THE FUTURE OF BOTTLE RECYCLING IN THE UNITED STATES OF AMERICA

by

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ABSTRACT

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Abstract

In this Master's thesis, the future of bottle recycling in the United States of America will be examined through interest, incentive and an infrastructure (iii) model. One of the American ways to recycle bottles, namely, the Dream Machine initiative, will be compared to the Finnish bottle recycling system. It will shed light through surveys done from Finnish high school students and randomly selected Americans about bottle recycling behaviour. In addition, two supportive surveys were administered to bring validity about the possible behavioural change through properly implemented recycling systems. The main conclusion is that through a proper implementation of a bottle recycling system, American's behaviour can change towards a more sustainable future.

Keywords
bottle recycling, reverse logistics, intention-behavioural gap, (iii) model

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Also, I would like to thank all the people who have made this thesis possible, namely, the faculty of the University of Jyväskylä, my classmates, and the people who gave me the material by taking my surveys. Special thanks go out to PALPA, who was able to respond quickly to help me fully understand the concept of bottle recycling in Finland. It is my hope, that someday our fellow American friends will have a similar system implemented that creates a better future for our posterity.

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1 INTRODUCTION

1.1 Topic discussion and background

Finnish bottle recycling systems will be used as a benchmark and a reference for this study. Since 1996, PALPA (non-profit bottle recycling organization) has been established to govern the complex network that goes into bottle recycling in Finland (PALPA Meeting, 2012). This section will briefly explain the material flow, the information and the money flow associated with the Finnish bottle recycling system.

The material flow is fairly simple to understand. The material starts its journey from a producer to a store. From a store, it is sold to a consumer, who pays a deposit that encourages the consumer to return the material back to the store. Once returned, the consumer receives the deposit back, and the store sends the material to a material handling facility. After the material has been handled, its journey will start again as it will be sold to various users who use the material for various purposes. (PALPA Meeting, 2012)

In Finland, bottle recycling started as early as the 1950's with reusable glass bottles (PALPA Meeting, 2012). The bottles are washed and reused approximately 33 times during their life cycle. In 1996, aluminium cans came to the market with a deposit (PALPA Meeting, 2012). These aluminium cans are recycled by means of melting, and new cans are made from them. Reusing aluminium brings tremendous savings to the environment, as it takes only 5% of the energy needed to melt a can compared to if the material were to be excavated (PALPA Meeting, 2012). PET bottles received a deposit in 2008 (PALPA, 2012). PET or polyethylene terephthalate plastics can be reused for making bottles, raincoats, fleece jackets, bags, shoes, and even eco-friendly cell phones (PALPA Meeting, 2012). In 2012, recycled glass bottles received a deposit (PALPA Meeting, 2012). These bottles are crushed and used as material for new bottles, or as material for the construction of roads. (PALPA Meeting, 2012)

The information and the money flows aspects of each material are a bit more complex. Because most of the beverages in Finland face a 0,51€ per liter

tariff at the customs, under tariff law 22, paying a deposit for a bottle has become a number one option for most of the producers (PALPA Meeting, 2012). The producer informs PALPA how many beverages they are bringing in to the market, and then pay a deposit accordingly to PALPA. The individual stores then pay a deposit to the producer. The consumers buy the deposit from the store, after they make the purchase for a bottle, and receive it back once they have returned the bottle. The stores report to PALPA the amount of bottles sold, and then receive the here said deposit from PALPA. (PALPA Meeting, 2012)

In this way, the deposit makes a full circle and the stores do not have to pay a double deposit. In addition, the producer pays PALPA a recycling compensation per bottle. In return, PALPA pays the stores a small amount for handling the material flow. PALPA also pays a small compensation for transportation expenses and any material handling expenses incurred by the material handling facility. (PALPA Meeting, 2012)

In the end, PALPA receives a payment from selling the washed, shredded or melted end products. PALPA, a non-profit organisation, uses this payment to cover all of the operational expenses. It also pays the staff members who keep the system running smoothly, by ensuring that the new bottles entering the market are properly labelled and made from the right materials. (PALPA Meeting, 2012)

PALPA has come a long way from 1996, when the recycling percentage in Finland was about 60% (PALPA Meeting, 2012). In 2011, the recycling average in Finland for cans was 94%, for plastic bottles 92% and glass bottles close to 100% (PALPA, 2012). The reason why bottle recycling is as dominant as it is in Finland is due in part to the Finnish law, which encourages bottle recycling. The Finnish law determines the minimum deposit amount that is currently being used. (PALPA Meeting, 2012) In this way everyone is in it together. It is not just a thing that only committed environmentalists are doing, or a green marketing gimmick that one of the producers is taking a benefit from. Instead, it is a recycling network that governs everything between the government and the consumer. It has become part of the everyday life for Finnish citizens. This is a classic example of a great reverse logistics network where the materials are reused properly, and adding value to the supply chain, since recycling bottles and cans is economically more attractive than disposing them (Srivastava, 2008).

1.2 Motivation for the research

I have always been fascinated by the concept of bottle recycling. Money used to be my main motivator as a little boy. I relished in each cash deposit I received after I collected bottles, took them to our local convenience store, where our neighbour counted them and handed me the coins.

As I have gotten older, I now have a better understanding of the reverse logistics of recycling, and the savings through resources on a large scale from a supply chain point of view. After living six years in various parts of the United States, I have come to a conclusion that the U.S. has a massive problem when it comes to recycling bottles. For me, what I thought was an unchangeable, 20 year habit of recycling, was quickly unlearned in just a matter of days as I moved to the States for the first time.

My intensions were good, but the lack of recycling locations, and the example from my roommates, prevented me from recycling bottles. It was custom to just throw away the bottles after they were used. This brought me to the concept of a value –action gap or an intention-behavioral gap as Barr (2008) puts it. It made me want to understand more about behavioral change, and how a working recycling system in Finland might work in the United States.

1.3 Aim of the research

The United States has finally come up with something new and exciting to enhance its bottle recycling. In 2010, two companies, PepsiCo and Waste Management launched the Dream Machine initiative. This is similar to the system used in Finland, except instead of receiving a deposit back; a person can receive points to earn rewards or to help disabled veterans fulfil their dreams by PepsiCo's donations. (WM, 2010)

The aim of this research is to study bottle recycling from a behavioural point of view, and to find out the push and pull factors to enhance the future of bottle recycling in the USA for the long term. After this study, a better understanding of how to close the intention-behaviour gap in regards to bottle recycling in United States will be established.

It is also to show whether the Dream Machine system is fit for the future of bottle recycling in the US, and if it is capable of motivating its consumers to return their bottles back.

2 RESEARCH TOPIC

2.1 Dream Machine

This study will focus on the new Dream Machine initiative launched by PepsiCo and Waste Management in 2010. It will include whether the Dream Machine can work as a productive long term bottle recycling system for Americans, and whether or not it motivates its consumers to recycle. The goal for PepsiCo and Waste Management is to reach a 50% recycling average by 2018 (WM, 2010). The current recycling rate in 2010, according to PepsiCo, is 34% (WM, 2010). However, another study shows that the recycling rate for PET bottles in the United States is only 29% (NAPCOR, 2011).

On Earth Day of 2010, Waste Management and PepsiCo challenged Americans to recycle cans and bottles. The idea was that the more Americans would recycle cans and bottles, the more money PepsiCo would provide for U.S. veterans with disabilities. This would include career training, education and ultimately job creation. (WM, 2010)

The Dream Machines can be found in several places from stores, parks, army bases, gas stations and stadiums. The idea of the dream machine is to encourage consumers to recycle their cans and bottles to enable them to earn points and redeem awards from the website www.greenopolis.com; which is part of Waste Management. (WM, 2010)

This study will also reveal some of the issues with the Dream machine initiative in its attempts to become a mainstream. To start, here are some staggering numbers that show just how large of a magnitude the issue is. On average, Americans consume 714 eight-ounce servings of carbonated soft drinks per year (Reuters, 2012).

For soda consumption alone, those numbers equal about one 16-ounce bottle (about 0,5 liter) consumed per day, per person. The numbers may be even higher if alcoholic beverages or bottled water were taken into consideration. As mentioned above, the current recycling rate at most for bottles in the U.S. is

about 34%. This means that if every American, 314 million, (Census, 2012) were to consume one 16- ounce bottle a day, that would tally up to over 207 million soda bottles ending up in landfills each day, which is over 75 billion bottles sent to landfills each year.

In the United States, some bottles are recycled through the Dream Machine initiative, curbside pickup, recycling centres, and through some grocery stores. The problem, however, is that there is not a unified system for bottle recycling. It would be helpful, if a laws were enacted that would encourage people to recycle, and worked in the same manner regardless of the State you lived in. It should be part of a corporate and social responsibility to give the tools to its citizens to enable and encourage them to recycle. This can be achieved by market and regulatory pressures (Kumar & Putnam, 2008).

However, in America the responsibility has been pushed downstream to the customers, with little or no tools to act responsibly. The current status quo on recycled aluminium cans in some States in the U.S. is a Five ($0,05) or ten ($0,10) cents cash refund value (Kahhat et al, 2008). However, this cash refund value does not seem to be a large enough incentive to encourage Americans other than in the States that are participating to recycling program cash refund value.

The unconstrained market as explained in Srivastava's (2008) research is a strength in bottle recycling. In an unconstrained market, the assumption is that all refurbished or remanufactured products can be sold (Srivastava, 2008). This is the beauty about bottle recycling; everything can be used, whether it was used for reusing the bottle or creating something else from it.

In Finland, there are about 3,700 recycling machines nationwide (PALPA, 2012). This number does not include the recycling locations for Hotels, restaurants and catering services. This number shows that, on average for every 1,500 people in Finland there is one recycling machine available. The number of Dream Machine locations available in the Harris County area of Houston, Texas, for example, is two (Dream Machine, 2012). One of them is at the Houston Baptist University, while the other is at Tom Thumb Distribution Center, which may not be accessible to the general public.

Two locations, for over 4 million people who live in Harris County (State & County, 2012) does not paint as colourful of a picture as the numbers in Finland. Imagine if all of the bottles bought (4 million) would be returned on a 90% return average. It is beyond imagination to think that two locations could handle 3.6 million bottles being returned a day; especially when one of them might not even be accessible to the general public.

The problem is not only the fact that there is a limited number of recycling machines in the States, but that some States do not have these machines or carry only static bins. Also, some of these States that do carry the machines may only have one or two that are located in places that may not be accessible to the general public; namely army bases and corporate headquarters (Dream Machine, 2012).

Changing behaviour through proper intervention itself is difficult, let alone attempting to change behaviour that is deeply rooted (Fishbein & Ajzen, 2010). In order for the United Sates to change such deeply rooted negative behaviors with bottle recycling, government interference and proper infrastructure are needed. And while there are major differences between Finnish and American governments, the U.S. government should still be held accountable in enabling their citizens to act environmentally responsible in regards to bottle recycling. However, it needs be known that these intentions and behavior should be about the same around the world, if the circumstances allow it.

2.2 Adaptation

Canning and Hanmer-Lloyd (2007) demonstrate trust building through green adaptations, perceived risk, and interaction. In Order to be successful in the adaptation of something as complex as bottle recycling, all of the participants must do their part and trust each other to do their part. There are several things to take into consideration when planning the system: recycling machines, logistics, deposit, operations and waste management. There is little to no hope in achieving desired results, if everyone is not participating.

Successful implementation of a new recycling system needs the end users, the government, and everyone in between to work together. In Finland, it is easy for individuals to follow the example of two large corporations, the K-Group and the S-Group, in forming a sophisticated, up to date, recycling system. In the United States, however, there are a plethora of large corporations, making the co-operation a bit more complex. Thus, the information flows and trade secrets in bottling, packaging, and labelling would need to be changed to a more unified system. For this to work, competitors in this field would need to be more open and willing to share their input for a better future (Canning and Hanmer-Lloyd, 2007; Vachon & Klassen, 2008).

For example, if other bottling companies, like Coca Cola, were to create their own recycling system in addition to the previous ones already created, it would make recycling even more complex and confusing for the consumers. Consumers should not need to think where and what kind of bottles they have to return to a specific location. The bottles should be able to return to any location regardless of where they were bought from. Later sections will expand more upon this idea.

The complexity of the issue lies not only within the idea that each individual State needs to regulate the status quo, but rather of the issue of how the costs of the investments are divided and the length of the payback time. Since there is no disincentive for each store to encourage bottle recycling, there is little to no need for producers or retailers to invest on something that is justified as simply being the proper thing to do.

The final issue that will take place after the research is complete, deals mainly with corporate and social responsibility. Thus, it is imperative to get the community involved. It is also important to note that after successfully implementing a new program, new sets of issues will ultimately arise. At this point, it will be easier to move towards corporate, community involvement (CCI) by getting employees and customers to work together (Hansen, Sextl & Reichwald, 2010).

However, to get a head start, it would be beneficial to win the trust of local communities, NGOs, and schools (Hansen, Sextl & Reichwald, 2010). They could help to take recycling to the next level. It would be smart to start, for example, with collecting old bottles for fundraising purposes. This is an important step of implementation in order for more awareness to be established in making recycled bottles mainstream and part of everyday life.

2.3 Hypothesis

The formulated hypotheses that were implemented for this study strongly relate to the surveys conducted. They attempt to prove that the assumptions for the current Finnish bottle recycling system are correct and universally applicable. The hypotheses are as follows:

1. Money is the highest motivator in relations to recycling bottles.
2. The closer, more convenient and more accessible bottle recycling is for a individual, the more likely he or she will recycle.
3. Finnish bottle recycling systems could work in the United States, from a behavioral point of view, if implemented properly.

Hypotheses one and two will be tested through the administered surveys in this research. Hypothesis number three is not tested, but is a conclusion from hypotheses one and two to be sound and true. Also, the supportive surveys will bring evidence that hypothesis number three would be a correct statement as well.

3 THEORETICAL FRAMEWORK

3.1 Behavioral change

Behavior change is different than merely reaching a desired goal (Fishbein & Ajzen, 2010). An example of this would be a person who has started an exercise program in hopes of losing 20 pounds. By merely reaching a desired goal, the person may only focus on the number of pounds needed to be lost. By doing this, the person may participate in fad diets in order to speed up the weight loss process. They may or may not succeed in their endeavours by using this method. However, the long term effects of the weight continuing to stay off look very discouraging.

With a behavioral change point of view, the person's main focus is not entirely on the number of pounds needed to be lost, but rather on their overall health. By doing this, the person is more likely to stay away from fad diets and focus on eating healthy, balanced meals, and incorporating exercise into their daily routine. The prospect of achieving the desired weight, and continuing to keep the weight off in the long run, are much more promising.

It is questionable whether PepsiCo and Waste Management's aim of reaching a 50% recycling rate, by the year 2018, (WM, 2010) is simply a goal, or an attempt to influence a behavioral change. Fishbein & Ajzen (2010) state that behavioural change through intervention happens, when the primary beliefs are targeted and when they have a strong connection with a particular intension, which in turn has a strong link to take the desired intention into action.

> If successful, interventions not only make a contribution to individual well-being but, in the long term, also can save money and allow us to reallocate resources to the solution of other problems. (Fisbein & Ajzen, 2010)

With the Dream Machine incentive, it is hard to decipher whether or not there is one basic belief targeted to enable a behavioral change to take place. It is

questionable whether people would recycle the bottles to receive the desired points to earn rewards, help the disabled veterans with their education, training and ultimately in job creation, or simply for environmental purposes. Just as questionable are the motives behind PepsiCo and Waste Management's recycling endeavours. Do they want to lessen the environmental impact by reducing the amount of bottles and cans ending up in landfills each year, or do they want to help disabled veterans?

An ideal Dream Machine user would be a person with high intentions and beliefs about environmental issues, who has a desire to help disabled veterans, and who likes to earn points and receive rewards from consuming beverages. From a behavioral change point of view, all of these ideal characteristics in a person are far and few to come by. The Dream Machine's ideal person is far from realistic.

Instead, what ultimately ends up happening is more consumption generated by the consumer. By consuming more soft drink beverages, the consumer earns more points to get rewards and thus help disabled veterans. Environmental reasons seem to be just a by-product from consuming more. The Dream Machine may simply be a fad green marketing scheme to help sales in the soda industry.

What happens after 2018 if the contract between PepsiCo and Waste Management is not renewed? Will the recycling continue without an incentive for points or money for the disabled veterans? The behavioral change will be measured by the lasting impact on one's behavior, not just by reaching a certain goal.

3.2 Interest and Initiative

Only in a perfect world, or in a theory, could bottle recycling reach 100%. People are all different and they each have a free will or choice to do as they desire. However, they also have a choice to recycle or not to recycle. Proper recycling would not work without an adequate interest and initiative, as seen in the figures between U.S. and Finland (PALPA, 2011; NAPCOR, 2011). Without initiative, even the most proper system would not encourage people to change their habits. Instead, the people who would recycle would be the ones who have a high enough self-interest of doing so.

The same can be said about interest. It would be very difficult to convince someone to act through incentive, if she or he does not believe it to be important or within their belief or understanding. To make matters worse, even though sound incentive and interest exist, other factors, namely the infrastructure, might unable them to act accordingly. Section 3.2.1 is an example of this from the car industry.

3.2.1 Interest and Initiative: Failure

There may be many people who would be willing to buy a car that is environmentally friendly; namely an electric car. The U.S. government even encourages their citizens to buy electric cars. They are currently offering a tax refund of up to $7,500 (Nissan, 2012) for individuals who purchase an environmentally friendly car. As good as this may sound, a new fully electric 2012 Nissan Leaf starts at $35,000. However, Nissan's 2012 gas car, the Nissan Versa, starts at only $10,000 (Nissan, 2012). Even with the government grant, it would take years for a person to gain their money back from the savings of switching from gas to electric.

The same can be said about Chevrolet and their 2012 electric Volt, which starts at $39,000 (Chevrolet, 2012). When compared to the price of its internal gas competitor, the Chevrolet Cruze, the starting price of $16,000(Chevrolet, 2012) simply cannot be beat. The car industry puts a heavy emphasis on advertisement and marketing for low gas mileage cars. However, one of the major factors that make things difficult for these electric cars is the monopoly that the oil industry has over the car industry.

After a trip to Houston, Texas in August of 2012, it was discovered that both the Nissan and the Chevrolet dealerships had only one person trained per dealership to sell the electric vehicles. Both dealerships explained how the charging stations network worked for the electric cars, but also made mention about the small number of charging stations available in a given area. Both the lack of education and small network of charging stations may contribute to the slow sale of electric cars in the United States.

While this is an example of an interest and initiative failure, it can easily be applied to the Dream Machine and its endeavours at bottle recycling. In order for a behavioral change to take place in bottle recycling, there needs to be a positive interest and initiative put in place that encompasses both companies, government and everyone in between. Each of the parties needs to accept their role as collaborative stakeholders (Manring, 2007; Prell et al., 2009). Otherwise, fancy, environmental marketing gimmicks currently used by PepsiCo and Waste Management will untimely end up having results that mirror the automotive industry.

3.3 Intension-Behavioural Gap

Barr (2008) studied the intention-behavioural gap between purchase behavioral, habitual behavioral and recycling behavioral. He studied the link between intention and behavioural and what factors caused them to form an intention or a behavior. The ending result was whether these links between each other were strong or weak, or positive or negative. In this study, Barr's (2008) analysis on recycling behaviour was given a closer look at because it related best to the

study done about bottle recycling behavioral. In bottle recycling for this research unlike in Barr's (2008) study, money or deposit are the key factors or indicators to motivate people to recycle.

It seems that the committed, mainstream and occasional environmentalists chose to recycle due to their intentions from environmental concern, their moral obligation, and the belief that their behavior will have a lasting impact. However, logistical ease ended up being the main factor that caused these individuals to recycle. The non-environmentalists who would recycle would simply do it because of moral obligation. (Barr, 2008)

The gap between intension and behavioural can come from two different factors, internal obstacles or external barriers. Internal obstacles include the belief or actual lack of skills, ability, or information to transform a particular intention into action. External barriers are things that are not in an individual's immediate control, for example legislations or infrastructure. The desired change can happen through proper implementation in one on one session, group sessions, or through a larger audience via television, radio or pamphlets. (Barr, 2008; Fishbein and Ajzen, 2010)

The most popular strategy for behavioural change is persuasive communication. This communication must come from a reliable source and have solid arguments. The benefit with persuasive communication is that it can be administered with a relatively low cost and to a wide target group. (Fishbein and Ajzen, 2010) In the Stern Review, role of government for adaptation in the developed world was summarised in the following manner.

> Government has a role in providing a clear policy framework to guide effective adaptation by individuals and firms in the medium and longer term. (Stern, 2008)

There will always be some individuals who will not abide by the laws. However, for a majority of the people, a good framework from the government that enable businesses and individuals to act responsibly will have long term benefits for the country and the individuals.

3.4 Interest, Incentive and Infrastructure (iii) model

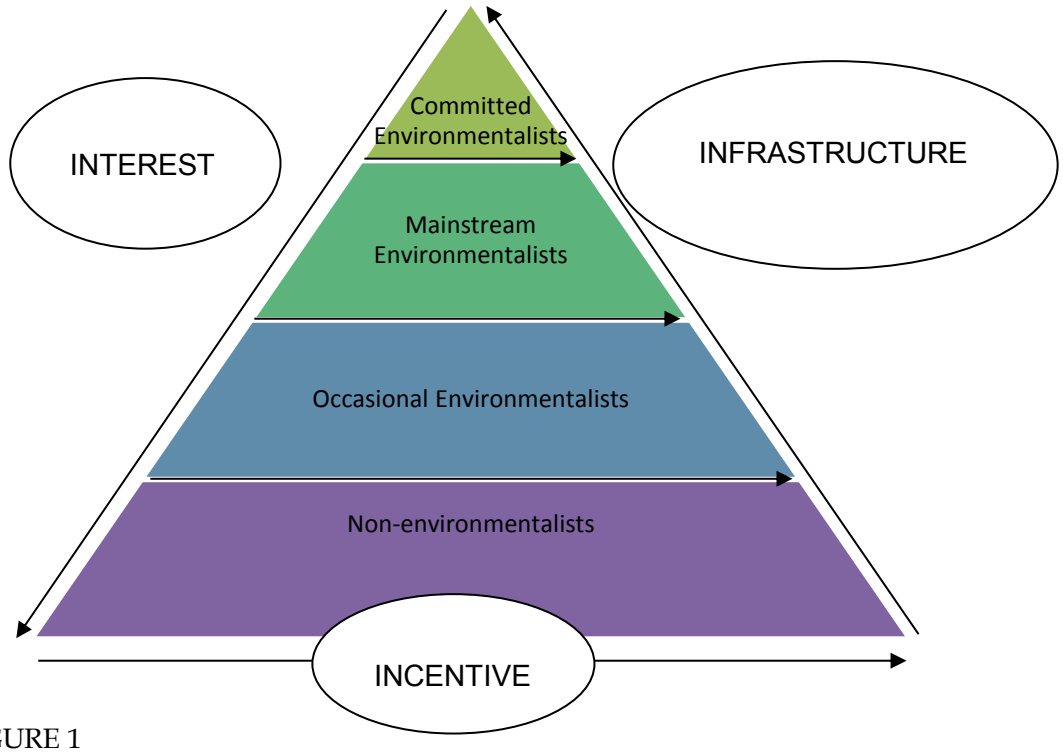

FIGURE 1

This statement by the CEO of Enterprise Rent-A-Car: that they need interest and incentive to push through their new environmentally friendly fleet (Enterprise, 2012), gave a start for the (iii) model above in figure 1. Added are Barr's (2008) four categories of people into the triangle from the least likely to recycle on the bottom, to the most likely to recycle on the top. Around the triangle there are arrows that help people in each category to recycle bottles, namely, interest, incentive and infrastructure. The higher in the pyramid, the less push and pull is needed for a desired behavior of recycling. These factors are explained in more detail in the following sub-headings.

3.4.1 Interest

The interest plays as a push factor for this study. The deeper the roots each person has for environmental issues be it taught at home, learned in school, or taught by a religious group, the stronger the push to act environmentally in a sound way. From Barr's study (2008), it is obvious that the top three categories that he characterised people in were already willing to recycle. Similar results came from this thesis study. Some of the respondents stated that they did not care if they received money from recycling bottles. They stated that they would do it if there was just a place or a location within a decent distance to take the bottles to. For people with higher environmental concern, they needed little or no push to recycle. However, if there is no infrastructure it will be hard for even

the most committed environmentalists to recycle. For example, for committed environmentalists, if the recycling location is too far away, the non-environmental act of consuming gas to and from the recycling location will outweigh the benefits of recycling.

One study done in behalf for PALPA in 2010 reveals that environmental reasons are the number two factor why bottles are recycled in Finland; with 38% of the respondents stating that they recycled mainly due to the environmental reasons. This number has come up from the research done in 2007 with 29%. (PALPA, 2012) In the survey done of the Jyväskylä high school students, an environmental reason consisted of 26% of the number one reasons to recycle bottles. This was the second most prevailing reason used as with PALPA's study to recycle bottles.

3.4.2 Incentive

Even though Barr (2008) does not mention deposits or money as one of the factors for recycling, the surveys given to the high school students in Finland, American, and in one study done for PALPA, show that money or the deposit is the number one reason why people recycle bottles. According to PALPA, 48% of the individuals surveyed returned bottles back because of the deposit (PALPA, 2012). For Finnish high school students, 54% returned bottles back because of the deposit. The interesting thing about the deposit incentive is that no one gains from it; the deposit is just rotated through different players and eventually makes a full circle. However, for consumers it feels like a nice incentive to receive money back from the bottles that they purchased. This is a really strong reason to recycle, especially when the government is behind the amount of deposit per bottle or can (PALPA Meeting, 2012).

3.4.3 Infrastructure

Infrastructure pieces the puzzle all together. Barr (2008) mentioned that the ease of recycling is one of the key factors to cause recycling behavior and intension to recycle. If the recycling was inconvenient, if there were no networks to govern it, or if recycling facilities were non-exiting or far away, it would not matter how eco-friendly a person was or how great of an incentive there was in place, a person is most likely not going to recycle. It is extremely important that there is a working infrastructure for bottle recycling. More so, there needs to be a law upon which the infrastructure is built on. When the infrastructure is present and everyone is recycling, the common statement for not recycling of - if no one else is recycling, why should I - (Barr, 2008), vanishes and encourages others to recycle through positive peer pressure.

4 METHODOLOGY

4.1 Research Design

This research will be conducted in two parts. First, the necessary background work is needed to collect data for questioners from Finnish students and from the people in the United States of America.

The research has four separate survey samples. The first one is a paper survey given to one of the high schools (Lyseo) in Jyväskylä, Finland. This survey will find out the main reasons why Finns recycle bottles. The second, a 9-question Survey Monkey questionnaire, was given to Americans who have never lived in Finland. This survey will find out some of the methods that might motivate Americans to recycle more. The third survey was sent to Americans who have lived in Finland and then moved back to the United States. This survey will help to understand the behavioural change towards bottle recycling between the United States and Finland. Lastly, a survey was sent to various Finns who have or who are currently living in the States. This survey will help to see if the Finns were still recycling bottles and have witnessed a behavioural change that took place after they moved to U.S. Each of the survey methods will be explained in more detail under the data collection section. The smaller surveys are to support the findings for the surveys above that had larger sample sizes.

4.2 Data Collection

4.2.1 Paper Survey for the high school students in Finland

The survey was to be conducted during a mandatory class period to receive as large as possible of a sample size with the most reliable answers. However, the contact person happened to be sick when the survey was to be conducted and

the survey was given to the students during a weekly non-mandatory student teacher meeting. Since all the good students tend to participate in these meetings, this could have put the survey results in a slightly more positive note, compared to if the rest of the 300 students would have taken the survey as well. The survey was administered to all grade levels which ranged in age from 16 to 19, and included the faculty. The survey was independent from the study done for PALPA, but the results were similar even though the sample size was 200 respondents less.

4.2.2 The American survey

The survey was conducted using an electronic surveying system called Survey Monkey. Over 500 e-mails were sent to random students from Brigham Young University in Idaho. Their ages ranged from 21 to 30. At least three male and three female students were randomly selected from the university student directory from each State, except Hawaii, West Virginia and the District of Columbia. Survey Monkey's Facebook data collector was also in use. Personal messages were sent to ask individuals to take the survey on the social network. The social network messages gave an opportunity for some individuals to speak out about their feelings toward recycling in general. The first 100 answers were then analysed from the Survey Monkey results.

4.2.3 Survey to Americans who used to live in Finland

The survey was conducted using the social network, Facebook. Twenty individuals, who are Americans that have lived in Finland and then returned back to the United States, were surveyed. The amount of time each individual lived in Finland varied between six months to two years. The purpose of this survey was to understand the behavioral changes in recycling bottles that took place before their move to Finland, during their stay in Finland, and after their move back to the United States. The total number of responses that came back from the social network site was fifteen.

4.2.4 Survey to Finns in America

The survey was conducted in a similar manner to the survey of Americans who use to live in Finland. A message was sent out, via the social network site Facebook, to twenty one Finns who were currently living in the United States or had lived in America. The purpose of this survey was to find out any behavioral changes that occurred upon arrival to the States in regards to bottle recycling, and the reasons that caused such changes. The total number of responses that came back from the surveys was twelve.

4.3 Reliability of the research

Overall, it is presumed that the research is fairly reliable. A few areas that could have been taken into better account during the surveys included the age of the participants, and being physically present during the administering of each survey.

If the surveys were to have included either an older generation of retired individuals, or a younger generation of elementary aged children, different answers may have surfaced. However, the surveys were intentionally administered to both Finland's high school population and Brigham Young University-Idaho college students so that the independent thoughts of each student could be collected without a bias interference from their families. This younger generation is also believed to be more accepting of change. They became a testing ground for the Dream Machine initiative and whether or not it will be able to motivate Americans to recycle bottles.

Second, it would have been beneficial to be present while administering the surveys. This would have given the opportunity to explain in greater detail, especially for the Americans, how recycling facilities and deposits work in Finland. The questions were answered by each individual as best as they were able to understand them. This enabled a more rounded and truthful responds, and not simply a bias conclusion from what the researcher was hoping to discover.

Also, the Dream Machine is a fairly new concept that has little to no information about it; other than what can be found from the internet. Being able to have more information on the research behind PepsiCo and Waste Management's Dream Machine initiative of why they chose what they chose for interest, incentive and the infrastructure, may have been more beneficial for the study. It is important to note, however, that the little contact that was done with PepsiCo was through one e-mail that stated that all information could be found from their website. They also stated that a person from their Dream Machine team would be willing to get in contact for the survey. However, no such e-mail, letter, or phone call occurred.

5 RESULTS AND DISCUSSION

The data has been analysed in light of the (iii) model in Figure 1. This will determine whether or not the questions correspond with any of the (iii) models three key concepts: interest, incentive and infrastructure tailored to enhance bottle recycling in the United States. By comparing the results from the Finnish and American respondents, the three hypotheses can be verified to be true.

The results also show the key elements that motivate individuals from Finland to recycle, and what elements might motivate individuals from the United States to do so as well. The results support a previous study done by PALPA that entail the reasons for bottle recycling in Finland (PALPA, 2010). The results for each question, from each survey, will be discussed briefly. At the end of this section there will be a summary discussion to draw similarities and further analysis between the different surveys.

5.1 American Survey

The total number of responses from the survey was 100. The individuals who answered came from 24 different States. The majority of the participants came from Texas, Utah, Idaho and California. Other States that had more than one respondent included: Arizona, Florida, Kansas, and Washington. States that had only one respondent included: Colorado, Connecticut, Delaware, Georgia, Iowa, Missouri, North Carolina, Nebraska, Nevada, New York, Ohio, Oklahoma, Oregon, Rode Island, Tennessee, Virginia, and Wyoming. Thus, the survey gives a fairly variable sample across the United States. The entire survey for the Americans can be seen in Appendix I.

Demographics of this survey can be seen in the figure 2. Over half of the respondents were female, and the majority of the respondents were between the ages of 21 and 30.

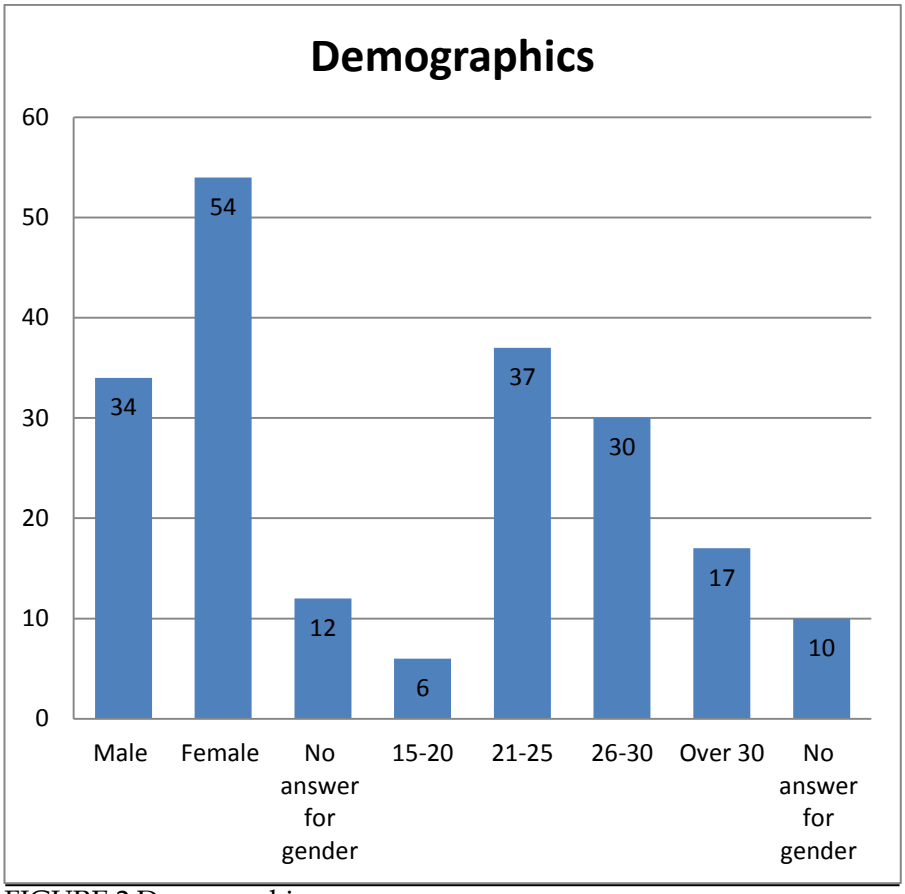

FIGURE 2 Demographics

5.1.1 Results

The purpose for question number two (2) from the American survey was to find out what happens to beverage containers after they have been consumed. There was a literal tie between throwing them into a trash bin (45%) and recycling them through waste management company's collection box (44%); see figure 3. These numbers indicate that almost every other American throws their bottles into a trash bin. The assumption was true that most of the individuals would put beverage containers into a trash bin.

It was surprising to find that nearly half of Americans recycle, while the other half throw their bottles away. This will enable a further study that compares the pros and cons of curbside pickup with the Finnish method of bottle recycling. Curbside pickup is available for nearly four million people in America (NAPCOR, 2011). Interesting enough though, this is less than 2% of the whole population. This should not be the reason for curbside pickup to receive a 44% support; unless of course, curbside pickup is considered as collecting recyclables as well as just regular trash.

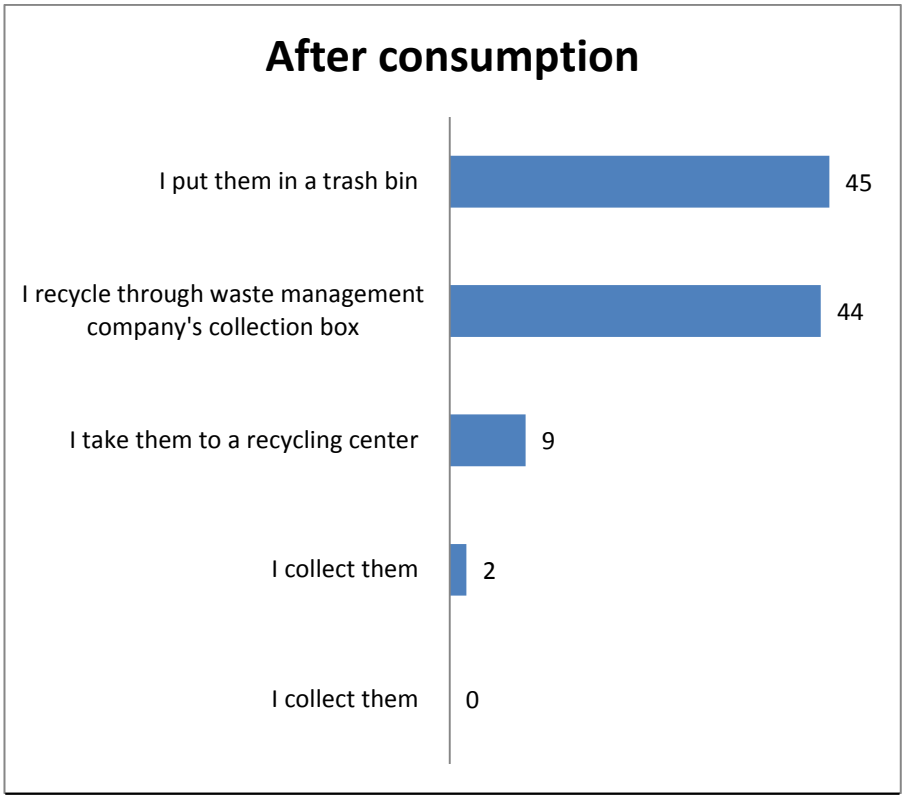

FIGURE 3 After consumption

Question numbers three (3) and four (4) go hand in hand. The purpose for these questions were reversed from Srivastava's (2008) study of finding out the maximum distance that Indians were willing to travel to a recycling center. Instead, the questions asked how close a recycling center must be in order for Americans to recycle.

Question number three discussed the issue of proximity, while question number four added a deposit to the equation of proximity. See table 1. These two questions appeared to be the most difficult questions for the Americans to answer. Because only 9 % of the respondents answered question number two (2) on the survey, this made collecting reasonable data from questions number three (3) and four (4) very difficult.

This may be due in part to the fact that some of the respondents might have had a difficult time understanding what a recycling facility was, or what a deposit does in regards to bottle recycling. From the results acquired, only two people asked respectively what either of these things were. However difficult the questions were, the trend was still leaning in the right direction. The closer the recycling facility was for an individual, the more strongly they agreed that they would recycle bottles. The majority of the respondents, 67%, either agreed or strongly agreed that they would recycle if there was a recycling facility in their convenience store. However, over 75% said they would recycle if it was in their city or town.

3. I would recycle if there was a recycling facility in my…					
	Strongly agree	agree	disagree	strongly disagree	Neither agree or disagree
State	24,0 %	24,0 %	21,9 %	12,5 %	17,7 %
County	25,0 %	29,2 %	21,9 %	6,3 %	17,7 %
City/town	**44,3 %**	30,9 %	10,3 %	4,1 %	10,3 %
Store	**41,8 %**	25,5 %	20,4 %	4,1 %	8,2 %
4. I would recycle bottles if there would be a deposit that I must pay at the store and would receive it back when I return the bottles…					
	Strongly agree	agree	disagree	strongly disagree	Neither agree or disagree
State	11,6 %	15,8 %	41,1 %	13,7 %	17,9 %
County	16,5 %	18,6 %	34,0 %	11,3 %	19,6 %
City/town	**29,6 %**	33,7 %	21,4 %	7,1 %	8,2 %
Store	**38,4 %**	32,3 %	16,2 %	5,1 %	8,1 %

TABLE 1 Proximity and deposit

Overall, 70% ended up saying that they would be willing to recycle, if there was a recycling machine in their local store with a deposit. With these initiatives, this would be 20 percentage points higher than what PepsiCo and Waste Management's goal of a 50% recycling rate by the year 2018 (WM, 2010).

Similar to Srivastava's (2008) research, question number five (5) asked the maximum distance a person were willing to travel in order to recycle their bottles. The results supported hypothesis number two, in that the closer the recycling facility was to an individual, the more likely they were willing to

recycle. See figure 4. In contrast, the further away an individual needed to travel, the less likely they were willing to recycle.

None of the respondents were willing to make a 50 mile trip to a recycling center, and only 7% said that they would be willing to go as far as 25 miles. The most popular answer, with 40% of the respondents, said that they would be willing to go as far as 5 miles. Only 27% of the respondents said that they would be willing to travel 1 mile, while 26% said they would be willing to go 10 miles. In other words, the closer the facility or a recycling machine was, the more willing the respondents would be willing to recycle.

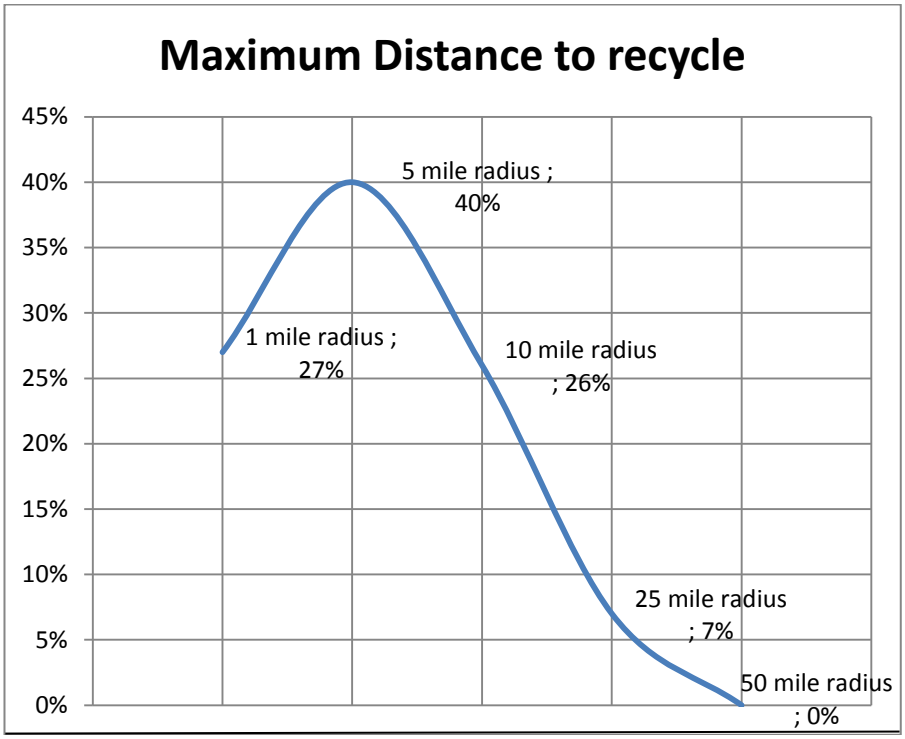

FIGURE 4 Maximum distances to recycle bottles

Question number six (6) suggested a set amount of change associated with the deposit. The results indicated that the proper deposit amount should be $0,05 across the board.

- Large bottles received 36% support as the $0,05 as the proper deposit
- Small bottles received 51,5% support as the $0,05 as the proper deposit
- Aluminium cans received 66% support as the $0,05 as the proper deposit

However, 40% of the American respondents answered that the deposit for large bottles should be at least $0,25. Also, 48,5% answered that small bottles should have a deposit of at least $0,10, and 34% indicated that aluminium cans have $0,10 as the proper deposit amount.

Question number seven (7) asked a preference on how the deposit should be returned. 70% indicated that either a cash refund or in store credit might be the best option. Whereas, 30% indicated, that cash, in store credit, or gift cards could be a viable option.

Question number eight (8) asked each respondent how well they knew about the Dream Machine initiative. Almost everyone, 94%, indicated that they had not heard of the Dream Machine initiative. However, 6% of the respondents had heard of it, with one of the, indicating that she had even used a Dream Machine. However, it turns out that the one person who said she had used Dream Machine had actually been taking her bottles to the recycling center on a Kroger's parking lot, since the only Dream Machine that can be found in her area was located on a college campus.

The last question for Americans, number nine (9), asked whether or not the respondent would be willing to recycle bottles on an arm base, at company headquarters, or any other area that may not be accessible to the general public. Not surprising, 69% of the respondents said that they would not be willing to return their bottles to a place that may not be accessible to the general public; with 31% stating that they would be willing to.

5.2 Survey for Finnish high school students

A total of 341 legitimate answers were filled during a non-mandatory student teacher meeting in Jyväskylä's Lyseo high school. The survey group consisted of 59% of the students being female, 40% being male and 1% opting not to identify their gender. The diversity between first second and third graders was as follows: 36% first graders, 33% second graders and 28% last year students.

Teachers consisted of only 3% of the respondents. Because of the insignificant number of teachers in the survey, their results were analyzed as a part of the whole and not separately. The average recycling rate of all respondents was 93%, with 7% indicating that they did not.

The end results indicated that older students fared better when it came to recycling and that female students fared better than males out of all three grade groups. The third year high school girls had a 98% recycling rate compared to the third year males, who had a 91% rate. Second year students came close behind with a 96% rate for girls, and an 88% rate for boys. First year students had 94% of the females indicating that they recycled, while only 86% of males did.

5.2.1 Results

Question three (3) supported hypothesis number one, in that money is the most important factor when it comes to motivating people to recycle. There are many reasons why individuals recycle bottles; however five of them can be taken under further scrutiny: environmental reasons, money, learned in the home, taught at school, and easiness or convenience.

Students were asked to rank the above mentioned reasons in order of importance as to why they recycled bottles. The number 1 indicated the highest motivation, with 5 being the least motivating.

Hypothesis number one held strong again, with 54% of the respondents indicating that money was their number one motivator for recycling bottles. Environmental reasons was ranked second with 26% and taught in the home came third with 13%. Learned in school ranked in 4th with 6% support, and easiness or convenience came in last with only 1% indicating that it was their highest motivator to recycle bottles.

Questions four (4) and five (5) will be discussed under deposit.

Question six (6) asked the respondents how they would like to receive their deposits back. Hypothesis one held strong again, with nearly all, 97%, of the respondents preferring money as the desired deposit. Only 3% indicated that gift cards could work as well.

Questions 7-11 are irrelevant for the purpose of this study and will not be analyzed further in this research. However, these questions may offer a new perspective between consumption and deposits that could be used for future research. See appendix II.

5.3 Survey for Finns who lives or have lived in the States

This survey was sent to 21 Finns who had lived in the States or are currently living there. The number of respondents back was 12; from which five are currently residing in America as of this writing. While this may not be a large quantity of people surveyed, the quality of the results supports all of the other surveys as well as the three hypotheses. All of the questions for this survey can be seen in Appendix III.

5.3.1 Results

Question number one (1) asked the respondents whether or not they recycled bottles before moving to the United States. Eleven out of twelve (92%) indicated that they had. The one respondent, who indicated that she did not recycle, moved to the United States in 1990. The numbers reflects the statistics done by PALPA for the bottle recycling rates in Finland.

Question number two (2) asked the respondents which State they have lived in or currently reside in. The results indicated that seven different states had been or are currently being occupied. These results give a much broader view that enable better comparison with other questions in the survey, instead of a simple comparison with only one single State. Six of the respondents had lived in UT during their stay in the States. Other States included OH, WI, FL, AL, HI, and TX. Five of the respondent who currently resides in the United States live in HI, FL, WI, OH and UT.

Question number three (3) asked the respondents if they continued to recycle upon moving to the States. The overall answer for all twelve respondents was that they did not continue to recycle. However, three of the respondents indicated that they made attempts, every so often to recycle. This question also gave an opportunity for the respondents to explain why they did or did not continue to recycle and how they recycled if they continued to do so. These results will be discussed in more depth in the beginning and after conclusion of section 5.5.1.

Question four (4) is irrelevant for the purpose of this study and will not be analyzed further in this research. However, it gives a new perspective between consumption and deposit that could be used for future research.

Question five (5) asked the respondents what might have helped or would help them to recycle bottles in America. Surprisingly, all twelve respondents indicated that in order for them to recycle better in America , they would need a system similar to the one in Finland, that included a deposit, with bottle recycling machines in the local stores.

The first part of question (6) is irrelevant for the purpose of this study and will not be analyzed further in this research. However, the second part of question six (6) asked if the respondents would be willing to recycle if a Dream Machine were accessible at their work or on their school campus. Ten out of twelve (91%) respondents said that they would recycle bottles at work or at school, with one respondent leaving the question blank.

Question seven (7) goes deeper in to the ease of recycling to find out what might be a person's intentions, if the dream machine would be in a rival school or company. The results were rather surprising. Only four of the respondents said that they would be willing to recycle, if the location was close enough. These are components separated from the initial intentions of the individuals willing to recycle (Fishbein and Ajzen 2008). Seven out of twelve (64%) responded that they would not recycle, with one respondent leaving the question blank. These results indicate that if recycling were inconvenient for a person, then they are less likely to recycle.

Question eight (8) asked the respondents to choose which method of recycling would work best for them. The options included: using recycling machines at the store, recycling bins in various locations, a recycling box by the curb through the company Waste Management, or by taking them to a recycling center.

Eight out of the twelve respondents (66%) stated that recycling machines at the store would be the best option. Two people (17%) stated that curb side recycling with the company Waste Management would be the best option. One person (8.5%) chose recycling bins in various locations, with one person (8.5%) choosing recycling centers.

Question number nine (9) asked the respondents if they would be willing to recycle their bottles in an area that may not be accessible to the general public, namely, army bases or company headquarters. The results strengthened hypothesis two, in that all of the respondents stated that they would not be willing to do so.

Question number ten (10) asked the respondents if they would be willing to recycle bottles if there was a dream Machine in their local store. The results supported hypotheses two and three in that, eleven out of twelve (92%) answered yes, with one respondent leaving the question blank.

Question number eleven (11) asked the respondents the amount of money the deposit should be on large plastic bottles, small plastic bottles, and aluminum cans. The results for this question were similar as the minimum recycling deposit in Finland.

Question number twelve (12) asked the respondents what would be the best method of receiving the deposit back. All twelve agreed that best way to receive the deposit back would be money. It was seen as the most practical, easiest and clearest method.

Question number thirteen (13) pertained to only the six who are currently living in the United States, and moved there after the year 2010 (the year that the Dream Machine initiative was launched). Each respondent was asked if they knew about the Dream Machine. All six respondents answered no.

Question number fourteen (14) asked the respondents if they knew where the closest Dream Machine was located. No one from the survey had heard of the Dream Machine, hence no one knew where the closest machine was located.

Question number fifteen (15) asked the respondents to use a link to the internet to find their closest Dream Machine. After each participant located the nearest dream machine, (Dream Machine, 2012) the results indicated that the closest machine ranged from 20 minutes to 4 hours away.

5.4 Survey for Americans, who lived in Finland and then moved back to the States

The survey for Americans, who have lived in Finland and then moved back to the States, was to find out behavioral change between the two countries and their overall attitudes toward bottle recycling. Fifteen Americans were given the survey to complete. All of the questions for the survey can be seen in Appendix IV.

5.4.1 Results

Question number one (1) asked if each person recycled before they had moved to Finland. Eight out of fifteen (53%) respondents said that they recycled bottles before they had moved. These results are somewhat higher than the national average of 34% (WM, 2010).

Question number two (2) asked the amount of time each person lived in Finland, and in what years. Almost half of the respondents (47%) lived in Finland in 2011. All but one respondent lived in Finland after the year 2000. This strengthens the validity of the research, in that most of the respondents were able to experience the Finnish recycling system as it was after PALPA was established in 1996. All but one of the respondents (93%) lived in Finland for at least 2 years.

Question three (3) asked whether or not each person recycled bottles during their stay in Finland. All but two said that they recycled, which is 87% of the respondents. The second part to question three is analyzed and discussed in section 5.5.

Question four (4) asked what each participant's first reaction was in discovering the Finnish recycling system. A few of the anonymous answers included:

> "I thought it was awesome! It was cool to see the automation involved and I wondered why the U.S. didn't make it as easy to do."
> "I like how simple and uniform the system is."
> "I thought it was a decent idea. It lets people get some money back, which is a good incentive."
> "I first used the Finnish recycling when I was about nine years old. At that age, I was thrilled with the idea that you could collect bottles, get some money back, and be able to buy a bag of candy, or save the money for later."
> "Worked okay to me – it became a habit."

> "At first I was annoyed by the increased cost of the beverage, but ultimately, the cost actually made it fun and exciting to return bottles."
> "I was impressed how universally it was implemented."
> "America should change to the Finnish system, hands down."

All of the comments were positive about the Finnish bottle recycling system, except one that focused on the bad smell of bottle recycling.

Question five (5) asked what happened to the newly learned and acquired recycling habits after the Americans moved back to the States. Nine out of fifteen (60%) said that they recycled after they went back to USA, with six (40%) stating that they did not continue.

Question six (6) is irrelevant for the purpose of this study and will not be analyzed further in this research. However, it gives a new perspective between consumption and deposit that could be used for future research.

Question number seven (7) asked what would help each respondent to recycle in the States. The expected results included the following:

- Finland's deposit system
- If it was easier to do or if it were more available, like in the stores
- Making it more convenient and cost effective
- A more simple way of recycling that paid enough to make the effort worth it

Questions eight through ten, in regards to the Dream Machines, received similar answers from the American respondents and from the Finns who have lived in America. None of the respondents had heard of the dream machine initiative or knew where the closest dream machine to them was. The overall reason not to recycle through the dream machines was the distance. The nearest dream machine was between 6 miles and 350 miles away, one way. None of the fifteen respondents were willing to take their bottles to be recycled there.

Question number eleven (11) in in regards to the proximity and easiness of recycling, from an American point of view. Fourteen out of fifteen agreed that they would recycle bottles, if there would be a dream machine at their school or at work. One participant left the question blank.

Question number twelve (12) asked if each participant would take their bottles to be recycled at a facility that was located at their rival school or company. The results had a similar trend to those of both the American and Finns who have lived in America surveys. Only two out of the fifteen answered yes to the question. There was one "sure", one "possibly" and one "probably not". One

respondent did not have a rival school, so they left the question blank. The rest of the 9 respondents (60%) answered no.

See figure 9 for question thirteen (13). When asked if the respondents would take their bottles to be recycled to an Air Force, Army Base, or company headquarters that might not be accessible to the general public, 69% stated that they would not. While 15% stated that they would, 8% stated yes but with a condition of it being nearby them. One answer was more in-depth that had two preconditions. First, that each person is allowed to take their bottles there regardless if certain areas are not accessible to the general public, and second, only if driving does not cancel out any environmental benefits compared to the recycling.

Question number fourteen (14) asked whether or not respondents would be willing to recycle if there was a dream machine in their local store. 92% said that they would be willing to, while 8% said that they would not. Theoretically speaking, these numbers would indicate that by selecting to have a recycling machine in a local store, the United States could have the potential to achieve the same recycling averages as Finland and other European nations.

Question number fifteen (15) asked which method they preferred for recycling. 43% of the respondents preferred a recycling machine at their local store. Curbside pickup held strong and came second with 30% of the respondents. Recycling bins received the same support as curb side pickup with 30%, while recycling centers collected 17% of the answers.

Question number sixteen (16) and seventeen (17) are discussed and analyzed under Deposit 5.5.3.

5.5 DISCUSSION

Some of the questions from the surveys will be further analysed in this section. The aim of this section is to focus on the behavioural aspect of recycling. The validity of PepsiCo and Waste Management's Dream Machine's initiative's will be discussed and analysed to see what can be improved on the basis of the (iii) model. Seven questions will deal with the before and after recycling rates in Finland and in the United States. There are seven general questions about bottle recycling, eleven questions about deposits, five questions about awareness of the Dream Machine, five questions about proximity and nine questions about accessibility.

5.5.1 Before and after

Each of the groups was asked a question to find out what their current recycling behaviour is. Because of the lack of negative answers received from the survey done in the Finnish high school, only the positive answers were analysed. The results for those who said they recycled were also analysed.

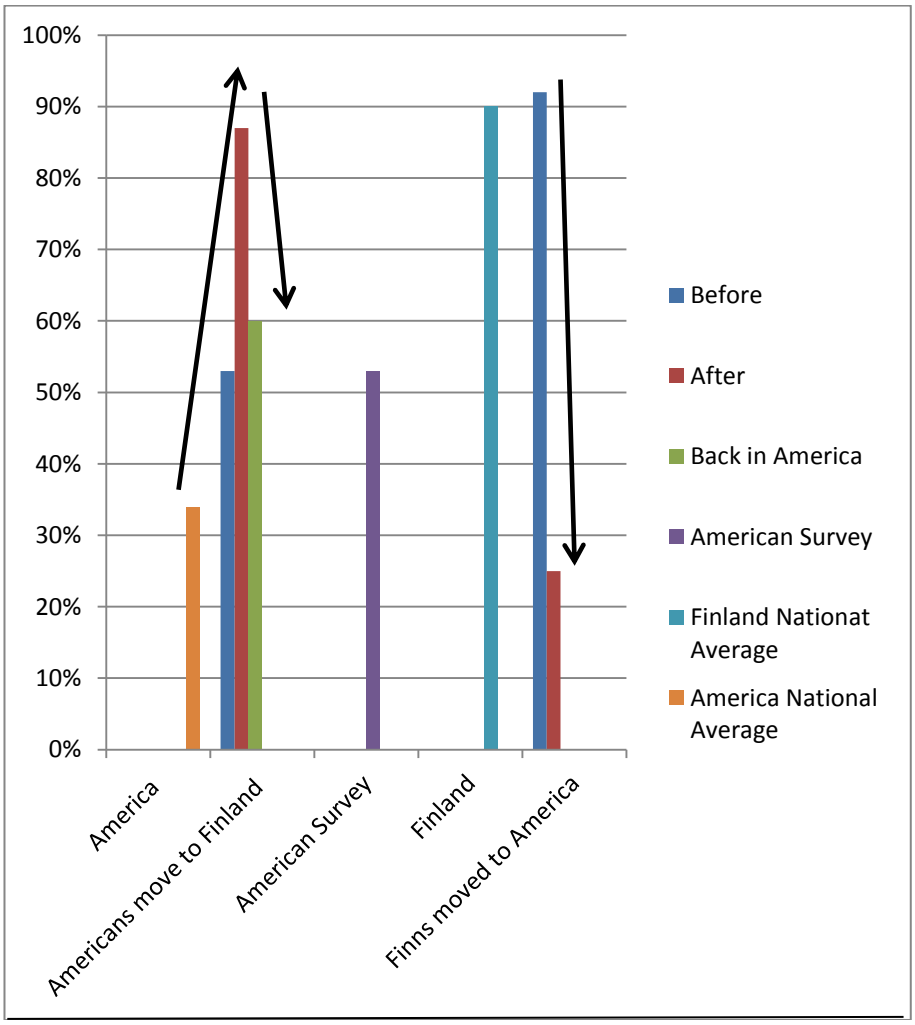

FIGURE 5 Before and after

As seen in the figure 5 above, the Americans who had moved to Finland and the Finns who had moved to America had the highest recycling average while they lived in Finland. The results were very close to the typical recycling rates in Finland.

When the Americans moved to Finland for the first time, it took some time for them to adjust to an established recycling system. For them, they were adapting a new way of doing things. However, once they were established, they reached almost the same recycling average as the Finns. Through education and by example from the Finns, they were able to change their behavior from a non-recycling mind set to a recycling mind-set.

However, upon return to the States, their behavioral change was difficult to keep rooted, and their recycling efforts fell to almost the same numbers as

before moving to Finland. In contrast, Finns who moved to the States experienced an even more dramatic change in bottle recycling behavior. Their recycling efforts fell even below the American recycling average. These statistics prove that the system and the culture have an immense impact on an individual's success in recycling.

In question number three (3) from the survey taken by Americans who lived in Finland, it is interesting to see that the sample was far above the national average of 34% (2010) recycling rate. Curbside pickup alone (44%) almost reached the goal of PepsiCo's and Waste Management's 50% recycling rate by the year 2018 (WM, 2010). If collection by waste management company (44%) and taking bottles to a recycling center (9%) is combined, the recycling rate would be 53%. With these numbers, PepsiCo and Waste Management would not have to worry much, since they have already reached their goal of a 50% recycling rate.

After moving to Finland, the American's numbers increased to an 87% recycling rate. This is a positive sign of adapting well to the Finnish system. Although insignificant in sample size, the overall result for this question for the Americans support the validity of hypothesis three. For a small group, within a short period of time in Finland, their recycling rate increased 34 percentage points or the real growth was 64%.

From the total sample, only two participants stated that they did not recycle. For one of them, they stated that recycling did not matter. The other person who did not recycle had been in Finland, at that time, for less than a year. This gives reason to believe that after establishing a proper recycling system in America, in a minimum of two years, America could enjoy similar recycling rates as Finland.

After moving back to the States the recycling rates for the Americans dropped to 60%. However, this is seven percentage points higher than before they had come to Finland. These results indicate that their behavior to recycle was similar to what it used to be before moving to Finland. One American, however, was able to form a strong enough behavioral change that enabled him to recycle in the States just as well as he did in Finland.

The Americans who lived in Finland stated that their method for recycling bottles after their return home was through curbside pickup. Four out of nine respondents, or (44%), claimed this as their method of recycling. Three respondents, or (33%), indicated that they recycle their bottles at a recycling center. Two other ways of recycling mentioned included recycling through recycling bins, and donating bottles to boy scouts. The reasons why some of the Americans who lived in Finland did not recycle when they returned back to the States came down to a lack of system. Because there was no longer a simple, convenient system, it was simply not worth recycling bottles anymore.

Moving from Finland to the states, and attempting to continue recycling, was not easy. For all of the Finns, there was no convenient recycling system established there. Thus, recycling of bottles did not take place anymore. However, some Finns still found ways to use their bottles in a more

environmentally friendly way. For example, one Finnish respondent used bottles multiple times before throwing them into the trash. Another Finn went out of his way to take bottles to a recycling center. One Finn even stated that she tries to recycle on campus if she remembered. However, she realised that her recycling did not compare anywhere near to how she recycled in Finland. She also mentioned that she develops a bad conscience when she does not recycle.

To continue, here are some of the reasons why Finns failed in their recycling efforts once they moved to the States. The common theme was mainly because there was not a comprehensive working system in the States. There were no bottle recycling facilities readily available, and there was not a unified deposit system. This meant that there was little to no incentive to recycle bottles. Other reasons included that: they are not that interested in recycling, they would not go out of their way to find recycling places, they did not think bottle recycling to be important, that it was easy just to throw them in trash, that they did not know where to return them, and from peer pressure to simply throw them in the trash.

It is very difficult to do something that other people might deem unusual, even though what you might be doing would be the right thing. However, it does not matter how high of morals a person has, or how much they have learned, if a proper infrastructure is not in place. Without it, all that has been built upon can be taken away. It is extremely important that there is a system in place that can support responsible behavior in order for recycling to work.

5.5.2 General

It is not enough to simply implement a Finnish recycling system in America to make a difference. There would need to be high emphasis on education and awareness, especially within the youth that are more acceptable to change.

Producer responsibility should have more to offer by allowing bottles to be returned to the purchase locations. The best way to recycle bottles, according to the surveys conducted, would be to use the Finnish system by having machines in local stores.

Listed are a few of the reasons why the Americans who lived in Finland chose to recycle bottles. Their reasons were divided into four main categories: money, easiness, environmental and culture. Nine out of thirteen respondents (69%) said they recycled bottles in Finland because of the money they received back from the machines. Four of them thought it was easy or convenient for them to recycle.

Easiness received the second highest remarks in six (46%) of the answers. For the Americans, five of the respondents (38%) recycled from environmental reasons, while the same amount (38%) indicated that they did it out of habit or culture.

For a larger sample, it would have been beneficial to ask a similar question to the Finnish high school students as to find out what motivated them the most

to recycle bottles. By asking an open ended question, the answers were not limited to certain preset categories. However, this information goes hand in hand with the reasons why Finnish high school students recycle bottles.

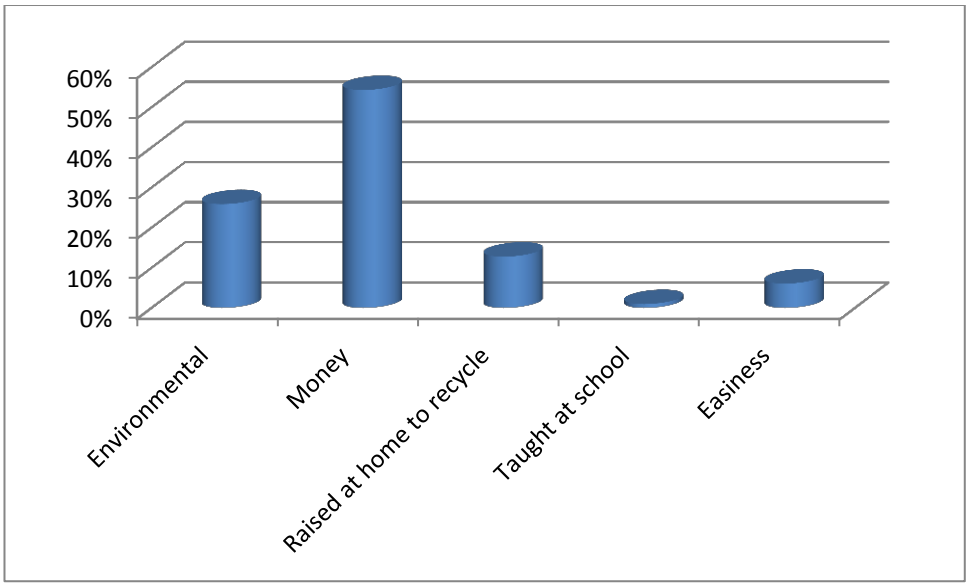

FIGURE 6 Number one reasons to recycle bottles for Finnish high school students

It would be interesting to build a correlation between intensions of these categories, from figure 6, leading to recycling behavior according to Barr's (2008) research.

Lastly, here is some general information about what should be done to improve bottle recycling in the United States from both a Finnish and American point of view. In regards to question five from Finns who have lived in the States, almost all of the respondents stated that better education is needed about bottle recycling. Information about what can be recycled and where it can be done, would greatly benefit bottle recycling in America. Some Finns mentioned that they did not even need the deposit back, just a place to take the bottles to.

Similar answers were received from the Americans who had lived in Finland. However, for some the advice of more education was harder to swallow. It was interesting that five out of fifteen (33%) Americans were not able to see outside of the box with answers like: I already recycle, nothing needs to be improved, or I think we've got a good system. It is dangerous to have an illusion of a perfect system, when the truth is far from it.

If only 29% of people recycle PET bottles (NAPCOR, 2011) in the United States, it is preposterous to say that they have a good system. Surely there can be some improvements to be made to get the rest of the 71% to recycle as well. The change will be hard if people think that all is well, and that nothing is wrong with their old system.

5.5.3 Deposit

Money seems to be the number one motivator in every survey that has been conducted in this research. It is surprising to see why $0,05 has such a wide acceptability rate as a cash refund value. Imagine if five cents would be added to the price of a twelve pack of soda. That would add only $0,60 to the total price, instead of $1,80 with a deposit amount of $0,15. I would argue that $0,15 as a deposit would motivate consumers to recycle more than $0,05 would. The larger the deposit amount is, the more reason for people to return them.

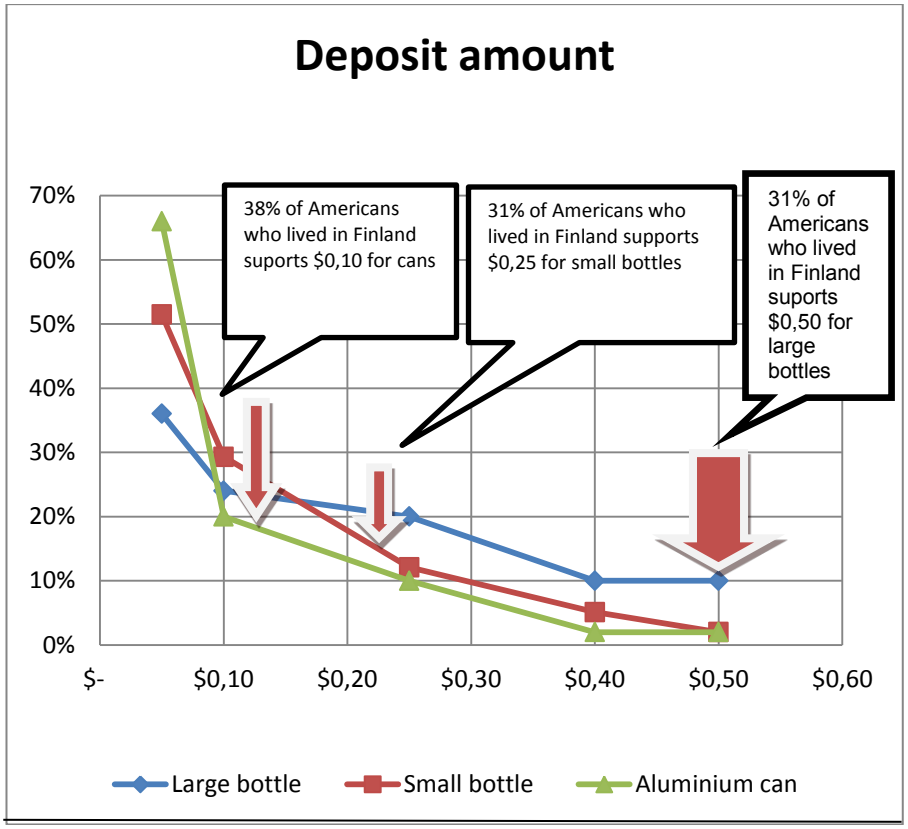

FIGURE 7 Deposit amount from the American Survey

The difference between the American's opinion and the American's who have lived in Finland opinion on the deposit amount of small bottles is 18% points (38% compared to 20%). With aluminium cans and large bottles the difference in opinions is somewhat different with 19% points (31% compared to 12%) and 21% points (31% compared to 10%), as seen in Figure 7.

These numbers indicate that the people who have lived in Finland have a somewhat better understanding as to what the proper deposit amount should be to motivate individuals to recycle. Of course it would be easy to think that the lower the deposit is, the less one needs to pay. However, when the deposit amount is high, people will think twice before they throw a bottle into a trash bin. A high deposit would also motivate people to bring their bottles to the store rather than have Waste Management pick them up and not receive any money back.

It is understandable why five cents came as the obvious choice for the Americans who have not been introduced to the Finnish bottle recycling

system. Currently, the refund value for aluminium cans is five cents in Vermont, Maine, New York, Iowa, Massachusetts, Oregon, Connecticut, Hawaii and California. Only in Michigan it is ten cents (Kahhat,et al., 2008). However, the current low percentage of recycled aluminium cans in the United States indicates that $0,05 is not a high enough incentive to make Americans want to recycle bottles. Even though in in California the recycling rate is about 60% (Kahhat et al., 2008) it does not constitute similar effect for the whole nation. According to 2010 Report on postconsumer PET container recycling activity, by National Association for PET Container Resources, indicate that since 1999 the average recycling rate in America was between 19% and 29% (NAPCOR, 2011). It is interesting that PepsiCo, Coca Cola, and other companies in the beverage industry take advantage of the laws in the United States that do not require them to recycle. For other countries, where recycling bottles is part of the law, these companies have been abiding by those countries recycling laws for a long time.

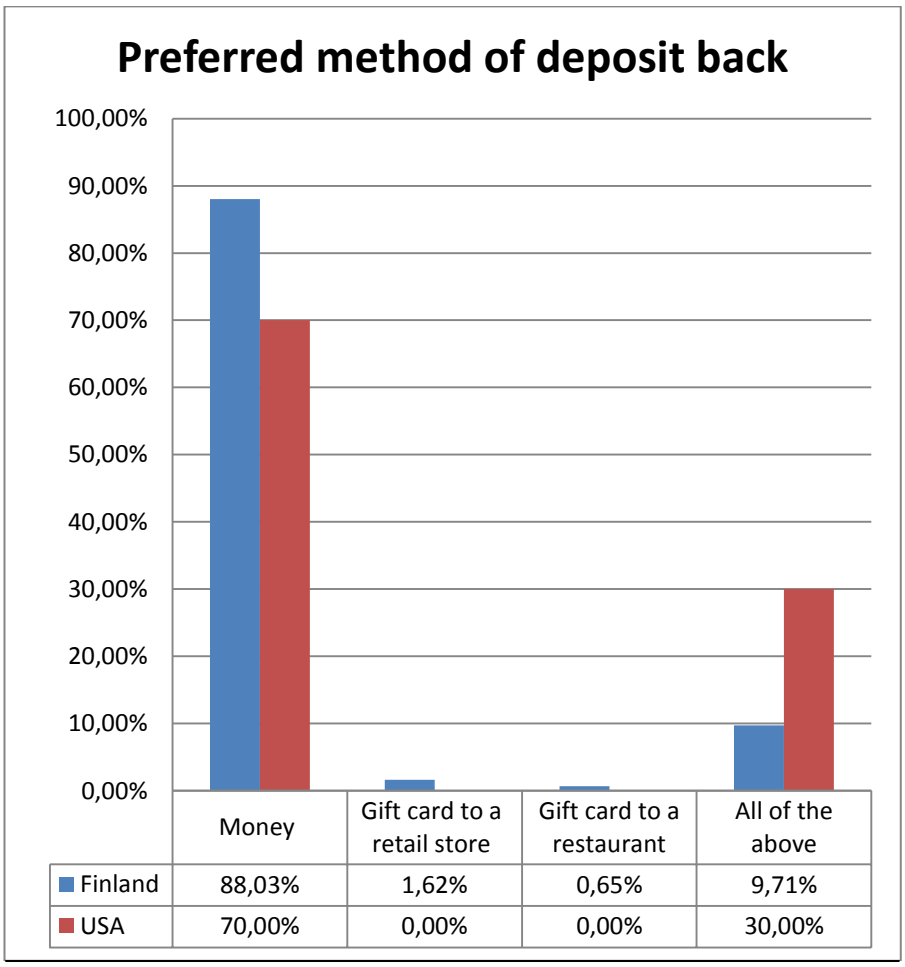

FIGURE 8 Preferred method of deposit back

Lastly, it is important to note preferred method of receiving the here said deposit back. Data above, in figure 8, disagrees with PepsiCo and Waste Management's Dream Machine's reward system; where you collect points to earn different rewards or discounts. The results from the surveys indicate that

people would just like to receive their money back. It asks the question if PepsiCo is doing this from an environmental aspect or by trying to get a competitive edge over their competitors. When a consumer buys more drinks, they receive more points. In essence, more consumption is needed in order for results to occur. That kind of motivation for consumption defies the environmental aspect of bottle recycling. From the Americans who had lived in Finland, 87% said that they would prefer money as the form of a deposit. When the information from all of the above categories are combined, the total number of money as a preferred method of deposit back receives 100% support from the Americans, and 97% support from Finns.

5.5.4 Awareness

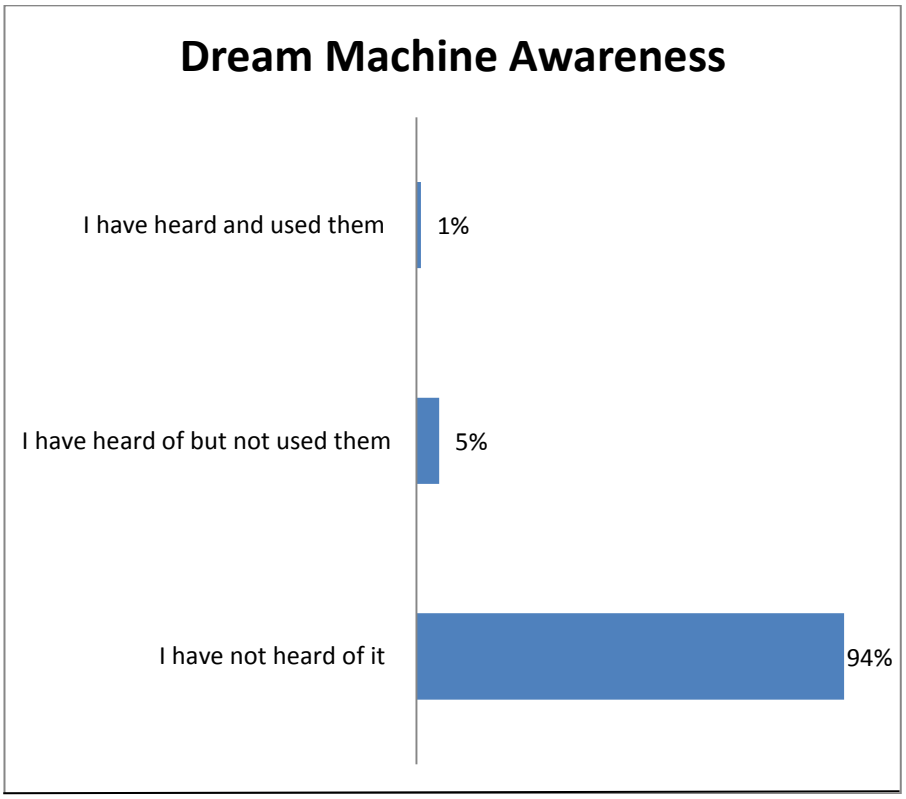

FIGURE 9 Awareness

These results, in particular, were rather disturbing. One might think that PepsiCo is a fairly well known company. If they want to get a message across, they could easily do. This raises the question of whether PepsiCo is promoting the dream machine as a fad green marketing gimmick. In order to receive a higher return on their investment, PepsiCo needs to have the consumers buy more of their products; thus, increasing total consumption.

For example, even though a 50% recycling rate might be reached by 2018, the total consumption rate continues to increase as well. This would result in more waste being taken to landfills in absolute numbers. This gimmick would take away from the benefits of recycling in the first place.

However, if the Dream Machine is something that PepsiCo wants to invest in the future for environmental purposes, it would be better for them to get it to the main stream through a nationwide advertisement campaign or through a super bowl ad. PepsiCo is already committed to putting a minimum of $500,000 each year for supporting the Entrepreneurship Bootcamp for the Disabled Veterans (Dream Machine, 2012). They have the capability to advertise a greener future if that is how they really see things.

The survey results indicate that no one will recycle if they do not know that there is a possibility to recycle, or how to do it. Someone needs to tell them. One of the main reasons for unsuccessful collection is highly related to consumer awareness (Jang and Kim, 2010) PepsiCo and Waste Management do a great job trying to bring a change to recycling in America, but the results from this research indicate that the average Americans does not know what a Dream Machine is or where to find one. In addition, none off the Americans who lived in Finland or any of the Finns living in the USA after 2010 knew about the Dream Machine initiative.

Although, it has been only two years since the launch of the Dream Machine initiative, hardly anyone knows about it. This means that there is a lot of work to be done with awareness; not only to reach PepsiCo and Waste Management's goal of 50% recycling rate by 2018, but also to change the behavior of consumers. It was initially thought that at least one person from the Finns who lived in the United States would have known about the Dream Machine. However, the results indicate that not one Finn knew about it. This proves that the awareness for the Dream Machine is nowhere near where it should be. In order for it to come up with results that could make a change in the long run for bottle recycling in the United States, there first must be awareness.

5.5.5 Proximity and accessibility

Proximity and accessibility are also one of the key factors for a successful bottle recycling system in the States. In America, people are thinking more about the price of gasoline since it has already reached close to $4,00/gallon. This means that with an average car that gets 30mpg, it costs $4,00 per every 30 miles of driving. Finnish high school students said that they recycle on average once a month, and receive a maximum of 5,00€ back from doing it. That equals twelve large bottles with 0,40€ deposit and one small bottle with 0,20€ deposit. The maximum distance to a recycling center to break even with the numbers above is 18,75 miles one way.

In addition it takes over 30 minutes to drive back and forth with a speed of 65 mph. It's no wonder why people do not recycle in America. The cost of recycling is greater than the benefits received from recycling. None of the Finns who lived in the States or the Americans who lived in Finland would take their bottles to be recycled to a dream machine location due to the long distance. Bottle recycling needs to become part of everyday life, where bottles can be taken to a place that is normally visited on a daily basis. There is, for example,

no good reason to put a Dream Machine in a bank's corporate headquarters in hopes that the general public will bring their bottles there.

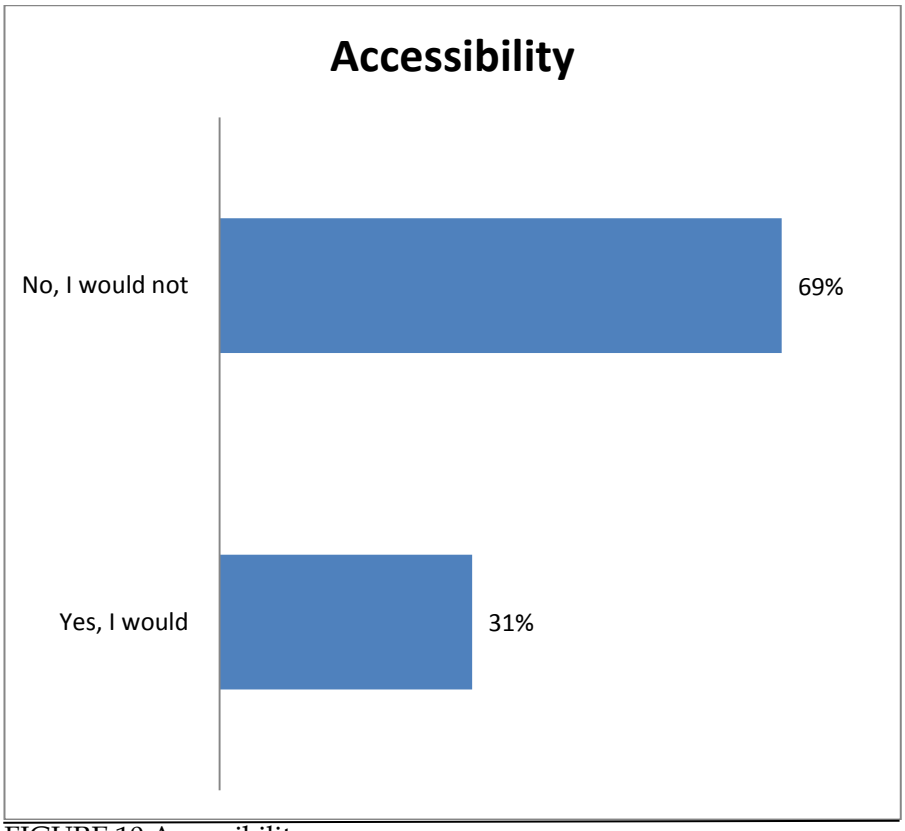

FIGURE 10 Accessibility

In figure 10 above, 69% of individuals would not take their bottles to be recycled to a place that might not be accessible to the general public. The surveys for Finns who lived in America and for the Americans who lived in Finland support the above statement. Logistically it would not be feasible to have recycling locations all over the place. Instead they should be stationed in places with high traffic that is accessible to the general public.

Company headquarters and army or air force bases are not those kinds of places. However, in the Army bases they do have stores that could have recycling machines located there. While placing a Dream Machine in schools or universities was an option, one of the respondents (who happen to be a teacher by a profession) brought up a valid point about recycling machines on school property**.** Most of the school properties do not welcome non-parent, or non-student traffic. She continued that one option could be to have a recycling machine outside in the school parking lot. This incentive could get the community involved without violating any school codes. However, it can be presumed that it would be better off for everyone if recycling machines were to be located in grocery stores.

It is a marvellous idea to have places to recycle bottles everywhere, but at large, some of these places do not work as well as others. In Finland there are over 8000 recycling places within restaurants, hotels and catering services

(PALPA, 2011). However, these locations are not to generate high amount of bottle recycling transactions by the general public. Instead they are out of the scope of this research. It is just one of the ways for these companies to act according to corporate social responsibility.

In America it would be a good idea to start from where the 69% would be willing to recycle. Most of the respondents, who would not recycle at army bases and corporate offices, said that they would be willing to recycle if it was more accessible. This would further increase the potential for higher recycling percentage rates.

With accessibility, gas prices were brought up again. The results indicate that is not worth the money in gas in order to drive long distances to an army base to recycle. Also the fact that some people might not have means of transportation needs to be taken into consideration.

Bottle recycling was not intended to be only for a certain group of people who work, or go to school at a certain place. It was not intended to be a means of support for the poor who collect bottles and habituate the bottle recycling areas; making them to be unsafe places, as one respondent pointed out.

Bottle recycling should be a right and responsibility for everyone regardless of social status, race, or age. Everyone should be held responsible to take care of what they use. And when those products come to the end of their life cycle, each individual should be held responsible to make sure it is disposed properly. Retailers and producers need to act on their responsibility of create means of providing a way to help consumers to recycle bottles conveniently close to their homes.

6 CONCLUSION

As we have seen in countless events throughout history, behavior can change. As technology has developed, so has the human behavior around it. Not long ago, land lines were widely used as a way of communication between people. Today, land lines are beginning to disappear and cell phones have taken their place.

The same can be said in regards to the surveys given to Americans who have lived in Finland, and from the survey given to Finns who have moved to the States. Behavior change did happen as they moved over seas.

When the Americans moved to Finland, it took some time for them to learn the Finnish recycling system. And while at first their main motivation was not environmental protection, as it came as a by-product, they were still willing to commit and had the support system from the Finns who encouraged them to recycle. By the time they had left Finland, they had developed a behavioral change of recycling that enveloped an environmental protection aspect as well.

However, once the Americans returned back to the United States, their behavioural change became difficult to keep root. Lack of recycling facilities, no infrastructure, and little to no support made it easy for them to slip back into their old habits.

In regards to the Finns moving to the United Sates, the change came as a shock. Nearly all means of convenient recycling resources were cut off. The lack of a proper system, peer pressure, and the minimal availability of recycling facilities simply prevented recycling from occurring.

It can be said that if the United States were to adopt a Finnish bottle recycling system, and build it upon a similar infrastructure as Finland, then recycling bottles would be more successful in the States. This is, of course, from a motivational point of view.

Key indicators for a successful recycling system in America would need to include a high dollar amount as a deposit for the bottles, close proximity and accessibility to recycling facilities, and enough awareness through education and other means of media for the citizens.

The first hypothesis, of money being the highest motivator in recycling bottles, covers all three sides of the (iii) triangle. It can be said that money is

important to people and that they want the best deal for their hard earned income. If a deposit is put on a beverage bottle, and the only way to receive the money back is by recycling it, then people will most likely recycle the bottles.

In the near future, it might be that environmental concerns will rise to the top as the number one reason for recycling bottles. People might not care whether they receive their money back, as long as they are doing a service for Mother Nature. However, until that day comes, let it suffice that money is the greatest motivator.

A cash deposit on each of the bottles is a great incentive to encourage recycling. And while other forms of incentives sound promising, whether they are points for flights, discount coupons, movie tickets or gift cards to a restaurant, they still require the consumer to consume more. This idea would ultimately wipe out any of the previous environmental benefits that are hoped to be accomplished through recycling.

In Finland, the government regulates the minimum amount needed for the deposits on bottles and cans; with the minimum being currently used (PALPA, 2012). While the minimum deposit may not seem like much, it is still an extremely strong motivator for producers and retailers to act upon the given legislation. And because money as a deposit received support from all three areas of the research, it is a valid and sound motivator to enhance bottle recycling that could be used in the States and in other parts of the world.

The second hypothesis, the proximity and convenience of recycling centers, support all three sides of the (iii) triangle as well. The ease of completing a task, and the amount of time associated with it, can be a very strong motivator. In today's busy world, some individuals rely completely on convenience.

With the Finnish bottle recycling system, individuals can have both convenience and time. This element alone has the potential to enhance recycling in the United States. No one wants to drive 50 miles to a recycling facility. The price and environmentally harmful effects of gas would end up out weighing the benefits of recycling the bottles. Thus recycling locations that are accessible to the general public, or within close proximity to neighbourhoods, can serve both as an interest and incentive for recycling.

The bottle recycling network, or the infrastructure, makes the hypothesis even stronger. In order for the infrastructure to work, there needs to be enough recycling machines available in a given location. The equipment also needs to be up to date to handle all of the dirty bottles and cans that go through the recycling machines. And there needs to be someone trained and ready to fix the machine if there is a malfunction. The logistics in the back room and transportation between stores and material handling facilities needs to run as automatic as possible.

The third hypothesis, that a Finnish bottle recycling system could thrive in the United States, comes from a behavioural point of view. If implemented properly, the United States has the potential to outreach PepsiCo and Waste Management's goal of 50% recycling rate. Eventually in the near future, it could

even have the ability to reach the same amount of recycling averages as Finland and other Nordic countries.

However, proper awareness is the key for proper implementation to occur. No matter how motivated, how great of a system, or how well the infrastructure was, if people did not know where to recycle or how to do it, they wound simply not do it.

Education in schools, and by the government, could enhance the knowledge and the importance of bottle recycling. At home, information and attitude is easily learned from parents. Thus, adults would also need to learn the importance of recycling, be it through classes, TV, newspapers, or pamphlets. The media is a great tool that has the capability to enhance behavioral change.

The wheel does not need to be invented again. The surveys conducted from this research prove that the Finnish way of recycling has the ability to motivate individuals to recycle. While various laws and regulations from each State may create obstacles for the implementation of a proper bottle recycling system, it is not impossible.

In order for the United States to gain a better understanding, and for possible implementation of a bottle recycling system, three further studies would need to be considered and conducted.

First, it would be interesting to discover whether or not PepsiCo and Waste Management's goal of 50% recycling was met after the year 2018. Another study could be conducted that showed whether or not a behavior changed occurred during this time and if manufactures took an interest in the issue as well. If they were unable to reach their goal, it would be interesting to know what some of the issues were that confined them.

Second, a case study would be beneficial to conduct with the key players in the field, namely, producers, retail stores, waste management, transportation, and each of the States legislation. Houston would be a great place to start for a demonstration city and 2,700 bottles recycling machines should carry out the experiment to gain the desired results. Another reason why Houston would be a great place to start is that Waste Management's headquarter is located there. This would enhance the model by Fang et al., (2007) to bring about industrial sustainability from leading the way from community level to nationwide. Experts in the bottle recycling field from the Nordic countries should participate as well, and it could be very helpful in conducting the implementation. If any given State were to reach an 80% recycling rate within three to five years, in comparison to the 50% rate goal initiated by PepsiCo and Waste Management, there could be enough evidence to take it mainstream throughout all of the States.

Lastly, curbside recycling pickup is an interesting new concept that should be further investigated. If there was a reliable way to combine curbside pickup and deposits for bottles, there could be even more potential for bottle recycling in the United States. It may not be as environmentally friendly or as effective as the Finnish bottle recycling system, but it could be a good start.

The goal of sporadically distributing 5,000 dream machines across the United States does not have the same effect as of having 5,000 machines in the Houston Texas area or even in one single State. As of writing this, in October of 2012, there are only 1,011 locations that have either one or more dream machines or static recycling bins available to recycle bottles (Dream Machine, 2012). This number is nowhere near to the 3,700 bottle recycling machines found in Finland. However, this is a noble goal for PepsiCo and Waste Management.

In addition to the rewards that are given to individuals who recycle, PepsiCo has committed donating a minimum of $500,000 in the upcoming years to the Entrepreneurship Bootcamp for Veterans with Disabilities (EBV). They have even promised to contribute an additional $250,000 for every 10 million pounds of recycled beverage containers collected (Dream Machine, 2012).

However, it is here that society faces the tragedy of commons (Stern, 2008). By not receiving immediate gratification, it is difficult for some individuals to quantify how much of an impact they could have if they were to recycle just one more bottle or a can. And while the Dream Machine way of recycling has its many flaws, PepsiCo and Waste Management's initiatives could have the potential to be an instrument for changing the future of bottle recycling in the United States later on.

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APPENDIX I

American Survey

1. Demographic questions: gender, age and location

Male

Female

15-20

21-25

26-30

Over 30

Current State and city of residency:

2. Where does your beverage container (glass, aluminium or plastic) end up after drinking it?

I collect them

I take them to a recycling center

I mail them in to get a refund

I put them in a trash bin

I recycle them through waste management company's collection box

3. I would recycle bottles if there was a recycling facility...

	Strongly Agree	Agree	Disagree	Strongly Disargee	Neither Agree or Disagree
In my State					
In my county					
In my city/town					
In my convenience store					

4. I would recycle bottles if there would be a deposit that I must pay at the store and I would receive it back when I return the bottles...

	Strongly Agree	Agree	Disagree	Strongly Disagree	Neither Agree or Disagree
To a recycling facility in my State					
To a recycling facility in my county					
To a recycling machine in my city/town					
To a recycling machine in my local store					

5. What would be the maximum distance you would be willing to take your bottles to be recycled?

1 mile radius

5 mile radius

10 mile radius

25 mile radius

50 mile radius

6. What would be a proper deposit amout that you would pay when buying a bottle and getting it back when recycling it?

	0,05$ (1)	0,10$ (1)	0,25$ (1)	0,40$ (1)	0,50$ (0)
Large (67,6) fl oz. bottle					
Small (20) fl oz. bottle					
Aluminium can (12) fl oz.					

7. Which of the following would you prefer as a method of receiving your deposit back from recycled bottles?

Receipt that you can exchange for cash or deduct it from your purchase at the cash register

Gift card to a retail store: JC Penney, Best Buy, Macy'c Sports Authority

Gift card to a restaurant: Apple Bee's, Red Lobster, Olive Garden

All of the above

8. Have you heard of PepsiCo's and Waste Management's Dream Machine Initiative and have you recycled bottles by using them?

I have not heard about dream machine initiative

I have hear of it but have not uded them

I have heard of it and have used them

9. Would you take your bottles to be recycled to a place that might not be accessible to the general public (for example AFB, AB or Company Headquarters)

Yes, I would

No, I would not

APPENDIX II

Survey for Finnish high school students

1. Demographic questions:
Male
Female
Year 1
Year 2
Year 3
Faculty
2. Mark the order why do you recycle bottles (1-5), number one being the most important reason
It is environmental thing to do
You receive money/deposit back
I was raised to recycle bottles at home
I was taught about recycling at school
Since recycling is so easy, you can take the bottles almost to any store
3. How much money do you receive on average on one time recycling?
0,00€ - 1,00€
1,01€ - 5,00€
5,01€ - 10,00€
Over 10€
4. How often do you recycle bottles?
Daily
Once a week
Once a month
Less than once a month
5.How do you use your money from the deposit?
Take the money and save it
Deduct it from the next purchase
Take it as money and use it in a different store later
6. How would you prefer the deposit back?
Cash as usual
Gift card to retail store: SOKOS, PRISMA, TOPSPORT
Gift card to a restaurant: ROSSO, McDonalds
All of the above
Other, specify:
7. I would buy more bottles if there was no deposit (you would not get money back either)?

	Strongly Agree	**Agree**	**Disagree**	**Strongly Disargee**	**Neither Agree or Disagree**

8. I would buy less bottles if the deposit for large bottle would be 0,50€?					
	Strongly Agree	Agree	Disagree	Strongly Disagree	Neither Agree or Disagree
9. I would buy less bottles if the deposit for large bottle would be 0,75€?					
	Strongly Agree	Agree	Disagree	Strongly Disargee	Neither Agree or Disagree
10. I would buy less bottles if the deposit for large bottle would be 1,00€					
	Strongly Agree	Agree	Disagree	Strongly Disargee	Neither Agree or Disagree
11. I would buy less bottles if the deposit for large bottle would be 1,25€					
	Strongly Agree	Agree	Disagree	Strongly Disargee	Neither Agree or Disagree

APPENDIX III

Survey for Finns who lives or lived in the States

Bottle recycling survey
Mar 17th 2012

1. Did you recycle bottles before you moved to the States?

2. When and where did you live or currently live in the States?

3. Did you continue to recycle bottles after you moved to the States?

   - If yes, how did you recycle them
   - If no, why did you not recycle them

4. If America would have a similar deposit system than in Finland would you buy or would have bought less soda or other beverages with a deposit?

   - Lot less
   - Little less
   - Does not affect my consumption behavior, I would buy the same amount

5. What would have helped or would help you to recycle bottles in America?

6. Where do you go to school or work or did go to school or worked in the USA?

   - Would you recycle or would have recycled if you would have had or have a Dream Machine at your work or school?

7. Would you take your bottles to be recycled to your rival school or a company if they had a Dream Machine?

8. What would you prefer as a bottle recycling method?

   - Recycling center
   - Recycling bins in various locations
   - Recycling box by the curb through waste management company
   - Recycling machine at your local store

9. Would you take your bottles to be recycled to a place that might not be accessible to the general public (For example AFB, AB or a company headquarters)?

10. Would you recycle bottles if there was a dream Machine at your local store?

11. What would be a proper deposit amount for:

- Large plastic bottle:
- Small plastic bottle:
- Aluminum can:

12. How would you prefer to receive your deposit back

- Cash back (the Finnish way)
- Gift card to a retail store
- Gift card to a restaurant
- All of the above
- Other, please specify:

NEXT THREE QUESTIONS ARE FOR THOSE WHO HAVE LIVED IN THE STATES AFTER 2010 OR ARE CURRENTLY LIVING THERE ONLY

13. Have you heard of the PepsiCo's and Waste Management's Dream Machine initiative?

14. Do you know where the nearest Dream Machine is located to you?

Locate the nearest Dream Machine through the link
http://www.dreammachinelocator.com/

15. How close is the nearest location to you and would you take your bottles to be recycled there?

Is there anything else you would like to add concerning the future of bottle recycling in the USA?

Thank you for the answers!

Jyri

APPENDIX IV

Survey for Americans who lived in Finland and moved back to the States

Bottle recycling survey
Mar 17th 2012

1. Did you recycle bottles before you moved to Finland?

2. What years were you in Finland?

3. Did you recycle bottles while you were in Finland?

- If yes, why do you think you did it?
- If no, why did you not?

4. What were some of your first reactions about the Finnish bottle recycling system?

5. When you moved back to the States did you continue to recycle bottles?

- If yes, how do you recycle bottles?
- If no, why?

6. If there would be a deposit system in the States, would you buy less soda/drinks? (note that you would get your deposit back as you return it)

- Lot less
- Little less
- I would buy the same amount

7. What would help you to recycle bottles in the States?

8. Have you heard of the PepsiCo's and Waste Management's Dream Machine initiative?

9. Do you know where the nearest Dream Machine is located to you?

   Locate the nearest Dream Machine through the link
   http://www.dreammachinelocator.com/

10. How close is the nearest location to you and would you take your bottles to be recycled there?

11. Where do you work/go to school?

- Would you recycle if you would have a Dream Machine at your work or school?

12. Would you take your bottles to be recycled to your rival school or a company if they had a Dream Machine?

13. Would you take your bottles to be recycled to a place that might not be accessible to the general public (For example AFB, AB or a company headquarters)?

14. Would you recycle bottles if there was a dream Machine at your local store?

15. What would you prefer as a bottle recycling method?

- Recycling center
- Recycling bins in various locations
- Recycling box by the curb through waste management company
- Recycling machine at your local store

16. What would be a proper deposit amount for:

- Large plastic bottle:
- Small plastic bottle:
- Aluminum can:

17. How would you prefer to receive your deposit back

- Cash back (the Finnish way)
- Gift card to a retail store
- Gift card to a restaurant
- All of the above
- Other, please specify:

Is there anything else you would like to add concerning the future of bottle recycling in the USA?

Thank you for the answers!

Jyri