UBC Social Ecological Economic Development Studies (SEEDS) Student Report

An Investigation into Introducing Liquid Sweeteners

Lu Gan, Nicholas Mulvenna, Aaron Cui,

University of British Columbia

APSC 262

April 4, 2013

University of British Columbia
APSC 262
April 04, 2013

“An Investigation into Introducing Liquid Sweeteners”

Sustainability Project Report

Gan, Lu (19210087)
Mulvenna, Nicholas (47733100)
Cui, Aaron (27330117)

ABSTRACT

In some of UBC Food Services' locations, dry sweetener portion packets and other sweetening products have been replaced by pumps that dispense liquid sweeteners (LS). The overall impacts of this change on the sustainability of UBC's operations are evaluated using a triple bottom line assessment. Through online research and contacting key stakeholders through surveys, the economic, social, and environmental differences between the two options were determined. While the price of LS is higher than dry packets, there might be a reduction in consumption due to decreases in waste and theft. Paper waste from dry packets cannot be composted or recycled due to the chemicals in their inks and plastic linings. LS do not produce paper waste; the plastic bottles can be recycled while the pumps are durable enough to be washed and reused often. The LS manufacturer, Monin, is located in the United States so their products need higher carbon emissions to transport compared to the Canadian dry sugar packet manufacturers. Purchasing from a Canadian manufacturer would also have a greater benefit to Canada's economy. Fair Trade and sustainability programs are supported by all the major sweetener manufacturers. The interviewed LOOP Cafe employees stated that they did not find that there was a significant difference in the time or effort required to set up and/or keep up the LS stations compared to dry sugar packet stations. In the consumer survey, more than half of the participants stated that they have taken extra packets to use at home or disposed of unused packets. As a result, LS should be introduced to more UBC Food Services locations in the future and posters should be displayed to raise consumer awareness.

TABLE OF CONTENT

GLOSSARY

Carbon footprint:	The total sets of greenhouse gas (GHG) emissions caused by organization, event, products or person.
Economic sustainability:	The use of assorted assets of the company efficiently to allow it to continue functioning profitability over time.
Environmental sustainability:	The process of making decisions and taking action that is in the interests of protecting the natural world, with particular emphasis on preserving the capability of the environment to support human life.
Fair Trade:	A loose term currently defined by FINE - an informal association of four international Fair Trade networks - to assess and certify products that meet a certain ethical, environmental, and sustainability standard
Pacific Garbage Patch:	An ocean gyre of marine debris in the central North Pacific Ocean which has high concentration of pelagic plastics, chemical sludge, and other wastes trapped by the currents.
Social sustainability:	It is an idea that future generation should have the same or greater access to social resources as the current generation while there should also be equal access to social resources within the current generation.
Sustainable procurement:	An organization's policy or intention to spend and invest in a way that meets its need for goods, services, utilities, and works not purely on a short-term monetary cost-benefit analysis, but with a view to maximize the net benefit for itself and the wider world.
Sustainability:	It is a way of looking at things that recognizes there are three equally important elements of a thriving, healthy world – a strong economy, a healthy environment and social well-being.
Triple bottom line:	It refers to decision making that takes into account economic, environmental, and social impacts.

1.0 INTRODUCTION

1.1 Objective

This report is an investigation that compares liquid sugar/sweeteners (LS) and dry sugar packets by conducting a triple bottom line assessment of the overall impact of the recent introduction of LS to several UBC Food Services locations. This assessment includes detailed calculations of energy used and costs in the entire lifecycle from sugar packaging to service providing; it means looking at what LS and dry sugar packets along with its associated equipment are made of, where they come from, and how they will be disposed. This paper discusses both negative impacts, or costs, and positive impacts, or benefits on the switch to LS. The discussion will be integrated with sustainable practices into the purchasing decisions in a way that will be systematic and long lasting. However, the main focus will be on direct decision making, since it is never possible to catalogue all relevant economic, environmental and social impacts given the restrictions on time, resources and available information provided. In the end, a recommendation will be made to UBC Food Services whether they should switch from dry sugar packets to LS at all food operation outlets on campus to provide services to customers with characteristics that make them environmentally and socially beneficial.

1.2 Background

Usually, sugar is provided to the retail or industrial market in three forms: white granulated sugar, LS and specialty sugars. Packaged sugars usually contain granulated sugar and are the most common form of sugar used at food stores at UBC and elsewhere. LS, which are made by mixing sugar with water to create syrup, are preferred by some food manufacturers including soft drink bottlers and confectioners. [1] Specialty sugar includes icing sugar and brown sugar, which can also come in the form of packaged or liquid [2].

In Canada, the sugar industry operates under an open market policy, which means that all the sugar suppliers that UBC Food Services are purchasing from are based on the principles of free trade [3]. Fair Trade Organizations, such as Fair Trade Canada and Fair Trade International, sets social and environmental standards in order to protect producers and the environment, as well as help workers work under fair conditions. However, Fair Trade sometimes conflict the financial aspect of the product. For example, the prices of dry packet sugars that are Fair Trade certified are approximately three times higher than similar sweeteners that do not have the certification. However, if we consider purchasing Fair Trade products and following

sustainable procurement, in the long run, it will yield greater benefits in all areas, potentially even cheaper. When the total costs of purchasing a product (all of the costs associated with the life-cycle of the product) are taken into account, it is still possible to save a lot of money with a high initial cost. These savings comes from ongoing operating costs saving, such as energy or water saving, lower cost of disposal, and reduced health and safety risks. Businesses not only benefits by saving money, but also contributing to economic development and improving employee morale.

In this report, we will mainly focus on 3 suppliers: Monin Inc., Lantic Sugar Ltd. (Rogers Sugar), and Gordon Food Services Canada Ltd. (GFS). Monin is a French business with approximately 150 employees, and it has a manufacturer located at Clearwater, Florida [4]. The Canadian company, Lantic Sugars, recently combined with Rogers Sugars and it has a Refinery Factory located in Vancouver [5]. We will be referring to Lantic Sugar with Rogers Sugar for the entire report. GFS is also a Canadian company; its manufacturer is located in Delta, BC [6].

2.0 Economic Sustainability

Monin's LS products are sold in 1L bottles and include free dispenser pumps. Each serving of LS (one pump) is roughly equivalent to one serving of dry sugar (one packet) and one 1L bottle contains approximately 135 servings of LS. The customer may dispense a fraction of a serving of LS by only partly pressing on the pump. However, creating a partial serving of dry sugar would require that the rest of the packet be thrown away.

Among the 3 suppliers that UBC Food Services order from, Monin's LS has the highest cost per serving ($0.085), GFS has the lowest cost per serving ($0.010), and Rogers' cost lies between them ($0.015). We can see that the price for LS is almost 8 times more than GFS and 5 times more than Rogers sugar packet.

For this report, we have conducted a survey based on 25 participants of sugar consumers regarding the use of LS and packaged sweeteners. Results have shown, 21% of the participants said they take away extra packaged sugar for later use and 24% of the participants have admitted that they have taken extras but thrown away unused packaged sweeteners. In another online survey based on approximately 40,000 participants, shown 30% of people voted that they will take extra items from restaurants for later use [7]. If you put anything on a public area, chances are someone is going to take it whether or not it will be consumed. A report has stated that, Diane Merrits of Orlando, Florida, has not bought coffee condiments for years because she takes extra packaged condiments at fast food restaurants. Patricia Farrell, a clinical psychologist, explains "Although there is an unwritten understanding that condiments and small spices or ingredients for making the food served at restaurants more flavourful are there

for limited use, some people choose to see this as an unpaid bonus of having come to the restaurants" [7]. Some people have already established a mentality of taking for granted, since for them, it's the restaurant's way of paying it forward. "Our table condiments account for about 1% of our total support cost. I know this sounds unbelievable, but the equals to about $900,000 on an annual basis. As crazy as it may sound, we continue to stock our tables, for our guests, with these bits of convenience or opportunity, however you look at it, " says Nick Pihakis, CEO of Kim 'N Nick's Bar-B-Q. [7].

Since nearly half of the dry, packaged sugar is either taken home or wasted by consumers, the actual cost per serving of Rogers and GFS sugar may be closer to $0.30 and $0.20, respectively. The higher cost of using Monin LS can be partly offset from this phenomenon.

3.0 Environmental Sustainability

3.1 Plastic Waste

According to Stats Canada, less than 7% of the total discarded plastic is currently recycled. The rest of the plastic is dumped into ocean yearly that piles up the Pacific Garbage Patch [13]. Plastic is made up of various chemical elements, which is not easily degraded in the natural environment after its usage. If we are to make a decision on which product to choose, why not choose a more eco-friendly option that lower the amount of plastic we consume and lower the risk we poses to the environment. Or, if we were to make the decision on purchasing products associated with plastic, we have to make sure they are 100% recycled after its use.

Monin LS usually comes in a 1 litre plastic container (bottle) with a small plastic over and a plastic pump. According to the employees of LOOP Cafe, the plastic cover is usually thrown in the regular garbage bin while the plastic bottle is disposed into a recycle bin after its use. And, the plastic pump is reusable. In conclusion, Monin uses plastic over paper for containing the sweeteners, but these plastic containers are being recycled.

Neither Rogers' nor GFS's sugar uses appreciable amounts of plastic for their packaging.

3.2 Paper Waste

Environment Canada says that Canadians use 6 million tonnes of paper and paperboard annually, and only a quarter of them are recycled [8]. Packets of sugar uses paper for packaging, and consumers don't usually recycle them. "We just throw them in the garbage," says one of the participants from the survey we've conducted. If we could choose a purchase option that can reduce our dependence on paper, we could not only be saving valuable natural resources, such as trees, but also be reducing greenhouse gas emissions and water pollution, saving energy, and reducing to the need for new landfills and incinerators.

A regular sheet of an A4 paper weights 5g, and a bag of sugar uses approximately 1/6 of an A4 paper [9]. A single order of Rogers or GFS sugar is usually 10 kg, which makes a bag of sugar weigh 5/6g. There are 2800 bags of sugar in an order. Therefore, we use 2333g of paper for an order, which is equivalent to 0.002 tons. According to UBC Food Services' financial report, they make approximately 300 orders of sugar annually, and that makes up to 0.6 tons of paper per year. A ton of non-recycled printing and office paper uses 24 trees [10]. In conclusion, with the amount of packaged sugar orders, UBC Food Service is cutting down 14 trees per year without planting them back.

One bottle of Monin LS only uses 1/4 of an A4 paper, which weighs 1.25g. And, that serves approximately 140 serving, which will also be recycled in the end.

3.3 Carbon Footprint

Every time we burn fossil fuels, such as gas, coal, or oil, carbon dioxide (CO_2) is released into the atmosphere. Today, we are producing so much CO_2 that it is causing devastating impacts to our environment. Therefore, we need to calculate the carbon footprint of both direct and indirect emissions as accurately as possible, in order to help making better decisions on purchasing which will have less impact on the environment.

Monin produces 710 kg of carbon emission to ship orders to Vancouver [11]. It is then transported to UBC from local distributors by truck that emits another 6.51 kg of carbon, which makes a total of approximately 720 kg of carbon emissions [12]. Rogers emits around 5 kg of carbon in order to ship orders from its Vancouver Refinery to UBC. GFS's shipments usually emit around 10 kg of carbon to get to UBC. In conclusion, Roger Sugars has the lowest carbon emission from shipping.

Both LS and dry sugar goes through the same processing steps, except that LS required extra steps which involve mixing the sugar with hot water. We were unable to find out how Monin boils its water and what type of energy is used to heat up. However, it is pretty straight forward that LS does require extra energy needed to form the LS. This mean that LS will has more carbon emission than packaged sugar for production.

4.0 Social Sustainability

4.1 Suppliers' Involvement with Social Sustainability

4.1.1 Monin Inc.

Monin supports all kind of groups and organizations, such as IFMA, CORE(TM), and more [4]. Monin is a member of International Foodservice Manufacturers Association (IFMA) since 1997, and the mission of IFMA is "To shape the future of foodservice by creating an environment for positive change and actionable solutions benefiting manufacturers and their foodservice partners." CORE is a non-profit organization which educates supports, encourages and donates to the children of restaurant employees that are going through life-threatening medical conditions.

A report from the Tampa Bay Times stated that Monin's chief executive knows every employee's name and interests of their families, and he help them with their loans for major car repairs, family emergencies and even helping them making a home down payment. Also, Monin has a Hazard Analysis of Critical Control (HACCP) operating plan in place to minimize the risk of illness or injury and operates under Good Manufacturing Practices.

4.1.2 Rogers Sugar

Rogers Sugar is actively involved in supporting local community initiatives where it has operations or offices [5].They make donations annually to help further medical research, purchase needed equipment for hospitals, fund school activities in poverty-stricken neighbourhoods, as well as contributing to cultural and artistic causes. For example, every year a gathering of non-perishable food items and toys is organized by Lantic for the distribution of Christmas baskets in the Hochelaga-Maisonneuve area where its Montreal Refinery is located.

Lantic said they care about their employees' well-being, and provides a variety of benefit programs designed to help workers balance their personal and professional commitments. One of the programs is called Life Insurance and Accidental Death & Dismemberment (AD&D); this offers each employee with a Basic life insurance and AD&D coverage. They also offer the Extended Health & Dental Care program, which includes reimbursement of prescription drugs, hospitalization and various types of medical services and equipment, as well as the disability insurance for employees who are unable to work due to illness or injury. They also conduct its daily operation in ways that contribute to the health and well-being of its employees as well as the community.

4.1.3 GFS Canada Ltd.

GFS Canada ensures its Corporate Sustainability, which allows the company to serve its customers, provide jobs, and pay taxes, and support communities today and in the future [6]. They recognize the importance of community involvement, and they donated to groups and events that benefit the well-being of the community. One social involvement example is, GFS Canada and Habitat for Humanity have engaged in a long term relationship to build homes across Canada.

GFS provides all the benefit programs that Lantic provides, such as Life Insurance, Extended Medical and Dental Plans, Long-Term Disability Insurance, and AD&D coverage.

4.1.3 Making the Right Choice

Social sustainability includes the quality of life, health, equity, and liveability. Choosing between LS and packaged sweeteners might not directly affect the social well-being of people, but choosing the supplier that supports social sustainability will help create and maintain a better quality of life for people.

All three companies support Fair Trade and promote worker health, safety standards, and high quality working conditions. Also, all of them provide safer and healthier products for consumers. They all have strong commitment to their local communities and social responsibility. However, choosing Rogers and GFS enhances local community economic development through local purchasing.

4.2 UBC Food Service Employees' Working Condition

We have interviewed three female employees at the LOOP Cafe, and other UBC Food Services locations. All three of them had told us that they have previously worked at restaurants that had dry packaged sugar. The employees were very cooperative, and they have shared a lot of information regarding the amount of work required to set up, clean, and refill the LS pumps. We've initially suspected that workers need to spend more time cleaning up the LS dispensing area due to its hygiene property, workers might need the help of others when unloading the original packaging of LS shipped from suppliers due to the increase in volume and weight, and the pumps might create a dangerous environment for both customers and workers due to its size and weight.

However, all three employees we have interviewed said that they did not feel that there was a difference between serving LS and serving packaged sweeteners. The time spent on cleaning the dispensing area that serves LS and refilling the LS pumps is the same as cleaning up a counter that serves packaged sugar and refilling the container that contains the sugar packets.

Switching to LS will not require employees to work harder and longer, and it does not require heavy-lifting. Since LS bottles are made from plastic and comes in 1 litre per bottle, it does not create a more dangerous environment for the workers to work under. Therefore, switching from packaged sweeteners to LS does not affect the physically health and mental well-being of workers.

4.3 Consumers' Concern with Liquid Sweeteners

From our survey, it is shown that more than half the participants have never used or seen LS pumps before. Even among the people that have seen the LS pumps, only 20% of the people said that they would actually try them. One might raise such question, how willing are these packet users going to adapt the new change? Although most of the participants are in their 20s, there might still be several that are as stubborn and are reluctant to change. The worst case is that these people end up not purchasing drinks from sellers with LS. The participants are unwilling to use the LS pumps mostly because of hygienic reasons; they try to avoid the perceived stickiness and messiness. Another major reason is that LS are not transportable. People are not willing to go back to get more if they did not dispense enough initially. Also, one of the participants stated that, "I cannot get for my friend, unless the pumps can be taken away!" There are also other reasons that people are trying to avoid LS, such as the syrup cooling down hot drinks, increasing the volume of the drinks, or having unknown ingredients. Also, some people worry that the pumps may not be cleaned properly.

5.0 Conclusion and Recommendation

We recommend that UBC Food Services continue to introduce LS to more locations (food operations) on campus. The initial prices of the LS are higher than the packets, but part of the price will be eventually offset by the reduced theft and waste. While UBC Food Services staff have not found that there are any additional challenges associated with the change, consumers are still learning and adjusting their habits and preferences. We suggest displaying simpler and more prominent posters near LS dispensers that emphasize their advantages to reduce customer confusion. Additionally, eliminating sweetener portion packets at UBC will save enough paper to avoid having 14 trees cut down each year. Ordering Monin's products will not support the local economy but it will help develop a sustainable market in Canada.

REFERENCES

(1) Wisegeek (n.d.). What is Liquid Sugar?. Retrieved from http://www.wisegeek.com/what-is-liquid-sugar.htm

(2) Canadian Sugar Institute (n.d.). Types of Sugar. Retrieved from http://www.sugar.ca/english/consumers/typessugar.cfm

(3) Canadian Sugar Institute (n.d.). Canadian Sugar Industry. Retrieved from http://www.sugar.ca/english/canadiansugarindustry/sugarmarket.cfm

(3) About Us (n.d.). Monin. Retrieved from http://americas.monin.com/

(4) About Us (n.d.). Lantic. Retrieved from http://www.lantic.ca/

(5) About Us (n.d.). GFS. Retrieved from http://www.gfscanada.com/

(6) LeTrent, S. (2012). Eatocracy associate editor: *Why your grandma swipes sugar packets?* Retrieved from http://eatocracy.cnn.com/2012/01/12/why-your-grandma-steals-sugar-packets/

(7) Statistics Canada. http://www.statcan.gc.ca/start-debut-eng.html

(8) ID2 Communications (n.d.). Facts About Paper and Paper Waste. Retrieved from http://www.id2.ca/downloads/eco-design-paper-facts.pdf

(9) Wikipedia (2013). Paper Size. Retrieved from http://en.wikipedia.org/wiki/Paper_size

(10) Conservatree (2012). Trees Into Paper. Retrieved from http://conservatree.org/learn/EnviroIssues/TreeStats.shtml

(11) Offsetters (n.d.). Flight Emissions Calculator. Retrieved from http://www.offsetters.ca/for-individuals/calculators/flight-emissions-calculator

(12) Government of Canada (2010, June 4). Emissions Calculator. Retrieved from http://www.tc.gc.ca/eng/programs/environment-ecofreight-road-tools-calculator-menu-106.htm

(13) Recycling Revolution (2011). Recycling Facts. Retrieved from http://www.recycling-revolution.com/recycling-facts.html

UBC Food Services Employees (2013, March). Interview.

Wakefield, Victoria. (2013, February 1). Email Message.

Disiewich, Jason. (2013, March 19). Email Message.

APPENDIX

Survey Questions:

Liquid Sugar Survey

** Please be honest when answering the following questions.*

1. Have you thrown away UNUSED sugar/sweetener packets? (YES / NO)
(The little bags of sugar you use for coffee or tea.)

2a. If your answer for question 1 is yes, why do you do so?

b. If your answer for question 1 is no, how do you handle the unused ones?

3. Have you previously heard about or seen liquid sugar pumps? (YES / NO)
(They are similar to pump dispensers for ketchup and other condiments but dispense a sweet syrup.)

4. If you have seen them before, have you tried using them? (YES / NO)

5. Would you prefer using liquid sugar pumps or packaged sugars?
(LIQUID / PACKETS) Please circle one.
Why?

6. What are your concerns for switching to liquid sugar pump stations?

THANK YOU FOR YOUR TIME

Survey Results:

(Based on 25 participants)

1. Have you thrown away UNUSED sugar/sweetener packets?
   YES - 7(24%) NO - 19(76%)
2. YES reasons:
   - Nowhere else to place them, since I had my hands on them already. (3)12%
   - Lazy to put it back. (1)4%

   NO reasons:
   - I use them ALL/take right amount. (5)20%
   - I don't use sugar. (5)20%
   - I put it back. (1)4%
   - Leave them for someone else. (2)8%
   - Take them home or later use. (5)20%

3. Have you previously heard about or seen liquid sugar pumps?
YES - 11(44%) NO - 14(56%)

4. Have you tried using Liquid Pumps?
YES - 5(20%) NO - 7(28%) NO ANSWER - 13(52%)

5. Which would you prefer?
LIQUID - 11(44%) PACKAGED - 14(56%)

Choose Liquid, why?

- Less waste, less environmental impact. (5)20%
- Convenient. (1)4%
- Mix/dissolve easy. (3)12%
- Less volume. (1)4%
- No comments. (2)8%

Choose Packaged, why?

- Clean, since Liquid is sticky and messy. (4)16%
- You know what's in them. (1)4%
- Convenient. (1)4%
- You will never have short/right amount. (3)12%
- Save for later. (1)4%
- No comments. (3)12%

6. What are your concerns for switching to liquid sugar pump stations?

- Hygienic reasons (Sticky and Messy).
- Hard to control amount dispensing.
- Taste bad.
- Line up.
- You can't get it for friend.
- You don't know what's in there.
- Cools down hot drinks.
- Add too much volume to drinks.