashtra. Further, dairy business was not common among farmers. These farmers, generally did not grow wheat and paddy, but grew more of *jowar* (sorghum) and *bajra* (pearl millet) in dry land for their own consumption. Similarly, in Gujarat also, most small farmers were upper caste and were mostly from the Patel (dominant caste) community. On the other hand, in Punjab, the farmers belonged to a caste of Muslims who were traditionally into vegetable growing and selling.

The average age of farmers across three states was between early 40s and late 40s which is lower than the average age of farmers in India, which is early 50s, and the latter is a cause for concern. Average schooling was also good in Gujarat and Maharashtra (almost 10 years), though poor in Punjab (4 years). All of the small farms across the three states were irrigated and grew four crops per year which shows very high crop intensity - much above the Indian average of 1.34. There was a dominance of high-value crops in cropping pattern though they also practiced intercropping for sustainability (Table 1).

Table 1: A comparative profile of Small and Prosperous farmers in India

Parameter	Punjab (5)	Gujarat (4)	Maharashtra (26)
Religion/Caste/ community	Muslims/*Kamoh* (gardening caste)	Hindu/patel (farming caste)	Maratha Hindu (farming caste)
Av. operated land (acres)	4 (owned and leased)	2.9	3.6
Other assets/ occupations	Retail shop keeping	Dairy animals/ tubewells	Pickup trucks / services/ retail shops
Average age (years)	42	46	41.5
Average schooling (years)	4	9	10
Subsidies availed	none	Micro irrigation, biogas, vermicomposting	Micro irrigation, farm level storage structures
Average number of crops taken/ year	5	3.7	4.3
Irrigated area (%)	100	100	100%
Source of irrigation	Groundwater with domestic power connections (non-commercial) and commercial	Electric tubewells	Tubewells/lift irrigation with diesel engines and electric motors
Local context	Not small farmer dominated	Small and medium farmer dominated	Small farmer dominated
Market	Local	On farm sale and local APMC	Local, district and distant market
Marketing/Selling	Local wholesale and retail	Wholesale	Local wholesale and retail
Access to farm credit	No	Yes, through KCC	Yes, through PACS
Cropping pattern	Vegetable dominated	High value cash crops	Vegetables and other high value cash crops
Cropping system	Inter and mixed crops	Organic and conventional	intercropping
Lease rate/acre/ year (Rs.)	35000	15000	15000
Hired labor use	Medium	High	High
Net income/acre/ year (Rs. million)	0.1-0.2	0.067-0.109	0.138-0.2

Source: primary data.

In Punjab, SFPFs did not borrow from formal sources and did not have Kissan Credit Cards (farmer credit cards; KCCs). They paid the highest land lease rent among the three states which was of the order of Rs. 30-40,000 per acre per year. Their farming is more about intensive farming with water and modern inputs with high family labor involvement, which seemed to have made them prosperous despite being small. The local market outlet and retailing on their own played significant roles in realizing the value from farming. The community culture of vegetable production and trade by this *Kamoh* caste has been the major cultural factor behind this success story (Table 1).

On the other hand, in Maharashtra's Pune region, land leasing was not much prevalent but lease rate depended on crops grown and cost of water and was anywhere between Rs. 10,000 and 20000 per acre/year. Some farmers (23%) were into commercial milk production, and some had goats too. Tubewells/lift irrigation with electric connections (3-5 HP, some with multiple or shared) was the norm for irrigation in the case of these SFPF farmers. Sugarcane, an annual crop, though grown by some farmers because of the presence of sugar mills especially co-operative ones in the area, was not very high paying, with Rs. 35000/acre net income, but it was easy to cultivate because sugar mills harvest and transport sugarcane from the farmer field with their own labor and transport (trailers, trucks, or bullock carts). Other crops, besides vegetable, with high net income are sugarcane ginger (net of Rs. 0.15-0.65 million per acre, and the crop/produce could remain in farm for 20 months), garlic, flowers, and turmeric (Rs. 0.64 lakh per acre net income). Net income/acre/year for these farmers was Rs. 1.38 lakh; if ginger or tomato with high price (off season) was considered, then even Rs. 2 lakh/acre.

The farmers in Maharashtra had not availed any major subsidies other than microirrigation and onion storage structures under National Horticulture Mission (NHM) schemes. These farmers either sold to *Hundekari* or in the local APMC, or district APMC or metro markets, like Mumbai. None of them was into contract farming or retail chain sales generally. They were only Primary Agricultural Co-operative Society (PACS) members and had KCC, or availed sugar cooperative loans if they were members. In fact, the region predominantly had small farmers, and a large percentage (in some villages up to 50%) could be classified as SFPFs. Most of the SFPFs in this region had all the basic comforts of life, like *pucca* house, two wheelers or four wheelers, color televisions (TVs), and refrigerators and bathrooms and toilets, besides cooking gas. Interestingly, the evidence of farming doing well could be seen in the fact that many nonfarmers with farming background were coming back to farming after leaving city jobs, and occupations as farming was more remunerative than some of those occupations, and these included drivers, mechanics, *hamali walas*, commerce graduate executives coming back to farming.

In Gujarat's Saurashtra region, all had assured irrigation with electric pumpsets. The produce was sold at the farm, directly to mills (cotton), and APMC. Dairying was also important in some cases (2 of 4). Only one farmer was a member of a producer company (PC) which has spread across six districts within 2 years of its formation and is making profits with the sale of member outputs, like cotton and mango, as well as sale of inputs to farmers through A*pna Kissan Malls* (farmers' own outlets) at the APMC market

town and village level. Some farmers had availed of drip (micro irrigation), biogas, and vermicomposting pits subsidy. Other income sources included running of *Apna Kissan Mall* (run for the producer/farmer company) in one case and two sons being employed in Jamnagar in another case. There were some farmers who were into organic production and its sale for some time now. The net income per acre ranged from Rs. 67,000 to 109,000 (if organic).

It is not that SFPFs in Gujarat are not into vegetables, though in Saurashtra, they were not much into vegetable production perhaps because of the lack of markets nearby. There were vegetable belts like Prantiz in Sabarkantha district in north Gujarat and Padra in Baroda district in central Gujarat known for their vibrancy as documented by Lamba (2012) though there were many large farmers in these areas who were also into vegetable production and supplied wholesale markets and modern supermarkets (Singh & Singla, 2011). The vegetable growers in Chandrala in Gandhinagar district neighboring Prantiz vegetable made net incomes of the order of Rs. 2.5 to 5 lakhs per hectare per year (Lamba, 2012).

In Gujarat, it is important to see the shift to organic as one of the ways to do a better and viable farming and also the focus on high-value crops, such as spices and oilseeds. In most cases, dairying was an important contributor to prosperity. In Maharashtra, it was mostly horticultural crops, , such as tomato, onion and potato, and spices, such as ginger, chilly, turmeric, and garlic. It was interesting to see the local perception of important factors in their prosperity in farming. For example, in Maharashtra, it is said that "Paani hai to agriculture hai" (irrigation makes farming possible). Also, on the profitability of the different crops, there is a local version of the economics. For example, in potatoes, it is said that "ek rupayia daalo, do milta hai" (invest one rupee, you get two in return). In one case in Maharashtra, it was interesting to see a farmer with 4 acres having a net income/ year higher than his brother's salary in Maharashtra State Electricity Board (MSEB) (Rs. 180,000) and another brother's salary as a driver (Rs. 96,000).

Factors in Prosperity

It was interesting to see that most SFPF farmers were into high-value crops. However, it was not only the production of these crops but also the market sense/orientation in planning to grow them and sell them well. Farmers across Punjab, Gujarat, and Maharashtra mentioned that the secret of success was planting/growing according to season, and market, and working hard.

On the production side, irrigation all across the case study states emerged as the most crucial determinant of high-value crop production and, therefore, viable farming and prosperous farmers. With two of the case study states being dry land regions, the significance of irrigation or access to water cannot be overemphasized. Water is as important, if not more, as land; and no free power is needed if the supply of water or power to extract or lift water can be assured as seen in the case of small farmers in Malerkotla who were using domestic motor connections to irrigate their crops and were paying dearly for it. The role of water

markets also comes in here because all farmers need not their own water sources but should have fair access to them regularly. As an example, West Bengal has Panchayats coming in to ensure that smallholders have access to tubewell water, regulating groundwater prices to ensure affordable access to groundwater and organizing cooperative tubewells by small and marginal farmers. This improved the efficiency (lower cost) and equity in water access and reduced reverse tenancy (Rawal, 2002).

Intercropping and mixed cropping were important strategies followed by SFPF farmers in Punjab and Maharashtra. There is a classic case of a field in Maharashtra where three crops were growing at the same time (intercropped). These were sugarcane, maize, and cauliflower, all three had their own harvesting schedule without disturbing the other crops. Generally, sugarcane does not allow other crops on the same land during the year because it is an annual or rather 14-month crop. Production risk management was done with diversified cropping pattern. Cost cutting and cost control were achieved by renting of machines, and not owning them. Not many SFPF farmers in Maharashtra had tractors or other high-cost equipment. However, it was all about intensive farming in terms of multiple crops on same piece of land as well use of modern inputs. Family labor was another major factor in farmer prosperity because it not only saves on high-cost labor and their nonavailability but also there is more involvement and quality in the work. Women, in general, were the doers on vegetable farms—whether family labor or hired workers.

Market availability and access to markets were perhaps as important as irrigation; unless the produce could be sold profitably in local or distant markets, it would be useless to go for high-value crops. Local institutions, like the *Hundekari* in Maharashtra, played an important role, although it can be seen that most farmers bring their produce to the market (APMC or farmers' weekly market or elsewhere) in the late evening on motorbikes, tempos, or tractor trailers. Community culture of producing for the market and dealing with markets on a daily basis was also a factor behind successful working of the SFPF enterprise. Generally, one came across a "desire to do well" and culture of "agribusiness" in these SFPF regions and that gave hope for the future of not only agribusiness but also agriculture.

Surprisingly, institutions like cooperatives, Producer Companies, or other collectivities were missing from local areas. No farmer reported any interaction with any collective except Primary Agricultural Co-operative Societies (PACS).

Learnings for Policy and Practice

The above case study-based analysis suggests three aspects of policy and practice from a smallholder's perspective that need to be understood and tweaked for replication of small and prosperous farmers across India. These pertain to policy, their own organization to deal with markets, and the financial architecture for small farmers. There are elaborated with specific examples and context below.

Policy and Role of State

General policy and investment neglect of agriculture globally because of various reasons are well documented, and it is also known that there are some basic conditions for successful agricultural growth, transformation that need to happen, which include macroeconomic stability, effective technology transfer system, access to lucrative markets, property rights and incentives for risk taking, and employment creating nonfarm sector—all of which have a public good character to some extent. Many countries, such as Taiwan, India, China, and Malaysia, seem to support this kind of agriculture-led transformation (Tsakok, 2011). However, when one brings in a smallholder perspective, these conditions become only necessary, and not sufficient.

It is still important to realize that so far as market for smallholders is concerned, there is still high market price fluctuation risk, and there is no coverage of it in terms of any mechanism, and individually, farmers are battling it especially in perishable crops which cannot be stored. The prices are still determined and driven by APMC markets which are still not adequately regulated and mistreat farmers. It is important to realize that whatever new markets, like contract farming and direct purchase may come for farmers, small farmers will continue to depend on APMC markets for many commodities. Therefore, it is important to ensure fair functioning of such markets like open auctioning, proper unloading of farmer produce especially perishable which is generally auctioned from road side and filthy grounds.

This is also important because there was only a marginal presence of modern channels like retail, processors, and "wholesale cash n carry" players. The functioningof traditional markets (APMC) needs to be improved to enhance their cost efficiency so that producers and consumers can realize better prices. The amended APMC Act allows for the setting up of private markets; but it is also necessary to require an open auction system, improve buyer competition in APMC markets, provide better facilities, such as cold storage, and improve the farmers' access to market information. These markets are important to small farmers and even a significant proportion of medium and large farmers who still depend on them; they also serve as the main competitors to contract farming and can improve the terms offered to contract growers (Singh, 2008). Warehouse receipts system needs to be extended to perishables, like potato and onion, in which many small farmers are involved, and the markets are very volatile, and crops need a high investment.

Farmer Producer Organizations

What this set of case studies of SFPFs shows is that one needs to appreciate the role of knowledge, planning, and market orientation in the modern agriculture which is moving toward agribusiness in terms of orientation because of the changing nature of demand and processes of production and consumption.

There is also a need to strengthen small farmer organizations and provide them technical assistance to increase productivity for the cost competitive market, provide help in

improving quality of produce, and encourage them to participate more actively in the marketing of their produce to capture value added in the chain. The government should play an enabling role through legal provisions and institutional mechanisms, like helping farmer cooperatives, producer companies, and producer groups, to facilitate smooth functioning of the supermarket linkage and avoid its ill effects. Producer companies in India are an institutional innovation legally and need to be promoted because they are market oriented and professional business entities that are fit for modern agribusiness. There are already hundreds of such producer companies across many states of India and across many crops and products with plenty of smallholder membership. A recent study of producer companies in India revealed that these entities have a potential to deal with supermarkets on behalf of the smallholders, which the supermarkets will also find attractive, but they suffer from policy neglect because there are no provisions for them to seek investment or working capital support or loans (Singh and Singh, 2014).

Fair trade and alternative trade networks provide the scope for participation of the small and marginal producers (Raynolds, 2004). There is, therefore, a need to mainstream organic and fair-trade movements to ensure the participation of a large number of producers in developing countries in these markets, without bringing in the ills of conventional chains. There is a need to combine value chains promotion with a livelihood perspective to enable the poor to enter and stay in globalized commercial markets. Choosing the right market and market development strategy is a must to scale up and avoid the "race to the bottom" which can come only by innovation of products and business models. Partnerships with private sector can come in handy because they can provide technology and help upgrade business (quality) and social standards (GTZ, 2007).

Financial institutions

High-value crops require high working and fixed capital, Unfortunately, the reality that marginal and small farmers mostly borrow from noninstitutional sources has been ignored and, therefore, most of the benefits go to the upper segment of the small farmers and, mostly, in agriculturally grown states and regions. The share of small loans (up to Rs. 25000) declined from 35.2% of the total agricultural advances in 2000 to 13.35% of the total in 2006 in India. Further, the share of small borrower accounts (< Rs.25,000) came down to 38% of the total accounts in 2004 to 2005 compared with 62% in 1991 to 1992. On the other hand, the share of bigger loans (> Rs. 10 million) increased from 14% of the total to 30% of the total during the same period. Thus, it is clear that the really small farmers were already excluded from the institutional credit structure by 2006. The proportion of small and marginal farmers who had accounts with formal credit institutions in 2005 was only 46.29% compared with 60.64% for other categories of farmers (Sahoo, 2008). In case of farmers owning less than 0.01 hectares of land, 77.4% were excluded from the formal institutional credit agencies and those with 0.01 to 0.40 hectare holdings, 56.7% were borrowing from noninstitutional sources with the average for farmers with holdings up to 4 hectares was 49.7% (Mahapatra & Sakhuja, 2008).

Despite a policy to lend 18% of net bank credit to agricultural sector directly since 1989, only 10 public sector banks and one private sector bank were able to achieve this by March 2006. Further, only eight public sector banks and one private sector bank met the subtarget of 10% of the net bank credit for the weaker sections (Karamkar, 2008). Barely 22.5% of such farmers have borrowed from the "institutional credit system" (banks) over the last 2 years. Of the 10 million farmers who availed of credit between 2005 and 2007, an estimated 75% were likely to have resorted to "informal channels" for obtaining loans. For this major chunk, the maximum borrowing came from other sources, like moneylenders, friends, and relatives. The highest proportion (36%) of small and marginal farmers approached moneylenders, whereas friends and relatives accounted for 32% of all loans. Farming households earning less than Rs 32,500 a year and those with land holdings less than five acres have been defined as small and marginal by the National Sample Survey. These findings are based on a sample survey of 10 lakh (I million) households and one lakh (0.1 million) in-depth interviews carried out last year by Dataworks, Invest India Market Solutions. According to the survey, just over a fifth of small and marginal farmers are expected to have secured loans from formal institutional channels, like commercial banks, regional rural banks (RRBs), cooperatives, and microfinance institutions. Also, 21% of small and marginal farmers borrowing from informal sources have bank accounts. In doing so, over half of small farmers end up borrowing money at interest rates greater than 36%, whereas only 18% manage to get loans at rates less than 12%.

Further, if the smallholders belong to lower castes (SC, ST, OBC), their access to credit may be limited either by way of complete denial of credit to such groups/ persons or costly access because of higher rate of interest charged or unfavorable terms of repayment which makes their faming enterprise unviable because of higher cost or loss of income compared with others (Thorat, 2010).

CONCLUSIONS

The above case studies of SFPFs in India across the three states show that it is possible for a small farm to support a family, provided it is market oriented and grows high-value crops with well-oiled market linkage. That this kind of farming, agribusiness rather, has been happening in the absence of the modern arrangements of coordination or any support from the state agencies to these small farmers shows that small farmers are resilient to the shocks and policy indifference and manage their affairs with knowledge, skills, and market orientation and are more like agribusiness enterprises rather than farming entities. The recent slogan and objective of doubling farmer incomes in India can draw inspiration from the experience of such SFPF who have done this for years together without any support. The state support and better market linkage can certainly add to this possibility and the replication of SFPF practice. The case study inferences point to assured irrigation, better market linkage, and farmer involvement with knowledge, skills, and aptitude for agribusiness.

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MARKETING MARGINS AND MARKETING EFFICIENCY FOR FRUITS IN MALAYSIA

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ABSTRACT

Fruit marketing in Malaysia is characterised by a large number of small-scale growers producing fruits with inconsistent quality and quantity, with a few players concentrating on the wholesale level. This research was carried out to study the marketing costs, margins, and returns for fruits in Malaysia and to determine whether marketing efficiency exists in the fruit sector based on a comparison between net returns and value of services. A total of 185 respondents were interviewed in a survey that included 11 types of fruits at farm, wholesale, and retail levels. The study found that the marketing of six types of fruits was efficient, whereas that of the other five fruits was inefficient. The farmers' share of the consumer ringgit ranged from 40% to 61%, whereas the wholesalers' margin varied from 30% to 59% and the retailers' margin was between 15% and 28%. Farmers should focus on those fruits that yield for them the highest share of the consumer ringgit, i.e., above 50%. These fruits are Berangan banana, Chokanan mango, Sarawak pineapple, and papaya.

Keywords: *Marketing efficiency, fruit marketing, fruit industry, farmer returns, food security, marketing margins, agricultural marketing*

INTRODUCTION

The fruit industry in Malaysia plays an important role as a foreign exchange earner. The industry has tremendous potential for further growth, given the increasing domestic requirements and the growing global demand for tropical fruits. The Malaysian Ministry of Agriculture, through its National Agro-food Policy 2011-2020 (Ministry of Agriculture, 2011), has estimated that the demand for fruits will increase from 2.7 million tonnes in 2010 to 3.4 million tonnes in 2020, for an annual growth rate of 2.3%. However, there is an urgent need for concerted efforts to increase the processing of local fruits to avoid frequent gluts in seasonal fruits (Ministry of Agriculture, 2011). Meanwhile, the production of local fruits is expected to increase from 1.8 million tonnes in 2010 to 2.6 million tonnes

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in 2020, for an estimated annual growth rate of 3.8%. The National Agro-food Policy 2011-2020 will focus on several fruits for which there is high demand, such as pineapple, banana, watermelon, durian, and papaya.

The area under fruit cultivation was estimated at 202,481 hectares in 2014, with the production at 1,599,118 tonnes (Ministry of Agriculture, 2014a). Malaysia grows many types of tropical fruits, but the main types grown commercially are durian (with an estimated production of 376,565 tonnes in 2014), banana (298,314 tonnes), and watermelon (298,314 tonnes) (Ministry of Agriculture, 2014a). Other popularly cultivated fruits include papaya, guava, jackfruit, duku, rambutan, and carambola.

The annual per capita consumption of fruits in Malaysia was estimated at 93.8 kg in 2014, whereas that of vegetables was at 58.5 kg (Ministry of Agriculture, 2014b), giving a combined total of 152.3 kg. Self-sufficiency in fruits was estimated at 56% in 2014 compared with 65.8% in 2010 (Ministry of Agriculture, 2014b). Malaysia is a net importer of fruits, with an import value of RM2.3 billion in 2014, consisting mainly of processed fruits, juices, and temperate fruits, such as apples and mandarins. At the same time, Malaysia exported RM793.4 million worth of fruits in 2014. Apparently, in spite of various efforts by the government, the country continues to rely on imported fruits to meet a major portion of its dietary needs.

This research was carried out to study the marketing margins and costs of fruit marketing in Malaysia. The specific objectives of the study were, first, to examine the marketing costs, margins, and returns for fruits in Malaysia; and second, to compare the marketing costs and net returns to marketers to determine whether marketing efficiency exists in the fruit sector.

The remainder of this report is organized as follows. Section 2 briefly describes past studies on marketing margins in the horticultural sector. Section discusses the methodology, and Section 4 presents the findings and discussion. Finally, the conclusions are provided in Section 5.

LITERATURE REVIEW

Food security is an important issue that has attracted the attention of many countries worldwide due to its vital implications on the welfare of the population. Food security is considered to exist when people have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and preferences for an active and healthy life (Food and Agriculture Organization, 2005). This definition places emphasis on three aspects: food availability, food access, and food use.

Food security is often linked to health through malnutrition, but it also concerns sustainable economic development, environment, and trade (World Health Organization, 2005). In addition, diet and nutrition are important factors in the promotion and maintenance

of good health (World Health Organization, 2003). Although the consumption of fruits and vegetables plays a vital role in providing a diversified and nutritious diet, the World Health Organization finds that low consumption of fruits and vegetables is a persistent phenomenon in many regions of the developing world (World Health Organization, 2003). Adequate consumption of fruits and vegetables may prevent major diseases, such as cardiovascular diseases and some cancers (World Health Organization, 2004). The World Health Report 2002 stated that low fruit and vegetable consumption may be linked to 31% of ischemic heart disease and 11% of stroke incidence (World Health Organization, 2003). Sufficient intake has been equated to a minimum of 400 gm daily of fruits and vegetables (excluding potatoes and other starchy tubers) by the Joint FAO/WHO Expert Consultation on diet, nutrition, and the prevention of chronic diseases (World Health Organization, 2003). This amounts to an annual per capita consumption of 150 kg.

To increase the consumption of fruits and vegetables for health reasons, there is a related need to ensure that fruit and vegetable supply and distribution systems are functioning well so that accessibility is increased for the general population (World Health Organization, 2005). Thus, the promotion of a viable and sustainable fruit and vegetable sector should be enhanced by the involvement of many stakeholders in the supply chain, including in production, processing, safety, quality control, and marketing.

Milow, Sorayya, Juli and Ong (2014) found that there were a total of 520 species of plants that produced edible fruits or seeds in Malaysia, as previously reported in the literature. These plants were categorized as trees (355 species) and non-trees (165 species). Fruit plants are an important source of food and income for local communities; in addition, they help strengthen family ties because fruit trees are often jointly owned through inheritance (Milow et al., 2014).

Fruit marketing in Malaysia is characterised by several features: a large number of small-scale growers producing fruits with inconsistent quality and quantity; the dominance of middlemen in the marketing process; poor implementation of grading, labelling, and packaging; high postharvest losses; and concentration on the wholesale level by a few players (Fatimah & Amna, 2007).

To increase marketing efficiency in the fruit sector, the government encourages direct marketing by farmers to reduce the role of middlemen and hence increase the returns to farmers. The Federal Agricultural Marketing Authority (FAMA) has provided marketing infrastructure, such as farmers' markets and fresh fruit outlets, where farmers can market their produce with minimum marketing cost.

The prices of seasonal fruits, such as durian, rambutan, and duku langsat, are volatile and fluctuate considerably due to the seasonal nature of the fruits, with the supply exceeding the demand during the short production period; at the same time, there is little avenue for processing and downstream activities (Fatimah, Amna & Nurjihan, 2012). In contrast, the prices of nonseasonal fruits, such a watermelon, guava, pineapple, and banana, tend to be less volatile. Fatimah et al. (2012) found that the producers' share of the consumer dollar

was more than 30% for the period from 1992 to 2007 and was highly unstable, especially for seasonal fruits.

The marketing margin in itself does not indicate market efficiency. However, it is a useful indicator of the manner in which the marketing margins and costs are distributed at various levels of the marketing chain. Raju (2008) pointed out that marketing margins and costs are able to highlight many facts about the marketing and price structure in produce marketing.

The marketing system for fresh produce has been found to be generally inefficient. Some previous studies on marketing margins include Pokhrel and Thapa (2007), which focused on mandarin marketing in Nepal; the authors found that although farmers were receiving a fair share of the consumer dollar from the marketing of mandarin, they were vulnerable to harassment and cheating by middlemen who took advantage of the farmers' weak bargaining power. Onyemauwa's (2010) study on the marketing of watermelon in the Niger Delta of Nigeria found that the system was inefficient, with a net margin of about 42%; statistically significant variables that influenced the net marketing margin of the respondents were identified, including marketing experience, depreciation cost of marketing equipment, cost of produce, and marketing cost. Aidoo et al. (2012) examined yam marketing in Ghana and found that marketing among producers was inefficient due to various constraints, such as poor road network, limited financial resources, poor storage facilities, and high cost of transportation. Meanwhile, Hassan, Hussain, Khan and Mahmood (2012) found that the producers' share of the consumer price in Pakistan was about 25% for most fruits and vegetables, with exploitative malpractices by intermediaries affecting the farmers' share.

The marketing costs, and hence the marketing efficiency, usually depend on the marketing channels used by the farmers (Sreenivasa, Gajanana, Sudha & Dakshinamoorthy, 2009). Sowmya, Devajar and Satish (2008) found that grape producers in India used four different marketing channels, leading to variations in marketing costs and efficiency (Fig. 1). Channel 1 was the longest and had multiple layers, whereas Channel 4 involved direct marketing from the growers to the consumers. The authors noted that the prevalent practice of selling the standing crop to preharvest contractors, who in turn sell the crop in a wholesale market, led to commission agents and wholesalers getting a higher share of the returns.

Channel 1: Cultivators – Preharvest Contractor – Wholesaler – Retailer – Consumers
Channel 2: Cultivators – Commission Agent – Wholesaler – Retailer – Consumers
Channel 3: Cultivators – Growers Association – Consumers
Channel 4: Cultivators – Consumers

Figure 1: Marketing Channels for Grapes in India

Source: Sowmya et al. (2008).

In Malaysia, almost 58% of farmers sell their fruits through wholesalers, whereas 26% sell through collectors/transporters; 3% sell directly to retailers, such as night markets, farmers' markets, and provision shops, and 12% to FAMA and farmers' organisations (Amin, Fatimah, Mansor, Zainal & Ismail, 2012).

The size of the marketing margin is often a contentious issue in food marketing efficiency. Generally, a small margin is desirable because of the belief that it denotes greater marketing efficiency. However, Kohls and Uhl (1998) pointed out that the size of the marketing margin cannot be used as the sole criterion to judge efficiency. The differences in marketing margins among various agricultural commodities may be due to differences in processing, perishability, bulkiness, and seasonality of production (Adekanye, 1988). High marketing margins do not necessarily mean that the marketers are taking advantage of the producers or consumers; similarly, low marketing margins do not necessarily indicate greater marketing efficiency (Eze, 2007). To determine whether marketing efficiency exists, it is necessary to compare the marketing margins with the marketing services provided. Marketing efficiency is said to exist if the marketing margin is commensurate with the provision of marketing services and value addition (Leftwich, 1979).

METHODOLOGY

This study was carried out in five selected regional zones of Malaysia: Penang (representing the northern zone), Pahang and Terengganu (eastern zone), Perak (central zone), and Malacca (southern zone). A field survey was carried out for two weeks, from 11 to 24 November 2013, by trained research officers from the Federal Agricultural Marketing Authority (FAMA) headquarters, assisted by FAMA field officers at the state level.

A structured instrument was designed for face-to-face interviews with the respondents, which consisted of farmers, wholesalers, and retailers. Two sets of questionnaires were used: the first for farmers, and the second for wholesalers and retailers. The questionnaires had three parts: Part A gathered information on the profile of the respondent, Part B collected data on transactions for the varieties of produce handled, and Part C recorded details on marketing costs.

Respondents at the farm level were selected from major fruit-producing areas, with the criteria that they had been involved in fruit production for at least two years and that their planted area exceeded one acre. Wholesale- and retail-level respondents were selected from the major wholesale and retail markets in each state capital. Respondents were selected by convenience sampling from a list of farmers, wholesalers, and retailers supplied by the FAMA state offices. A total of 185 respondents were interviewed: 59 at the farm level, 67 at the wholesale level, and 59 at the retail level.

The study focused on 11 commonly consumed fruits in Malaysia: B10 starfruit, guava, Chokanan mango, honey citrus, papaya, Morris pineapple, Sarawak pineapple, watermelon (red), honeydew melon, Berangan banana, and sweet corn. Data analysis was carried

out by using descriptive and inferential statistics. The descriptive statistics made use of frequency distributions, means, and percentages.

RESULTS AND DISCUSSION

Table 1 shows the demographic profile of the respondents, of which the majority (88%) were males, and only 12% were females. In terms of ethnicity, 53% were Malays, 45% were Chinese, and 2% were Indians. Regarding age, the biggest group (30%) belonged to the 41-to-50-year age group; 28% were in the 31-to-40 age group, 23% in the 51-to-60 age group, and 8% in the over-61 age group.

Table 1: Demographic Profile of Respondents

Item	Description	Number	Percentage
Gender	Male	163	88
	Female	22	12
Age (Years)	20 - 30	20	11
	31 - 40	52	28
	41 - 50	56	30
	51 - 60	42	23
	>61	15	8
Ethnicity	Malay	98	53
	Chinese	83	45
	Indian	4	2

In terms of ethnic breakdown, 66% of the farmers were Malays, 27% were Chinese, and 7% were Indians (Table 2). Among the wholesalers, 63% were Chinese, and 37% were Malays. The retailers consisted of 58% Malays and 42% Chinese. The gender breakdown was 92% male and 8% female for the farmers, 78% male and 22% female for the wholesalers, and 97% male and 3% female for the retailers. The age distribution showed that the farmers were generally in the older age groups, with 36% in the 51-to-60-year age group, and 24% in the 41-to-50 age group. In contrast, the wholesalers were mainly younger, with 37% in the 31-to-40-year age group, and 27% in the 41-to-50 age group. Most of the retailers (41%) were in the 41-to-50-year age group.

Table 2: Demographic Breakdown for Farmers, Wholesalers, and Retailers

	Farmers		Wholesalers		Retailers	
	Number	**Percentage**	**Number**	**Percentage**	**Number**	**Percentage**
Ethnicity						
Malay	39	66	25	37	34	58
Chinese	16	27	42	63	25	42
Indian	4	7	0	0	0	0
Total	59	100	67	100	59	100
Gender						
Male	54	92	52	78	57	97
Female	5	8	15	22	2	3
Total	59	100	67	100	59	100
Age (Years)						
20 - 30	5	8	10	15	5	8
31 - 40	13	22	25	37	14	24
41 - 50	14	24	18	27	24	41
51 - 60	21	36	5	7	16	27
> 61	6	10	9	13	0	0
Total	59	100	67	100	59	100

The marketing margins were obtained by using the definition given by Kohls and Uhl (1998). Therefore, the formulas for marketing margin, net marketing margin, wholesale margin, and retail margin are as follows:

$$MM = RP - FP \quad \ldots\ldots\ldots\ldots\ldots\ldots (1)$$
$$NMM = MM - MC \quad \ldots\ldots\ldots\ldots\ldots (2)$$
$$MM = WM + RM \quad \ldots\ldots\ldots\ldots\ldots (3)$$
$$WM = WP - FP \quad \ldots\ldots\ldots\ldots\ldots (4)$$
$$RM = RP - WP \quad \ldots\ldots\ldots\ldots\ldots (5)$$

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 Eq. 2, the net marketing margin is the difference between the marketing margin and the marketing cost. Assuming a single tier in the marketing channel, i.e., that wholesalers buy directly from farmers, and retailers buy directly from wholesalers, the marketing margin can then be apportioned between the wholesale and the retail margin, as given in Eq. 3.

Table 3 shows the wholesale and retail margins, as well as the producers' share of the consumer ringgit, for the 11 types of fruits included in the survey. The analysis, based on the prevailing prices during the fieldwork, showed that the farmers' share of the consumer ringgit for the fruits studied varied widely from 40% to 61%. The highest farmers' share of the consumer ringgit was for Berangan banana and Chokanan mango at 61%, followed by Sarawak pineapple at 59% and papaya at 56%; the lowest farmers' share was for honeydew melon at 40%. The wholesalers' margin ranged from 20% to 39%. Honeydew melon provided the highest return to wholesalers at 39%, followed by 37% for honey citrus and 35% for guava. The retailers' margin was between 15% and 28%. Watermelon gave the highest margin to retailers at 37%, followed by B10 starfruit at 28% and Morris pineapple at 23%.

From a policy viewpoint, it is desirable to have a margin of 20% or below for both wholesalers and retailers. This is important to obtain a share of over 60% for farmers, thus ensuring that they receive remunerative returns considering that they put in the most effort in the supply chain compared with the marketers. Based on this criterion, only Berangan banana and Chokanan mango provided the minimum desired returns to farmers.

Table 3: Distribution of Marketing Margins for Fruits 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 (%)
Starfruit (B10)	1.80	3.00	4.15	43	29	28
Guava	2.25	3.90	4.75	47	35	18
Mango (Chokanan)	3.80	5.25	6.25	61	23	16
Honey Citrus	3.80	6.80	8.00	48	37	15
Papaya	1.65	2.35	2.95	56	24	20
Pineapple (Morris)	1.15	1.80	2.35	49	28	23
Pineapple (Sarawak)	1.85	2.50	3.15	59	20	21
Watermelon (Red)	1.10	1.60	2.55	43	20	37
Honeydew Melon	1.50	2.95	3.75	40	39	21
Banana (Berangan)	2.35	3.20	3.85	61	22	17
Sweet Corn	0.95	1.50	1.95	49	28	23

Note: The prices refer to the averages from 11 to 24 November 2013.
Source: FAMA, Field Survey, 2013.

Based on the respondents' feedback, the authors found that several components of the marketing costs were usually incurred at the various marketing levels (Table 4).

Table 4: Types of Marketing Costs at Wholesale and Retail Levels

Components	Activities
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-wheel drive vehicles, vans, or motorcycles; fuel, tolls, insurance, road tax, and maintenance.
Administrative Costs	Business license, rental, utilities, communication, workers' levies, and visa charges.
Postharvest Losses	Weight loss, damage during handling, and unsold quantities.

Source: FAMA, Field Survey, 2013.

To determine the marketing efficiency, the formula of Olukosi and Isitor (1990) was used, as given in Eq. 6.

$$\text{Marketing Efficiency} = \frac{\text{Net Margin}}{\text{Marketing Costs}} \times 100\% \quad \text{.....(6)}$$

In the above formula, marketing efficiency is the ratio of the net marketing margins to the marketing costs. The average prevailing prices during the survey period were obtained from the respondents at the various levels and, when necessary, converted to their RM/kg equivalent to arrive at the marketing margins and marketing efficiency calculations.

Table 5 presents the estimated marketing margin and marketing efficiency for the 11 varieties of fruits during the study period. These estimates are based on the simple averages of the prices and costs in the five states surveyed.

Table 5: Marketing Margins and Marketing Efficiency for Fruits in Malaysia

Fruit Type	Farm Gate Selling Price (RM/kg)	Retail Selling Price (RM/kg)	Marketing Cost (RM/kg)	Marketing Margin (RM/kg)	Net Marketing Margin (RM/kg)	Marketing Efficiency (%)
Starfruit (B10)	1.80	4.15	1.21	2.35	1.14	94
Guava	2.25	4.75	1.00	2.50	1.50	150
Mango (Chokanan)	3.80	6.25	1.20	2.45	1.25	104
Honey Citrus	3.80	8.00	1.68	4.20	2.52	150
Papaya	1.65	2.95	0.86	1.30	0.44	51
Pineapple (Morris)	1.15	2.35	0.53	1.20	0.67	126
Pineapple (Sarawak)	1.85	3.15	0.92	1.30	0.38	41
Watermelon (Red)	1.10	2.55	0.53	1.45	0.92	174
Honeydew Melon	1.50	3.75	0.77	2.25	1.48	192
Banana (Berangan)	2.35	3.85	0.81	1.50	0.69	85
Sweet Corn	0.95	1.95	0.60	1.00	0.4	67

Note: The prices refer to the averages from 11 to 24 November 2013.
Source: FAMA, Field Survey, 2013.

As shown in Table 5, the net marketing margin varied widely among the different types of fruits, ranging from RM0.38/kg for Sarawak pineapple to RM2.52/kg for honey citrus. The marketing cost also showed large variations, from RM0.53/kg for watermelon and Morris pineapple to RM1.68/kg for honey citrus. A big portion of the marketing costs, typically 30%, was attributed to postharvest losses. A comparison of the net margins with the marketing costs showed that the marketing efficiency was highest for honeydew melon at 192%, followed by watermelon at 174%, and guava and honey citrus at 150%.

A marketing efficiency of more than 100% is considered as efficient, according to the definition of Olukosi and Isitor (1990), because the net margins or returns obtained at the marketing levels exceed the marketing costs. Six of the 11 fruits studied had a marketing efficiency of more than 100% and thus were considered as efficiently marketed. Therefore, for these six fruits, i.e., honeydew melon, red watermelon, guava, honey citrus, Morris pineapple, and Chokanan mango, the net margins exceeded the marketing costs. However, five fruits had a marketing efficiency below 100% and hence were regarded as inefficiently marketed; i.e., the net returns were lower than the marketing costs. These five fruits were Sarawak pineapple, papaya, sweet corn, Berangan banana, and B10 starfruit. Sarawak pineapple had the lowest efficiency at 41%, whereas honeydew melon had the

highest efficiency of 192% and was therefore the most efficiently marketed among the fruits.

The differences in results reflect the differences in marketing costs and returns for the various fruits and can be used in decision-making on the types of fruits that will give the highest returns to farmers. In addition, the marketing efficiency indicators are also useful in identifying which fruit types need further government assistance to improve their distribution.

CONCLUSION

This study analyzed the marketing margins and marketing efficiency for different fruits in Malaysia. Based on a comparison of the marketing costs and net marketing margins, the marketing of six types of fruits was found to be efficient, whereas that of five other fruits was inefficient.

The analysis showed that the farmers' share of the consumer ringgit ranged from 40% to 61%, whereas the wholesalers' margin varied from 30% to 59%, and the retailers' margin was between 15% and 28%. The net marketing margin varied greatly, ranging from RM0.38/kg for Sarawak pineapple to RM1.50/kg for guava. The marketing cost varied from RM0.53/kg for watermelon and Morris pineapple to RM1.68/kg for honey citrus. The large differences in the net marketing margins and marketing costs may be a reflection of the differences in supply chain management for various fruit types and the losses incurred due to postharvest handling. The government should therefore focus on providing infrastructure at farm collection centers and improve rural roads to decrease postharvest losses.

Based on the above analysis, farmers are advised to focus on those fruits that yield the highest farmers' share of the consumer ringgit, i.e., above 50%; these fruits are Berangan banana, Chokanan mango, Sarawak pineapple, and papaya. However, the production costs should be taken into account to obtain the net returns for farmers and improve their decision-making process. Improving the returns to farmers should be the focus of agricultural policies to ensure continued farmer involvement in agricultural production in order to meet the targets for food security.
Honeydew melon, honey citrus, and guava gave the highest returns to wholesalers, whereas retailers received the best returns from watermelon and starfruit. Marketers have an important role in ensuring an efficient distribution of products to meet consumer requirements. They should also help in the accurate dissemination of market information to farmers in order to assist the latter in their decision-making on what and how much to produce.

This study assumed a single tier of distribution from the farmer to the wholesaler and then to the retailer. In reality, farmers use several marketing channels, and these varying channels give different returns to farmers because they entail different marketing costs. Future studies could focus on differences in farmers' returns and marketing margins based on different marketing channels.

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IDENTIFYING THE NATURE, ISSUES AND CHALLENGES OF WOMEN ENTREPRENEURS IN AGRICULTURE: A MIXED METHODS APPROACH

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ABSTRACT

The number of women entrepreneurs in Malaysia has increased significantly since the country gained independence. Malaysia can be considered as a country that practises equality between men and women. Government support can be seen through the creation of many development programs for women. Inclusiveness has been emphasized, through the 10th Malaysia Plan, to ensure that marginalised groups in the population, including rural women entrepreneurs, are taken care of. A limited study has previously been undertaken to understand the issues and challenges faced by women entrepreneurs in the country. In the present study, focus group discussions were carried out and self-administered questionnaires were given to 256 female participants from three women development programs. Factor analysis was used to identify the issues and problems faced by rural women entrepreneurs, especially those involved in agriculture-based businesses. The majority of respondents were Malays within the age group of 41 to 60 years. The results of the analysis indicated that the top three challenges faced by rural women entrepreneurs were marketing, human resources, and financing. One challenge pertained specifically to family commitments. Overall, although burdened with the responsibilities of a homemaker, rural women have the potential to contribute to their household economy and raise its income if the issues and challenges they face are managed well, with support from the development programs provided for them.

Keywords: Women, rural, entrepreneurship, factor analysis, mixed methods

INTRODUCTION

Women make up half of the potential human capital in any economy. Okorafor, Nnajiofo, Okorafor and Enemuoh (2013) asserted that when women and men are relatively equal, economies tend to grow faster, the poor move more quickly out of poverty, and the well-being of men, women, and children is enhanced. The number of women entrepreneurs in Malaysia has increased significantly since the country gained independence. The rate of women's participation in the Malaysian workforce rose steadily from 46.8% in 2010 to 49.5% in 2012 and further reached 51.1% in 2013 (Economic Planning Unit, 2013). Malaysia can be considered as a country that practises equality between men and women.

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Government support can be seen through the creation of many development programs for women. Inclusiveness has been emphasized, through the 10th Malaysia Plan, to ensure that marginalised groups of the population, which includes women entrepreneurs in rural areas, are taken care of. The 11th Malaysia Plan continues to focus on matters that are of greatest concern to the populace, namely, jobs, small businesses, cost of living, family well-being, and social inclusion, which relate directly to rural women entrepreneurs in Malaysia.

Issues and Challenges of Women Entrepreneurs

The recognition of entrepreneurship as a source of job creation and income generation, especially in rural areas, is well established (Fong, 1990; Soete & Stephan, 2004; Nor Amna A'liah, 2015). All around the world, entrepreneurship provides women with economic benefits, besides presenting them with the opportunity for empowerment and better integration in society (Blomqvist, Chastain, Thickett, Unnikrishnan & Woods, 2014). However, women have fewer entrepreneurial skills and face more constraints than do men, thus making them more likely to encounter greater challenges in opening or sustaining businesses (Brixiova & Kangoye, 2016).

The Malaysian government is fully aware of the issues surrounding small-scale entrepreneurs, especially rural women, to whom they provide many support services. However, problems still occur because the support delivered is not in line with the issues or requirements; the design of the support activities is usually unrelated to the actual needs. This observation was highlighted by Curran and Blackburn (2000). Recently, Rakicevic, Omerbegovic-Bijelovic and Lecia-Cvetkovic (2016) concurred that the support services often did not have the suitable structures and characteristics to meet the requirements of the small and medium enterprises in their study samples. Successful management needs to be applied, with the use of direct information from the entrepreneurs themselves, so that the implementation of support services can be attained successfully. The actual problems faced by rural women entrepreneurs in the case at hand should first be identified.

Interestingly, there is a significant difference in these problems based on race, culture, and religion. For example, the majority of Turkish businesswomen were found to face prejudice from the community (Turan & Kara, 2007). Among Omani women entrepreneurs, one of the challenges identified was the lack of business organizations for women, from which they could draw experiences or to which they could refer for guidance (McElwee & Al-Riyami, 2003). Resistance from family can also become a barrier, as is often the case in developing countries, in which the primary role of a woman is that of a wife and mother. Ilhaamie, Arni, Rosmawani and Al-Banna (2014) pointed out that gender stereotypes are regarded as a significant growth obstacle facing women entrepreneurs, especially in male-dominated sectors of business. Alam, Jani and Omar (2011) reported that one challenge faced by Malaysian businesswomen was that of having enough time to spend with the family, besides the difficulty of obtaining financial loans.

In Singapore, Hau-Siu Chow (2005) found that women faced specific challenges in the form of family commitments and sex-role conflicts. A recent study that presented a model for effective planning of support services for small and medium enterprises (SMEs) identified the problems faced as: lack of financial resources, legal issues, lack of information on domestic and international market trends, lack of business ISO standard certifications, difficulty in the procurement of construction permits, lack of information on available technologies, insufficient number of employees and insufficiently trained employees (Rakicevic et al., 2016).However, the findings could not be generalized to women entrepreneurs or SMEs because the survey focused specifically on Serbia, and the samples neither included women in particular nor focused on rural areas. Thus, the current study was carried out to identify the nature, issues, and challenges of rural women entrepreneurs, specifically in Malaysia.

METHODOLOGY

A mixed-methods approach consisting of both quantitative and qualitative procedures was chosen for this study. For the quantitative part, a survey was carried out to obtain data and information. Stratified random sampling was applied, resulting in the inclusion of 256 women entrepreneurs in the rural areas of Peninsular Malaysia among the final respondents. These respondents were mainly entrepreneurs in agriculture and agro-based industries, categorized under small and medium enterprises (SMEs). All the respondents were participants in government-initiated women development programs. The sampling frame was based on the list of women participants in women development programs provided by the Malaysian Department of Agriculture (DOA), the Malaysian Fisheries Development Authority (LKIM), and the Farmers' Organization Authority (LPP). A structured questionnaire comprising closed and open-ended questions was developed for the survey, which was done in collaboration with DOA, LKIM, and LPP. These government agencies were responsible for gathering the women entrepreneurs under their care at an agreed place and time for the survey. The number of respondents in each session depended on the availability of both the enumerator and the respondents themselves. Although most of the questionnaires were self-administered, several survey sessions had a maximum of 30 respondents, in which case trained enumerators carried out the survey in groups, and the respondents were given the questionnaires to answer themselves.

The collected data were coded and analysed by using the Statistical Package for Social Sciences (SPSS) software. Frequency distribution analysis was used to determine the demographic profile of the respondents. Factor analysis, through the principal component method, was applied to identify responses pertaining to issues and challenges faced by rural women entrepreneurs and to group these responses into smaller sets of factors or components. The relevant factors were extracted by applying the varimax method. The criterion for a factor to be extracted was that its eigenvalue should be equal to or greater than one.

Meanwhile, the qualitative approach made use of the rapid information gathering (RIG) method, which provides a quick overview of sociocultural data, besides giving the respondents the opportunity to further deliberate on their answers in order to better understand the issues and problems they face. A maximum of four questions were asked, and the respondents were given sheets of paper on which to write their answers. The answers were collected and categorised immediately during the session to gain a quick understanding of the issue at hand and to determine whether the responses match the quantitative data. The information obtained through the qualitative approach was used to initially explore the issues and challenges faced by the respondents. The outcomes were compared with the results analysed and produced quantitatively, as both data could support each other and strengthen the findings.

RESULTS

Demographic Profile

The demographic profile presented in Table 1 show that most of the women operate their agro-based businesses within the compound of their houses (65.7%). The rest operate their businesses farther away, outside of their homes. The majority of the respondents (64.5%) are between 41 and 60 years of age and are categorized as adults;16 percent are between 18 and 40 years old and are categorized as youths. The remaining 11.5 percent are over 60 years old. More than half (169) of the women entrepreneurs finished high school; only 17 achieved a higher level of education or gained at least a diploma. A small percentage of the respondents (5.9%) had no formal education.

Table 1: Demographic Profile of Respondents

Variables		Frequency	Percentage (%)
Age (years)	18-40	41	16.0
	41-60	165	64.5
	>= 61	50	11.5
Status	Single	10	3.9
	Married	204	79.7
	Single mother	42	16.4
Education Level	No formal education	15	5.9
	Religious school	6	2.3
	Primary school	49	19.1
	Secondary school	169	66.1
	College/University	17	6.6
Business Location	Within house compound	151	65.7
	Outside house compound	79	34.3

Nature of Agribusiness of Rural Women

The characteristics of the rural women entrepreneurs and the nature of the businesses they operate were identified. The businesses are notably private-owned, and the operational activities are dominated by family members. In other words, the business entities run by these rural women are owned by the individuals themselves and their families. The majority of these businesses are categorized as agriculture-based industries and are considered as microenterprises. Microenterprises refer to companies with annual sales of less than RM200 000 or those with less than five full-time employees (SME Corporation, 2014). The average woman entrepreneur runs a business that falls under this category. Most of the women entrepreneurs have their own family members, such as their children, brothers or sisters, and especially their husbands, if they are married, helping them out with the business, although local and foreign workers are sometimes hired for this purpose. The reason for starting a business or the main drive that encourages the women to start a business is so that they can contribute to increasing the family income. The initial goal of married entrepreneurs is to run an economic activity to help reduce the burden on their husbands as the sole income earners. This corresponds with the finding of Chan and Foster (2001) that necessity is one reason for a woman to start a business. The development programs in which the women participate actually motivate them to achieve their intentions because the members often offer encouragement and provide the needed guidance and advice to each other. Furthermore, through the various trainings and courses organized under these programs, the participants learn about the things they need to prepare before starting a business.

Rural women entrepreneurs who manage their own microenterprises have been reported to have few managerial skills and only informal knowledge on the process and know-how of running a business. They have not gained much in their formal lower education. Thus, they learn through the experiences of other entrepreneurs, as well as friends, and base their decision-making on past experiences and the opinions of family members. A minority has a high level of education but lacks the experience and know-how necessary to efficiently run a business. Consequently, most do not have a systematic method of financial record keeping, marketing tools, managerial skills, proper business plans, or other operational skills.

The women entrepreneurs in rural areas operated their businesses within their house compounds. Most of them allocated a specific area or corner for their business activities, as was clearly observed. One entrepreneur turned a garage attached to her house into a store for bananas, sweet potatoes, tapioca, flour, cooking oil, and packaging materials**.** The garage was renovated into an open and air-circulated area in which she did the cleaning, peeling, cutting, and frying of these commodities, as well as the packaging of fried banana chips or tapioca crisps. A total of 151 respondents operated their businesses within their house compounds, whereas 79 ran their businesses outside. This indicated that 34.4 percent of the respondents had a business location further away from or outside their homes; 26 participants did not respond to this query.

Table 2: Business Location of Rural Women Entrepreneurs

Location	Frequency	Percentage (%)
Within house compound	151	65.7
Outside house compound	79	34.3
Total	230	100.0
Non-response	26	10.2

The responses to how the entrepreneurs sell their agro-based products indicated that the majority (92.2%) sold their products personally, and only 7.8 percent used middlemen or sales agents (Table 3). When probed further on their marketing strategies, most of the respondents said they rely on word-of-mouth marketing. Positive word of mouth has been shown to be effective and to have a considerable effect on people's willingness to buy a product or service (Sweeney, Soutar & Mazzarol, 2014). The women entrepreneurs initiated this type of marketing by giving away samples to their neighbours or bringing their products to community events or development program meetings, as indicated by the following responses:

"I sell these (agro-based) products myself. I give samples to my neighbours. They will then tell their friends that they can order from me. I also bring along my products whenever there are weddings or village meetings. My husband also helps by telling his friends at work. The marketing starts from these occasions." (Respondent number 7).

"You only need to take care of the quality of your product. If people like it, they will talk about it and spread the word around. New customers get information from my regular customers. Now I even have a convenience store 10km away where I bring my products to be sold." (Respondent number 15).

Table 3: Selling Method of Rural Women Entrepreneurs

Method	Frequency	Percentage (%)
Personal selling/Self-marketing	212	92.2
Others (agents, middlemen, etc.)	18	7.8
Total	230	100.0
Non-response	26	10.2

Participation in Rural Women Development Programs

All the respondents have participated in government-initiated women development programs (Table 4). Three of these programs were selected, namely, Kumpulan Peladang Wanita (PeladangNita), Kumpulan Wanita Nelayan (KUNITA), and Kumpulan Pengembangan Wanita (KPW). Government agencies and departments are responsible for monitoring these programs, which fall under the purview of LPP, LKIM, and DOA, respectively. These programs motivate their members to actively participate in income-generating activities. The program members provide each other with encouragement and needed guidance and advice.

Table 4: Women Development Programs

	Frequency (n = 256)	Percentage (%)
Program:		
KPW	32	12.5
PeladangNita	149	58.2
KUNITA	75	29.3
Participation in program:		
≥11 years	38	14.8
6 -10 years	73	28.5
≤5 years	145	56.6

Technical courses and trainings are often also provided to participants of the development programs. The survey findings showed that a majority of the women believed that the trainings were helpful and beneficial to their understanding of how to conduct their business operations (Table 5). The participants also indicated that technical or hands-on trainings were especially helpful because agriculture-based entrepreneurship is a technical field involving technical activities. An empirical analysis carried out by Brixiova and Kangoye (2016) indicated that broader training for women entrepreneurs encompassing business and technical skills, as well as soft skills, would be more effective.

Table 5: Are the Courses/Trainings Offered Beneficial toward Improving Business Operations and Activities?

Trainings and courses	Frequency (n = 256)	Percentage (%)
Beneficial	186	72.7
Not beneficial	16	6.3
Neutral	54	21.0

Factor Analysis Results

As previously mentioned, factor analysis was applied to determine the latent factors underlying the problems of rural women in relation to their entrepreneurial activities. The questionnaire used included 20 items that had been subjected to principal component analysis (PCA). Before the PCA was carried out, the suitability of the data for factor analysis was assessed. An evaluation of the correlation matrix showed the presence of many coefficients equal to or higher than 0.3. The Kaiser-Meyer-Olkin value was 0.827, exceeding the recommended value of 0.6 (Pallant, 2005). Bartlett's test of sphericity reached statistical significance, supporting the factorability of the correlation matrix (Table 6).

Table 6: Kaiser-Meyer-Olkin (KMO) and Bartlett's Tests

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.827
Bartlett's Test of Sphericity	
Approx. Chi-square	2985.106
Df	190
Sig.	.000

The principal component analysis showed the presence of six component groups with eigenvalues exceeding 1, which explained 36.3, 10.5, 8.4, 6.6, 6.2 and 5.2 percent of the variance, respectively, of the components (Table 7).

Table 7: Summary of the factor analysis results

	Factor Loading					
	F1	**F2**	**F3**	**F4**	**F5**	**F6**
Marketing						
Problems associated with distribution and the need for middlemen	.868					
Difficulty in obtaining market information	.823					
Too much competition in the market	.708					
Limited market	.537					
Low quality of raw materials	.491					
Variance (percent explained)	36.3					
Human Resources						
Difficulty in finding workers		.843				
Workers often quit their jobs		.807				
Workers do not have basic skills and lack knowledge of the industry		.754				
High salaries for highly skilled workers		.540				
Variance (percent explained)		10.5				
Loan/Financing						
Need for collateral for loan application			.869			
Insufficient capital and difficulty in getting financial assistance			.840			
Strict rules and regulations for business loans			.821			
Variance (percent explained)			8.4			

Table 7 (continued)

	Factor Loading					
	F1	**F2**	**F3**	**F4**	**F5**	**F6**
Raw Material/Operational Costs						
Unstable prices of raw materials, which affect the price of the final product				.852		
Continuous increase in operational costs				.786		
Difficulty in obtaining raw materials when needed				.650		
Unstable and high prices				.636		
Variance (percent explained)				6.6		
Extension Agent						
Lack of monitoring by government agencies and departments					.847	
Difficulty in obtaining technical advice and Other services from extension agents					.754	
Variance (percent explained)					5.2	
Technology						
Outdated or less efficient technology						.859
Difficulty in operating the technology or lack of technological know-how						.705
Variance (percent explained)						6.2

Extraction method: principal component analysis.
Rotation method: varimax with Kaiser normalization.
a. Rotation converged in 6 iterations.
b. Total percentage of variance: 73.250

These six factors, which account for 73.25% of the total variance, are summarized as follows:

Marketing

This factor has the following five sub-variables, which account for a total variance of 36.3%: a) *Problems associated with distribution and the need for middlemen, which* has the highest factor loading (0.868); b) *Difficulty in obtaining market information* (0.823); c) *Stiff competition in the market* (0.708); d) *Limited market* (0.537); and e) *Low*

quality of raw materials (0.491). The results suggest that women entrepreneurs face the greatest challenges in the marketing component, including high competition, problems in distribution, and difficulty in obtaining market information.

Human resources

This factor represents a total variance of 10.5% and comprises four sub-variables: a) *Difficulty in finding workers* (0.843); b) *Workers often quit their jobs* (0.807); c) *Workers do not have basic skills and lack knowledge of the industry* (0.754); and d) *High salaries for highly skilled workers* (0.540). These results indicate that apart from marketing issues, women entrepreneurs also face problems associated with finding and maintaining skilled workers.

Loans/Financing

This factor, which accounts for a total variance of 8.4%, has three sub-variables: a) *The need for collateral when applying for a loan* (0.869); b) *Insufficient capital and difficulty in getting financial assistance* (0.840); and c) *Strict rules and regulations for business loans* (0.821). The women do not have enough savings to cover their operational costs; thus, they rely on loans. However, the difficulty of obtaining a loan seems to be one of their major problems.

Raw material/Operational costs

This factor represents a total variance of 6.6% and comprises four sub-variables: a) *Unstable prices of raw materials, which affect the price of the final product* (0.852); b) *The continuous increase in operational costs* (0.786); c) *The difficulty of obtaining raw materials when needed* (0.650); and d) *Unstable and high prices* (0.636). The costs of agriculture-based business operations relating to an agro-based industry, such as food processing, fluctuate and are unpredictable. When the price of a certain commodity increases, the prices of most other raw materials go up as well, affecting the price of the end product.

Technology

This factor accounts for a total variance of 6.2% and consists of two sub-variables: a) *Outdated or less efficient technology* (0.859); and b) *Difficulty in operating the technology or lack of technological know-how* (0.705). The available technologies in the agriculture industry, especially in food processing, are abundant. Most processing is no longer done manually or from scratch. However, the transfer and usage of technologies are still very minimal. More importantly, rural women entrepreneurs lack knowledge and understanding of the available technologies that could assist and boost their businesses.

Extension agents

This factor, which represents a total variance of 5.2%, comprises two sub-variables: a) *Lack of monitoring by government agencies and departments* (0.847); and b) *Difficulty of obtaining technical advice and other services from extension agents* (0.754). Rural women entrepreneurs in particular have a very high regard for technical advice from government officers. The results show that the respondents want the government to play an active role in ensuring the availability and consistency of extension agents in the provision of monitoring, technical advice, and other services.

Challenges pertaining to family commitments

Tradition, culture, and stereotypes have contributed to the gender division between men and women (NAM Institute for the Empowerment of Women, 2014). In conservative societies, such as in rural communities, women are mainly responsible for caring for the children, the elderly, and the disabled in the family. These activities are assumed responsibilities that the women are generally not paid for doing, resulting in their lower economic status compared with men. Even when the women have the opportunity to increase their economic status by entering into self-employment, they continue to assume their roles and activities at home.

Women entrepreneurs are faced with a specific challenge pertaining to their family commitments. This is especially true in rural areas, where it is rare to find a household with hired helpers or maids to help out with household chores or child-caring. Therefore, the burden rests on the women, either the wives or the mothers (see Table 8).

Table 8: Responsibility for Household Chores

	Frequency	Percentage (%)
Household chores mostly done by herself	213	83.2
Household chores mostly shared	37	14.5
Household chores mostly done by third party	6	2.3
Total	256	100.0

More than 80% of the women entrepreneurs in the survey are also responsible for the household chores. This means that all the tasks that need to be done at home are carried out by the women themselves without outside help. These tasks include taking care of the children, washing clothes, buying kitchen and food supplies, cooking, washing dishes, and cleaning the house. However, some families share the household tasks among family members (14.5%) because the woman in the house is no longer a full-time housewife but rather works outside the home to contribute to the household income. Slightly more than 2 percent of the women responded that most of their household chores are done by a third party. This means that they buy ready-to-eat or ready-to-serve food instead of doing the cooking themselves, or they send their clothes to the laundry instead of doing the washing and ironing themselves.

Although most of them run their own businesses and contribute to their household income, the women admit that they look up to their partner as the family anchor. This concurs with the qualitative data, which indicate that the majority of the women acknowledge and accept that the men are the head of the family.

"Of course my husband is still the head of the family. He makes most of the important decisions, but he never interferes in my business, unless my business operations interfere with my responsibilities at home." (Respondent number 16).

The same situation can be observed among Malaysians, especially in the Malay community, in which, based on the sociocultural norms, the wives have high respect for their partners, and the husbands remain the head of the family even when their wives are equally successful (Nik Rozana, 2015).

On the issue of household work, the respondents reported that they carry out most of the household chores despite their owning and operating agriculture-based businesses. A common sentiment shared by the respondents is having feelings of guilt when juggling business and family commitments.

"Actually,I have to manage the daily operation of my business, buying raw materials myself, handling workers, … and at the same time, I also need to maintain my house to make sure everything at home is in order. Furthermore, I have small kids. My husband and older children do help, but I always feel guilty if I just leave everything to them. I feel like I am not a good mother or wife." (Respondent number 21).

"I still have to make sure I cook for the family, clean the house, and take care of our children, no matter how busy I am with my business." (Respondent number 16).

Nevertheless, it should be noted that despite the challenges they face, the women are actually happy and content to be involved in their agro-based businesses, and their participation in women development programs helps them learn from and connect with others who are in a situation similar to theirs.

"I am happy to be in this women development program because it helps a lot. The other participants mostly come from around our community here. We share a lot on how each of us manages our time, with the business and family and all. We also do a lot of community work together (gotong-royong). What is actually important is the sharing and not really on the solution. It reduces stressfulness." (Respondent number 8).

In fact, many female business owners opt to create businesses that they can integrate into their lives rather than viewing their businesses as entrepreneurial careers. The families of these women are part of the business because they affect business decisions (Akehurst, Simarro & Mas-Tur, 2012). Brush (1992) rightly pointed out that "women view their businesses as an interconnected system of relationships instead of a separate economic unit in a social world" and that "the woman business owner is at the centre of a network of various relationships that include family, community and business."

DISCUSSION

The aim of this study is to identify issues and challenges faced by rural women entrepreneurs and to explore the nature of rural businesses run by women in relation to demographic and other relevant variables. Based on the demographic profiling, most of the rural women entrepreneurs are adults, with ages between 41 and 60 years. This finding is not surprising because the women in younger age groups are more prone to move out from rural villages to explore job opportunities in the city. These younger women believe that they can build a brighter future and earn more in the city, compared with working or doing business in rural areas. This is especially true for those with college or university degrees, who desire to apply their knowledge in the corporate world. On the other hand, the more senior or elderly females are more content to settle down in their hometown. This is what motivates them to start or maintain agriculture or agro-based businesses, which, regardless of size, will generate enough income for their daily expenses. Most rural enterprises are micro in nature, and several are categorized as SMEs.

Based on the factor analysis, six issues or challenges that can hinder the business progress of women entrepreneurs are identified. These pertain to marketing, human resources, loans or financing opportunities, operational costs, technology, and the role of extension agents. The results show that 59% of rural women entrepreneurs operate their businesses within their house compound. Most of them do not actually carry out promotional strategies to market their products. They basically wait for walk-in customers who have heard about their products from their existing customers. In other words, they rely solely on word-of-mouth marketing. Others have very minimal marketing strategies. For example, some ask help from middlemen in bringing their products to the nearest town, to be placed on the shelves of convenient stores, grocery shops, and similar outlets. Women entrepreneurs should take advantage of the booming online shopping phenomenon. Agricultural e-business, a trading mechanism for selling agricultural produce online, has recently been found to be well accepted by Malaysians (Suhana & Nik Rozana, 2015). Perhaps the Malaysian Communications and Multimedia Commission (MCMC) can play a bigger role in educating rural women, where possible, on the use of the Internet for online marketing. This can be a stepping stone toward gaining more customers and increasing the volume of sales.

Human resources is also one of the more persistent issues facing rural women engaged in SMEs. It is difficult to find workers who are interested in working full-time and for long hours in the field, as well as in agriculture-based businesses such as food processing, in rural areas. Most of the youths migrate to urban areas in search of better jobs with better pay. Undeniably, women in Malaysia still uphold the traditional cultural norm that they are responsible for doing the household chores, including cooking, cleaning, washing clothes, and child-caring (Nik Rozana, 2015). Thus, even when a woman manages a business outside the home, she is still expected to carry out most of the household chores.

The results also show that rural women entrepreneurs face the problems of finding skilled labour and maintaining their existing human resources. Most of the workers in food

processing operations or agriculture-based industries do not work out of interest; rather, they regard their work as part-time jobs, which they hold down as they wait for other, higher-paying opportunities that better fit their interests.

Financial constraints are another common problem faced by rural women entrepreneurs. Financial institutions normally require collateral or proper paperwork before granting loans. Most rural women do not have enough savings to fund their start-up or rolling operational costs, thus the need to obtain loans. Agrobank was established by the government to provide a range of financial services and banking facilities that focus on the agriculture sector. This institution offers various schemes with minimum requirements, which should be beneficial to rural women entrepreneurs.

Two other factors, namely, the role of extension agents and the transfer of technology, are closely related to each other. Extension agents play a pivotal role in transferring not only recent technology but also knowledge and technological know-how for the benefit of female entrepreneurs and their business operations. The involvement of government agencies, especially those directly involved in women empowerment or rural transformation programs, can play a significant role in providing assistance to rural women entrepreneurs. The government agencies handling agricultural research and development and technology generation also play a crucial role in providing advice, hands-on trainings, and other relevant assistance toward ensuring the sustainability of the businesses and maintaining the sources of income.

Women development programs should be well maintained and improved. Through the various trainings and courses organized by such programs, the participants learn about the things they need to prepare before starting a business. Most of the respondents admitted to benefiting from the courses and trainings given; the information they gained from the trainings helped them improve their business activities. This finding corresponds with the responses of members of the Women's Economic Development Agency (WEDA), who said they were satisfied with their participation in the program because they saw positive changes in their knowledge, skills, and income (Norsida, 2010). Women development programs also open opportunities for women to become part of the community, to discuss and deliberate together toward finding solutions to the challenges they face, and to be empowered.

CONCLUSION

This study contributes to the empirical literature on women's entrepreneurship, especially in rural areas, particularly in Malaysia. The focus is on entrepreneurship activities in the agro-based sector. The characteristics of women's agriculture-based businesses in rural areas are determined and analysed, and an in-depth understanding of the issues and challenges faced by rural women entrepreneurs is provided. The results could help SMEs to better plan their requirements. The findings could also assist government and administration bodies at all levels, as well as organizations providing support services,

toward a better understanding of the problems of women entrepreneurs and their need for support. Government measures should be geared toward women entrepreneurs, especially in rural areas, to ensure the inclusiveness of all groups in the country population, as declared in the national agenda.

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RESOURCE USE EFFICIENCY ON CASSAVA PRODUCTION IN ABIA STATE, NIGERIA: IMPLICATION FOR AGRI-FOOD MARKETING

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ABSTRACT

Food security is a global challenge and is further exacerbated by inefficiency in resource use in agricultural production. This affects the ability of farming households to commercialize their net surpluses. Accordingly, improved efficiency will enable agric-marketing to optimize its full function to create utilities for consumers. The goal of this study is to investigate the role of resource use efficiency on commercialization and food security of cassava farmers in Abia state. The study therefore identified determinants and levels of commercialization among farming households based on resource use. The study used multistage sampling technique in the selection of location and 90 respondents. Analytically, descriptive statistics, marginal return of efficiency (efficiency ratio), multiple regression model, and food security index were used. Result showed that the marginal variable products are less than their prices (MVP<MFC). This indicated an inefficient utilization of resources used in cassava production. Again, inputs, adoption of modern technology, labour, and household size returned as significant factors that influence resource use efficiency; the result of the food security status shows that farmers who are food insecure are greater in number than their counterparts who were food secure, with a general food insecurity incidence at 0.61. In view of this, the study recommended that government and stakeholders should come up with new initiatives and policies that will transform the smallholders from consistence-oriented to market-oriented production; training of farmers on the adoption of modern farming technologies to boost production and food security and marketable surpluses.

Keywords: Cassava, efficiency, food security, marketing, resource use

INTRODUCTION

In the face of worsening poverty situation, growing inequalities and food insecurity in the world, the United Nations, estimated that in 2050, the world will need to increase food production by more than 70% to feed its growing population. This calls for integrated efforts in rethinking of strategies and practices that are sustainable and efficient. Admittedly,

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agriculture, marketing, distribution, and other sectors are important vehicles in achieving post development agenda especially food security. Although economies of most countries witnessed increase progress in recent time, but against popular expectation, these growths were triggered by the service sector and have left unresolved the central issue of how effective the agricultural sector has performed. For instance, Table 1 highlighted the sectoral contributions to Nigeria economy and paints a worrisome picture of underperformance in the agricultural sector. This has severe implication on how effectively marketing can meet customer food expectation.

Marketing serves as a sort of a gearbox, which makes a profitable connection between demand and supply for products. According to Andrew, Jonathan, and Colin (2008), marketing systems play a decisive role in vibrant economies as mechanisms for both exchange (necessary for specialization and hence leads to higher economic growth) functions and the proper coordination of the exchange (through price signals) which reflect and shape producer and consumer incentives in supply and demand interaction. If small-scale domestic producers are to take advantage of the projected domestic demand growth, then marketing systems in the supply chains linking producers to consumers must be able to support low-cost production and timely delivery of the product. This is because of severe implication, such as levels of customer satisfaction, producer's profits, and overall welfare of the society (Beierlein, Schneeberger, & Osburn, 2014).

Table 1: Sectoral Contributions to GDP Before and After GDP Rebasing

Sectors	Before Rebasing	After Rebasing
Agricultural sector	35	22
Service sector	29	52
Telecommunication (specific Industry)	0.9	8.7
Manufacturing	1.9	6.8
Oil and Gas sector	32.4	14.4

Sources: National Bureau of Statistics, 2014

Today, Nigeria face increased cost in meeting domestic food due in part to food scarcity occasioned by convergence of economic, social, and political challenges. This emerging scenario has engendered a bloat in the percentage of food insecure households, especially those residents in the rural areas where the effect of government policies is rarely felt and as such inequalities will continue to widen. Food scarcity which affects effective marketing is constrained by the gap in food supply and demand. For instance, despite the productive capacity and advantage of Nigeria in cassava production, great imbalance still exists in the demand and supply of cassava. This affects both domestics and industrial utilizations of cassava (Olomola, 2007) and by extension capacity of marketing in the marketing system to address issues of availability, price, and distribution of this important product. The gap is predicated on the fact that about 80% of farming holdings in Nigeria are poor resource farming (Nwajiuba, 2013). This limits their ability to compete favourably with other countries that have attained the desired allocative/economic and technical efficiency in production.

Inefficiency is the bane of Nigeria agricultural development. Many studies, such as Omonona (2009); Nweke, Spender, and Lynam (2002); Nwajiuba (2013); Obasi and Agu (2000), have identified low productivity in agricultural production caused by inefficient use of resources as the challenge of Nigeria agriculture competitiveness and marketing of agricultural produces. According to Bamidele, Babatunde, and Rasheed (2008), Nigeria agricultural problem centres on efficiency with which farmers use resources on their farm. It also borders on how those factors that explain farm efficiency could be addressed to improve both production and creation of form, place, time and possession utilities.

Efficiency is an important factor of productivity in growth as well as stability of production especially in developing economies (Hazarika & Subramanian, 1999). Efficiency in resource use has become a very significant factor in increasing agricultural productivity (Ali & Chaudry, 1990; Bravo-Ureta & Pinheiro, 1993; Ashok, Ali, & Shah, 1995; Seyoum, Battase, & Flemming, 1998; Abay, Miran, & Gunden, 2004; Chavas, Petrie, & Roth, 2005). The scope of agricultural marketing by implication can be expanded and sustained through efficient use of resources (Udoh, 2000) for improve productivity.

The development of efficient market must start with the management of factor endowment and efficient resource utilization. Nigeria has a deep and reflective history with cassava production as the largest producer of cassava in the world; but not so encouraging one with utilization and value chain to achieve global market competitiveness and food security due to poor agricultural marketing capabilities. The concern of marketing is to ensure that there is availability of products to meet consumer demand. This is possible to the extent that resources are used in an efficient and effective manner for the overall welfare of the society and economic developments. The interest on resource use efficiency and food security is predicted on its role also in enhanced societal welfare (Okunmadena, 2001). The need to reverse the dwindling agricultural production and empower agric-marketing to cater for increasing demand for food security and position Nigeria for global competitiveness has necessitated the reconsideration of the issue of efficiency in agricultural production. The goal of this article is to investigate the influence of resource use efficiency on food security status of farmers at difference levels of commercialization. Also, to identify the major factors that influence resource use efficiency in the study area.

LITERATURE REVIEW

From an economic perspective, humans are rational being. They make prudent and logical decisions that guarantee the best outcome. This is the case with household farming decision, which is made with understanding of exchange to obtain outcomes that benefit the family given that the farmer cannot provide everything he needs. Commercialization is a household marketing decision which is based on rational choice model. It provides the framework to understand farmer's behaviour and attitude toward marketing of surplus outputs. This model is part of the expanded view of theory of planned behaviour of Ajzen (1988, 1991) focusing on self-interest and rational choice-based. Commercialization is that proportion of agricultural production that is marketed based on a farmer's rational

choice decision (Govereh, Jayne, & Nyoro, 1999). According to these researchers, agricultural commercialization aims to bring about a shift from production for solely domestic consumption to production dominantly market-oriented. In line with the above definitions, Sokoni (2007) perceive commercialization of smallholder production as "a process involving the transformation from production for household subsistence to production for the market." The concomitant realization is that what is marketed as surplus is based on the household farming decision

Hazell, Poulton, Wiggins, and Doward (2007) averred that most definitions refer to agricultural commercialization as "the degree of participation in the output markets with the focus very much on cash incomes." However, there are some writers who attach profit motive as an integral part of agricultural commercialization. Among others, Pingali and Rosegrant (1995) noted that agricultural commercialization goes beyond just selling in the output market. They claim that a household's marketing decisions, both in the output and input choice, should be based on profit maximization. They further averred that commercialization does not only occur by the reorientation of agriculture to highly valued cash crops but it could also occur by reorienting it to primary food crops. From the view point of Von Braun (1994), commercialization of subsistence agriculture takes many forms. They state that: "Commercialization can occur on the output side of production with increased marketed surplus, but it can also occur on the input side with increased use of purchased inputs. This implies that the net surplus of farmers is a function of efficiency with which the farmers engage in farming production and other agricultural activities to produce beyond subsistence level of production for market orientation. In this instance, we can differentiate three levels of market orientation according to Moti, Gebremedhin and Hoekstra (2009)—subsistence systems, semicommercial systems, and commercial systems based on the farm households' objective for producing a certain crop, their source of inputs, their product mix, and income sources. In these cases, the level of efficiency with resource use in farming will determine the level of surpluses the farm households will present to the market for commercialization.

Commercialization brings multifaceted level of benefits to both the farming households and rural economy. For instance, it plays a role in increasing income and stimulating rural growth (Von Braun and Kennedy, 1994), other benefits highlighted by several authors include employment opportunities, higher agricultural productivity, direct income benefit for employees and employers, expanding food supply, consumption and nutrition (Govereh et al., 1999; Leavy & Poulton, 2007; Pender & Dawit, 2007). However, commercialization is constrained by associated risk of efficient market and high cost in the food marketing system according to Govereh et al. (1999). Therefore, the outcomes of commercialization are dependent on whether the market is efficient. If efficient markets do exist, then commercialization leads to separation of production from consumption, supporting food diversity and overall stability at household level and increased food security and improved allocative efficiency at macro level (Fafchamps, 2005; Bernard & Gabre-Madhin, 2007). However, if markets remain inefficient and transaction costs are high, smallholders fail to exploit the blessings of commercialization.

Based on the above line of reasoning, small holder farming households' capabilities to engage in commercial agriculture is constrained by the convergence of factors among which is inefficiency and other exogenous factors, such as availability of new technologies, infrastructure, market access, and policies. Therefore, this study is encouraged to test the hypotheses: H_1: there is significant difference between cassava production, commercialization, and food security of farmers; H_2: there is significant relationship between socioeconomic profile of cassava farmers and resource used.

METHODOLOGY

Abia State is the study area for this study. The state is located within the southeastern Nigeria and lies between longitude 04° 45¢ and 06° 07¢ North and Latitude 07° 00¢ and 08° 10¢ East. Abia state is bounded by Imo state at the western border; Ebonyi and Enugu states at the North; Cross River and Akwa-Ibom states at the East and Rivers state at the south. Its population stood at about 2.883.999 persons with a relatively high density at 580 persons per square kilometer (National Population Commission, 2007). Abia state is divided into administrative blocks called local government areas, which is further grouped into three agricultural zones namely, Ohafia, Umuahia, and Aba zones. In terms of occupation, about 70% of Abians are farmers and have the potential to produce agricultural produce and products, such as palm oil, cassava, vegetables, palm kernel, yam, rice, and so on, and also engage in food processing (Abia State Government, 1992). The presence of a good number of agricultural institutions, such as National Root Crops Research institute, Michael Okpara University of Agriculture, Umudike, Faculty of Agriculture, Abia State University, Uturu, in the state guarantees an unquantifiable advantage and adds to their capacity in agricultural production.

Data for the study consist mainly of primary data, which were obtained with pretested and structured questionnaire. It includes data on socioeconomic characteristics: age, education, gender, price, household size, farm size, labour, inputs, and so on. For this purpose, a multistage sampling technique was used. In the first stage, two local government areas were selected from each of the three agricultural zones of the state. The second stage involved the selection of two villages purposively from each local government areas. Then, the final stage involved a careful selection of 20 cassava farmers from each of the selected villages in each of the zones. This aggregated 90 respondents for the study.
In terms of analytical tools, socioeconomic characteristics of cassava farmers were realized with descriptive statistics, whereas multiple regression (OLS) models were tried to estimate the factors that determine resource use efficiency. The implicit form of the production function is expressed as:

$Y=f(X_1,X_2,X_3,X_4,X_5,X_6,X_7,X_8\ldots+e_i$……………………………….. (1)

where:
Y= output of cassava (kg)
X_1=Age (years)
X_2=Gender

X_3=Education (years)
X_4=Cost of inputs (Naira)
X_5=Household size
X_6=Adoption of modern farming technologies (adapt=1, otherwise=0)
X_7=Income
X_8=Extension awareness/Visitation (aware=1, otherwise=0)
X_9=Farm size (ha)
X_{10}=Access to credit (access=1, otherwise=0)
X_{11}=Association/Union (membership=1, otherwise=0)
X_{12}=Hire labour (hire labour=1, otherwise=0)
e_i=error term

This methodology is consistent with Daniel, Sanda, and Adebayo (2010) and Shehu, Tashikalma, and Gabdo (2007), who used the same method in their studies.

The Marginal Return of Resource utilization was used to ascertain the resource use efficiency among cassava farmer. This is recourse to the fact that value of the marginal physical product (MVP) = marginal factor cost (MFC).

From estimated regression results of linear production, the values of MPP and MVP for regression used were estimated as follows:

$$MPP_i = \frac{dy}{dx} = b_i \frac{\bar{y}_i}{\bar{x}_i} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

MVPxi = MPPxiPy

where MPPi = marginal physical product of input Xi (MVPxi)
MVPxi = marginal value product input xi
Xi = Arithmetic mean value output
Py = unit price of the output.
bi = the regression coefficient of the ith input
xi = quantity of ith input used, following Uchegbu (2001).

In this study, the formula below following Orebiyi, Olorunsanya, Babatunde, and Fatore (2006), Daniel *et al.*, (2010) and Goni and Baba (2007) was used to determine the efficiency of resource use:

$$r = \frac{MVPxi}{MFC} \quad \text{---------- (3)}$$

where
MVP= Marginal value product of ith input and it is given as marginal physical product (MPP) and unit price of the output {MPPXi (PY)}
MFC= Marginal factor cost of ith input or resources.
MPPXi = Marginal physical product of the ith resources

PY = Output price per unit.
r= Efficiency ratio (ratio of MVP to MFC)

The decision rules in determining the resource use efficiency ratio are as follows:
If, r=1, it implies that cassava farmers are efficient in the use of the resource.
r< 1, implies that cassava farmers are inefficient (over utilizing resources) in resource use
r>1, implies that cassava farmers are inefficient (under-utilizing resources)

The above decision criterion is consistent with the Kay (1981), Goni and Baba (2007), and Daniel *et al*. (2010) who used the same approach in their studies on resource use efficiency.

Food Security Index of Cassava Households

The households were classified into food secure and food insecure households using food security index, which was used to establish the food security status of various households (Omonona & Agoi, 2007). It is given by;

Fi = Per capita food expenditure for the ith household/ 2/3 mean per capita food expenditure of all households ……..(4)

where Fi= food security index
when Fi ≥ 1= food secure ith household
Fi ≤1= food insecure ith household.

A food-secure household is therefore that whose per capita monthly food expenditure fall above or is equal to two thirds of the mean per capita food expenditure. On the other hand, a food-insecure household is that whose per capita food expenditure falls below two-third of the mean monthly per capita food expenditure (Omonoma & Agoi, 2007; Arene & Anyaeji, 2010).

RESULTS AND DISCUSSIONS

The marginal physical product (MPP) for each of the production inputs was estimated from the regression coefficient of the stochastic frontier production function. This was used in determining the value of the marginal products (MVPs) at the geometric mean of inputs following Okon and Enete (2009) and Daniel *et al*. (2010). These form the basis for the result presented in Table 2. Within the limits of statistical reliability, these values provide a measure of the efficiency of resource use of the production inputs prevailing on the average, in cassava production in the study area. The result indicates that all the MVP are less than their prices (MVP<MFC). This indicated an inefficient utilization of resources used in the production of cassava. From an economic perspective, allocative efficiency is achieved at the point where the farm is at equilibrium with the value of MVP

to the prices of resources used or is able to achieve profit using same factors, but, in the case of the factors used above, the reverse is the case. All the resources are overused. To correct this imbalance, adjustment could be made in terms of quantity of factor inputs used and cost in the production process to restore r=1 (Goni & Baba, 2007). The result generally showed that cassava farmers are inefficient in the allocation and utilization of available resource, despite high cost of most productive resources, such as labour. This result is consistent with the findings of Emakaro and Ekunwe (2009), which had similar outcomes. This affects commercialization outcome and availability of food in the marketing system. The choice of farming households to move from subsistence level of market orientation based on the finding of this result hinders semicommercial system or commercial system. The goal of agricultural marketing to make form, place, time, and possession utility is hindered further due to high level of inefficiency in resource allocation and utilization.

Table 2: The Level of Efficiency of the Factors used in the Production of Cassava

Variables	MPP	MFC (#)	MVP (#)	R	Inference
Variable inputs(kg)	0.001	350	0.035	0.0001	Over-utilized
Farm size(ha)	-3.146	3500	-110.11	-0.03146	Grossly over-utilized
Labour (p/day)	18.982	900	664.37	0.738	Over-utilized

Source: Field survey, 2016

NB: The price of output used for this analysis was based on the current farm gate price of 35/kg of cassava.

Analysis of the Determinants of Resource Use Efficiency

The estimated result of the determinants of cassava resource use efficiency is presented in Table 3. The result shows that linear function had the best fit, hence its choice as the lead equation. From the result, the following variables were significant with positive signs Inputs (X_4), Adoption of Modern Farming Technology (X_6), Household size (X_5), and labour (X_{12}). This is in line with a priori expectation. This implies that as these variables increase, the output of cassava also increases.

The coefficient of household (family labour) was found to be significant at 10% level and positively related to hired labour (5%) which also has a positive sign. This indicates that the greater the number of hired labour used in the production of cassava with every available resource in place, the higher the output per production. This implies that an increase in a unit of these labours will lead to an increase in output by 32.39% and 19%, respectively. The higher percentage of family labour over hired labour could be attributed to the high cost of hiring farm labour in Abia state. This finding supports the one conducted by a past researcher who had a similar outcome, such as Okike (2000) and Umoh (2006). In line with a priori expectation, large household sizes are virtually seen as advantage in terms of contributing to labour and as such, perceived as a source of cost reduction. Although this outcome is in disagreement with the findings of Nwachukwu and Onyenweaku (2007) who opined that large household sizes impose pressure on family income. That

notwithstanding, the importance of labour (family and hired) in our cultural setting that is predominantly manual cannot be over emphasized; this is in contrast with advanced countries that are involved in mechanized farming. Human power plays a crucial role in virtually all farming activities (Umoh, 2006).

Adoption of modern farming technology and inputs (fixed and variable inputs used in production of cassava) had a positive sign and was significant at 1% level, respectively. This is in line with *a priori* expectation. This showed a stronger relationship with output and signifies that for every 1 unit of improved input added into the production of cassava, the output will yield more than 22.12% returns and 100%, respectively. This has implication for improve yield, productivity, and reduced cost of hiring labour (input). The coefficient of farmers' age indicated a negative significant. This implies an inverse relationship with output. The negative relationship could imply that although older farmers are more risk averse, younger ones are more dynamic, with regard to the adoption of innovation that would enhance their productivity (Okon & Enete, 2009), with modern farming technology. Age, in this study is used also as a proxy for farmers' experience. It shows that the higher a person's age, the more experience the farmer in the production system and knowledge of risk management in farming than inexperienced farmers; however, from the findings as indicated by the negative coefficient of age of the farmers, age has no direct bearing. This result implies that in today's modern farming business, what counts is not mainly experience of the farmer as proxied by his age but the level of adoption of modern technologies and right resources. In fact, in this age of smart agriculture, age is not important but farmers' ability to adoption modern tools of farming that improve efficiency and productivity.

Table 3: Regression Analysis to Determine Resource Use Efficiency

Variables	Linear	Exponential	Double log	Semi-log
Constant	6.427	2.717	-.070	-105.659
	(.347)	(6.768)***	(-.055)	(-1.729)*
Age	-.439	-.008	-.511	-28.146
	(-1.906)*	(-1.640)	(-2.281)*	(-2.597)*
Gender	3.105	.125	.163	4.740
	(.585)	(1.088)	(1.551)	(.933)
Education	.575	-.012	-.155	1.583
	(.760)	(-.743)	(-1.159)	(.244)
Inputs	.001	2.03E-005	.531	22.356
	(6.397)***	(6.604)***	(8.642)***	(7.532)***
Household size	3.239 (2.313)*	.084 (2.757)**	.435 (2.682)**	16.273 (2.073)*
Adoption of modern farming technology	22.115 (3.997)***	.399 (3.329)**	.311 (2.852)**	18.115 (3.435)**

Table 3 (continued)

Variables	Linear	Exponential	Double log	Semi-log
Income	-3.5E-006	-1.1E-007	-.031	-.366
	(-.442)	(-.655)	(-.620)	(-.150)
Extension	8.453	.166	.073	3.548
	(1.337)	(1.216)	(.576)	(.578)
Farm size	-3.146	-.065	-.022	.056
	(-1.859)*	(-1.780)*	(-.441)	(.023)
Credit	1.826	.050	.033	.068
	(.298)	(.376)	(.265)	(.011)
Association	3.137	.047	.048	3.021
	(.540)	(.376)	(.419)	(.543)
Labour	18.982	.441 (3.326)**	.390 (3.217)**	16.737
	(3.100)***			(2.854)**
R	.875	.696	.753	.715
R^2	.769	.484	.567	.512
F-statistics	7.873***	8.374***	11.687***	9.343***

Source: Field survey, 2016

NB: *, **, and *** are 10%, 5% and 1% respectively

Farm size (X_9) showed a negative coefficient signs. This showed that it has an indirect relationship with output. The negative size of land is in line with the findings of Onoja and Achike (2010) and Mwakalobo (2000), which had the same outcome. It is expected that increased area cultivated would have been associated with gross output, so the sign of the coefficient for land would have been positive. Therefore, in their opinions, land expansion viz-a-viz size may not bring marginal returns given the way they were combining their resources. Also, increased farm size diminished the timeliness of input use. This result is in variance with those of Agwu, Anyanwu, and Mendie (2013); Omonona (2009); and Omiti (2009). According to them, increased area cultivated is associated with gross output, so the sign of the coefficient for land would have been positive.

Finally, all other variables, such as gender, association, credits, extension, education, and income, were not statistically significant and therefore made no impact in determining efficiency of resource use in cassava production. Most of these do not conform to *a priori* expectation. These might be due in part to farmer's inability to assess credit facilities from financial institution, illiteracy, lack of visit by extension workers, and other unexplained reasons. Against the backdrop of the above, this study justified the hypothesis that socioeconomic profiles of cassava farmers affect the choice of resources use in cassava production.

The value of R^2 (77%) indicates that there are other factors affecting resource use efficiency in the production of cassava that were not indicated in the model. This could include some exogenous factors such as government policies on issues bordering around marketing

factors, and so on. The F ratios for all the models are statistically significant at 1% level showing that farmers in this study area plant cassava very well, thereby justifying the research work in the chosen areas.

Estimation of Food Security Status at Different Levels of Commercialization

The result of food security status of cassava farmers at different levels of commercialization is presented in Table 4. The result shows that farmers who are food insecure are greater in number than their counterparts who were food secure. Although Chirwa and Matita (2012) observed that households who are food secure tend to be more commercialized, this result does not wholly support the assertion because the proportion of both food secure and food insecure households shored up with increasing level of commercialization. It shows that cassava farmers operating at a low level of commercialization are few and there is a slight disparity in the proportion of those that are food secure and those that are food insecure. Those that are food insecure are more in number. However, majority of the farmers seem to operate at a medium level with more of the people attaining food security. Also, at high commercialization level, the scenario is no different from that of those operating at a low level of commercialization. On the overall, the proportion of farmers that are food insecure is more than those that are food secure as indicated by the food insecurity incidence. This is comparable to the food insecurity incidence of 0.49 posted by Omonona and Agoi (2007) for Lagos Urban households.

Table 4: Estimates of Food Security Status at Different Levels of Commercialization

Levels of Commercialization	Food Secure		Food insecure	
	Freq	%	Freq	%
Low (1 – 25%)	3	8.57	7	12.73
Medium (26 – 50%)	20	57.14	30	54.54
High (51 – 100%)	12	34.29	18	32.73
Total	**35**	**100**	**55**	**100**
Food insecurity incidence	**= 0.61**			

Source: Field Survey, 2016

In line with a *prior* expectation, increase cassava production as a result of efficient resource utilization and thus commercialization. This implies the tendency to attain food security. Cassava commercialization is seen as the aggregate of household surplus presented by smallholder farmers in the market for acquisition and income.

CONCLUSION

Nigeria and indeed many developing countries of the world face a worsening food crisis; and roots and tubers, such as cassava, have been identified as a viable crop in household food security in sub-Sahara Africa with the capacity to ameliorate the challenges posed by food insecurity. Unfortunately, the current capacity of farmers to increase production of cassava for commercialization to bridge the gap in cassava supply and demand is marred by inefficient allocation of resource. For instance, the efficiency analysis of land, input and labour indicated that resources were underutilized. This does not allow farmers to reap the benefits of their investment; it discourages the productive capacity of farmers and youths to be fully engaged in agriculture. To reverse the trend, increase efficiency in resource use becomes imperative. Because the current level of commercialization of cassava in Nigeria is low given our capacity and international status as the world's largest producer of cassava, government and other stakeholders should shoulder the responsibility of developing new initiatives and policies that will transform the smallholders from subsistence oriented to market-oriented production system. This will require the use of incentives, such as training of farmers on modern farming techniques, acquiring modern smart farming tools and financing, reduction in the cost of labour, encouraging of youths to venture into agriculture, since young ones are more dynamic and averse to risk than old farmers in terms of adoption of innovation in modern farming techniques, improved cassava varieties and other inputs that has been discovered to be risk free and promises better harvest, training by extension personnel and support policies by government so as to optimally generate output that will balance demand and supply for the product in the markets to farmers to attract people to explore the downstream subsector and the commodity's value chains.

Food marketing in recent time has undergone strings of reforms, bringing waves of competition in all segments of the market. However, there still exist pockets of market inefficiencies. Improved market conditions that will engender more participants in the market are necessary to dismantle inefficient market conditions that are prevalent in food marketing system in most developing countries. The need to scale up training to improve efficiency in both allocative and marketing capabilities to provide impetus for food security cannot be overemphasized. Increasing efficiency of farming households is important to grow farming household capacity to move the ladder in their market orientation. Agri-food marketing thrives on the wing of commercialization of agricultural product by farming households. Hence, whatever affects their capacity to present surpluses to the market affects marketing functions and its abilities to create utility. Agricultural marketing is an economic activity that depends on marketing efficiency. Improve efficiency both for allocative and other resources use will enable especially agric-marketing to exercise its full capabilities in areas of pricing, selling, assembling, transportation, processing, storage, and preservation to create utility for consumers.

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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 food requirements of the domestic population. The per capita consumption of vegetables has increased from 54.1 kg in 2008 to 57.3 kg in 2013, and the self-sufficiency level of the country has increased to an estimated 91.3% in 2014 compared with 58.4% in 2012. However, the efficient distribution of food is an important consideration toward ensuring food security. This study examined the marketing costs, margins, and returns for ten types of vegetables. Primary data were collected from five states that represented the various regional zones of Malaysia. Face-to-face interviews were carried out with 215 respondents consisting of farmers, wholesalers, and retailers. The study obtained mixed results, which indicated the existence of marketing efficiency for five of the ten vegetable types studied. The farmers' share of the consumer dollar ranged from 32% to 60%, 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, agricultural marketing

INTRODUCTION

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

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

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

Food security is an important issue in the world today. The World Food Summit of 1996 defined food security as existing "when all people at all times have access to sufficient, safe, and 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, i.e., the demand side, and the issues of access by vulnerable people to food. Whereas availability is determined by food production, stock holding, and food marketing (Von Braun, J. , Bouis, H. , Kumar, S. & Pandya-Lorch, R., 1992), the efficient distribution of food is an important aspect to consider toward ensuring continuous availability (Babatunde, R., & Oyatoye, E., 2005).

According to Aidoo, R., Nimoh, F., Bakang, J. E. A., Ohene-Yankyera, K., Fialor, S. C., Mensah, J. O., and Abaidoo, R. C. (2012), many development agencies and governments recognize that efficiency in agricultural markets would improve the bargaining position and increase the income of farmers. 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).

Food marketing is a very important aspect of agricultural development; however, it is often given little emphasis because countries usually focus on policies to increase food production. As a result, there is not much consideration of efficient food distribution to encourage improved productivity (Olayemi, J.K., 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, C.S. (2010) analysed the net margin of marketers of watermelon in the Niger Delta of Nigeria and found that the watermelon marketing system is inefficient, with a net margin of about 42% in the area. The statistically significant variables that were found to have a positive relationship with the net marketing margin were marketing experience, depreciation, cost of marketing equipment, produce cost, and

marketing cost. The study also reported that the marketing in Nigeria was ineffective and inefficient due to inadequate infrastructure and social amenities, such as transportation facilities, communication systems, 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, S. , Hussain, A. , Khan, M.A. and Mahmood, I. (2012) reported that the producer's share of the consumer price for the majority of fruits and vegetables was around 25% and that there was a need to bring reform into marketing operations and networks in the country to transfer the real benefits to farmers.

Pokhrel, D.M. and Thapa, G.B. (2007), in their study on mandarin marketing in Nepal, found that although the 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) pointed out that in Malaysia, small farmers were in danger of being marginalised because the marketing at the farm level had not kept pace with the rapid growth of food retailing in the country. The vegetable and fruit industries in Malaysia were reported to be 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, M. , Nolila, M.N. & Mansor, I., 2009). In addition, the producers are usually at a considerable distance from the marketing centres and lack market information. Inadequate marketing infrastructure also aggravates their marketing problems.

According to Kohls, R.L. and Uhl, J.N. (1998), the marketing margin is the portion of the consumer's food dollar that accrues to food marketing firms. It can also be defined as the difference between what the consumer pays and what the farmer receives. The cost of carrying out a multitude of functions and the 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, R.L. & Uhl, J.N., 1998). A small margin is often regarded as 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 had embarked on a campaign to reduce the role of middlemen. With the tagline *Jihad Memerangi Orang Tengah* (War against Middlemen) (Ismail, S., 2014), the campaign aimed to reduce the manipulation of middlemen in the marketing chain and to ensure remunerative returns to producers and fair prices to consumers. Ismail, S. (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 the returns to farmers not being commensurate with their efforts.

However, the size of the marketing margin cannot be used as the sole criterion to judge efficiency (Kohls, R.L. & Uhl, J.N., 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, T.O., 1988). It is not possible to conclude that high marketing margins mean that marketers are taking advantage of producers or consumers. Similarly, low marketing margins may not mean greater marketing efficiency (Eze, C. C., 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 the value added (Leftwich, A.C., 1979).

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

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

METHODOLOGY

This research was carried out in five states that represented the various regional zones of Malaysia: Penang (north), Pahang and Terengganu (east), Perak (central), and Malacca (south).

Primary data for the market survey were obtained through face-to-face interviews with selected respondents consisting of farmers, wholesalers, and retailers by using structured questionnaires. Respondents at the farm level were selected from major producing areas based on 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, in each state capital. Convenience sampling was applied by using a list of farmers, wholesalers, and retailers supplied by the Federal Agricultural Marketing

Authority (FAMA) state offices. A total of 215 respondents were interviewed in the survey, comprising 75 respondents each at the farm and wholesale marketing levels and 65 respondents at the retail level (Table 1).

Table 1: Regional Distribution of Respondents for the Study on Vegetables

Level/Region	Penang (North)	Perak (Central)	Melaka (South)	Pahang (East)	Terengganu (East)	Total
Farm	11	12	20	12	20	75
Wholesale	15	10	15	10	25	75
Retail	10	18	10	12	15	65
Total						215

The survey was carried out by trained research officers from the FAMA headquarters, 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 collected data on transactions for the varieties of produce handled, and Part C included details of the marketing costs.

The focus of the study was on 10 types of commonly consumed vegetables in Malaysia: leaf mustard *(Brassica chinensis* L. var *oleifera* Makino), Chinese spinach (*Amaranthus* spp.), cabbage (*Brassica oleracea* var *capitata* L.), red chillies (*Capsicum annuum* 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). Table 2 presents the classification of vegetables based on the parts that are eaten.

Table 2: Classification of the Vegetables Sampled in the Survey

Classification	Common Name	Scientific Name
Leaves	Leaf Mustard	*Brassica chinensis* L. var. *oleifera* Makino
		Amaranthus spp.
	Chinese Spinach	*Brassica oleracea* var. *capitata* L.
	Cabbage	
Fruits	Red Chillies	*Capsicum annuum* var. *acuminatum* L.
	Cucumber	*Cucumis sativus* L.
	Tomatoes	*Lycopersicum esculentum* Mill
	Pumpkin	*Cucurbita maxima* Duch ex. Lam
Seeds	Brinjals	*Solanum melongena* L.
	Long Beans	*Vigna sinensis* L.
	French Beans	*Phaseolus vulgaris* L.

Descriptive and inferential statistics were used to analyse the data collected during the field survey. The descriptive statistics were expressed as frequency distributions, means, and percentages.

The marketing margins were obtained by using the definition given by Kohls, R.L. and Uhl, J.N. (1998). Therefore, the formula for marketing margin, net marketing margin, whole margin, and retail margin, respectively, can be expressed as follows:

$$MM = RP\text{-}FP \quad (1)$$

$$NMM = MM\text{-}MC \quad (2)$$

$$MM = WM + RM \quad (3)$$

$$WM = WP\text{-}FP \quad (4)$$

$$RM = RP\text{-}WP \quad (5)$$

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 Eq. 2, the net marketing margin is the difference between the total marketing margin and the 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 Eq. 3.

RESULTS AND DISCUSSION

Table 3 presents the average marketing margins and producers' share of the consumer dollar for the ten types of vegetables studied. The analysis showed that the farmers' share of the consumer dollar ranged from 32% to 60%, with the highest share for red chillies at 60%, followed by leaf mustard at 59%, and brinjal and French beans at 58%. The lowest farmers' share was for pumpkin at 32%. The wholesalers' margin varied from 17% to 29%, whereas the retailers' margin was between 18% and 30%.

Table 4 shows the marketing costs that are frequently incurred at the various marketing levels, as obtained in the survey.

Table 3: Marketing Margins 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
Cucumber	1.2	1.85	2.4	50	27	23
Brinjal	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 the average prices from 11 to 24 November 2013.
Source: Field Survey, FAMA, 2013

Table 4: Components of the 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-wheel drive vehicles, vans, and 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

To come up with a measure of marketing efficiency, a comparison of the net margins and marketing costs is necessary Olukosi, J.O. & Isitor, S.V., 1990). Accordingly, the following formula was applied:

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

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

Table 5 presents the estimates of the marketing margins and marketing efficiency for the ten varieties of vegetables during the study period. The estimates are based on the simple averages of the prices and costs in the five states surveyed.

The net marketing margin ranged 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. The marketing efficiency was found to be highest for pumpkin at 305%, followed by long beans at 166% and Chinese spinach at 159%.

Table 5: Marketing Margins and Marketing Efficiency for Vegetables in Malaysia

Vegetable Type	Farm Selling Price (RM/kg)	Retail Selling Price (RM/kg)	Marketing Cost (RM/kg)	Marketing Margin (RM/kg)	Net Marketing Margin (RM/kg)	Marketing Efficiency (%)
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
Cucumber	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

A marketing efficiency rate exceeding 100% is considered to be efficient based on the definition Olukosi, J.O. and Isitor, S.V. (1990) because the value addition (as represented by the net marketing margin) exceeds the marketing costs incurred. Five of the vegetables studied have marketing efficiency ratios exceeding 100% and thus are considered efficient; these are pumpkins, long beans, red chillies, Chinese spinach, and French beans.

In contrast, five vegetables have marketing efficiency ratios below 100% and thus are considered inefficient; these are brinjals, cabbage, leaf mustard, cucumbers, and tomatoes. The differences in results for the different vegetables may be due to the intricacies in the handling of each vegetable type.

CONCLUSION

This study analysed the marketing margins and marketing efficiency for vegetable marketing in Malaysia. Based on a comparison of the marketing costs and net marketing margins, the marketing was efficient for five types of vegetables but was inefficient for five other vegetable types. The analysis showed that the farmers' share of the consumer dollar ranged from 32% to 60%, 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 costs, which ranged from RM0.42 per kg for pumpkin to RM1.67 per kg for brinjals.

For the sake of simplicity, the present study assumed the existence of a single marketing chain involving producers, wholesalers, and retailers. In reality, the marketing chain may consist of many more layers. Further research 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 is done through farmers' markets. Also, the distribution of the marketing margin among the various players could be analysed in greater detail to find reasons for the differences in marketing margins at each level.

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