

The Compostable Coffee Pod: Is PürPod100™ the Best Thing Since Sliced Bread? A Case Study on Club Coffee

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Abstract

With consumer consciousness growing in the area of sustainable food supply, food distribution is looking for methods to embrace, adapt and improve its environmental performance, while still remaining economically competitive. Until recent innovative solutions were developed, coffee pods have been considered as an ecologically unsound approach to single-serve beverages. Some have argued that reverse logistics (recycling) is a better option than green supply chain management (composting). With a particular focus on coffee pods a case study on Club Coffee, which focuses on green supply chain management, is presented for the design of a capacitated distribution network for a two-layer supply chain involved in the distribution of coffee pods in Canada. Our investigation shows that Club Coffee's relationship is not only critical to fostering the green supply chain ideology, but it is also unique in the business. Findings are presented and limitations and future research are proposed.

Keywords: Coffee pods, Green supply chain, Reverse logistics, Sustainability

1. Introduction

Coffee is the second most traded commodity in the world and has had a significant impact on the daily lives of thousands of consumers. Demand for coffee has increased significantly over the last few years. The world coffee production through the five-year period of 2008–2013 has experienced unprecedented growth, from approximately 128.5 million bags to roughly 145.7 million bags of coffee (CiAI, 2015). Over 91% of Canadians drink some amount of coffee, at home or outside the household (Ipsos Reid, 2015). But coffee consumption is increasingly intertwined with environmental stewardship. The consumption of coffee has been recognized as having a great environmental impact (Brommer, Stratmann and Quack, 2011). An employee at Club Coffee had one way to explain how much waste is generated by coffee:

“From a food waste perspective, relatively, coffee pods do not generate waste. When it comes to filter coffee, the largest consumer to coffee is the kitchen sink, to get rid of the unconsumed coffee in a pot. It generates a great deal of waste.”

Claudio Gemmiti, VP Innovation and Strategy, Club Coffee

The preparation itself of coffee in households by the consumer is one crucial part of the entire life cycle of coffee, making up a share of 30% of the overall emissions (Brommer, Stratmann and Quack, 2011). Research shows that the most relevant environmental aspects for a cup of coffee are brewing (i.e. the heating of water) and coffee production. Transportation and retail packaging are of minor importance (Soto-Pinto et al., 2000). In recent years the method with the highest impact is the use of coffee pods. With the arrival of coffee pods in the marketplace, the environmental impact of coffee pods has attracted significant criticism (Bartel, Mesias and Morales, 2015). Some jurisdictions are slowly becoming aware of the potential systemic threats. For example, in early 2016 the City of Hamburg in Germany decided to ban the sale of coffee pods in its area (Kattasova, 2016). That news made headlines around the world.

Coffee pods arrived on the market in 1976 with Nespresso. It is estimated that 27% of homes in the U.S. have single-serve brewers and many expect the single-serve approach will be available one day for soups, oatmeal and other consumer products (Bowen and Aragon-Correa, 2014). It was not until the last decade that single-serve coffee machines became popular around the world. With the arrival of coffee pods in recent years, consumers are arguably the most significant contributor to environmental degradation and pollution (Azad and Laheri, 2014), and are now wondering how they can make a difference. Consumers are increasingly making the connection between single-serve coffee and waste. One survey suggests that 95% of single-serve coffee machine users would try a compostable pod at least once (Ipsos Reid, 2015). But such a product was not available on the market until quite recently.

Club Coffee, a Toronto-based contract manufacturer is attempting to market its PürPod100™. This pod is a unique blend of coffee chaff and bio-resins which makes the product compostable. However, the company has faced significant resistance from municipal officials

who have argued that non-compostable pods could be diverted to compost. This study explores the concept of the green supply chain. Based on several interviews over a period of a few weeks this case study attempts to understand how Club Coffee can engineer a green supply chain with its innovative coffee pods. While the market need has been recognized, connecting the product with consumers has been a challenge for an array of reasons. Meanwhile, competitors are promoting recycling as the best option for the category.

The objective of this study is twofold. This study explores options to engineer a complete supply chain which would allow consumers to appropriately dispose of pods by way of compliant solid waste programs. In addition, the study also looks at consumer awareness and the responsibility for making consumers aware of the green technology. Both objectives will be satisfied by conducting a case study on Club Coffee and on the PürPod100™. Even though the focal organization of this case is Club Coffee as a vendor, the case also includes testimonials from Loblaw Companies. Loblaw is the largest private employer in Canada, employing over 180,000 people, and generates well over \$40 billion in food retail sales annually. It is the largest grocer in Canada and owns one of the most valued brands in the country, President's Choice (PC). Loblaw is Club Coffee's largest customer as it supports the PC brand. Interactions between the two companies are captured in this case study. The case also presents limitations and future research endeavours to be considered.

1.1 Sustainable green products and supply chains

The sustainable nature of any consumer goods is increasingly becoming critical in the value proposition (Labrecque, Dulude and Charlebois, 2015). It is especially true for food products as they are consumed every day and many consumers are becoming more concerned about waste (Charlebois, Sterne and Buhr, 2014; Labrecque and Charlebois, 2011). Current food consumption patterns and production systems based on traditional practices and commercial technologies are generally not sustainable and are now challenged by contemporary market forces (Dües et al. 2013).

Coffee pods were initially introduced for the sake of providing more convenience. However, it is acknowledged that convenience has often trumped environmental benefits (Cruz et al., 2015). In fact, the rapid industrialization and the consequent rapidly rising levels of water, air and land pollution have raised concerns about the unsustainability of current growth patterns related to food consumption (Geng et al., 2010). The food industry is increasingly exposed to mounting pressures of adopting sustainable practices. Finding environmental solutions and supporting innovation cannot be leveraged without better market connectivity (Pfaltzgraff et al., 2013).

“They love the coffee, and the convenience, but they hate the guilt. Consumers are starting to walk away from the category.”

Claudio Gemmiti, VP Innovation and Strategy, Club Coffee

Sustainable green products attempt to use designs that lessen the environmental burden and resource use (Azad and Laheri, 2014). Green products are well defined in the literature and is applicable to environmentally-focused coffee pods. Green products can be defined as

non-toxic, are made from recycled materials, minimally packaged and as having less of environmental impacts (Ottman, 1998). Better design can decrease the ecological footprint of a product, but such efforts ought to be coupled with better supply chain management practices (Silvennoinen et al., 2015).

1.2 Reverse logistics and Green supply chain management

A complete supply chain to support green technologies requires residuals to be managed beyond consumption (Kronborg, Munksgaard and Arlbjørn, 2013). The complete product cycle requires an in-scope of any management practices of companies marketing a consumer product. Traditionally the actual perception of waste in a supply chain can be changed through green supply chain innovations (Carter and Easton, 2011). Obsolete food products at the retail or consumer levels alike, which have been perceived as a waste product with related dumping costs, can be regarded as a valued input by implementation. As a result, other food supply chains can investigate similar solutions.

Conditions exhibited in Figure 1 go beyond interorganizational sentiments such as trust and congeniality, but are embedded in the conceptual framework. Conditions displayed are action-driven.

One solution can be reverse logistics, which would include recycling. It can be achieved through reverse logistics which includes not only the returns from the customers, but also the management of waste and recyclable material. Reverse logistics can either signify that the manufacturer accepts previously shipped products from the point of consumption for possible recycling and/or re-manufacturing, or it creates options for the market to repurpose used consumer goods (Carter and Ellram, 1998; Dowlatshahi, 2000). The reverse logistics paradigm supported by a committed organization are also directly impacted by customers, suppliers, competitors, and government agencies. Reverse logistics is embedded in such an approach (Garnett, 2009; Charlebois, 2009a; Charlebois and Van Acker, 2016). Due to exponential growth of waste in the field of consumer goods, the use of recyclable materials in food packaging are desirable and effective. Consumer engagement is commonly straightforward as they can complete the product lifecycle by bringing the consumed product back to the point of purchase or to some other retail outlet.

Indeed, obsolescence does not play a significant role in food consumption but perishability does generate waste. Some concepts can also be applied to certain food products with sophisticated packaging (Koplin, Seuring and Mesterharm, 2007). Complications may be generated by the lack of harmonisation amongst recycling procedures enabling stakeholders such as municipalities to act as barriers. Standards are known to differ greatly between jurisdictions. From a policy perspective, there generally are more market maturity and regulatory openness to reverse logistics in food. In modern society reverse logistics or recycling are considered as a dominant design, being more prominent in the market than green supply chains (composting) (Labrecque, Charlebois and Spiers, 2007). Also, the heterogeneity of material used to manufacture a finished product for consumption also makes reverse logistics more appealing to society (Hénault-Ethier et al., 2016).

Green supply chain management, or sustainable supply chain, is an emergent business concept for managing the environmental impact of the products' lifecycle (Srivastava, 2007). Environmental sustainability related to supply chains is also generally known as green logistics, not reversed logistics. Typically for a green supply chain management strategy to work the environmental blueprint of a product is primarily locked-in during the design stage but its functions is parallel with environmental recycling and waste management practices (Sroufe, 2003). Making a product compostable would adhere to such a philosophy. Waste amount optimization at all levels provides an opportunity to improve the overall performance of the green supply chain strategy.

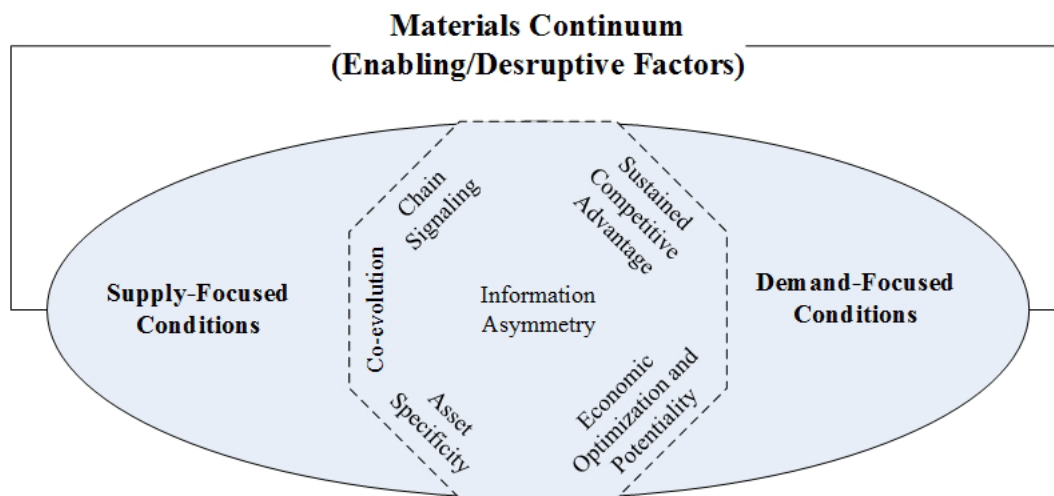


Figure 1. Reverse Logistics and/or Green Supply Chain Management Conditions for Single-Serve Compostable Coffee Pods

Many companies recognize the increasing pressures stemming from a greater number of green consumers. Demand-side pull is critical for green innovation to be successful (Weinhofer, Hoffmann and Mitigating, 2010). That pull is generated by a favourable regulatory framework. A consumer-focused approach to performance improvement in green supply chains can lead to more satisfied consumers and improved returns to the entire system, including manufacturers, retailers and consumers (Macharia, Collins and Sun, 2013).

Food offers a unique arena. Its ever-changing nature makes chain signaling a critical component to the industry. Chain signaling is the capacity for several supply chain participants to mutually recognize opportunities and threats, whether it is supply or demand driven (Le Valleé and Charlebois, 2015).

Compared to reversed logistics, during which revenues can often be generated at the end of the products' lifecycle, the accounting to recognize financial benefits in green supply chain management is often less obvious (Wang et al., 2013; Charlebois, Creedy and Von Massow, 2015). As such, within the supply chain, it would require a firm to allow for synchronized co-evolution to occur (Wilson and Hynes, 2009). In a co-evolutionary perspective, organizations keenly try to move from competing on an individual basis to competing on a supply chain basis in order to connect with firms that are directly in contact with the end-user

of a technology. This means that two or more organizations adapt, learn and change due to market changes. Further, it is necessary for companies to be sensitive and responsive to their environments with co-evolution and interdependencies in adapting to the system (Crozier and Thoenig, 1976). In doing so, firms also need to interact socially even amongst individuals forming the supply chain to offset negative systemic responses (Jones, Hesterly and Borgatti, 1997). Social networks can support the effectiveness and sustainability of a green supply chain.

Information asymmetry affects the ability for a green supply chain to be efficient. Consumers struggle to appreciate how environmentally friendly products can be different from one another due to the lack of knowledge (Delmas and Montiel, 2009). Better signaling within the supply chain and the recognition of externally recognized standards can also leverage information asymmetries. Signaling suggests mechanisms for the transfer of information to another party with the target to resolve information asymmetries (Spence, 1973; Charlebois and Haratifar, 2015). An example of signaling that a supply chain is environmentally sound is to have certification standards implemented among supply chain partners.

Additionally, a green supply chain can be harnessed by valuable, rare, imperfectly imitable, and non-substitutable innovation (Barney, 1991). These features can provide a competitive advantage to one company or to the entire chain which need to be sustained for a significant period of time. The potentiality of the new innovation to remain a competitive advantage is also key to make the green supply chain work (Colicchia et al., 2016).

Economic optimization is also embedded in the functionality of a green supply chain by reducing transactional costs (Williamson, 1981; Heide, 1994; Curtis et al., 2014). Economic incentives have to be shared across the field of firms to make any efforts worthwhile. Finally, economic incentives should be evident and clear to all public and corporate partners. A sector or a category should be in an expansion phase, not in a contracting phase as it may discourage partners to invest resources (Cruz and Wakolbinger, 2008). The notion of the asset specificity and organizational actions related to green supply chain management is one economic dimension of significance. Asset specificity surveys whether assets used by the firms engaged in a transaction can be re-deployed in alternative uses and by alternative users (Charlebois, 2009b). This is certainly relevant to green technologies when examining the entire product lifecycle. Companies engaged in transactions involving highly asset-specific investments, have therefore greater dependency on their current customers than do firms with lower asset specificity (Vachon and Klassen, 2006; Simpson, Power and Samson, 2007). Coordination and information sharing becomes less cumbersome when all firms are engaged in a relationship which is asset and resource driven (Rosen, Bercovitz and Beckman, 2000).

1.3 Coffee consumption

Critics point out that the retailers market of single-serving coffee pods has created substantial room for failures in green innovation and markets. Consumers may be confused as to what technology to trust and which one can actually work beyond consumption. This is cause for concern as consumers are diverted from legitimately sustainable technologies related to

coffees. The basis for this confusion manifests itself at various levels (Perfecto et al., 2003). Environmental concern demonstrated by consumers indicates their willingness to support green efforts by companies and contribute personally to solving environmental problems as long as it is convenient and that there is a collective recognition of long-term effectiveness (Fournier, 1998; Dutta K. et al., 2008).

“If you drink coffee, you love it. You don’t drink it for nutrition. It’s an experience, it’s a lifestyle.”

“With the single-serve market, people are starting to make the mental connection between single serve and garbage, and it is starting to affect the category.”

Claudio Gemmiti, VP Innovation and Strategy, Club Coffee

What has driven this increase has been identified in the deep changes that have occurred in the supply chain over the last decade. A number of stakeholders have been attracted to new solutions concerning both brewing techniques and packaging systems and devices. The “moka” pots, also called coffee pods or capsules, are the most widespread solutions. Capsules and pods are considered as user-friendly and the market has grown at unprecedented levels. In the U.S., for example, it is expected that single-serve coffee sales will surpass \$5b a year by 2018, but it is expected to plateau beyond 2018 (Club Coffee, 2016). Sales of coffee pods exceeds grounded coffee in Canada. The market for regular ground coffee in the U.S. is approximately \$6.5b annually.

“The single-serve market is fascinating. The retailers love this category. The single serve segment exceeds the regular grounded coffee. It’s incredible.”

Solange Ackrill, VP Strategic Planning, Club Coffee.

“In 2012, when we launched, our goal was to sell 5 million pods a year. Do you know how many pods we’re selling to Loblaw now? 100 million. It’s massive.”

Claudio Gemmiti, VP Innovation and Strategy, Club Coffee

Waste is now a critical issue when considering coffee consumption, particularly with pods. However, there is a lot of confusion between recyclable and biodegradable pods which is challenging for waste managers and municipalities as they cannot determine who is responsible to manage garbage collection. One the one end, some companies like Nestlé and Keurig are pursuing the recyclable option for pods. In fact, some companies have committed to make all of their pods recyclable by 2020. Companies argue that it is the best method to sell an environmentally friendly product while not compromising quality. Other companies have focused more on the compostable option. They argue that consumers are really seeking to make a difference knowing that the recyclable products may not provide the desirable outcome from an environmental perspective.

1.4 Club Coffee

Club Coffee is a division of Morrison Lamothe, a company now based in Toronto, Canada. The enterprise has two divisions, Frozen Foods and Club Coffee. The first division, Frozen Foods, has a diverse history. Cecil Morrison and Richard Lamothe established their business in 1911, in Ottawa, and then Morrison Lamothe in 1933. The company evolved from a traditional bakery with home delivery services to frozen foods via restaurants. Over the years they have served important accounts such as Nestle, McDonalds' and Loblaws. With its experience in food processing, the company transformed itself into a North American focused contract manufacturer of frozen food in the 1990s. That model was extended to coffee in 2007, hence acquiring Club Coffee which has been in operation since 1906. Today, Club Coffee manufactures coffee cans and bags, and single-serve pods, supporting well recognized Canadian brands like President's Choice and Tim Horton's. It has become the largest producer of roast and ground coffee in Canada.

"I come down to eight words. We innovate, we partner, and we deliver with passion. We have a quirky team here. We embrace people who add something to the mix. When you add a boat in the lake, it raises the water level for everyone."

John Pigott, CEO, Club Coffee

Capitalizing on its 100 year history, Club Coffee's goal is to be the leading, high quality, custom coffee roaster in North America. Its list of customers includes some of the largest and most respected names and brands in the retail and food Service sectors. Despite its very long history, the leadership of the company has argued that the culture has remained the same. The vision is as follows: *We innovate, we partner, we deliver... with passion.* It prides itself as playing the role of the underdog while being strategically savvy in a very competitive marketplace. Mother Parkers, located in Mississauga, is Club Coffee's main competitor as a co-roaster in private labelling, and Keurig the main competition in the single serve segment.

"Club Coffee is impressively nimble. More gets done here with less than anywhere else I know. The compostable pod project speaks to how nimble and effective the organization is."

Chris McKillop, VP Communications, Club Coffee

The current CEO, John Morrison Pigott, has held this position since 1989. Providing convenient food solutions to meet the lifestyle needs of today's consumers. While developing new products, partnerships are key in how they conduct business on a regular basis. They tend to focus on finding common goals and interdependencies as they build trusting relationships with different business partners. In doing so, Morrison Lamothe has made it an important goal to support their partners' brands as if they were their own. They have conducted business with key partners such as Loblaw (1938), McDonald's (1983) and Nestle (1999). These company brands are very much part of Morrison Lamothe's DNA. This also applies to Club Coffee.

"The brand comes first. We don't own brands, but the brand comes first."

John Pigott, CEO, Club Coffee

They manufactured novel products like sliced bread (1926), frozen fruit pies (1958) and TV dinners (1962), Microwavable pies (1997), and compostable coffee pods (2015). Given the growth in coffee pods, the compostable coffee was first launched in 2012 under the name Aromacup. The genesis of the project came from a conversation between Claudio Gemmiti and John Pigott in 2012 while Mr. Gemmiti was still working at Loblaw. The unique packaging design allowed Club Coffee to release the world's first compostable coffee pod for Keurig brewers. The aim was to mix convenience and environmental responsibility. Inspired by Aromacup, PürPod100™ was launch in Canada and the U.S. in 2015.

“This project has brought to bear a significant contribution, involving business and academia. I think we’ve hit a homerun.”

Peter Hobbes, President, Club Coffee

The product is the only single-serve coffee pod that is designed to be digested by bacteria. PürPod100™ is certified by the Biodegradable Products Institute (BPI) which means that 96% of the product disintegrates in weeks and that biotoxicity is well within the acceptable range (Canada NewsWire, 2015; Atkins, 2015). The technology was developed by the Departments of Plant Science and Engineering at the University of Guelph in Canada. The design of the product requires coffee chaff (the outside of the coffee bean) to be reclaimed, uses bio-composite technology, uses a new bio-resin rings and lids, and allows food waste to be significantly reduced. The product has also been certified by the U.S. Composting Council and PAC Next. Many municipalities have tested the product in the U.S. and Canada, including Cedar Grove close to Seattle, Syracuse, Toronto, Vancouver, Guelph, London, Niagara, Orillia, and Nanaimo in British Columbia.

2. Methodology

To conduct an empirical investigation of a contemporary phenomenon within its real-life context, the present study uses the case study approach (Yin, 1994). Such a method is appropriate to explain complex causal links in real-life interventions and to explore those situations in which the intervention being evaluated has no clear set of outcomes. The study is based on the information available from Club Coffee, Loblaw, NGOs and solid waste managers in the public sector from primary and secondary sources.

In essence, the overall approach for this study included a preliminary assessment of the company and its business and regulatory environment. This was followed by conducting semi-structured interviews with executives from Club Coffee and Loblaw. The case develops and analyzes the data collected during the interviews. Semi-structured interviews are one form of interview that allows for thorough investigation into a subject matter. The survey instrument was developed based on past single case studies conducted in the food industry.

The preliminary assessment consisted of a tour of the facility and the review of the compilation of existing facility documentation to better understand the specific context

surrounding the environmental issues facing companies in the scope of the present case study. Primary data were captured through interviews conducted at two locations, Club Coffee headquarters in Toronto and at Loblaw's headquarters in Brampton in the winter of 2016. A total of 8 respondents were surveyed for this case study, of which two are from Loblaw. All respondents were high-ranking executives at both companies.

3. Findings

3.1 Enabling and disruptive factors

One enabling factor that was identified early on was how the Canadian coffee market has grown in recent years. The Canadian coffee market is unique and very dynamic. Consumers in Canada have a special relationship with the commodity and they tend to consume it in ways that can elevate the coffee pod technology to levels which is unlikely matched by many other markets. It was reported that Canadians drink the most coffee outside the home in the world, after Italy. It was identified as the Tim Horton's effect.

During interviews it was also reported that most generations enjoy coffee pods, from Millennials to boomers. It was mentioned that coffee pods offer the same experience as a coffee shop but for a fraction of the cost, which explains the popularity of the product. Consumers have shown some loyalty to the product over the last few years, but that loyalty is slowly eroding. As the popularity of the single-serving pod grew, consumers became concerned about the amount of waste generated by the plastic pod, enabling a very potent marketplace for new sustainable technologies.

The path to launch the proposed technology by Club Coffee has not been easy. It was a mixture between product development and social engineering. The social recognition of waste is significant enough to make it a business challenge which compelled the company to find a solution. Club Coffee has experienced some unforeseen challenges due to disruptive factors fostered by external forces outside the supply chain. The success of new food technologies not only largely depends on consumers' behavioural responses to the innovation, but the regulatory regime should also support environmental intents. At first it appeared that municipalities, the caretakers of the technology at the end of the products' lifecycle, were neophobic to the new technology presented by Club Coffee (Charlebois et al., 2016). But the context was explained more elaborately during interviews. What the technology represented, or how it was perceived by external influences to the supply chain, affected the ability to establish a materials continuum through green supply chain engineering. Some respondents shared their frustrations related to how some municipalities are hesitant to adopt the technology and allow coffee pods into their compost.

“Nothing ever surprises me, and you never know what will come up next. I did believe at the beginning that the compostable journey was going to be very tough. I was wrong, it is even tougher. I estimated that it would be difficult, much more so than anyone, and I was wrong.”

“Canadians want to be number 2, and so they often ask where else is the technology been used.”

Chris Isaacs, Consultant for Club Coffee

“Looking at municipalities, it is the race for fourth place. No one wants to be first. Municipalities have learned from past failures. The Sun Chips bag from Pepsi is a good example. Some suggested it did not break down as anticipated.”

Chris McKillop, VP Communications, Club Coffee

Most at Club Coffee mentioned that even if they are disappointed with how long it has taken for the technology to be endorsed, they were not surprised by the lengthy process. Past failures are making municipalities hesitate. Some speculate that self-proclaimed compostable products were not in fact compostable. Since then waste managers tend to be more careful. It was often described that municipalities were targeted as responsible for not embracing the technology as quickly as they should. A few respondents pointed out that the challenge was not necessarily with municipalities in general, but with people working for them.

“We have to be careful with how we use the term municipalities. We should be talking about municipal waste managers.”

Colin Isaacs, Consultant for Club Coffee

One respondent described the primary audience in municipalities as professional engineers who are often waste managers. Further, he considers that the audience includes three distinctive groups. The first are the “interested” which would include field engineers who really do set the tone for peers. The second group are environmental believers.

“The environmentalists working in municipalities believe Satan has a Keurig machine.”

Chris McKillop, VP Communications, Club Coffee

The comment was made in a sarcastic fashion. This group believes that we are enabling a destructive technology. The third group are concerned about costs. Recycling and composting costs are significant. In Toronto, for example, it was stated that the cost of composting is double to what it is for regular garbage.

“Operators often have differing views of what their purpose is. We have heard from waste managers in Canada that their objective was to produce the best quality compost. Hang on a minute. That’s not your objective. Your goal is to reduce the amount of waste going to landfill. They have diverted their thinking because they want to generate more revenues by selling better compost.”

Colin Isaacs, Consultant for Club Coffee

Skewed views on their objectives appear to have affected municipal waste managers in their ability to embrace PürPod100tm as a novel compostable technology. Club Coffee pods were tested by many municipalities and most results were conclusive. One respondent mentioned that if the pods do not break down in the compost, it likely meant that composting methods in certain municipalities were not sound. The pods break down and their performance is consistent with BPI standards. After months of tests at several locations, respondents claim that municipalities admit that the technology works, but the fundamental argument used has little to do with the technology. One respondent mentioned that it is the race for fourth place for municipalities. No one has shown an interest in being first. Municipalities have learned from past failures, which has made them more cautious. The Sun Chips bag from PepsiCo Canada launched a few years was mentioned as a primary example. Some suggested it did not break down as anticipated. One respondent mentioned that municipalities are accustomed to reject technologies presented to them, but the compostable coffee pod provided differing results. Municipalities have shared their frustration with Club Coffee that the coffee pod makers should harmonize their standards to make it easier to manage waste. They are also concerned that if permission is granted to Club Coffee to market a compostable pod, consumers would be confused between the difference between compostable and recyclable, which could contaminate their composts.

Convincing test results at municipal composting sites, however, were not sufficient. Club Coffee anticipated that waste managers would become a roadblock which is why the company opted to connect with public officials to advance the technological agenda by making it a political issue. In recent months, it was reported that Club Coffee has met with several public officials.

“We recently met with the environment minister. He thought our coffee pods were the greatest invention since slice bread. He can’t force municipalities to do this, but the pressure is real.”

Chris McKillop, VP Communications, Club Coffee

After many tests, however, respondents have argued that the problem is much more complicated than what was initially thought. It was often mentioned that harmonization of standards between municipalities is a not a legitimate reason to reject the compostable pod. The resistance to PürPod100tm was explained by the uncertainty around the funding model for waste collection between municipalities and governments, particularly in Ontario. The municipalities are not pleased about how the funding model works with the province of Ontario. Municipalities expect some budgetary relief from the province in the new Bill 151, presented in November 2015.

“Harmonization of standards is really a false excuse. We are trying to launch this product in the middle of a debate in Ontario on extended producer responsibility, Bill 151. It is making things very complicated.”

Chris Isaacs, Consultant for Club Coffee

“The compostable coffee pod is the best solution. This is really a stewardship debate more so than what is the right thing to do.”

Peter Hobbes, President, Club Coffee

This is likely the most critical disrupting factor to allow for the material continuum to occur with coffee pods. Club Coffee believes it has been a great partner to municipalities, but feel that the agenda has not been as clear as it should be, even calling it “bureaucratic sidestepping”.

Since Club Coffee’s primary focus has been Ontario, new policy on waste management has generated uncertainty and has appeared to have made municipalities more hesitant to adopt any new technologies, which could generate more costs to them. It was mentioned that between recycling and composting, costs are the main issue. For municipalities, recycling is funded while composting is not. To offset composting costs, municipalities need to sell more of it. Club Coffee’s technology is not compatible with the current funding model. This issue is likely more important than harmonization of standards and contamination of the compost. The company has presented the technology to other provinces, even in the U.S. One respondent commented on how different the attitude is towards new technology compared to Canada:

“We often believe Canada is ahead of the Americans. Innovation is embraced differently in the U.S. In San Francisco, they asked us to let them know when we would launch so they can tweet their residents. Tweet their residents! What planet are we on?”

Claudio Gemmiti, VP Innovation and Strategy, Club Coffee

But there seemed to have been deferring views in terms of what the best option is for coffee pods in the future. Although there was some consensus at Club Coffee on composting, the competition has positioned reversed logistics as a preferred option and has committed to implement the proper changes in relative short order.

“Keurig had declared that their pods will be recyclable by 2020, so we have two years.”

Claudio Gemmiti, VP Innovation and Strategy, Club Coffee

3.2 Chain signaling

Recognizing external signals and capitalizing on specific opportunities is critical to advancing innovation. This seems to be the case with Club Coffee. It posits that the entire coffee pod category is driven by convenience which is why the recycling solution is not compatible with how it can grow sustainably. Keurig is a dominant player in the industry. Some have argued that Keurig’s dominance has limited the company in its ability to enhance the category through new green innovation. This is something Club Coffee is trying to take advantage of.

“Keurig created this fence, and fenced out guys like us, but they can’t move from a technology perspective. Labels are all about the opportunity whereas branding is about the strategy.”

John Pigott, CEO, Club Coffee

Tensions between Club Coffee and Keurig are not new as the coffee pod market is becoming extremely competitive (Friend, 2014). Club Coffee has been openly critical of Keurig’s market positioning in the past. Keurig’s strategy was judged several times during interviews, arguing that Club Coffee had the correct response to the market shift they are experiencing. It was argued that the market is somewhat shrinking and something needs to be done. Club Coffee is recognized as the only company pushing the compostable solution. One respondent mentioned that Club Coffee’s discipline of looking at the environmental issue holistically was evident, Club Coffee’s intention is not to charge a premium for offering environmental benefits to coffee pods consumers. Its intent seems to be to use the compostable feature as a desirable feature for both their customers and consumers. Club Coffee seemed to have interpreted market signals differently from any of its other competitors.

3.3 Co-evolution

The empirical evidence suggests that Club Coffee may have co-evolved into dyadic forms as a means of consciously trying to alter the category’s established norms. Coffee pods are relatively new in food marketing but its size is significant. Without calling it as such, Club Coffee formed a strategic alliance with Loblaw to compete together either in dyadic form or a technological-enabling supply chain. Elevating the technology has been challenging for Club Coffee since it does not own a brand, so Loblaw’s role is imperial.

“Making the compostable pod a political issue has been discussed, but the concern is our relationship with the brand.”

Chris McKillop, VP Communications, Club Coffee

This comment suggests that there is an appreciation for coevolution, as one firm cannot advance without the other advancing as well. In fact, it was mentioned and validated by both Club Coffee and Loblaw that contractual terms are kept to a minimum between the two organizations. Beyond the basic vendor contract, both organizations rely on meetings and operational interactions to agree on how to proceed on emerging issues. It was reported at Club Coffee that it has a cultural disposition which makes the company want to do more and serve Loblaw well. Club Coffee’s President described the success they have with Loblaw by making the following analogy:

“Antelopes get up every day because they are scared. That is how I would see why our relationship with Loblaw is sustainable.”

Peter Hobbes, President, Club Coffee

The co-evolutionary relationship is a combination of exclusiveness and independence. Club Coffee’s description of its relationship with Loblaw is telling. It describes its connection with

Loblaws as vast and deep. They consider Loblaws as one large, ideal customer, but they are also concerned about overdependence which could add pressure to the relationship. Club Coffee generates 40% of its revenues from the U.S. Diversification is essential to the welfare of the organization and allows Club Coffee to hedge its risks. Club Coffee has an exclusive relationship with Loblaws: it cannot produce another private label in Canada. However, the partnership allows Club Coffee to grow beyond Canadian borders which in turn often benefits the relationship in several ways. For Club Coffee, it was explained that the model they have with Loblaws is used as a template to foster other partnerships.

3.4 Asset specificity

Loblaws' commercial success seems to be a fundamental performance metric for Club Coffee, and not just for Loblaws. It was shared during interviews by Loblaws that Club Coffee was known at times to provide unsolicited discounts to Loblaws on their products. In turn, Loblaws would use the savings to promote products provided by the vendor. This liberal transfer of assets between firms without a formal agreement is highly unusual in food distribution, but they seemed unsurprising to both parties during the survey.

One worthy point to make in relation to asset specificity is on the use of proper technology. Information technology is often perceived as a primary medium for co-ordinating complex asset re-deployment processes. The monitoring of third-party logistics, recalls or efforts to repurpose goods in process between firms can provide evidence that asset specificity is relatively high. Club Coffee shared with us a recall situation which occurred in November 2015 involving Nespresso pods. As soon as some pods were believed not to be compatible with certain coffee makers all pods were recalled by Club Coffee. The total cost of the recall was not reported. This decision was made to safeguard brand equity, a brand Club Coffee does not own.

Where asset specificity appeared lower for Club Coffee it was with both academia and municipalities. Even though no respondents from either the University of Guelph or municipalities were included in our survey, reviews of relationships between the firm and other organizations beyond the supply chain were mixed.

3.5 Information asymmetry

Club Coffee believes that aligning goals and vision will make a partnership work between businesses. This is what they believe the company has with Loblaws. Club Coffee consists of a team of about ten people who interact with Loblaws daily. It was reported that the team shares sensitive information with Loblaws. For example, it was shared during an interview when Loblaws was asked if Club Coffee knew something about cold brew. Club Coffee was not aware until some research was conducted on behalf of both companies. Club Coffee shared all of the information it gathered on cold brew with Loblaws. Given that Loblaws has many divisions, including the conventional and discounted divisions, Club Coffee describes their relationship as being fairly balanced between these two divisions.

What is essential is how to make data available and consumable for the other party. Club Coffee has acknowledged that the data needs to be analysed and processed prior to being

submitted. Knowing who the end audience is, Club Coffee configures the data for partners so it makes sense to them, including Loblaw. Club Coffee acknowledges that finding something retailers do not know is difficult, given their position in the marketplace.

3.6 Sustained competitive advantage

To make a business model successful in food products, a successful product lies in its coherence, its uniqueness and the fact that it is difficult to imitate (Matzler et al., 2013). A company's task is to find new ways to generate added value for customers and to monetize a portion of this surplus value. However, innovation to enhance consumer goods may at times generate market confusion throughout supply chains, which seems to be the case with Club Coffee and the PürPod100™. As a manufacturer that does not own its own brand to monetize any innovation is trying. A fact that seems to be appreciated by Club Coffee during interviews.

The compostable feature seems to be perceived as a competitive advantage by all respondents involved in this survey. The potential for the technology to provide a competitive advantage to partners was perceived by many respondents as being real. It was recognized several times that the technology has the potential to make its mark beyond coffee. The technology could transcend several categories and revolutionize how food products are packaged.

“They have been compostable products like film rapping, and compostable cups. But the compostable pod is unique, and ground breaking. This can be transformational for other consumer goods like yogurt, oatmeal and other products requiring a compostable container.”

Chris McKillop, VP Communications, Club Coffee

Club Coffee conveyed during interviews that it would love to claim that PürPod100™ can be a game changer when it comes to compostable packaging in general. As the company is dedicated to coffee, their ambitions are muted. They believe it is a food solution for the future and that is how they see it. This can potentially be a driving force for both Club Coffee and Loblaw to further promote their green technologies (Charlebois and Giberson, 2010).

Our investigation did point to one of Club Coffee's greatest weaknesses. The highly vulnerable state of Club Coffee as an innovative enabler was manifest in this case study. Most of the innovation is developed externally to the firm which makes any partnerships even more so critical to make any competitive advantage sustainable. The fact that the firm does not own any brands makes the business case to develop the technology in-house weak (Charlebois and MacKay, 2010a; Charlebois and MacKay, 2010b; Charlebois and Hiem, 2014; Charlebois, Von Massow and Pinto, 2015). But unless a very strong binding agreement is stricken between the intellectual property owners and Club Coffee, the firm will continue to remain vulnerable.

3.7 Economic optimization and potentiality

Both Club Coffee and Loblaw have concluded that the PürPod100™ has market potential. Many at Club Coffee identified a news report as a shifting event between the two

organizations. Loblaw was asked to comment publicly on pods and waste when invited to be interviewed by a national news outlet. Prior to the report by Global news, which aired March 2 2016, Loblaw never commented publicly on compostable pods.

“In a matter of 90 minutes, something swung which made Loblaw conduct the interview. The Hamburg story was making them swell and a political issue became a business problem. They have a quarter of a billion dollar category, so they were concerned of a potential ban. It was great.”

John Pigott, CEO, Club Coffee

Loblaw’s response to the news story showed that it decided to respond to a media request based as a business mitigating gesture. It felt compelled to protect the brand and a category which contributes to a very large portion of their business activity.

“Giving an interview to Global was the right business decision. We did it to protect the category. And we would do it again tomorrow.”

Ian Gordon, VP, Loblaw

Since the news report in March 2016, Club Coffee has claimed that it has had a positive impact on their relationship with Loblaw. Club Coffee believes that Loblaw can create a new industry benchmark and make compostable pods the norm. Whether Loblaw believes it is unclear. Both companies have manoeuvred this issue on the basis that their relationship between each other is critical.

“Based on all the years I have spent in the business, the relationship with Loblaw is unique, without a doubt. But they are the 800-pound gorilla, so they are very careful with what they do in public. The Global News report was a quantum shift for Loblaw.”

Peter Hobbes, President, Club Coffee

Club Coffee qualifies its relationship with Loblaw as “near monogamous”. The commitment which makes the dyadic relationship between the two organizations is palpable. It appears though that the socio-political characteristics of food waste and the utilization of coffee pods are pushing the relationship to another level, which could allow some form of social engineering to prevail. What was considered as a symbiotic relationship is progressively becoming a relationship built on comradeship, from a business perspective. Both may be seen as fighting the garbage war. What became clear during our investigation is how economically beneficial the relationship has been for both Club Coffee and Loblaw as both recognize the potential for more growth by enabling green supply chains in the single serve market move beyond coffee pods.

4. Discussion

The case study on Club Coffee warrants a few interesting observations. For Club Coffee, the compostable coffee pod project caused the company to deal with governments and the public

for likely the first time in their history. They had to hire individuals with expertise in communications and other fields to complement their current strengths.

“The company never worked in the public and government relations area before, never had to until now.”

Chris McKillop, VP Communications, Club Coffee

These individuals seem to not only be hired to augment Club Coffee capacity to support the project, but they also all appear to share common values with employees within the organizations. As interviews were being conducted, it was difficult to pinpoint which respondents were not working for Club Coffee on a full-time basis.

The way Club Coffee manages its environment is also noteworthy. It seems to apply the same approach for every relationship they manage, hoping to replicate what they have with Loblaw. But with academia and public administrations, it appears to have been a disappointment for Club Coffee.

“Our sacred rules on partnerships are these: common goals, interdependency and trust. These rules carry us over challenges, but with municipalities, it’s been difficult.”

John Pigott, CEO, Club Coffee

It was mentioned during an interview that Club Coffee’s work to commercialize a technology developed by a university is largely underappreciated by the academic community. Observing that Club Coffee was interacting with different stakeholders expecting similar outcomes, or at least the same reciprocity was unanticipated. The Club Coffee-Loblaw duo is distinctive in the industry. Information, ideas and even assets are shared constantly between organizations. Both organizations do not share the same culture, but the mutual understanding appears to be profound. Many employees of Club Coffee are former Loblaw employees which likely assist both organizations to reach a level of reciprocated understanding which is beyond industry standards. Replicating such a relationship would likely be difficult to do.

“For a partnership to work like the one we have with Club Coffee, exclusivity and a long-term commitment on investments are key. I would consider Club Coffee as one of our top vendors, if not the top vendor right now as far as our trust reciprocity goes. They want to protect the PC brand as much as we do.”

Ian Gordon, VP, Loblaw

Interestingly, this case raises the issue of whether firm boundaries should be viewed as discrete or whether there are more fuzzy boundaries. As interviews were conducted, it became challenging to identify firm-based priorities, between the consultants working for Club Coffee and with those working for Loblaw as well. All shared similar values and even made very similar comments about future strategic directions for Club Coffee.

For policy-makers, this study suggests that a situation in which multiple technologies can co-exist is not necessarily problematic, as long as the diversity of standards allows different organizations to participate in the marketplace (Nasser et al., 2011). In this case, between

recyclable and compostable coffee pods, it is not clear whether co-existence is possible. When it comes to sustainable solutions, innovation from a broader sense ought to be embraced. Club Coffee's focus was not so much about aggressively pushing a technology to the market place, but more so about fighting the "garbage war", as mentioned by John Pigott during interviews. That process may have constrained Club Coffee from becoming an advocate of one technology against another, and not necessarily for one technology to co-exist with another. The process which provides stewardship at the end of the product lifecycle is assured by municipalities, which makes the issue multi-faceted (Charlebois and Camp, 2007).

A perceived ideal solution by a manufacturing contractor, a company with no brands and no direct relationship with the public, became a social engineering battle with regulators, academia and industry. Being fully aware of their stature, they proceeded to take on the "garbage war" with extreme caution.

"Loblaw has been good to us, so we are very careful. We have a foot on both pedals most days."

John Pigott, CEO, Club Coffee

A few more comments were made by John Pigott which really captures how Club Coffee manages its strengths and weaknesses as a processor and vendor for Loblaw:

"We are a contract packer, we are not equipped to innovate. We don't own a brand so how do we cash out if we innovate? But you want to earn that right to get the first phone call from the brand owner for requests. The compostable pod was the first time we took the lead on innovation."

"I like to think of myself as the Carson of the Abbey. I eat downstairs, I'm a vendor, but I understand how the building works and will know what the Lord wants."

Club Coffee believes it is petitioned to get the first phone call and to be solicited for some advice. The results of this case suggest that multi-dimensional integrations represent one of the most important characteristics of a responsive supply chain strategy. A responsive supply chain strategy implements socio-relational integration with strategic suppliers and customers. A conventional supply chain strategy puts stress on cost-efficiencies and stability. But the Club Coffee case appears to demonstrate that a responsive supply chain strategy that enhances the focal company's responsiveness/adaptability to rapidly changing customer demands can be even more effective. As a result, adding value to customers by reducing waste throughout the supply chain is possible, but does not come without any difficulties.

Companies may seek to communicate their environmental performance to outside stakeholders, but may not always find this easy to do since they may lack control of the product cycle and full knowledge of processes, and materials flowing through their supply chains. This seems to be the case with Club Coffee.

Food processors may hold more information about their environmental performance and the performance impact is to be experienced by the customers, or even worse, consumers. This

situation is defined as an information asymmetry. For Club Coffee to convey to the broader public that compostable pods are more environmentally friendly can reduce waste in a meaningful way is a challenge. For Club Coffee consumers' inability to discern how green the products or materials from the supply chain are is difficult (Delmas and Montiel, 2009). The role of information sharing is critical for coordinating a supply chain which is Club Coffee's focus.

5. Limitations

Results of this study cannot be generalized to other economic sectors because the nature of products manufactured by Club Coffee is different as compared to meat products, dairy, or other categories. Also, the findings of any single commodity or food product can only be used with caution because it is not possible to draw conclusions about replication in different environments. In industries where little turbulence exists or where firms perceive little risk, then less change may occur and the formation of strategic alliances may be less. Also, the case study is only focused on Canada. Although it is our belief that this study will be universally beneficial to supply chain managers, separate country-specific research is essential for further investigation due to differences in food distribution.

6. Conclusion

This case study attempts to demonstrate how a dyadic relationship can work between a market-dominating company and a smaller-scale vendor. The positive outlook of the Club Coffee-Loblaw alliance in this study suggests that firms which made the co-evolutionary change to alliances or chains can succeed. The case study was conducted without knowing if the PürPod100™ project was indeed launched, but Club Coffee views itself as being able to succeed only if it remains part of an alliance with Loblaw, suggesting that the firm viewed the selective unit not to be individual, but rather at a group level.

Both organizations are keenly aware of which unit has more power than the other, but the mutual respect which seems institutionalized to a certain degree appears to carry the work required to support PürPod100™'s fruitful outcome. Our analysis also suggest that, regardless of how successful PürPod100™ is, it will have little or no influence on the dyadic relationship between the two firms targeted in this study.

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