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CONSUMER PERCEPTION AND FACTORS INFLUENCING IN ADAPTING OF BOTTLED WATER CONSUMPTION IN BATTICALOA DISTRICT, SRI LANKA

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ABSTRACT: *The bottled water consumption pattern shows an increasing trend in Batticaloa District for the past decade. Development activities and tourism promotion play an important role in the development of bottled water sales and consumption in the District which is visible in increased number of bottled water distributors and sales points. A survey was conducted to examine the factors influencing the bottled water consumption and how they influence in the consumers' preference in selected DS divisions of Batticaloa District. The study also aims to find the significant relationship of consumption behavior spatially. The analysis of the responses shows that some of demographic and marketing factors are significantly associated with the consumption pattern and provide a significant contribution to the consumer perception towards bottled water. The consumption pattern also shows a strong relationship with the geographical locations in the District.*

KEYWORDS: Bottled water, consumers, consumption pattern, perception, spatial

INTRODUCTION

Drinking water with the best quality is one of the critical issues in most of the developed and developing countries in the world. Scarcity of the available drinking water is also a major issue in developing countries. The development projects also cause ground water pollution which is a serious threat to human population. Therefore, people adopt different strategies to fulfill their needs on drinking water especially focusing on their health. There are several reasons for a person to adopt bottled water for drinking purpose. Health concerns, individual preferences on aesthetic conditions and consumer distrust of persons responsible for the quality of public drinking water are some of the main possible reasons why certain people believe it is necessary to adjust or replace the drinking water. The increase in sales of bottled water and home drinking water treatment devices shows further evidence of growing concern in bottled water market (Curry, 1988).

Separate studies conducted by Ferrier (2001) and Doria (2006) found that there is a relationship between bottled water consumption and perception of tap water quality including both safety and taste. The increased consumption trend of bottled water represents a change in ways of life. It also indicates that the tremendous development of urbanization, deteriorates the quality of tap water, but at the same time, the growing standard of living enables people to bring home heavy and expensive bottled water (Ferrier, 2001). Furthermore, the bottled water consumption is related to demographic factors such as race, income and gender. In contrast, education and income were found to be inversely associated with the risk perception of drinking water (Doria, 2010).

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Though, the growth and popularity represent success for the bottled water industry, the life cycle of bottled water forces a serious impact upon the environment which is not a sustainable solution for the global community due to the massive amount of fossil fuel burning required for transportation and packaging (Emily & Janet, 2006). Therefore, it is necessary to investigate consumer's behaviour in terms of perception towards the drinking of bottled water and the factors influencing the behaviour that drives the consumers towards bottled water consumption.

Research Background

Preliminary studies conducted by Dasinaa and Delina (2015) reveals that an increasing pattern can be observed in bottled water consumption in the Eastern Province of Sri Lank in last few years. It shows that the consumption behavior of bottled water differs along with several factors in different geographical locations. Numbers of distributors and sellers have increased because of the demand in these areas. Significant development of projects in the Eastern Province leads to increased number of tourists (local and foreign) in the region which enhances the bottled water sales and consumption. Even though Batticaloa is blessed with plenty of natural surface and ground water resources, use of bottled water for drinking purpose shows an increasing trend in the region. Therefore, it is intended to formulate a study to focus more on the consumers' perception and behavior towards bottled water consumption in Batticaloa District, Eastern Province of Sri Lanka.

Research problem & Research questions

Several studies revealed that consumers' purchasing pattern is influenced strongly by cultural, social, personal and psychological factors (Kotler *et al.*, 2008). Therefore, a study was designed to investigate the following research problem.

Are demographic, marketing and psychological factors related to the consumption behavior of bottled water in Batticaloa District, Sri Lanka?

In order to investigate the above problem, the study mainly focuses on 4 research questions.

1. To what extent is there a relationship between demographic factors and bottled water consumption behaviour?
2. To what extent is there a relationship between marketing factors and bottled water consumption behaviour?
3. To what extent is there a relationship between psychological factors and bottled water consumption behaviour?
4. Are the above factors spatially related with the consumption behaviour?

Objectives of the Study

The study was designed to explore the consumer insights in bottled water consumption reference to Batticaloa District, Sri Lanka.

This research also tends to investigate the following specific objectives:

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1. How the consumption behaviour of bottled water influences by demographic, marketing, and psychological factors.
2. To identify the geographical influences directly related to the consumption behaviour of bottled water in terms of availability of other drinking water source.
3. To know whether the consumers are aware with the environmental issues associated with disposal and recycling of water bottles.

Conceptual Framework and Hypotheses

A conceptual frame work of this study is constructed (Figure 1) and the relationships between independent and dependent variables are assumed positive (+) based on the studies conducted by Durga (2010).

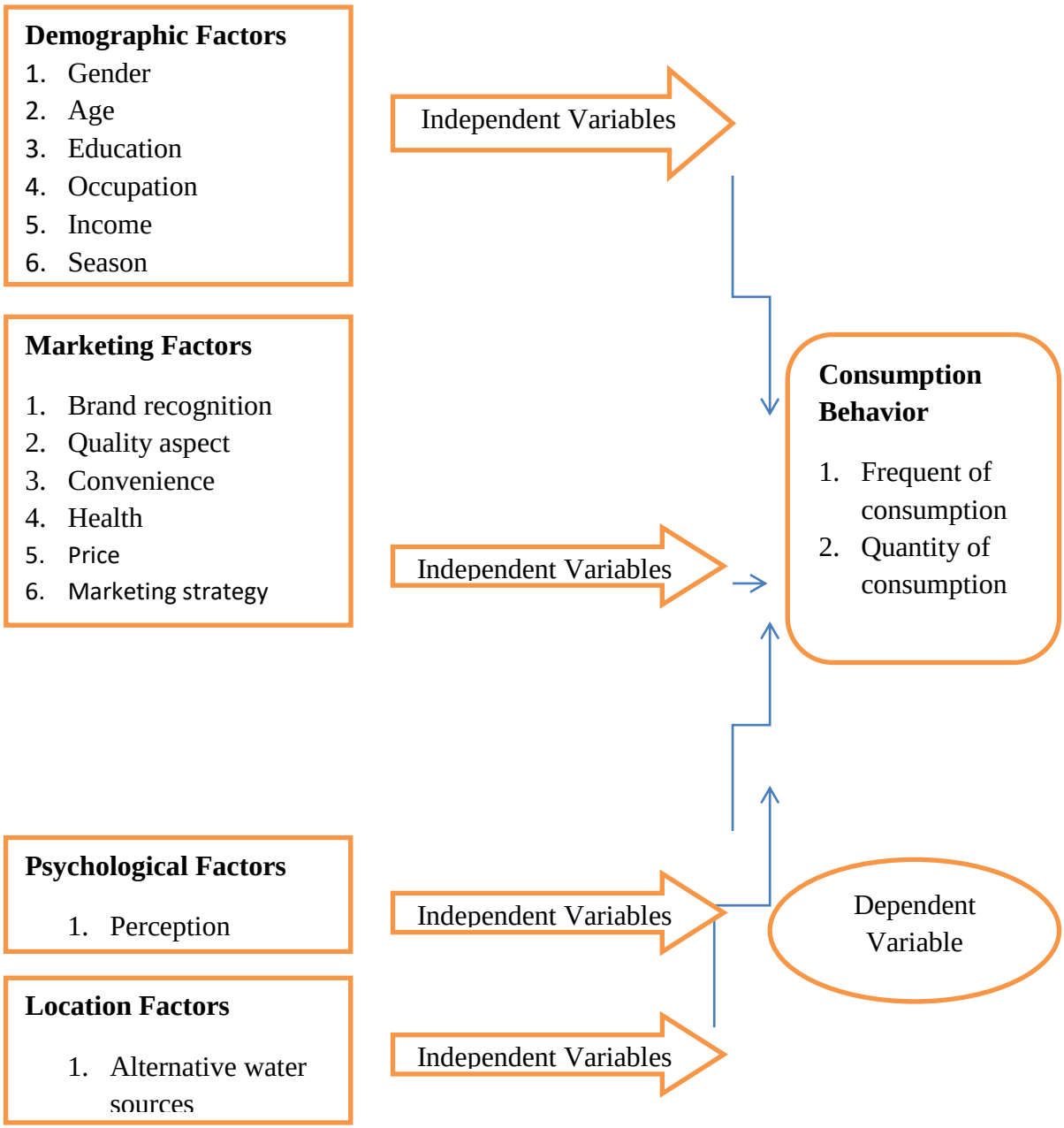

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Figure 1. Conceptual model developed for the study

METHODOLOGY

Study Area

A baseline study was conducted with main bottled water agencies in Batticaloa to find out the geographical distribution pattern in the district. Based on the preliminary data 6 DS Divisions named as Koralai Pattu, Koralai Pattu North, Manmunai Pattu, Manmunai North, Kattankudy and Eravur Pattu were selected out of 14 DS division for the study which are dominant in the distribution in terms of sales of bottled water by the agencies and also famous for urbanization and tourism in Batticaloa (Dasinna and Delina, 2015) District (Figure 2).

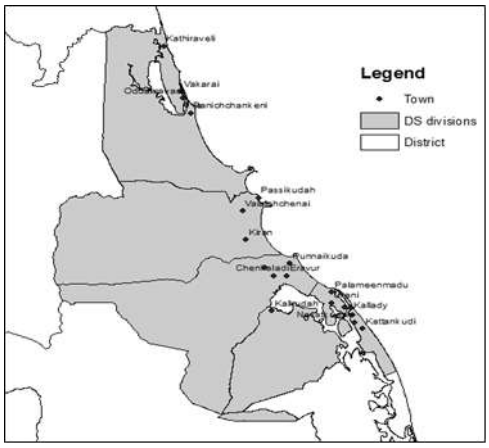

Figure 2. Geographical sites of bottled water distribution in Batticaloa

Survey Questions & Data Collection

A semi-structured questionnaire was designed based on five sections. The first section collects personal and demographic information such as Gender, Age, Education, Income and Seasonal influence in the Consumption behaviour. The second section measures how the preference of consumers in terms of Brand recognition, Quality, Convenience, Health, Price and Information sources they get knowledge to prefer bottled water in the consumption pattern. In the third and fourth sections, the respondents were asked to rate the alternative source of water quality of the places where they live. They were too asked questions on their perceptions on bottled water and to rate them based on Likert scale. The last section was aimed to get details about the environmental concern of the respondents related to bottled water usage. Two questions were asked to determine the consumption behaviour based on frequency and volume of consumption from the respondents. The survey was carried out in a random sampling method with the sample size of 100 targeting main spots such as hospital, educational institutes, government departments, tourist and religious places where the bottled water consumption is assumed as high in each DS division.

Data Analysis

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The collected data was statistically analyzed in order to produce the study's main research questions and objectives. The data collected from the questionnaires is summarized and analyzed by using SPSS (version 22.0). Frequencies and descriptive statistics were carried out to summarize main data of respondents to get an overview and to conduct further analysis. Then, Associative analysis such as t-test and one way – ANOVA were carried out among dependent and independent variables to identify the significance at 5% and 1% level.

RESULTS AND DISCUSSION

The study was carried out to reveal the current consumption pattern of bottled water among consumers from Batticaloa District in terms of demographic, marketing and psychological perspectives. The study also attempts to analyze the environmental issues related to the consumption as well as the spatial relationship of consumption pattern. Different factors have different degree of influence over people's perception and consumption behaviour. The profile of the data collected through questionnaires is summarized in table 1.

Table 1: Frequency table of respondents' profile (N=100)

No	Variables	No. Respondents	%	Cumulative %
1	**Gender**			
	Male	65	65.0	65.0
	Female	35	35.0	100.0
2	**Age**			
	15-25	17	17.0	17.0
	26-35	51	51.0	68.0
	36-45	21	21.0	89.0
	46-55	9	9.0	98.0
	Above 55	2	2.0	100.0
3	**Education**			
	None	0	0	0.0
	Primary	8	8.0	8.0
	Secondary	28	28.0	36.0
	Tertiary	26	26.0	62.0
	Higher education	38	38.0	100.0
4	**Income (Rs.)**			
	<10,000	9	9.0	9.0
	10,001-20,000	6	6.0	15.0
	20,001-30,000	23	23.0	38.0
	30,001-40,000	33	33.0	71.0
	> 40,000	10	10.0	81.0
	None	19	19.0	100.0

Influence of Demographic factors in consumption behaviour

A number of demographic variables can influence the bottled water usage such as ethnic group, age, income, occupation and gender (Doria, 2006). The following table discusses the influence of demographic factors under following variables (Table 2).

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The gender distribution was fitted with 65% (male) and 35% (female) in the study. The t-test shows that there is a relationship between 'gender' and 'bottled water consumption behaviour' (table 2).

Table 2: Summary of results of hypotheses of demographic factors

Type	Variables	Hypothesis	Test	Results	Sig. value
Demographic	Gender	H 1.1: There is a relationship between gender and consumption behaviour H0 1.1: There is no relationship between gender and consumption behaviour	t-test	Accept H 1.1 Reject H0 1.1	t = 2.346 p =0.021/ <0.05
	Age	H 1.2: There is a relationship between age and consumption behaviour H0 1.2: There is no relationship between age and consumption behaviour	ANOVA	Accept H 1.2 Reject H0 1.2	f = 3.369 p =0.013 / <0.05
	Education	H 1.3: There is a relationship between education and consumption behaviour H0 1.3: There is no relationship between education and consumption behaviour	ANOVA	Reject H 1.3 Accept H0 1.3	f =1.664 p = 0.180 / > 0.05
	Income	H 1.4: There is a relationship between income and consumption behaviour H0 1.4: There is no relationship between income and consumption behaviour	ANOVA	Accept H 1.4 Reject H0 1.4	f = 3.262 p = 0.006 /< 0.05
	Season	H 1.5: There is a relationship between season and consumption behaviour	ANOVA	Accept H 1.6 Reject H0 1.6	f = 4.823 p =0.004 / < 0.05

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		H0 1.5: There is no relationship between season and consumption behaviour			

Significant level p <0.05

The p-value (Sig. 2-tailed) of 0.021 indicates that H1 1.1 is accepted. Studies found that younger respondents are more likely to perceive tap water as slightly riskier or less safe, while other studies report that older respondents perceive tap water as riskier (Doria, 2010). Results of survey show the p-value (Sig.) of 0.013 of the ANOVA indicates that there is a relationship between these 2 variables. So, H1.2 is accepted. The highest percentage of age group involved in the bottled water consumption is (51%) between the age group of 26-35 years which is followed by 36-45 years (21%) who are the working population in the study area.

The relationship between 'income' and 'bottled water consumption behaviour' indicates that there is a relationship between these variables (p=0.006). Similar results obtained from the study by Durga (2010) shows a small relationship between the 'incomes' and 'perception' of the consumers. The study revealed that, people with a relatively high income and students/other young people (16-25 years) are the most frequent users of bottled water, because they are assumed to be more sensitive to advertisement which seems to be socially accepted. Seasonality shows a significant relationship with the consumption behaviour of the bottled water. The consumption is high in the dry season (43%) and 36% of the respondents fall into both seasons where they consume bottled water in both seasons.

Consumers' preference on Bottled water consumption

Ferrier (2006) indicates the factors that influence whether tap water is consumed as drinking water include convenience, health and cost. Consumers might drink bottled water because they believe it tastes better than tap water. The consumer preference was tested in terms of brand recognition, quality, convenience, health, price and source of information which can be also categorized as marketing factors. The survey reveals that 99% of the respondents prefer based on brand of the bottle. However, 76% of the respondents do not have any idea about the quality of the bottled water, 88% prefer bottled water for its convenience and 80% for their health safety.

Table 3: Summary of results of hypotheses of marketing factors

Type	Variables	Hypothesis	Test	Results	Sig. value
Marketing	Brand recognition	H 2.1: There is a relationship between brand recognition and consumption behaviour H0 2.1: There is no relationship between brand recognition and consumption behaviour	t-test	Reject H 2.1 Accept H0 2.1	t = -0.885 p = 0.378 / > 0.05
	Quality aspect	H 2.2: There is a relationship between quality aspect and consumption behaviour	ANOVA	Reject H 2.2 Accept H0 2.2	f =1.144 p = 0.323 / >0.05

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	H0 2.2: There is no relationship between quality aspect and consumption behaviour			
Convenience	H 2.3: There is a relationship between convenience and consumption behaviour H0 2.3: There is no relationship between convenience and consumption behaviour	t-test	Reject H 2.3 Accept H0 2.3	t =0.954 p=0.343 /> 0.05
Health	H 2.4: There is a relationship between health concern and consumption behaviour H0 2.4: There is no relationship between health concern and consumption behaviour	t-test	Reject H 2.4 Accept H0 2.4	t =1.117 p=0.267/ >0.05
Price	H 2.5: There is a relationship between price and consumption behaviour H0 2.5: There is no relationship between price and consumption behaviour	t-test	Reject H 2.5 Accept H0 2.5	t =1.491 p =0.139 / >0.05
Marketing strategy	H 2.6: There is a relationship between source of information and consumption behaviour H0 2.6: There is no relationship between source of information and consumption behaviour	ANOVA	Accept H 2.6 Reject H0 2.6	f = 3.549 p = 0.006/ <0.05

Significant level p <0.05

Studies show that the consumers are very health conscious, so they perceive bottled water as safer and of better quality (Ferrier, 2001) and this is largely caused by the heavy industry advertisement of bottled water being pure and pristine, and is healthier than tap water (Olson, 1999). The price too influences the preference where the 80% of the respondents are satisfied with the price of the bottled water. The associative studies (t-test) on brand recognition and convenience, health and price show there is no significant relationship between variables.

The ANOVA test (Table 3) also reveals that there is no relationship between the quality aspects of the bottled water (p=0.323). However, the survey shows a significant relationship between source of information (p= 0.006) and consumption behaviour where the advertisement plays a major role in providing information and influence the preference of the consumers. Studies also show the importance of particular information sources varies geographically and is influenced by demographics, mass media coverage is the main impersonal source of information that publicize uncommon events such as water risks, which then influences people's beliefs on tap water quality (Durga, 2010).

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Effect of Perception on Bottled Water Consumption

Study was conducted to determine how the perception towards the bottled water influences the consumption. Likert scale (1-5) was used to measure the statements (strongly disagree, disagree, not sure, agree and strongly agree) and obtained mean value for each statement. The statements were designed to analyse the respondents' perceptions toward drinking bottled water via assessing presence and quality of alternative water sources, health and safety concern, taste, environmental concerns and price and convenience in selecting the bottles. Average mean score was calculated to obtain the overall perception value in the usage of bottled water. The following table shows (Table 4) the mean values obtain for each statement from the respondents.

One of the factors influencing the consumer perception is that bottled water is safer than tap water. Studies have shown that increased consumption of bottled water is related to a negative consumer perception of tap water quality (Ferrier 2006). According to the above table 4, majority of the respondents agree with most of the statements explaining the perception. However, the respondents (48%) were unsure about the environmental impacts caused by the bottled water. The perception of the consumers are highly rely on the positive beliefs which the consumers have about bottled water such as higher quality standards, safer, healthier, more reliable than domestic water and convenient which is strongly agree by the respondents (46%) too. The ANOVA test for the perception reveals that there is a significance relationship between consumer perception and consumption behaviour of bottled water ($p = 0.039$).

Table 4: Frequency results of the respondents' perception of bottled and domestic drinking water

No	Statements	Strongly Disagree (1)	Disagree (2)	Unsure (3)	Agree (4)	Strongly Agree (5)	Mean
1	Bottled water is better than domestic drinking water because it doesn't have strange taste	1 (1%)	11 (11%)	14 (14%)	45 (45%)	29 (29%)	3.9
2	It is healthier to drink domestic water because it contains less toxic chemicals	2 (2%)	3 (3%)	16 (16%)	54 (54%)	25 (25%)	3.97
3	Bottled water is safe to drink because it does not contain toxic chemicals	1 (1%)	3 (3%)	14 (14%)	58 (58%)	24 (24%)	4.01
4	I like domestic drinking water more because it tastes better than bottled water	4 (4%)	8 (8%)	14 (14%)	57 (57%)	17 (17%)	3.75
5	Un-reusable water bottles can pollute the environment	4 (4%)	7 (7%)	19 (19%)	41 (41%)	29 (29%)	3.84
6	Drinking bottled water is not harming the environment because the bottles do NOT leach toxic chemicals	4 (4%)	12 (12%)	48 (48%)	30 (30%)	6 (6%)	3.22
7	The quality of domestic	2 (2%)	4 (4%)	15	72	7 (7%)	3.78

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	drinking water is better because the regulation of is stricter than that of bottled water			(15%)	(72%)		
8	It is safer to drink bottled water because the water is sterilized thoroughly	1 (1%)	2 (2%)	15 (15%)	66 (66%)	16 (16%)	3.94
9	Bottled water is more convenient	1 (1%)	5 (5%)	4 (4%)	44 (44%)	46 (46%)	4.29
10	Domestic drinking water produces less waste	1 (1%)	3 (3%)	27 (27%)	62 (62%)	7 (7%)	3.71
11	Bottled water generate more waste than domestic drinking water	0 (0%)	3 (3%)	40 (40%)	48 (48%)	9 (9%)	3.63
12	Bottled water is more accessible than domestic drinking water	1 (1%)	7 (7%)	22 (22%)	65 (65%)	5 (5%)	3.66
13	It is easy to find a drinking water source where I work/study	1 (1%)	8 (8%)	5 (5%)	50 (50%)	36 (36%)	4.12
14	Domestic drinking water is cheaper than bottled water	2 (2%)	4 (4%)	21 (21%)	59 (59%)	14 (14%)	3.79
15	Bottled water is not as expensive as domestic drinking water	6 (6%)	9 (9%)	34 (34%)	44 (44%)	7 (7%)	3.37

Environmental concern

Although the bottled water industry growth marks success, the life cycle of water bottled in disposable plastic negatively affects the environment (Glitz *et al.*, 2007). Since the public is not well informed about the environmental problems associated with bottled water, Parag and Roberts (2009) believe that information alone could have a serious impact on consumption. Respondents were asked how long they keep the bottles (duration) at their premises. It was fairly acceptable that the higher number of people (21%) used those water bottles and kept it only for a week.

Around 58% of the respondents use the reusable bottle for collecting drinking water which might be either tap water or well water. And 18% of the total representative used the bottles as the storage media for juices in the study area (Figure 3).

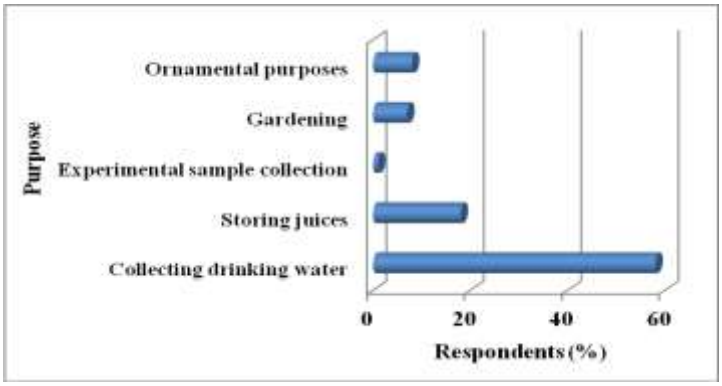

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Figure 3. Purpose for using reusable water bottles

The color and shape are the 2 main criteria used by the respondents to mark the unusable status of the water bottles. Soon after the identification, disposal of the bottled water occurred in several ways such as burning (4%), burying (5%), send to dumping sites (81%) and recycling (14%). In Batticaloa District, engineered land filling sites were developed in a modernized way where the proper leachate collection is being practiced (Figure 4).

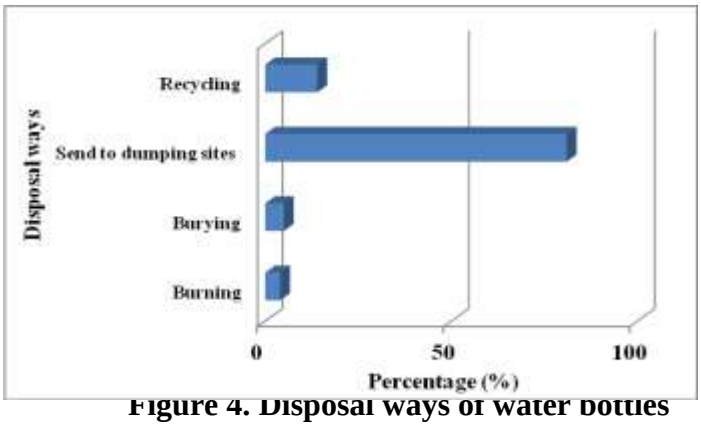

Figure 4. Disposal ways of water bottles

Spatial influence

Public knowledge about water sources is often limited. Therefore, knowledge about the place where drinking water is abstracted seems to be weakly associated with perceptions of quality and risk (Doria, 2010). The beliefs of the respondent on bottled water and tap water are strongly influenced by the tap water quality of the city in which the respondent grew up. If the respondent spends a long time in a place that has poor tap water quality, he or she tends to drink more bottled water, and vice versa.

According to the structured questionnaire, people were investigated with their primary water sources of drinking water. The choices were given as private well (82%), tube well (30%), water supply (36%) and mineral water (15%). However, most of the people from the urban areas use combination of water supply and tube well or water supply and private well otherwise private well and mineral water. People who highly depend on the private well were interviewed deeply regarding their overall drinking water quality of the water sources. Bad taste and odour, presence of floating particles, hardness and colour were some of the specific features observed during the rainy season which were the facts to the different scale with different season of the year. Overall satisfaction of domestic drinking water was calculated and compared with the consumption behaviour of the respondents spatially. The results from the ANOVA – test revealed that it has significant relationship ($p = 0.035$) in order to accept the Hypothesis of "the consumption behaviour is spatially related in terms of domestic water quality and satisfaction".

CONCLUSION

The results of the study provide information on the factors that influence a consumer's decision of whether or not to drink bottled water in terms of perception. The study shows that there is a significant relationship between consumer perception and behaviour in bottled

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water consumption which is influenced by the factors such as gender, age, income, season and marketing strategies which are too significantly influence the consumption behaviour and also it significantly varies according to the spatial locations in Batticaloa District.

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