



The Influence of Chemical Risk Communication on Consumer Behavior in Purchasing Foods: A Psychological Study

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ABSTRACT

Consumers prefer a nutritious and delicious diet which is natural. Hence, they pay attention to research which focuses on chemical added food and risks involved in such consumption. Communication media plays a major role in deciding consumer willingness. Therefore, it is necessary to identify the influence of chemical risk communication on consumer behavior in purchasing foods. A qualitative and quantitative research method has been followed by the author to collect data, and questionnaires and in-depth interviews have been used to collect data. Data obtained are analyzed using SPSS for quantitative data whereas; the qualitative data is analyzed thematically. The data were collected from 100 Householders in the Badulla district. This study analyses the problem of how the messages on health risk influence consumer psychological behavior in purchasing food. The main objective of this research is to identify how the messages on health risk due to chemical additives in food influence the psychological behavior of consumers in purchasing food. The findings of the study reveal that consumers are not clear about the term, organic. The major factor that inhibited people from buying organic food was the high price. A majority of respondents had expressed interest in healthy and nutritionally rich food as well as environmental concerns and sustainability. Ultimately this study indicated that consumer awareness effectively advances the demand for organic products. It could be concluded that adoption of proper awareness programs would help in promoting the organic product consumption.

1. Introduction

Sri Lanka, being mainly dependent on agriculture, has its unique cultivation patterns. In the olden days, people did their cultivation using domestic methods and relied heavily on traditional pesticides. They rarely used chemical or fertilizer for crops. However, with the rapid industrialization and globalization, cultivation patterns have drastically changed. People have become more profit oriented giving less consideration to the quality of food. They have started using chemicals that promised more yield. Commercialization of the crop cultivation has provided an opportunity to bring food safety to the attention of the public. Each time when an incident related to food has occurred, media has given wide coverage. That has led to consumers beginning to question the safety of food. According to previous studies, negative reports by the media on food-related incidents had an adverse impact, which is far stronger than that generated by positive reports. With an increasing number of food incidents and rise in public interest on the issue, there is a need for risk communication to serve the purpose of readily delivering accurate information to the public. Risk communication resolves the differences between the views held by the experts in the field and the myths communicated by the non-experts by conveying to the public accurate information in a timely manner. Especially during national emergencies, the government must provide the public with accurate and reliable information to assure the public and to establish trust. To maximize risk in communication, we must first analyze how the public obtains such information and which media primarily influence their risk perception. After figuring out the information channels, the effective way to communicate can be decided to reduce risk amplification.

Chemicals are essential building blocks for everything in the world. All living matter, including people, animals and plants, consists of chemicals. All food is made up of chemical

substances. Chemicals in food are largely harmless and, often desirable, for example, nutrients such as carbohydrates, protein, fat, and fiber are composed of chemical compounds. Many of these occur naturally and contribute both to a rounded diet and to our eating experience. Some chemical substances occur naturally in the food chain. For example, farming, food processing, and transportation. Chemicals can have a variety of toxicological properties, some of which might cause effects in humans usually, these are not harmful unless we are exposed to them for a long time and at high levels. Scientists help to safeguard against these harmful effects by establishing safe levels (European Food Safety Authority, 2016).

Organic food was described as “food guaranteed to have been produced, stored, and processed without adding synthetic fertilizers and chemicals” (Lockie et al, 2002). The most significant of which is the wellness and health benefits associated with organic products. Nonetheless, organic products have been perceived as being healthier, safer and more environmentally friendly than conventionally grown products. According to Dumea, food consumption patterns are changing rapidly nowadays. Issues such as environmental awareness, the nutritional value of food and health concern have influenced the consumer's food purchase decision. Therefore, factors such as environmental concern, concern for health and knowledge about organic food have become the main motivations for consuming organic products. This statement is supported by several studies which have concluded that consumers buy organic products due to organic products being healthier, safer, tastier, of better quality and also more environmentally friendly compared to conventional products (Dumea, 2012).

According to a study, food preference is often of a 'fast food' type and accordingly the food habits of many young consumers may

increase the consumption of poorly nutritionally balanced meals. While young consumers were aware of healthy eating, their food preference behavior did not always appear to reflect such knowledge, particularly within the school and social environments. Author reported that the need for effective nutritional education for young consumers has become increasingly clear, given their general food habits and behavior, particularly during teenage years and analyzed that the dealings between young consumers' food preferences and their nutritional awareness behavior, within three environments (home, school and social) (Brown et al, 2000). Soil Association of the USA investigated that women are more committed to good food. Women want to provide natural food and are ready to pay a premium for environmental good (Soil Association, 2000).

Shafie, F., & Renie, D. (2012) proves that health factor is the most significant factor for choosing organic food. It also develops environmental and animal welfare as other factors. Some consumers recognized the difference in food quality and changed the preferences towards organic food. Consumers also found the safety and nutrients quality in organic food compared to others.

Consumers should have knowledge about the goods that they are purchasing from the market. This is especially important when the consumers purchase food products for their consumption. At present, there is an issue regarding the chemical additives in food which are available in the market. If this is properly communicated to the consumers there is no doubt, since they know it has a risk for their health, they would reduce purchasing in all possible ways. This may compel them to identify food with minimum additives of chemicals affecting demand and the demand pattern for different foods. However, there is a dearth of studies focused on this matter in the Sri Lankan context. Therefore, this study investigates how the

messages on the chemical additives in food influence consumer behavior at the market due to possible health risks.

This research has been conducted with the aim of finding out the influence of the chemical risk communication on consumer behavior in purchasing foods with special reference to urban and rural villages in Sri Lanka. The main objective of the study is to evaluate the impact of the chemical hazards on the lives of people and their awareness. Therefore, the research study was carried out in the Badulla district covering both rural and urban areas. Thus, it can be considered as a comparative analysis of consumer behavior in both rural and urban communities living in the surveyed area.

Objectives of the research were;

- To identify whether there is a real demand among consumers for chemical-free food
- To evaluate the role played by media and other source of communication on the awareness about chemicals among consumers
- To identify demography of consumer segments who prefer chemical-free food and
- To identify what made the consumers shift from healthy food.

2. Materials and methods

2.1 Study Area

Badulla District is an agricultural district where tea, vegetables and paddy are cultivated with a population of around 815,405 (2012 statistics). Lack of irrigation facilities in these areas adversely affects paddy cultivation. Chena cultivation is done in dry highlands and vegetables and crops are grown in chenas. The industrial sector is comparatively less developed, and some industries generate income to a certain extent where the required resources are regionally

available. Also, tourism is popular in some areas.

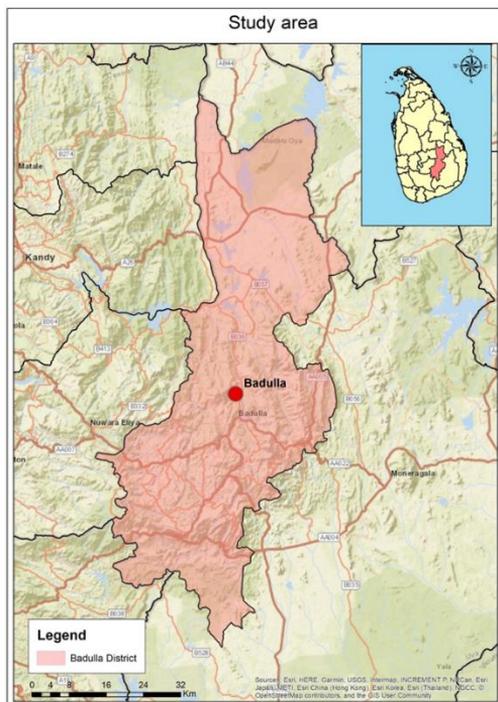


Figure 1. Study Area Map

Badulla is identified as one of the most poverty-stricken districts in the island. A high number of dependents and the low per capita income as well, are the main reasons for this situation.

Agriculture is the main source of income generation and there is a significant number of families who do not earn enough even to fulfill their basic needs of living.

According to figures in 2002, 37% of the population was poor in Badulla District. Out of the total population, people live in poverty are nearly 241,697. Rideemaliyadda Divisional Secretariat division was the poorest and 51% of the population in the area live below the poverty line.

Poverty has been reduced up to 23.7% in the district, according to the survey carried out during 2006 -2007, but when compared to

the country's poverty level of 15.2%, this figure is still higher.

2.2 Selection of Sample and Sample Size

When considering the prominent reason for the particular sample selection, the main occupation of the people in the Badulla district is farming. A majority of them cultivate vegetables and fruits for consumptions and for selling purposes. Additionally, they use high amounts of pesticide in their cultivation. Target group of the research was house holders. A total of 100 house holders was selected for this research from random sampling method. Based on the above sampling techniques, the suitable sample was selected from two areas, representing both urban and rural sectors. Data were obtained from Badulla, and Sucharithagama representing urban and rural areas.

2.3 Data collection and Analysis

Data collection was done by using both primary and secondary sources. Primary data were collected through a questionnaire. In addition, 100 interviews have also been conducted with household members. Structured intercept interviews were conducted in different places, on different days and at different times of the day over-representation.

Qualitative data analysis was performed and especially the study depended on the primary data. To analyze the qualitative data especially in the case study method; interviews have been conducted and answers summarized. SPSS statistical software (version 22) was used to analyze the correlation between variables. Hypotheses were tested using correlation analysis. To analyze other quantitative data, a content analysis was done using graphs, charts and tables. Hypotheses were drawn up which sought to identify the factors responsible to explain consumer perception of chemical risk in food.

2. 4 Limitations

Collecting and analyzing the data for the study may not be precise and highly accurate due to following limitations which were unaccounted by the researcher.

- Some of the respondents were not able to provide required answers due to lack of awareness on chemical hazards
- Most of the respondents were more eager to give their personal view and opinions based on their own experiences instead of providing a general view about the subject

3. Results and Discussion

Respondents randomly selected representing different family backgrounds and income levels. The majority of the respondents were women and their percentage is 72% while the figure for the male stood at 28%. In sample areas similar to rest of the country, women were the most important contributors in the decision-making process of a household when it comes to consumption purposes. They recognize the benefits of organic foods and are willing to pay more because they want to provide their families with the highest quality and most healthy products being offered in their local store.

The study found that race, education level, and household income consistently influenced the consumer's decision to purchase organic vegetables. In brief, previous studies discussed and analyzed the importance of consumers' awareness about organic food products in various settings and conditions. These conditions varied from local organic products to the overall organic food products including imported products. These previous studies agreed that the socioeconomic/demographic factors play a significant role in determining the consumers' decision to buy organic product. Furthermore, this study addresses and analyses the influence of non-income and non-occupational status variables such as gender and education as we argue that they

could be more relevant to changes on the dependent variable (i.e., awareness about organic food products). Variables such as household income and occupation status are important to make the consumer demand an effective demand, so their inclusion in the econometric model specification is critical. However, this study's objective is to further analyze the significance of each of such non-income related factors towards the overall awareness of consumers about organic food products. Accordingly, 85% of the surveyed group of people has received a significant amount of formal education and that makes them aware of the health hazards caused by chemicals and chemical components.

Table 1. Gender Distribution in surveyed areas

		No	Percentage (%)
Sex	Male	28	28.0
	Female	72	72.0
	Total	100	100.0

Table. 2 Level of Education

	No.	Percentage (%)
No Schooling	4	4.0
Grade 1-5	4	4.0
Up to O/L	52	52.0
Up to A/L	35	35.0
Vocational Training	1	1.0
Degree courses	4	4.0
Total	100	100.0

Table 3. Occupation

Occupation	Percentage (%)
Agriculture	8
Agricultural Labor	3
Non-agricultural Labor	1
Security Forces	2
Apparel Industry	1
Teaching	18
Other Government Jobs	13
Other Private Sector Jobs	7
Labor	6
Self-Employment	2
Retired	39
Unemployed	2
Total	100

Level of occupation plays as an important factor when deciding the buying ability because purchasing organic food is costly compared to the ordinary food items. Having a permanent source of income assures the ability of buying quality food. Around 98% of the surveyed has a source of regular income.

Table 4. Source of Supply

	Responses	
	No.	Percentage (%)
Market	98	72.1
Own cultivation	38	27.9
Total	136	100.0

Weekly fair or Sathi Pola is the most favored source (60.5%) of the food supply. Buying food items from a close by boutique comes next with a percentage of 37.8%. This table shows buying food items from super-markets and economic centers are not very popular modes among these people.

Table 5. Type of Market

		Responses	
		No.	Percentage (%)
From the market, then it is	Close by boutique	37	28.7
	Supermarket	12	9.3
	Weekly fair	78	60.5
	Economic centers	2	1.6
Total		129	100.0

Table 6. Awareness on chemicals

	Responses	
	No.	Percentage (%)
Yes	95	95
No	5	5
Total	100	100.0

Table 7. Source of Communication

	Responses	
	No	Percentage (%)
Television	88	43.6
Radio	29	14.4
Internet	16	7.9
Newspapers	7	3.5
Hand Bills	17	8.4
NGOs	7	3.5
Societies in the area	2	1.0
Through neighbors	13	6.4
Other sources	23	11.4
Total	202	100.0

Thus, organic agriculture and production have become one of several important marketing concepts which are associated with the altruistic values of creating a sustainable and healthy environment for oneself and for others (OTA, 2014). In general, people seek more information, and they want to be knowledgeable about how organic production is different from the conventional production systems (e.g.

fertilizer, pesticides, etc.) (Cicia & Giudice, 2002; Zanolì & Naspètti, 2002).

Table 8. Willingness to buy food grown using chemicals

		Responses	
		No.	Percentage (%)
Do you still buy foods grown using chemicals?	Yes	96	97.9
	No	2	2.1
Total		98	100.0

Due to various factors such as easy accessibility, family preference, less cost etc. people still buy food grown using chemicals and chemical components despite the awareness on the negative impacts they have on humans. Figure 9 shows only 2% among the surveyed population are not buying chemical strewn food items.

Table 9. Reasons

	Responses	
	No.	Percentage (%)
Family preference	50	47.2
Common Accessibility	30	34.0
Low Cost	11	10.4
Convenience	9	8.5
Total	100	100.0

Table 10. Using chemicals in own cultivation

	Responses	
	No.	Percentage (%)
Yes	13	12.8
No	87	87.2
Total	100	100.0

Out of the sample segment 87.2% stated they do not use chemicals or chemical substances in their cultivation. Most of these people

cultivate crops for selling as well as consumption purposes. Most of the people who acknowledge that they use chemicals in the cultivation are the market producers. This practice has become more and more common due to increased demand for food and the urgency to produce higher yields and achieve economic viability.

Table 11. Awareness on the impact of chemicals

	Responses	
	No.	Percentage (%)
Yes	96	96.2
No	4	3.8
Total	100	100.0

According to this table, a majority (96.2%) is aware of the hazardous impact of chemicals and chemical substances on the human body and the nature. Only 3.8% said they have no understanding of such effects.

Table 12. Willingness to consume food grown using chemicals

		Responses	
		No.	Percentage (%)
Do you consume foods grown using chemicals?	Yes	85	85.0
	No	15	15.0
Total		100	100.0

Badulla being a poverty-stricken district in Sri Lanka, the income of the people is an important factor when deciding the buying ability. Price of organic food is high compared to food grown using chemicals because it demands more labor and quality ingredients. Thus, the majority of the people (85%) who participated in the survey are compelled to consume food grown using chemicals and

chemical components due to economic constraints despite their awareness. Only 15% have moved away.

organic food; i.e. food grown using chemicals, fertilizers, pesticides, chemical components etc.

Table No. 13: Awareness on illnesses caused by chemicals

		Responses	
		No.	Percentage (%)
Are you aware of the illnesses caused by consuming non-organic foods?	Yes	79	79
	No	21	21
Total		100	100.0

This table shows that people have a considerable percentage of understanding on the illnesses caused by consumption of non-

Table 14. Source of information

	Responses	
	No.	Percentage (%)
Agriculture Instructor	45	45
Agro - Research Officer	1	1
Chemical selling outlets	14	14
From other farmers	33	33
Through media	7	7
Total	100	100

In this area Agricultural Instructor is the main source of advice when using chemicals in the cultivation. They also learn from the experience of others.

Table 15. Understanding on the chemicals contain in imported food products

		Responses	
		No.	Percentage (%)
What is your view about chemical components contained in the imported food items?	Contain a small amount	9	9
	Contain a large amount	69	69
	Normal	13	13
	No idea	9	9
Total		100	100.0

People have a fairly good understanding of the usage of chemicals in food that are been imported. 69% of them think it is in a large amount. 13% think the percentage is normal while 9% said they have no idea about the amount of chemicals that are been used in imported food items.

Table 16. Awareness on approved additives

	Responses	
	No.	Percentage (%)
No Understanding	11	11
Understand	60	60
Moderate understanding	15	15
Good understanding	14	14
Total	100	100

Table 17. Awareness on non-approved additives

	Responses	
	No.	Percentage (%)
No Understanding	14	14.0
Understand	53	53.0
Moderate	14	14.0
Have a good understanding	10	10.0
Have a very good understanding	9	9.0
Total	100	100.0

4. Conclusion and Recommendation

– Some consumers are not clear about term ‘organic’.

Most consumers think all organic food was sustainable and define ‘organic’ as ‘natural lacking pesticides’, fresh and essentially good for the environment.

They had expressed interest in healthy and nutritionally rich food as well as environmental concerns and sustainability.

Interestingly, there are respondents who considered organic food as herbal foods or foods that did not have antibiotics and some even understood them as traditional/indigenous foods.

- High Price

The major problem that inhibited people from buying organic food was the price.

It was the major barrier to increased purchasing among those who bought organic products on a limited scale. It also prevented those who didn’t buy at all from taking that first step. Many people would purchase organic foods if they were affordable.

- Availability Problem

Another major hurdle was lack of availability and doubts about origin.

However, perceptions that organic food was becoming more readily available and getting cheaper were among the main motivating factors for those who intended to buy more.

Supermarkets/retail chains were the most preferred place for buyers.

Consumers were keen to have more organic shops in their area and to see more organic foods in the market.

Fresh vegetables and fruits were the most preferred products.

Consumers believed that organic farming was in harmony with nature and the environment.

Many bought organic foods to support local farmers and farm workers.

Recognition of sustainable farming systems is a concern that attracts the attention of the society at present in Sri Lanka. Organic farming is a prominent sustainable agricultural system that is becoming increasingly popular in Sri Lanka due to

increasing public understanding about adverse consequences of conventional farming which is greatly dependent on synthetic pesticides (McCoy & Parlevliet, 2001).

Vegetable are an inclusive component in the diet of millions of Sri Lankans whose staple food is rice. Vegetables buyers are not at all satisfied with the vegetables that they buy but are willing to purchase pesticide-free vegetables, provided that conditions such as organic certification, price, convenience of buying, cleanliness, packing, etc. are met. However, cultivation, harvesting, packing, and type of product are not geared towards the market. Foundations behind product and pricing policies are different from customers' perspective and are not based on market factors.

The place of selling in-terms of total sales and number of customers dealing with the growers has not been developed for the best interest of the grower and customer. Strategies of selling are not currently coinciding with the factors of customer retention.

It is suggested that strong policy mechanisms should be developed in order for formulation and implementation of strategies and also framing and maintenance of stable policies that can back-up this industry.

Facilitation of more outlets, popularization of production facilities, enhancing of cropping efficiencies through research & development efforts, development of a more focused extension service, establishment of a recognized organic certification body, offering of novel products and consolidation of production are some of the strategies and policies have been suggested to benefit this industry of tremendous future potential.

Since this study indicated that consumer awareness effectively advances the demand for organic products, it could be concluded

that adoption of proper awareness programs would help in promoting the organic product consumption. Further, given the respondents, higher importance attached to price as an important determinant in deciding their buying behavior of organic products, it could be said that the prices of organic products should be competitive with that of the inorganically produced products that are available in the supermarkets. The additional willingness to pay for organic vegetables is shown to be significantly influenced only by the income, environmental education and years of education. Hence it could be concluded that, in general, educational programs could promote organic product consumption. Similarly, along with the price of organically produced products, marketers should also introduce organic products with good quality that has a certification from a reputed organization. In order to enhance the quality of organic products, establishment of proper local certification standards could be considered important in building trust among consumers about organic products.

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