Conference Paper

Value Chain Analysis of Organic Vegetables on Two Different Supply Chain Systems in Yogyakarta

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Abstract

Recently, business of organic vegetables in YogyakartaYregion has been growing substantially. It is characterized by the formation of a new supply chain system called Jogjakarta organic market supply chain (POJOG) in addition to modern retail supply chain system that is already available i.e. Organic Farmers of Merapi (TOM). The different characteristics of these two supply chain systems allow the consumers to shift their preferences from modern retail supply chain to organic market supply chain when buying organic vegetables. Therefore, analysis of the performance and competitiveness of these two different supply chain systems is important for improvement of organic vegetable supply chain in the future. Based on the results of supply chain analysis, it was found that the added value obtained by modern retail supply chains TOM was 58.44%, while that obtained by organic market supply chain POJOG was 38.97%. The marketing margin ratio obtained by such players in modern retail supply chain system as farmers, TOM and Super Indo were 1.29, 1.91 and 1.18 respectively, whereas those obtained by farmers and POJOG on the organic market supply chain were 2.10 and 1.29 respectively. In terms of marketing efficiency, Jogjakarta organic market performed better, accounting for 58%, more than double of those performed by modern retail supply chain that only accounted for 26%.

Keywords: Value Chain Analysis; Organic Vegetables; Yogjakarta; Marketing Margin

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INTRODUCTION

In Yogyakarta, the sale of organic vegetables has been growing substantially. In the past, organic vegetables could only be found at some modern retails in Yogyakarta, i.e. at Merapi Organic Farmers (TOM), TOS and Freshland. Over 70% of the market share is controled by TOM. But since last year, organic vegetables could have been found at

the Jogja's Organic Market (POJOG), a group of seller forming organic vegetable communities. In general, modern retail offers higher prices because its selling system must follow a longer supply chain involving several tiers when compared to that of organic market supply chain. According to Kohls and Uhl [3], market efficiency is an approach to measure and assess efficiency of a supply chain for describing its overall performance. Therefore, to measure performance of a particular product's selling system, efficiency of each value chain activity in the supply chain system should be of concern [4]. In this case, efficiency of organic vegetable supply chain will affect formation of prices, which possibly leads to displacement or consumer's shifting preferences from one supply chain system to another. By using value chain analysis, efficiency of supply chain systems, their interactions and opportunities for new producers or players to new as competitors can be predicted. This study was aimed to analyze the supply chain systems of organic vegetables through modern retail and organic market, determine the distribution of value chain for each supply chain player with indicators of value added distribution and the establishment of marketing margins throughout the supply chain of organic vegetable and analyse marketing efficiency obtained by each organic vegetable supply chain system.

RESEARCH METHOD

In this study, Merapi Organic Farmers (TOM), which plays its role as a trader, and Super Indo, as a representative of supermarkets, were selected as samples of players in the modern retail supply chain, because of their positions as the biggest traders and supermarkets in organic vegetable sales in Yogyakarta.

TOM is located in Wukirsari village, Cangkringan, Sleman, Yogyakarta. The selected modern retail stores were 8 outlets of Super Indo which scattered throughout Yogyakarta province. On the other hand, the sample of players of supply chain in the community market was represented by Organic Market Jogja (POJOG). Measurements of marketing margin on each tier of supply chain were calculated using Hayami's value-added analysis method. Comparative analyses on the basis of each tier performance were conducted between the two organic vegetable supply chain systems to determine the distribution of their respective value chain.

Table 1 shows the method for calculating added value using Hayami method [2, 5, 6, 8]. The calculation of marketing margin ratios on each tier in modern retail market

and organic market supply chains used Return to Cost ratio [7]. The calculation was conducted using the following formula:

$$R = P_y \cdot Y \quad (1)$$

$$C = FC + VC \quad (2)$$

$$R/c = \frac{(P_y \cdot y)}{(FC + VC)} \quad (3)$$

Note:

R = Revenue Y = Quantity of output

C = Cost C = fixed cost

P_y = Output price VC = variable cost

The marketing efficiency was calculated using farmer's share [1]. The formula was as follows:

$$FS = \frac{Pf}{Pr} \times 100\% \quad (4)$$

Note:

F_s = *Farmer's share*

P_f = Selling price at farmer level

P_r = Price at last tier paid by end consumer on modern retail and organic market supply chain

RESULTS AND DISCUSSION

Based on the survey results and observations, supply chain systems in modern retail and organic market in this study can be seen in Figure 1. From the calculation using Hayami method and Return to Cost ratio, the values of marketing margins and R/C ratios for each tier in modern retail supply chain system were illustrated in Figure 2. On the other hand, using similar methods of calculation the values of marketing margins and R/C ratios for each tier in organic market supply chain system were shown in Figure 3.

From the value chain analysis of modern retail and organic market supply chain systems above, it can be drawn three conclusions that all tiers either in modern retail supply chain system or organic market supply chain system gained return to cost ratios of more than 1, meaning that those businesses were categorized to be profitable and feasible.

Table 1: Hayami's method for added value analysis.

Hayami Method		
No	Variable	Value
1	Output (Kg)	A
2	Raw Material Input (Kg)	B
3	Workers/Labours (persons)	C
4	Conversion factor	D = A/B
5	Worker coefficient	E = C/B
6	Output Price (IDR)	F
7	Average wage (IDR)	G
Revenue and Profit		
1	Raw Material price (IDR)	H
2	Other Input contribution (IDR)	I
3	Output Value	J= D*F
4	Added Value (IDR)	K = J-I-H
5	Added value ratio	L = (K/J)*100%
6	Revenue of Worker	M = E*G
7	Portion of Worker	N = (M/K)*100%
8	Profit (IDR.)	O = K-M
9	Profit rate	P = (O/K)*100%

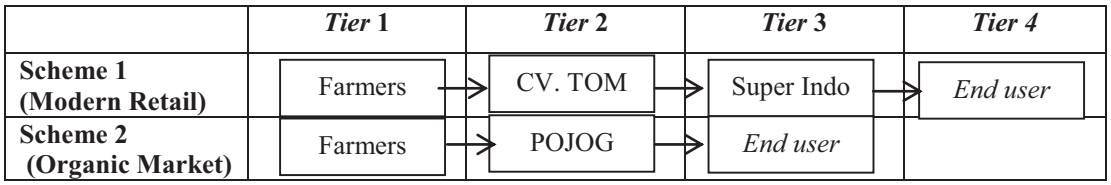

Figure 1: Supply chain systems of modern retail and organic market in Yogyakarta.

Farmers in the organic market supply chain system gained Return to Cost Ratio greater than the farmers on modern retail supply chain system, at the value of 2.10 compared to 1.29. The end consumers of organic market supply chain system paid lower prices than those in modern retail supply chain system. Table 2 explains the buying prices of organic vegetables in both markets. Three points above illustrates that when viewed from the perspective of value chain analysis, farmers in the organic market supply chain system received better revenues than the farmers on modern retail supply chain system.

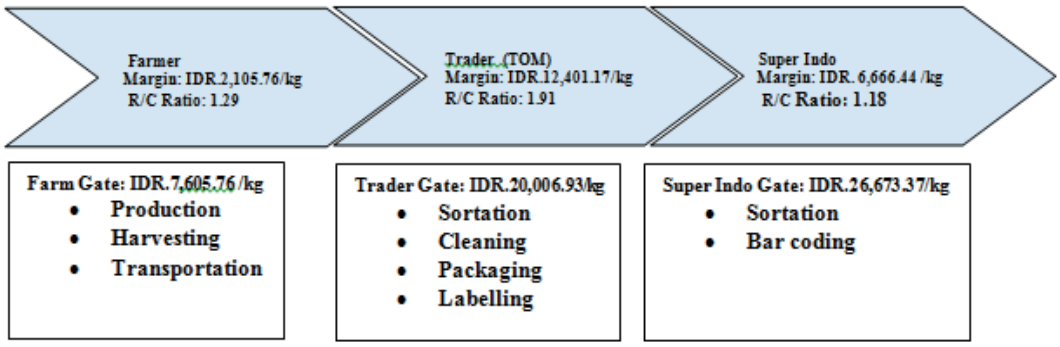

Figure 2: Marketing margin, Return to Cost Ratio and tiers' activities in modern retail supply chain.

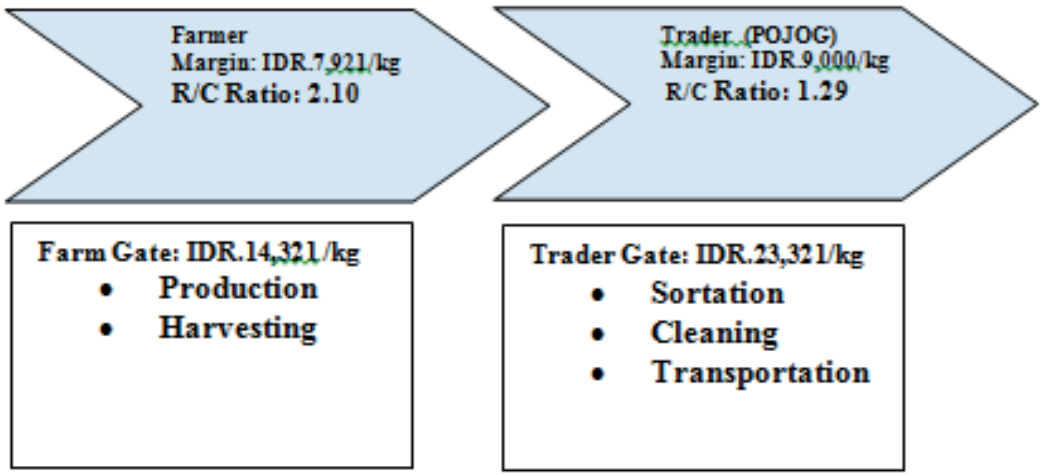

Figure 3: Marketing margin, Return to Cost Ratio and tiers' activities in the organic market supply chain.

Better payments were not only received by the farmers, but also by consumers since almost every commodity sold in the organic market supply chain system could be obtained at a cheaper price than those in modern retail supply chain system.

It was attributable to the fact that TOM and POJOG did not involve in direct competition and played in different markets with different sale methods. But in the future, it is possible that POJOG can gradually take TOM's market share and plays as a leader of organic vegetable trader in the Yogyakarta area. Besides, the existence of POJOG does not only threaten TOM in terms of sales, but also can attract farmers who supply TOM. When the contract expires, they can move to POJOG as new supplier for getting better benefits. These phenomena have been several times found in the field, i.e. TOM's supplying farmers who already met the target of sale for TOM but still had excessive stocks and managed to sell organic vegetable products to POJOG due to higher selling prices. If this situation continues, it is believed that the market share of

Table 2: Consumer's Buying Price (Per kilogram) of organic vegetables.

Commodity	Consumer's Buying Price (Per kilogram)	
	Modern Retail	Organic Market
Kailan	IDR.31,000	IDR.24,000
Pakcoy	IDR.25,000	IDR.14,000
Bit	IDR.36,500	IDR.33,000
Broccoli	IDR.35,000	IDR.30,000
Tomato	IDR.19,500	IDR.24,000
Carrot	IDR.20,000	IDR.23,000
Purple Eggplant	IDR..22,500	IDR.18,000
Snaps	IDR.25,500	IDR.14,500
Red Lettuce	IDR.29,300	IDR.34,500
Green Spinach	IDR.25,500	IDR.15,000
Kale	IDR.26,900	IDR.18,000
Green Lettuce	IDR.30,000	IDR.18,500
Parsley	IDR.43,900	IDR.36,000
Celery	IDR.31,300	IDR.24,000

TOM will be disrupted. Nonetheless, TOM still has some advantages. Its market share that is bigger than that of POJOG will give better opportunity in selling their products.

Marketing Efficiency Analysis

By using the formula (4), the results of Farmer's Share calculation of the modern retail and organic market supply chain systems can be seen in Table 3. From the results of calculations, it can be illustrated that the marketing process through the organic market supply chain was efficient since its marketing efficiency accounted for 58%, more than 50%. On the other hand, the process of marketing through modern retail supply chain system could be considered not efficient since its marketing efficiency was only 26% or lower than 50%. This means that modern retail supply chain system enabled new competitors to arise due to the persistence of profit margins which were large enough to be gained. In other words, new competitors or players were still able to sell organic vegetables at a lower price with reasonable profit margins because the marketing efficiency has not been reached. Such a situation becomes an alert to Super

Table 3: Farmer's share of modern retail and organic market supply chains.

Commodity	Modern Retail	Organic Market
Kailan	29%	63%
Pakcoy	22%	36%
Bit	30%	73%
Broccoli	46%	70%
Tomato	31%	63%
Carrot	40%	61%
Purple Eggplant	22%	50%
Snaps	20%	38%
Red Lettuce	27%	74%
Green Spinach	16%	40%
Kale	13%	50%
Green Lettuce	23%	51%
Parsley	25%	75%
Celery	26%	63%
Average	**26%**	**58%**

Indo and especially TOM as tier having the largest marketing margin ratio in modern retail supply chain system to protect themselves against new competitors that may arise and seize their market shares.

On the contrary, the opportunity of arising new competitors in the organic market supply chain system seemed to be relatively small. This was attributable to the fact that marketing efficiency had been reached and the profit margin was limited to support new competitors to compete with lower prices. Therefore, the marketing process through POJOG could be considered safe from the threats of new competitors.

CONCLUSION

1. The shifting preference of the consumers and the farmers from modern retail supply chain to organic market supply chain were very possible. However, modern retail supply chain system still outweighed organic market supply chain system in terms of large scale sale potential and more accessible locations by consumers.

2. The added value distribution for TOM and Super Indo in modern retail supply chain system amounted to 58.4% and 17.82% respectively, while that of POJOG in the organic market supply chain system accounted for 38.97%.
3. Marketing efficiency in the modern retail supply chain system was relatively small, accounting for only 26%, far less than that in the organic market supply chain system which reached 58%.

References

[1] Asmarantaka, R.W. 2009. *Bunga Rampai Agribisnis (Collection of Agribusiness*). Seri Pemasaran. Bogor, IPB Press

[2] Hayami, Y. 1987. *Agricultural Marketing and Processing in Upland Java, A Prospective From Sunda Village*. Bogor: The CGPRT.

[3] Kohls, Richard L, Joseph N. Uhl. 2002. *Marketing of Agricultural Products*. Prentice Hall. New Jersey. USA.

[4] Kotler P, Keller K.L.2008. *Marketing Management.* Prentice Hall. New Jersey. USA.

[5] Marimin, Defni Feifi, Sri Martini, Retno Astuti, Suharjito, Syarif Hidayat 2010. *Added Value and Performance Analyses of Edamame Soybean Supply Chain: A Case Study. Operations and supply chain management* Vol. 3, No. 3, September 2010, pp. 148-163.

[6] Marimin, Nurul, M. 2011. *Aplikasi Teknik Pengambilan Keputusan dalam Manajemen Rantai Pasok (Technical application of Decision Making in Supply Chain Management).* Bogor, IPB Press

[7] Soekartawi. 2006. *Analisis Usaha Tani (Analysis of Farming Business)*. Jakarta. UI Press.

[8] Sudiyono, A.2002. *Pemasaran Pertanian (Agriculture Marketing)*, Malang. UMM.