Consumers' knowledge and awareness towards organic vegetable certification in Phnom Penh City, Cambodia

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ABSTRACT: This paper is investigated about consumers' knowledge and awareness of organic vegetable certification in Cambodia. Data providers was collected in Phnom Penh city through face to face survey within 402 respondents. The descriptive statistics and chi-square test were employed. Gender, organic knowledge, and trust's label were found relatively statically significant related to consumer's propensity to purchase organic vegetables. Further results show that organic vegetable certification could be divided into three classes including (1) organic vegetables sticking organic logo, (2) sticking generic term "organic", and (3) sticking organic logo and generic term. Organic consumers usually bought organic vegetables sticking with logo and generic term "organic" while the decision making was made by their own self rather than other. About 80 percent of organic consumers recognized the organic certification. However, consumer's knowledge on organic certification is limited since 85 percent of consumers bought chemical free vegetables confused that it was organic vegetables, so television and radio should broadcast more about organic information since these are the significant media.
Keywords: organic vegetable logo, consumer knowledge, organic vegetable certification

Introduction

Cambodia had been facing food shortage after Khmer Rouge regime were collapsed in view of tragedy of nearly two million people were killed (Ministry of Planning & Ministry of Health, 2011). To fulfill self-sufficiency, the United Nation Food and Agriculture Organization (FAO) had imported enormously over 2,100 tons of pesticides during 1979 to 1982. With the free market economy in 1993, private sector earned profit around 250,000 US dollars per year (Yu and Diao, 2011). In addition, World Health Organization, FAO, and Cambodia IRRI Australia Project (CIAP) continued to import the pesticide freely from Vietnam (48.20%), Thailand (37.60%), British (7.60%), Cambodia (4.80%), China (1.60%), and Malaysia (0.02%), respectively.

Prey Veng Province was known as where pesticide sold numerously. About 3,200,000 liters of them were sold in amount of 20 million US dollars. More than 70% of rice farmers had been using chemical fertilizer (Yu & Diao, 2011) and not comprehended precisely on pesticide usages (Savoeun, 2008). Consumers concern about chemical sustain using on food (Ozguven, 2012). Raising pesticide consumption has resulted negative feedback on human health hazard (Jarupong and Chuleemas, 2011).

Currently, organic market seems positively growth and continuously expand market size all around the world. In 2007, Cambodia had organic cereal land, organic palm sugar, organic fruit, and organic vegetable in amount of 4,320 hectares, 72 hectares, 128 hectares, and 23 hectares in accordingly (FiBL and IFOAM, 2014, p. 23).International Federation of Organic Agriculture Movements (IFOAM) was the first private cooperative established in 1980 to set up international organic standard (Soeun, 2004).

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Regarding to organic sector in Cambodia, organic regulation has not been constitute yet, so applicable policy is Food Safety of Agricultural Products, Rectangular Strategy, National Strategic Development Plan, Agricultural Sector Strategies Development Plan, Internal Control system, Integrated Pest Management, System Rice Intensification, and Management of Agricultural materials which serve instead of organic law (Makarady, 2007).

In 2004, organic standard was set up by internal institute individually in Kompot, Pursat, Battambang and Kompong Thom Province. By the end 2005, Cambodian Organic Agriculture Organization (COrAA) was formed up to certify organic products in Cambodia. This association has two main organic label such as organic mark and chemical free mark as shown in **Figure 1**. So far, there are 30 organic members which 20 of them are organic mark and the rest are chemical free. Those organic and chemical-free products are vegetable, moringa product, fruit, sprout, rice, pepper, mango, cashew nut, and so on (Cambodia organic agriculture association [COrAA], 2009).



Figure 1 Logo of organic and logo of chemical product certified by COrAA

There are many organic operations on the here and now, yet it is hard to quantify them as they activate outside the formal market and certification, for example non-used chemical sustain farmers are organic by default (Makarady, 2007). Noticeably, vegetable currently has three kind of logos such as (1) organic vegetable, (2) chemical free, and (3) generic labelling with the prefix “Organic” without logo.

According to **Figure 2** shown about logo of CEDAC and logo of Natural Agri-Product shop. Cambodian Centre for Study and Development in Agriculture(CEDAC) bought vegetables from cooperative farmers in fair price to sell in CEDAC’s shop namely the Natural Agri-Product (NAP) without sticking organic logo but it is well known as organic product because this organization have worked with organic agriculture since 2003 (Makarady, 2007).



Figure 2 Logo of CEDAC and logo of Natural Agri-Product shop logo under CEDAC management

On account of positive pointer of organic labelling much research in recent years has focused on organic certification globally (Barrett, et al., 2002; Janssen and Hamm, 2012; Kleemann, et al., 2014; Veldstra, et al., 2014). However, non-researcher has addressed the organic certification system and awareness in Cambodia along with consumers' knowledge about organic vegetable is limited in scientific works, so the purpose of this study is to discover about organic vegetable certification and examine the consumer awareness and understanding of organic vegetables. With the benefit of hindsight, this would enhance the knowledge of organic certification and consumers' awareness on organic vegetable, and raise organic consumption in this emerging market even the organic term is relatively fresh to them.

Methodology

Sample Size and Data Collection

This filed were conducted nearby several supermarkets and along river side purposively sampling in Phnom Penh city where most people liked to go, so they had equal chance to provide data, associated with 402 convenient sampling during June to July 2015. Structure questionnaires were used as tools to obtain data which was popularly used and responsibly administered because data provider just only need to read and tick with close end question. In addition, it is a kind of indirect answer, so data providers are not hesitated or has any pressure to provide answers. This method can construct statically useful information from the questionnaire and generate relatively stable outcome and reasonably high in reliably and validity to avoid holistic and becoming a vital instrument in this research. To obtain reliable data, this research had been organized several steps. First, English version questionnaires were designed in accordance with empirical researches and were translated into Khmer language. Then this Khmer version questionnaires were translated back to original languages to ensure the accuracy and precision of the questions. There were three main sections. The first section focused on socio-demographics. The second was indicated about consumer's knowledge, consumer's trust, and consumer's awareness about logo. The last part focused on the factor that influenced consumer to buy, decision making, mass media broadcasting, and price observation. During freelance, data providers were recruited by research's judgment and asked to answer the questions. In case of refusing providing data, the next candidate were asked instead of.

Data Analysis

Descriptive statistics and chi-square were applied to analyze data. Descriptive statistics were run to perceive the percentage of knowledge level, awareness logo, organic mass media broadcasting, decision making, and influenced factor to purchase while chi-square were tested about relationship between gender, knowledge level, and trust level with consumer behavior. These main parameters were measured in ordinal and nominal measurement while the outcome of consumer behavior was binary. In addition, this data was non-parametric data which was suitable to apply with chi-square test. The P-value method of hypothesis testing was applied at significant level of 0.01 and 0.05 by Statistical Package for Social Sciences (SPSS) version 22.

Results and Discussions

Among 402 respondents, two categories of consumers were defined including organic vegetable consumers and non-organic vegetable consumers. About 53.20% of respondents were organic vegetable consumers which approximately equal 214 respondents while non-organic vegetable consumers were 46.80%. According to **Table 1** showed that gender was relatively statistically significant related with consumers' propensity to purchase organic vegetable ($\chi^2(1) = 5.694$, $p<0.05$). About 56.10% of men were organic consumers while 55.90% of women were non-organic consumers.

Further results showed that organic knowledge level was highly statically significant toward consumers' propensity ($\chi^2(2) = 13.315$, $p<0.01$). Undoubtedly, about 50.40 percent of respondents who perceived some ideas about organically vegetables were likely to buy organic vegetables while more than 60 percent of respondents who had little knowledge about organic vegetables were not likely to buy. The proportion knowledge of people, bought organic vegetables, were higher than other. This was shown that organic consumers bought the product based on their understanding. If they are not acquainted with organic vegetables well such non-organic consumers, surely they will not purchase it. That is the reason leading most of non-organic consumers have lower percentage of knowledge about organic vegetables than other group.

To verify organic vegetable consumers' knowledge, four statements were used to check their understanding in term of organic knowledge. Interesting answers were obtained from organic consumers that over 80% all of the organic statements were answered correctly which was not far from the truth. The essential statement was about "organic farming is good for the environment and health" which 91.60 % of the answers were correctly, so this factor appeared the highest point in organic consumers' view point compared to other statements. According to the organic knowledge statements showed that "organic product do not contain pesticide residues", "organic farming is the process of organic growth without using chemical sustain and used only soil fertilization", and "organic farming is used only by compost and animal manure" were answered correctly in the proportion of 86.40%, 85.50%, and 83.20%, accordingly.

With respect to consumers' trust level, there was a statistically significant different between consumers' propensity and consumers'trust ($\chi^2(2) = 9.949$, $p<0.01$). More than half of organic buyers (50.50%) trusted on organic vegetable label as it did. In contrast, non-organic consumers still suspected the quality whether it was indeed organic or not with respect to 56.40% say "I somehow trust organic vegetable label".

Table 1 Gender, organic knowledge level, and trust level statistics

Items	Frequency N=402	Non-Organic Buyers (n=188)	Organic Byers (n=214)	p-value
Gender				$\chi^2(1) = 5.694$, $p<0.05$*
Male	203	44.1%	56.1%	
Female	199	55.9%	43.9%	
Knowledge Level				$\chi^2(2) = 13.315$, $p<0.01$**
Little[a]	208	61.20%	43.50%	
Some[b]	170	33.00%	50.40%	
A lot[c]	24	5.80%	6.10%	
Trust Level				$\chi^2(2) = 9.949$, $p<0.01$**
Trust	177	36.7%	50.5%	
Somehow Trust	193	56.4%	40.7%	
Not trust	32	6.9%	8.9%	

a. I know a little knowledge about organically product

b. I know some knowledge about organically product

c. I know a lot about organically product

* Statistically significant level of 0.05, and

** Statistically significant level of 0.01

Based on empirical literature, consumers' awareness of logos have been tested by four logos as shown in **Table 2**. For instance, (1) CEDAC logo is agricultural organization promoted organic product, (2) Natural Agri-Product (NAP) logo is CEDAC's shop sold agricultural product, and (3 and 4) the logo of COrAA certified on organic and chemical product. Referring to data shown that more than 60% of respondents demonstrated that they knew CEDAC logo very well meanwhile others logos stood still quite similar proportion such NAP logo (28.40%) and COrAA-Organic logo (26.50%). Less than one sixth (13.30%) of respondents illustrated that they have ever seen COrAA-chemical logo.

With regard to confirmative question, "is it organic logo?" was elicited individually. It is clear that most of organic consumers who ever seen CEDAC, NAP, and COrAA-Organic logo knew exactly the logos stand for. More than 80% of CEDAC, NAP, COrAA-Organic logo were recognized as organic label. About 92.70% of the COrAA-Organic logo was the best well-known because this logo associated with the generic term "organic" while the rest had not. Unfortunately, 85% of the COrAA-chemical logo were misunderstood as organic logo. This might be resulted from lack of information. Therefore, the generic term of organic on the logo seem to be important to alert consumers' consciousness about the product as COrAA-organic which is well known among its ever seen consumer.

Table 2 Consumers' awareness of organic logo

Logos	Have you ever seen this logo?				Is it organic logo?			
	Yes		No		Yes		No	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)
CEDAC	147	68.9	67	31.1	123	83.6	24	16.4
NAP	61	28.4	153	71.6	53	86.4	8	13.6
COrAA-Organic	57	26.5	157	73.5	53	92.7	4	7.3
COrAA-Chemical	28	13.3	186	86.7	24	85.2	4	14.8

Regarding to mass media, television (25.20%) and radio (22.10%) were known as the main source where consumer received information about organic product. In addition, internet (17%) and information from friends (18.60%) were the second range of media. Finally, word of mouth, agency, and newspaper were the least effective media informing organic knowledge to consumers. In this case, it reflects that organic consumers mostly watch television and listen to radio very often.

Absolutely, in Cambodia market there were three kind of organic product characteristic including (1) the product sticking with only organic logo,(2) product sticking with only generic term "organic term", and (3) product sticking the combination of logo with organic term. According to **Table 3**, almost half of organic consumers (42.5%) had bought organic product stuck with logo and organic term. This sign informed that consumers like to buy the product stuck with logo and organic term rather than logo or generic term solely.

Table 3 Factor influence to buy and buying behavior

Items	Frequency	Percentage
Factor influence to buy		
Logo	70	32.7
Generic term "organic"	53	24.8
Both	91	42.5
Buying behavior based on		
Self	117	54.7
Another person	12	5.6
Self and other	85	39.7

In general, more than half of the decision making to purchase organic product (54.70%) were made by him or herself while another person has less proportion (5.60%). However, organic purchasing tendency is could be made by themselves together with encouragement from other person as well.

During the freelance, three target markets were observed purposively on July 1, 2015 about the price of vegetable such as (1) Stung Mean

Chey Market (fresh market) which sold only conventional vegetable, (2) Lucky Supermarket in New Stung Mean Chey Supermarket, and (3) NAP organic community market in Stung Meanchey district in Phnom Penh City where situated nearby. These community market and supermarket sold organic vegetables. Based on Organic and conventional vegetable price observation, there were ten items observation including lemon, cucumber, green melon, white Chinese radish, bitter melon, carrot, cabbage, Chinese cabbage, escaroles, and tomatoes.

Moreover, organic vegetable price in community market and supermarket were quite similar, it depended on some item availability in market. For instance, lemon, escaroles, and tomatoes in supermarket had higher price than organic community market while others vice versa. Noticeably, the price of conventional vegetables in fresh market were the lowest price compared to organic vegetables because there are a lot of sellers sold a wide range of vegetables, so the price will be decreased in case of increasing of suppliers and availability of vegetables. Consequently, it can be concluded that the cheapest price was conventional vegetables which always existed in fresh market while the highest price was in organic community market and supermarket, for there was a limited variety of organic vegetables, but sometimes organic vegetables in supermarket had higher price than organic community market and vice versa.

Conclusions

Organic vegetable certification in Cambodia was divided into three groups such as organic vegetable sticking organic logo, organic vegetable sticking generic term “organic”, and sticking organic logo and generic term. The organic logo plays a vital role in certified organically product attracting organic consumers because more than 50% of organic consumers trust on organic label is indeed organically product. They like to buy organic vegetable sticking with logo and generic term “organic”. The decision making to purchase this product is definitely depends on themselves, but when there is some encouragement from the third person, there is a possibility of purchasing as well. Regarding to consumers’ knowledge about organic vegetables, more than 80% of organic consumers recognize the organic certification, and half of organic consumers perceive some knowledge about organically product. Indeed, CEDAC and COrAA organic logo are well known as organic product, but there are some consumers still confuse with chemical logo. Hence, organic knowledge is still limited in Cambodia. In addition, more than 90% of them consider that organic is good for their health and environment. Also, they receive information mostly from television and radio. Therefore, the marketer or organic producer should find out the third party organization or collaborate with government to make certification logo on their product to build consumer’s truth, and advertise or share the benefit of organic product via television and radio to consumer since this is the main media where most of consumers frequently watch and listen.

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