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Trends in Bottled water Use Survey in Addis Ababa: Implication on Reverse Logistics of Bottled Water Manufacturing in Ethiopia

Matiwos Ensermu

PhD, Assistant Professor of Supply Chain Management and currently teaches at Addis Ababa University, College of Business & Economics, School of Commerce, Addis Ababa, Ethiopia, matiwos.ensermu@aau.edu.et

Abstract: ***The trend in the changing life style of the Ethiopian people in drinking bottled water at home, work place, recreation and travel in and outside the country provided another opportunity to sale bottled water as a product in the local market and sought its potential sale in the international market as far as international water quality standards are met. However, regardless of increasing trend in the distribution logistics of bottled water to the Ethiopian domestic market and the commencement of export of plastic packaged water to international market by few branded bottled water companies raised the issue of environmental regulation as a result of the existing plastic packaged branded water products are unfriendly to the environment. In the absence of green packaging of water products for commercial use in Ethiopia, it demands for reverse logistics for recycling of plastic packages for water use. Unlike soft drink companies which voluntarily apply reverse logistics for re use of bottle for their product packaging, water bottling companies in Ethiopia are not required by law to re use/recycle plastic packages for water regardless of their negative impact on the environment as plastics take thousands of years to decompose. As a result, it is not uncommon to observe in the streets of Addis Ababa and regional towns to find plastic packages of water dumped here and there regardless of increased use by residents at home, workplace or recreation centers in daily basis. Besides, the city government of Addis Ababa organized informal sectors at micro enterprise level to play the role of collectors to remove waste from the city as their regular day to day economic activity creating significant number of employment in the city. Besides, individual households pay for removing these plastic packages for bottled water and other solid wastes from their areas to the collectors. The study explored and described the water resources management of Ethiopia focusing on trends in bottled water use by residents of Addis Ababa as unit of analysis excluding irrigation and hydropower development capabilities on water resources of Ethiopia from this study. Based on the current trend in commercializing of bottled water in national and international market, manufacturers of bottled water in Ethiopia are tapping the opportunities in the increasing consumers demand and use style for bottled water at workplace, meeting, home, and recreation and hotel services centers without due consideration of wider impact on environment of the plastic packages of water use. Therefore, the study recommends the application of reveres logistics by bottled water manufacturing companies in Ethiopia for recycling plastic packages of bottled water that should be enforced legally for environmental sustainability.***

Keywords: Bottled water, plastic packages, reverses logistics, recycling

1. Introduction

Bottled water delivery service is an important part of the bottled water industry. For homes and offices it is a convenient way to receive cost effective, high quality drinking water on a regular basis. Studies have shown that use of purified water in the workplace increases productivity and improve the overall health of the workforce. [1]. For instance, according to the International Bottled Water Association, consumption of bottled water in the US continues to rise – from 9.1 billion gallons in 2011 to 9.67 billion in 2012. Americans drink more than 73 billion half-liter bottles of water a year. [2].

Plastic bag wastes pose serious environmental pollutions and health problems in humans and animals. The situation is worsened in economically disadvantaged countries like Ethiopia. The trend of utilization of plastic bags is increasing from time to time in spite of a good deal of awareness of the residents about the adverse effects of these products. [3].

Core competencies are wellspring of new business development. They should constitute the focus for strategy at country level [4]. These attributes may also apply to inter-organizational arrangements. The more dynamic aspects of the Resource Based View (RBV) consider a firm's core competence to be its ability to react quickly to situational changes and build further competencies. [5]. or dynamic capabilities. [6]. Therefore, the firm's core competence lies on its unique resources and capabilities.

Even if maintaining one's core competence is a source of sustainable competitive advantage by keeping the knowledge of the firm as confidential and unique by denying access to its capability firms may opt for cooperation to gain access to other firms' core competency and unique resources, especially when core competence lacked by the firm. The RBV is an implicit assumption in many firm/ country level cooperation decisions. Often, outsourcing decisions are based on the idea of focusing on core competencies and outsourcing complementary competencies to external partners. Third party logistics (TPL) and outsourcing of standard components and processes to subcontractors are examples. However, outsourcing of design, new product development (NPD), or software development is often a way to gain access to other supply members' core competencies though inter-organizational collaboration. [7].

The Water Resource Based View (WRBV) approach will lead to sustainable economic and social development for Ethiopia which pre supposes capability building on the water and related resources of the country. Because of the ownership of water resources, building core competence of

water resources of Ethiopia for sustainable economic and social development based on the assumption of future water shortages in the world. There is increasing trend in the number of bottled water manufacturing companies in Ethiopia engaged in the production and sale of potable water in the form of packaged/bottled water for safe drinking by branding water as a commercial product through bottling using plastic packages with all the required product labeling. Because of consumers' life style towards safe and quality potable water, there is increasing trend of preference of bottled water to the traditional one (tap water) in the metropolitan cities like Addis Ababa of Ethiopia with large population size of estimated at 4.03 million and diplomatic city of Africa enhances the commercialization and profitability of water as a product in the national and international market for Ethiopian bottled water manufacturers.

Unique assets and capabilities are the source of enduring competitive advantages. Its implication for sourcing decision is: not outsource capabilities that create competitive advantage. Buying and alliances may be vehicles for obtaining capabilities and pick sources with complementary capabilities. Firms with abundant resources are less willing to cooperate than firms with fewer resources. Firms are reluctant to cooperate with others, because resources are sources of competitive advantage. Core competencies are built as a result of holding unique capabilities (knowledge competency) and as a result of learning over long period of time and unique resources (raw material, human, technology, etc) held by the organization/country.

In the RBV, firms are not willing to share their resources because it is their core competence and source of sustained competitive advantage which could only be possible through maintaining the secret of their core competence, at least not sharing the knowledge and ownership of the resources.

Regardless of abundant resources, Ethiopia as an 'entity' didn't capitalize on her core competence and benefited her social objectives, though there are resources that can be considered as strategic assets for national competitive advantage in the international markets. Lack of focus on identifying Ethiopian core competence (especially the institutional capabilities the country has on the water resource management, if we consider water resource is the strategic asset of the country and worth capability building on its management) and its implication for sustainable development is worth studying.

Though the country possesses a substantial amount of water resources little has been done on developing institutional capabilities for drinking water supply (bottled ones with international quality water standards),; hydropower generation (marketable in the international market-Africa, Middle East and Europe; irrigation (large and small scale based on the available 12 big river basins and thousands of small river basins); and other purposes.

If the resource based view (RBV) is about core competence building, and if Ethiopia is endowed with resources that can be built into core competence ,then Ethiopia can have core competence on her natural resources(in this case typical of water resources). But non-observance of the Ethiopian core competence in the world economy implies resource management flaws. This problem may in turn be attributed to lack of building capability on water resource management; even though there are resources that can be build and can be core competence of Ethiopia which results in competitive advantage to the country in its competition in the global economy.

The same resource based view of the firm being developing capability and owning unique resources, if yields in core competence of the firm, and if Ethiopia has plenty of water resources (rivers) that are scarce and will continue to be valuable in the world economy, these resources (Ethiopian Rivers-Like Abay, Wabeshebelle, Gibe, Awash, Baro, etc) can be developed in to core competence to the country (Ethiopia) for international trade. Based on the present indicative information sources, the potential irrigable land is about 3.7 million hectares. The area under irrigation development to-date, obtained from different sources is estimated to range between 160,000 - 200,000 hectares (around 5% of the potential). [8].

Therefore, if water resource is the scarcest resource and highly demanded in the near future, Ethiopia can frame its export policy on products generated from water resources like hydropower generation, buildings of logistics channels as a future major supplier of packaged water for the world market. The scarce water resources in foreign countries will provide Ethiopia with the opportunity to have sustainable competitive advantage in the regional and global markets. This is mainly because of Ethiopia's ownership of the resource and core competence of these resources and its institutional capabilities on irrigation, hydropower and bottled water manufacturing and sale in an innovative water resource management can bring sustainable competitive advantage for Ethiopia in the future.

In addition to the above explanation, drinking water is something abundantly available in Ethiopia that can be value added and developed with little effort and less operational cost to international market through packaged water and continuous supply to the world market.

However, with the increasing trend in the use of bottled water instead of tap water by consumers of Addis Ababa at home, work and recreation centers regardless of due care on environmental effect of the plastic package of the bottled water after use. Besides, there is growing social pressure for organizations to reduce their rates of consumption of nonrenewable natural resources and in parallel, to also reduce the release of post-production and post consumption waste to landfills, water bodies and air, thereby causing damage to the environment. To respond to the pressure it is necessary that organizations' operations prioritize the "3R" goals: Reduce, Reuse and Recycle. [9].

Therefore, this study tried to produce empirical evidence on the shift in the use of bottled water in Addis Ababa and its implication of reverse logistics on the plastic package water products.

2. Research Questions

Based on the stated problems for the water resource management in Ethiopia, the research addressed the following central question:

What is the current trend of bottled water use as a branded product by consumers of Addis Ababa City and implication on reverse logistics of plastic packages for water product?

3. Materials and Methods

3.1 Research Design

The study is of exploratory in nature. Primary and secondary data sources are analyzed to describe facts with regard to water resources of Ethiopia and the resource based theory of the firm is extended to explore its applicability in the water resources of Ethiopia for sustainable development. Lastly, the study tried to understand what explains Ethiopia's sustainable competitive advantage.

3.2 Methods of Data collection and Sample Design

Primary data collection was carried out at as follows:
A study on trends of bottled water users in Addis Ababa was carried out to see the trends in use for bottled water products from a traditional shift of using tap water or soft drinks as regular use at home, work and recreation centers .bottled water products (like Yes, Aqua-addis, origin, Abyssinia Spring) and their sales potential as a salable product in national and international markets were surveyed. Sample was designed from respondents of Addis Ababa from Academic Staffs of Addis Ababa University, Business and Economics College. As population is found to be 313(College of Business and economics Academic profile, 2014), sample size was calculated as 173 based on 95% confidence level and 5% margin of error and respondents were randomly selected during lunch hour and voluntarily took to fill the questionnaire and return back in two weeks' time. In the questionnaire item, respondents were requested to describe their water usage frequency using different dimensions of bottled water product. The data collection took place in the month of April 15-30/2014.

3.3 The Collected Data

3.3.1. Procedures and Activities undertaken

Questionnaire was designed for Addis Ababa residents about bottled water use as their drinking life style. The questionnaire contained detail of 20 items (annexed A).

The questionnaire is divided in to two parts:

Part one inquires about commercial elements of bottled water and preference frequency and brand selection of bottled water users by the academic staffs of Addis Ababa University College of Business and Economics. Part two addressed questions related to users' perception on their agreement continuum on the bottled water and its interaction with environmental concerns. Twenty three item questionnaires were prepared, and were given for language experts for language editing and accordingly refined after incorporation of comments forwarded by the language editor. The questions were measured based on a scale of five to rate the measurement variables and of a multiple choice type for other variables. Then 173 questionnaires were duplicated and ready for distribution to the 173 research participants. The questionnaire instrument was administered in the month of April15-April 30/2014 via self administered questionnaire by randomly selected academic staffs of the selected College.

Of the 173 questionnaires 149 questionnaires were returned, but 7 questionnaires were removed from further consideration because of incompleteness based on the questionnaire item format. Therefore the total number of questionnaires valid for analysis was 142 with a response rate of 82%.

3.4 Data Analysis

Data obtained from primary sources are analyzed using descriptive statistics on the identified study variables using frequency distribution, mean, and standard deviation, with the help of SPSS software version 20**,** to describe and explain the bottled water use style by the respondents and its implication on reverse logistics.

4. Findings and Discussions

Table 4.1: Reliability Statistics

Cronbach's Alpha	*N of Items*
.770	20

Source: Own survey, 2014

The reliability of the survey questionnaire was tested based on 20 item Cronbach's alpha reliability test for internal consistency of the respondents on the item and found to be 77%. A Cronbach's alpha of 70% is accepted as reliable in most of the cases; hence, reliability test result of this survey is found to be reliable and qualifies for further analysis.

Table 4.2: Mean result for Commercial elements of Bottled Water

N	Valid	Price	Cleanliness	Packaging	Environmental friendly	Taste	Convenience
		142	142	142	142	142	142
Mean		2.5634	2.7113	3.5493	3.2465	3.3521	3.1972
Std. Deviation		1.08807	1.10820	1.06909	1.13104	1.05989	1.28956

Source: Own survey, 2014

Table 4.2 summarizes the responses of participants on the price, cleanliness, packaging style, taste, and convenience of the bottled waters marketed in Addis Ababa. The responses were given in the form of rating the dimensions just listed

using a scale where 1 representing very poor, 2 poor, 3 neutral, 4 good and 5 very good.

Here it should be noted that unfairly higher price has been assigned a lower number (1 or 2). So this less than average rating of the price of bottled water by respondents implies that consumers were charged unfairly higher price. The irony is the fact that the price of such bottled waters is being hiking continuously. This is probably because the said product is not abundantly produced creating shortage in the market place. This is, in fact, contrary to our proposition that Ethiopia is endowed with huge resource of water of various forms, if only it knows how to capitalize on it as a core competence.

The second attribute rated and represented in table 4.2 relates to cleanliness. Respondents' rating, in this regard averages to 2.7 with a standard deviation of 1.1. This too is not a satisfactory rating. The dust and stain on the bottle that is being sold without even polished to customers basically makes retailers of these bottled waters responsible. Probably a strong linkage among members of the supply chain (for example manufacturers of bottled waters may set some criteria related to cleanliness based on which retailers will be identified upon fulfillment of such criteria) is one possibility of scaling up cleanliness.

Packaging style as a third variable being rated was given an average of 3.5 with a standard deviation of 1. In relative terms with the previous items rated and, in fact, in absolute terms too, the respondents rating of the packaging style can be taken as encouraging. However, the researcher is not convinced that this is something out of which manufacturers should take pride. This is based on an argument that the Ethiopian customers who, until very recently, did not have any idea of paying a dime for pure water deserve much more appeals and persuasions packaging style being one of those appealing mechanisms.

The environmental friendliness attribute is rated with a mean of 3.2 and a standard deviation of 1.1 which met the minimum respondents expect based on the rating. However, literature in this regard is very critical of the practice of plastic packaged water arguing it is highly environmentally unfriendly.

How does water taste? Respondents' response regarding the taste of bottled waters marketed in Addis averages to 3.4 with a standard deviation of 1. This level of rating from the residents of Addis Ababa, where there does very good taste pure water is available almost for free, may indicate that the consumers are really very comfortable of the taste of the bottled waters marketed in Addis.

Lastly, convenience was the question raised to the respondents to rate on the five point scale and replied with a mean of 3.2 and standard deviation of 1.3. This also implies that, the bottled water product in Addis Ababa is convenient for consumers for use as it excels their expectation based on the score given by the 142 respondents.

Based on the six attributes identified and rated by respondents of Addis Ababa on the use of bottled water, the way bottled water packed, environmental friendliness and convenience are the attributes that appear to have been rated little above average whereas, cleanliness and price are the least ranked attribute where the bottled water product failed to meet the expectation of the consumers in Addis Ababa. Regarding taste it can very well be argued that the bottled waters are faring very well as the ratings of consumers is encouraging

Table 4.3: Brand

		Frequency	*Cumulative Percent*
Valid	Yes	62	43.8
	Origin	35	68.3
	Aqua safe	29	88.7
	Aqua addis	14	98.6
	Abyssinia Spring	2	100.0
	Total	142	

Source: Own survey, 2014

Respondents were asked to identify their preference among the bottled water brands sold in Addis Ababa. Table 4.3 above demonstrates that Yes brand is preferred the most as about 44% of the respondents said so followed by Origin brand (26%) and Aqua safe brand **(**20%). From this empirical fact it is safe to conclude that Yes bottled water brand holds the lion's share of Addis Ababa market and known to be the popular brand of bottled water in Addis Ababa today.

Table 4.4: Drink Preference at Home

		Frequency	*Percent*	*Cumulative Percent*
Valid	Boiled tap water	10	7.0	7.0
	Tap water	31	21.8	28.9
	Filtered tap water	33	23.2	52.1
	Bottled water	48	33.8	85.9
	Other	20	14.1	100.0
	Total	142	100.0	

Source: Own survey, 2014

Table 4.4 portrays the inquiry with regard to what type of water do consumers of bottled water in Addis Ababa prefer to drink when they are at home. Accordingly, 7% of the respondents prefer boiled tap water; 21.8% replied tap water; 23.2% replied their preference of filtered tap water; 33.8% preferred bottled water and 14.1% preferred other approaches of drinking water at home like adding agar to kill micro organisms in tap water. From this survey it can be observed that significant portion of the respondents is using bottled water for drinking at even when they are at home. This may imply that there is a huge shift of life style in this regard, in favor of, of course, bottled water drinking.

Table 4.5: Drink preference at Work

	Frequency	*Percent*	*Cumulative Percent*
Tap water	23	18.3	18.3
Filtered tap water	34	23.9	42.3
Bottled water	67	47.2	89.4
Other	15	10.6	100.0
Total	142	100.0	

Source: Own survey, 2014

As depicted in table 4.5, respondents were also asked their preference of drinking water while they are at work. The response is presented as follows: 18.3% tap water; 23.9% filtered tap water; 47.2% bottled water and others 10.6%. From this response, it can be argued in the same fashion that bottled water is again the most preferred drinking preference at work for employees as well businesspersons in Addis Ababa. This indicates that people in Addis Ababa are using bottled water as any commodity to be purchased and used in their day to day life style, at work or at home.

Table 4.6: Frequency of Bottled Water Use

		Frequency	Cumulative Percent
Valid	Never	0	0
	0-1/week	6	4.2
	2-3/week	30	25.3
	4-5/week	89	88.0
	Greater than or equal to 6/week	17	100.0
	Total	142	

Source: Own survey, 2014

As shown in table 4.6, respondents were asked about their frequency of use of bottled water per week time period. Accordingly, as summarized in table 4.6 above, 4.2% replied 0-1 bottled water per week, 21.1% said they consume 2-3 bottled waters per week, 62.7% (the majority) of the respondents said they consume 4-5 bottled waters per week, and finally, 12% of the respondents replied that they used 6 or more bottled waters at per week at work. Based on this analysis it is clear that most respondents of the Addis Ababa (74.7%) can be judged as regular users of bottled water at work place.

Table 4.6: Reasons for bottled water Purchase

		Frequency	*Percent*	*Cumulative Percent*
Valid	Inconvenience to carry own bottle	19	13.4	13.4
	Bottled water is cold	32	22.5	35.9
	Bottled water is cleaner	28	19.7	55.6
	Bottled water is cleaner, cold and fashionable	46	32.4	88.0
	Bottled water tastes good	12	8.5	96.5
	bottled water is quality	2	1.4	97.9
	other reason	3	2.1	100.0
	Total	142	100.0	

Source: Own survey, 2014

Respondents were also asked about why they purchase bottled waters. Table 4.6 summarizes the reasons why they prefer to buy bottled waters. Accordingly it has been found out that a huge proportion of the respondents (32.4% + 19.7% + 22%) said they purchased bottled waters for the reason that they are cleaner, fashionable and cold. Such other reasons as convenience, portability and also quality of the bottled waters were not given so much weight as reasons to buy. So the cleanliness, fashionableness and cooling are perhaps areas on which bottled water companies should work hard on.

Table 4.7: Disposal of Empty Bottle

		Frequency	Percent	Cumulative Percent
Valid	put in rubbish bin	51	35.9	35.9
	Reuse	53	37.3	73.2
	Recycled	5	3.5	76.8
	Dispose anywhere	33	23.2	100.0
	Total	142	100.0	

Source: Own survey, 2014

Critical question was raised to respondents as displayed in table 4.7, with regard to the disposal of bottled water after use in Addis Ababa and replied as shown below: 35.9% of the respondents replied they put in rubbish bin after use of bottled water; 37.3% of the respondents responded they reuse the empty bottle; 3.5% of the respondents replied they give the empty bottle for recyclers and 23.2% of the respondents replied they dispose the empty bottle anywhere after use. The figures demonstrated here are indeed shocking implying how the consumers in Addis Ababa are environmentally unconscious. The fact that only 4% of the respondents said they give the empty plastic bottles to recyclers imply a lot of possible problems. Perhaps the people are grossly ignorant of the issues at stake pertaining to saving the planet to the next generation by way of conserving the environment. The other possibility is that people are fairly aware of the issues but need so much pressure from environmental activists so they bring about behavioral change. Still another possibility is that there are no recycling organizations around making it very difficult to the consumers to get one. Perhaps, there also may be other possible explanations or any combination of the explanations given here. The point here is that people are not demonstrating the desired behavior in terms of caring for the environment pertaining to bottled water consumption. There should be no confusion here that economic growth without environmental responsibility can never be sustainable.

Table 4.8:. Change Bottled water Purchase Encouragement

		Frequency	Percent	Cumulative Percent
Valid	Lowering price, more attractive package	18	12.7	12.7
	Lowering price, environmentally friendly packing	7	4.9	17.6
	Lowering price, better quality	22	15.5	33.1
	Lowering price, better quality, more environment friendly packing	55	38.7	71.8
	Lowering price	40	28.2	100.0
	Total	142	100.0	

Source: Own survey, 2014

As depicted in table 4.8 respondents were asked what changes on bottled water would encourage them to purchase bottled water and replied as follows: 12.7% said lowering price and more attractive package could further encourage them to buy bottled water; 4.9% of the respondents replied that lowering price and environmentally friendly packing could encourage them to buy bottled water- as this implies

less consideration is given to environmental friendly packing by respondents; 15.5% of the respondents replied lowering price and better quality of bottled water could encourage them to buy it; 38.7% (significant portion) of the respondents replied any change in the three attributes together(lowering price, environmentally friendly packing and better quality) could be the reason for buying of bottled water and finally 28.2% of the respondents replied lowering price alone could encourage them to buy bottled water made and availed in Addis Ababa. This implies that any improvement in the current pricing strategy of the bottled water in Addis Ababa through product quality including design for environmentally friendly packing may boost the sale of bottled water in Addis Ababa.

Table 4.8: Bottled water dimensions

	N	*Mean*	*Std. Deviation*
Bottled water causes great environmental problem--the empty bottles are wasted	142	3.4437	1.21763
Quality of bottled water may not be better than tap water	142	2.4366	1.03461
Tap water in Ethiopia is safe enough to drink directly	142	2.3099	.92394
Bottled water is being commercialized	142	3.4577	1.17070
Bottled water is becoming more popular	142	3.4437	1.10142
It is inconvenient to prepare my own bottle of water	142	3.2958	1.15953
When I buy bottled water, I won't consider the effect on environment	142	3.0704	1.22415

Source: Own survey, 2014

In table 4.8, respondents were asked to rate their degree of agreement on the five point scale for 1 being totally disagree; 2 = disagree; 3 = neutral; 4 = agree; 5 = totally agree on the following six variable. Their responses, therefore, are stated as follows

Regarding the environmental problems the water bottle is said to create respondents rated it at 3.4 on average indicating that they are fairly aware of the issues pertaining to the possible negative impacts of the industry. This may tell that the reason why these respondents, as indicated earlier, do not supply their empty water bottles to recyclers is due to a reason other than awareness. The other question in this rating scale relates to whether bottled waters were any better than tap water. And the responses average to 2.3. Since the question is framed in a negative form the average of 2.3 can be regarded as a little above average implying that consumers think bottled water is still better than a pure tap water. So we can infer from here than consumers lodge much more value to bottled water than tap water.

Respondents rated the proposition that tap water in Ethiopia is safe enough for drinking. The rating in this regard amounts only to 2.3 implying that people do not have confidence on the purity of tap water in Ethiopia. This very perception of the people on tap water can be regarded as a very good opportunity for bottled water producers since it can very well be argued that the Ethiopian populous will heavily relying on bottled water for drinking. This will be a reality with the economy growing fast adding up to the purchasing power of people and their increasing consciousness for health and safety.

In addition to the above the propositions read, bottled water is being commercialized; bottled water is becoming more popular and it is inconvenient to prepare my own bottle of water, scored positive response from the respondents of Addis Ababa with a mean score of 3.46, 3.44, 3.3 with standard deviation of 1.2, 1.1and 1.2 respectively. Such ratings obviously are in favor of expanding and developing the bottled water industry which has been proposed by this researcher at the very outset.

5. Conclusions

Based on the respondents opinion whether bottled water commercialization in Addis Ababa the following conclusions are drawn.

- Bottled water pricing in Addis Ababa is overpriced like any other commodity in Addis Ababa, but users are willing and to prefer to pay and use bottled water at home, work and hotel services.
- Packing, environmentally friendliness, taste and convenience while handling and using of bottled water products in Addis Ababa are above the expectations of bottled water users and can be concluded as success factors for the commercialization of bottled water in Addis Ababa.
- Respondents' bottled water user's favorite brand is 'Yes' brand.
- Significant number of consumers of bottled water in Addis Ababa prefers to use bottled water for drinking at home, work or hotel places as compared to other forms of tap water.
- Majority of bottled water users have daily frequency of using it at home, work or hotels.
- Consumers' justification for preference of bottled water use at home, work or hotel is cleaner, cold and fashionable.
- The disposal of empty bottles by bottled water users anywhere on the streets of the city is environmentally unfriendly as all of the packaging of the bottled water is plastic.
- Respondents justified continuing to buy bottled water with lowered price, better quality, and more environments friendly packing.

Based on these empirical survey, of bottled water users in Addis Ababa, bottled water sale like any type of product is a successful business venture private firms are maximizing profit out of it which can be extended to international marketing based on the available international marketing strategies of standardization, adaptation or combination of the two, as international water quality standards are met like any product traded in the international market.

6. Implication on Reverse Logistics of Bottled Water Manufacturing in Ethiopia

The trend in the changing life style of the Ethiopian people in drinking bottled water at home, work place, recreation and travel in and outside the country provided another opportunity to sale bottled water as a product in the local market and sought its potential sale in the international market as far as international water quality standards are met. However, regardless of increasing trend in the distribution logistics of bottled water to the Ethiopian domestic market and the commencement of export of plastic packaged water to international market by few branded bottled water companies raised the issue of environmental regulation as a result of the existing plastic packaged branded water products are unfriendly to the environment. In the absence of green packaging of water products for commercial use in Ethiopia, it demands for reverse logistics for recycling of plastic packages for water use. Unlike soft drink companies which voluntarily apply reverse logistics for re use of bottle for their product packaging, water bottling companies in Ethiopia are not required by law to re use/recycle plastic packages for water regardless of their negative impact on the environment as plastics take thousands of years to decompose. The government should also take in to account, the exponential increase in the production and sales volume of branded bottle water products availability in supermarkets, hotels, workplaces, household residents and the like with increased availability of plastic packages for bottled water after use in open space and dustbins. Therefore, it is not uncommon to observe in the streets of Addis Ababa and regional towns to find plastic packages of water dumped here and there as a result of increased use by residents at home, workplace or recreation centers in daily basis. Even though, the city government of Addis Ababa organized informal sectors at micro enterprise level to play the role of collectors to remove waste from the city basis in the areas of household residents, recreation centers and streets of Addis Ababa as their regular day to day economic activity creating significant number of employment in the city, the Government may have made a trade off for not putting a stringent environmental regulation on the reverse logistics of plastic packages of bottled water for recycling or reuse. Because, if significant number of employment is created as a result of collecting plastic bottles for water products, it deemed rational for the government to maintain the statuesque and discouraged to put any environmental policy measure that has an outcome of reduction in employment of the already created job as the prevalence of high unemployment rate in the City of Addis Ababa. Besides, individual households pay for removing these plastic packages for bottled water and other solid wastes from their areas to the collectors. Based on empirical evidences collected from the respondents on the current trend in commercializing of bottled water in national and international market, manufacturers of bottled water in Ethiopia are tapping the opportunities in the increasing consumers demand and use style for bottled water at workplace, meeting, home, and recreation and hotel services centers without due consideration of wider impact on environment of the plastic packages of water use. Therefore, the study recommends the application of reveres logistics by bottled water manufacturing companies in Ethiopia for recycling plastic packages of bottled water that should be enforced legally for environmental sustainability.

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Appendix A

Bottled Water Users' Questionnaire Survey ("Is drinking bottled water a new trend in Addis Ababa?")

Code No: _____

Dear Respondents!
This questionnaire is intended to gather facts with regard to water resource management in Ethiopia in general and institutional capabilities build so far in particular (if available) for Ethiopian sustainable development. Your genuine response to the scientific inquiry will help to draw valid conclusions that will in turn help policy makers for their water resources related decision making. Therefore, the researcher kindly requests your response's impartiality and kind cooperation to

respond to the questions fully. I will assure you that individual responses will not be divulged by name and survey responses will be reported as aggregate or mean**.**

Thank you in advance for your cooperation!

Questions

I am going to ask you some questions with regard to commercial elements of bottled water marketed in Addis Ababa. Therefore, you are kindly requested to rate the bottled water marketed in Addis Ababa, based on the following items from 1 very poor; 2 poor,3 neutral, 4 good to 5 very good

Sr. No.	Description/Item	1	2	3	4	5
1.	Price					
2.	Cleanliness					
3.	Packing					
4.	Environmental friendliness					
5.	Taste					
6.	Convenience					

a. Which brand of bottled water do you prefer
b. Yes
c. Origin
d. Aqua Safe
e. Aqua Addis
f. Abyssinia Spring
g. Other, please specify

7. What type of water do you prefer to drink when you are at home?
a. Boiled tape water
b. Tap water
c. Filtered tap water
d. Bottled water
e. Other
f. What type of water do you prefer to drink when you are on the street/work?

8. Boiled tape water
a. Tap water
b. Filtered water
c. Bottled water
d. Other

9. How often do you purchase bottled water?
a. Never
b. 0-1 time/week
c. 2-3times/week
d. 4-5times/week
e. 6 and >6 times a week

10. Why do you purchase bottled water? (You can choose more than one answer)
a. It is inconvenient to prepare my own bottle of water ,I want to keep the empty bottle after drinking the water
b. It is inconvenient to prepare my own bottle of water ,Bottled water is cold
c. Bottled water is cleaner
d. Bottled water is cleaner ,Bottled water is cold ,Bottled water is fashionable
e. Bottled water tastes good
f. Bottled water is quality
g. Other reason

11. After drinking bottled water, how would you deal with the empty bottle for most of the time?
a. Put in rubbish bin b. Reuse
b. Recycled d. Dispose any where
c. Other, please specify
d. Which of the following changes on bottled water would encourage you to purchase bottled water? (You can choose more than one answer)

e. Lowering the price ,More attractive packaging
f. Lowering the price ,using a more environmental friendly packing
g. Lowering the price, better quality
h. Lowering the price ,Better quality ,using a more environmental friendly packing
i. Lowering the price
j. Lowering the price ,More attractive packaging ,Better quality ,using a more environmental friendly packing

II. Now you will be asked to rate your degree of agreement on the five point scale for 1 being totally disagree; 2=disagree; 3=neutral, 4=agree; 5=Totally agree on the following issues.

Sr. No.	Description/Item	1	2	3	4	5
12.	Bottled water causes great environmental problem--the empty bottles are wasted					
13.	Quality of bottled water may not be better than tap water					
14.	Tap water in Ethiopia is safe enough to be drink directly					
15.	Bottled water is being commercialized					
16.	Bottled water is becoming more popular					
19	It is inconvenient to prepare my own bottle of water					
20	When I buy bottled water, I won't consider the effect on environment					