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ISSUE I

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# LIFELABS: THE ETHICS OF RESPONDING TO A RANSOMWARE CYBER ATTACK

Ron Babin

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*All figures in Canadian dollars unless otherwise noted.*

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According to the Privacy Commissioner of Ontario, in late 2019, the LifeLabs information systems were hacked by cyber criminals who gained access to records and data of approximately 15 million LifeLabs customers.<sup>1</sup> The data accessed included name, address, email, customer logins and passwords, health card numbers, credit card numbers and lab test results. The cyber criminals penetrated the company's information systems, extracted data, and demanded a ransom.

On December 17, 2019, LifeLabs' CEO Charles Brown sent a public notice to customers describing the cyber attack.<sup>2</sup> After apologizing for the cyber attack, he outlined the steps taken to protect customer information, including hiring cybersecurity experts, paying the ransom after consultation with experts to retrieve the data, and engaging law enforcement.

The Privacy Commissioners in Ontario<sup>3</sup> and British Columbia began investigating the attack shortly after they were notified, as required by law.

## The LifeLabs Ransomware Attack

LifeLabs was a Canadian company that provided health diagnostics to patients and doctors. It operated primarily in British Columbia (BC) and in Ontario, with a few labs in other provinces. LifeLabs offered a range of medical tests, from standard lab testing to genetic and naturopathic testing. LifeLabs was one of the largest medical testing companies in the world and performed over 112 million laboratory tests for Canadians each year. The Ontario Municipal Employees Retirement System (OMERS) owned LifeLabs at the time of the cyber attack.

Senior executives at LifeLabs who were responsible for ransom decisions were President and CEO Charles Brown and Chair of the Board of Directors Jon Hantho. Charles Brown joined LifeLabs in 2018. Jon Hantho became chair of the board in April 2019.

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1. Beamish & McEnvoy, 2019.

2. LifeLabs, 2019.

3. See [Information and Privacy Commissioner of Ontario website](#).

## Ransomware

According to Gartner, ransomware was a form of cyber extortion where an external hacker “threatens to seize, damage or release electronic data owned by the victim” using “malicious software that infiltrates computer systems or networks and encrypts data, holding it hostage until the victim pays a ransom.”<sup>4</sup> The hacker would then copy or exfiltrate data, and threaten to publish the data to embarrass the victim. As well, exfiltrated data could be used in other criminal ways, such as identity theft using credit card and personal information.

Ransomware had been a growing global concern for all organizations.<sup>5</sup> The number of reported ransomware attacks worldwide more than tripled from 2019 to 2021. The volume of attacks declined slightly in 2022, with just under 500 million ransomware attacks reported. [Figure 1 – Annual Number of Ransomware Attacks Worldwide](#) depicts the recent growth in worldwide ransomware attacks. .

The prospects of regaining access to the stolen data were reasonably good once the ransom has been paid, and most organizations responded with some form of ransom payment. According to Statista, over 90% of organizations that paid ransom did regain access to their data.<sup>6</sup> However, for 41% of those who made the initial payment, the attackers demanded additional payments before access to the data was restored. A small percentage (6%) refused to pay additional ransom demands and their data was not recovered. Only 1% of victims who paid the ransom did not regain access to their data. [Figure 2 – What Happened When Ransom Was Paid?](#) shows what happened when ransom was paid.

Paying ransom was not illegal unless the attack organization has been sanctioned by government — for example, if it was listed as a terrorist organization. Many law enforcement agencies, such as the F.B.I., did not support paying the ransom and encouraged executives to consider all options to protect their stakeholders before paying any ransom. As Gartner noted, “approximately 80% of organizations that pay ransom demands end up being exposed to another attack. Moreover, investing in ransomware protection measures generally cost less than paying the ransom.”<sup>7</sup>

Along with the dramatic growth in attacks, the ransomware insurance industry had grown, with over 100 companies providing some form of cybersecurity insurance. However, the rising frequency and demands of ransomware attacks had caused a significant increase in cyber insurance premiums. According to Roger Grimes, “Today, most organizations seeking cybersecurity insurance coverage face far fewer choices and will have to prove they have fairly strong cyber defences to get any policy. ... Insurance firms are looking for clients who take cybersecurity defence seriously. ... Companies covered by cybersecurity insurance are more likely to pay the ransom because all the money isn’t coming out of their pocket”; hackers understood this and specifically targeted organizations that were known to be insured.<sup>8</sup>

## LifeLabs Responded to the Attack

In reaction to the cyber attack, LifeLabs offered customers cybersecurity protection.<sup>9</sup> The protection included credit monitoring and fraud insurance for one year. As well, LifeLabs committed to monitoring the dark web to identify potentially exposed personal information. Lastly, LifeLabs provided identity theft insurance to protect against potential

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4. Gartner Inc, 2021, p. 7

5. For example, see Sharton, 2021.

6. Petrosyan, 2023, April 13

7. Gartner Inc, 2021, p. 7

8. Grimes, 2021.

9. LifeLabs, n.d.

damages related to identity theft and fraud. LifeLabs' CEO Charles Brown confirmed to customers that: "Our cybersecurity firms have advised that the risk to our customers in connection with this cyber attack is low and that they have not found any public disclosure of customer data as part of their investigations."<sup>10</sup>

Six months after the attack, LifeLabs CEO Charles Brown further acknowledged the breach in a statement to customers: "I cannot change what happened, but I assure you that I have made every effort toward making change to provide services you can trust." He then identified several changes, such as appointing a chief information security officer (CISO) and investing \$50 million to achieve ISO 27001 certification through an accelerated information security management program. He confirmed that cybersecurity firms continued to monitor the dark web and no public disclosure of customer data had been identified from the attack.<sup>11</sup>

## Governments Investigated; Customers Sued

In early 2020, Privacy Commissioners in Ontario, Saskatchewan, and British Columbia conducted their investigations of the reported data breach. The Saskatchewan privacy commissioner published their investigation findings on June 9, 2020.<sup>12</sup> The commissioner found that "because a fulsome, detailed report was not provided, LifeLabs did not demonstrate that it fully investigated the breach or adopted appropriate preventative measures."<sup>13</sup> Two weeks later, on June 25, 2020, the privacy commissioners in Ontario and BC published a short summary of their combined investigation.<sup>14</sup>

In late 2019, the first of several class-action lawsuits was initiated in British Columbia. The case filed on December 30 at the Supreme Court of British Columbia claimed that LifeLabs had breached the statutory privacy rights as set out in the Canadian Personal Information Protection and Electronics Documents Act (PIPEDA). In the first three months of 2020, at least ten lawsuits were filed against LifeLabs in British Columbia and Ontario.

## LifeLabs Responded to the Lawsuit and Considered a Possible Settlement

Throughout 2020 and 2021, the various lawsuits were consolidated until finally, one national action was confirmed, representing plaintiffs and class members from all jurisdictions. The amended statement of claim<sup>15</sup> was filed and published on February 3, 2022, and the certification hearing was scheduled for March 2 and 3, 2023, in the Ontario Superior Court of Justice.

The statement of claim relied on research prepared by the three privacy commissioners and published by the Saskatchewan Privacy Commissioner. In the statement of claim, the plaintiff stated that the security breach began in November of 2018 and possibly earlier. The security breach "continued undetected for at least a year before LifeLabs discovered it in or about late October 2019" (p. 15)<sup>16</sup>. During that one year, the cyber attackers accessed the personal information of LifeLabs' customers and exfiltrated that information.

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10. LifeLabs, 2019.

11. Sehgal, 2020.

12. Kruzeniski, 2020.

13. Kruzeniski, 2020, p. 1.

14. Information and Privacy Commissioner of Ontario, 2020.

15. Carter v LifeLabs, 2022.

16. Carter v LifeLabs, 2022.

The statement of claim identified at least ten deficiencies in the technical and procedural safeguards at LifeLabs, including unencrypted or weakly encrypted personal information, failing to use network segmentation and segregation, failing to install security patches and other software updates, etc.<sup>17</sup> The statement of claim also stated that LifeLabs had drafted IT security procedure documents but had not finalized or brought the procedures into effect until May of 2020, several months after the discovery of the security breach.

**Figure 3 – Summary Timeline of the LifeLabs Cyber Attack** outlines the timeline for the LifeLabs cyber attack. The reference documents that provided much of the data for the timeline are listed with the figure.

In preparation for the scheduled hearing, both parties completed cross examination of each other's witnesses and prepared documents for the court, summarizing the facts. Three documents were filed with the Ontario Superior Court of Justice, as follows:

- On January 16, 2023, the plaintiffs filed a 92-page “Factum of the Plaintiffs for Certification.”
- On February 17, 2023, LifeLabs submitted an 83-page “Factum of the Defendants, Responding to the Certification Motion.”
- On February 27, 2023, the plaintiffs filed a 25-page “Reply Factum.”

These 200 pages of facts, supported by sworn affidavits of key witnesses, provided new information about the cyber attack. Although the case had not been heard, and the full details may never be published if an agreement were reached between the two parties, the evidence and arguments provided in the three factums provided insight into the cyber attack and its potential impact. The sections below summarize the three factums.

## A. Factum for the Plaintiffs (January 16, 2023)

- Highly confidential test results for 131,957 LifeLabs customers were exfiltrated by the cyber attackers, for a period of approximately one year (p. 1).
- Personal information, including provincial health card information, for at least 8.8 million customers was also exfiltrated. (p. 1)
- The factum later notes, “LifeLabs cannot confirm that this is all that was accessed or exfiltrated” (p. 7).
- “Much of the data was unencrypted, making it highly vulnerable to theft and exploitation” (p. 2).
- When LifeLabs hired security experts on October 28, 2019, they discovered that cybercriminal “hackers had been lurking, undetected, in LifeLabs’ computers for almost a year” (p. 4).
- LifeLabs paid a ransom to the cybercriminals and received five datasets of client information; however, as the factum notes, “LifeLabs is unable to confirm that the cybercriminals deleted all versions of the data ... it cannot confirm that the cyber-criminals have not provided copies of some or all of the stolen data to other criminal actors.” (p. 5).
- To further establish this point, the plaintiff factum argued the following: “It is simply not reasonable to believe that criminals permanently deleted the information and that they never sold or will sell it. LifeLabs’ trust in the assurances it purchased from the criminals is contrary to the basic and common-sense adage that there is no honour among thieves” (p. 17).

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17. See [page 16 of the statement of claim](#) on the law firm’s website for the full list of the deficiencies.

## B. Factum of the Defendants, Responding to the Certification Motion. (February 17, 2023)

- LifeLabs confirmed that it received a ransom email on October 31, 2019, and following negotiations, the ransom was paid. The ransom amount was not disclosed. Nor did LifeLabs indicate if an insurance policy paid any portion of the ransom. The factum states: “The Cyber Attacker returned the data via an encrypted share link and stated that they did not retain any copies” (p. 2).
- LifeLabs agreed that it was true that “LifeLabs cannot state ‘with any certainty’ whether all of the stolen data was returned; cannot prove that none of the data was passed on to other criminals; and cannot prove that none of the data was for sale.” However, LifeLabs then asserted that “none of that is relevant” (p. 9).
- As their last statement of fact, LifeLabs noted: “Since the Cyber Attack, LifeLabs has not been approached by any person purporting to possess any of the stolen data, or by any customer presenting credible evidence of either an economic loss or an emotional or psychological impairment arising out of misuse by any criminal of the stolen data” (p. 10).

## C. Plaintiff's Reply Factum (February 27, 2023)

- Although the cyber attacker undertook to erase the stolen data, “one cannot rely on the word of a thief. LifeLabs admitted it has no proof that the data was erased” (p. 1).
- “The plaintiff’s experts unanimously agreed that the compromised data is often chopped up and sold in parts to maximize value.” LifeLabs’ assertion that the stolen data have not been found ignores this (p. 2).

The Ontario Superior Court hearing scheduled for March 2 to 3, 2023, was suspended on March 1 for this reason: “The parties agreed to adjourn this hearing pending the finalization of a potential settlement between the plaintiffs and defendants. If the potential settlement is finalized, it will require Court approval before it takes effect.”<sup>18</sup>

## The “Dirty Hands” Dilemma

LifeLabs decided to pay the ransom. LifeLabs reported the incident to the provincial privacy commissioners as required by law. LifeLabs also communicated with its customers and took protective action. For a large and reputable company, these decisions seemed appropriate.

LifeLabs paid ransom on the expectation that criminals would follow through with their commitments. The class action lawsuit contended that criminals cannot be trusted and suggested that the private client data may still be available.

The Factum for the Plaintiffs indicated that LifeLabs’ cybersecurity protection and procedures were weak or non-existent, with much of the data unencrypted. The stolen customer data included sensitive private medical information and financial information such as insurance accounts and credit card data. The attackers had almost one year of unchallenged access to the LifeLabs systems.

**Making a decision in this type of situation was sometimes referred to as the “dirty hands” moral dilemma.**

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18. Waddell Phillips, 2023.

Making a decision in this type of situation was sometimes referred to as the “dirty hands” moral dilemma, where any decision would include moral problems.<sup>19</sup> One would have to get one’s hands dirty to solve the problem; there was no simple, clean solution.

LifeLabs senior management faced a difficult decision: Was it ethical and appropriate to pay ransom in a cyber attack? CEO Charles Brown had joined LifeLabs one year earlier, in 2018. Board Chair Jon Hantho had been in his position for less than a year. Responding to the ransomware attack was a critical decision for the new leaders and for all members of the senior executive team. LifeLabs’ reputation and trust with clients and the community were at stake.

Senior executives at LifeLabs weighed several issues in making the decision about whether or not to pay the ransom:

- If the ransom was paid, would there be any guarantee that the attackers would not ask for additional ransom?
- By paying the ransom—an action that would become publicly known—would the organization encourage other criminals to attempt similar attacks either at this company or similar organizations?
- Should LifeLabs have followed the advice of cybersecurity experts, legal experts, and law enforcement?
- Would the LifeLabs insurance coverage pay for some or all the ransom expense, and what would be the impact on insurance for future cyber attacks?
- What was the likelihood that the criminals would follow through on their threat if the ransom was not paid?
- How would LifeLabs’ stakeholders (e.g., owners, employees, customers, governments) react when they learned that LifeLabs had paid the ransom?

## The Case Continued

In October 2023, the Ontario Superior Court of Justice approved the settlement reached in July 2023 between LifeLabs and the plaintiffs. KPMG was given the role of administering the claims and published a website where potentially over 8 million individuals could have submitted a claim. In the settlement agreement, which was available on the KPMG site, Lifelabs agreed to pay up to \$9.8 million in settlement funds. The total amount paid would depend on the number of claims made. The settlement agreement identified the maximum amount that could be paid to each claimant was \$150.

LifeLabs continued to operate as a successful enterprise. Lifelabs implemented additional cybersecurity measures in 2020. Public attention after the attack identified cyber vulnerabilities and the need for constant surveillance. In May of 2023, the chief information security officer (CISO) at LifeLabs was recognized for his leadership and commitment to innovation and secure services by the CIO Association of Canada as the Member of the Year. Ultimately, Lifelabs paid both the cybercriminals and the plaintiffs as a consequence of the firm’s weak cybersecurity strategy and invested internally in implementing additional cybersecurity measures to prevent future cybersecurity breaches. Did Lifelabs manage this cybersecurity breach well? Could they have managed it differently? What would you have done if you were President and CEO Charles Brown or Chair of the Board of Directors Jon Hantho and responsible for managing this cybersecurity crisis?

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19. Nick, 2021.

## Exhibits

Figure 1 – Annual Number of Ransomware Attacks Worldwide

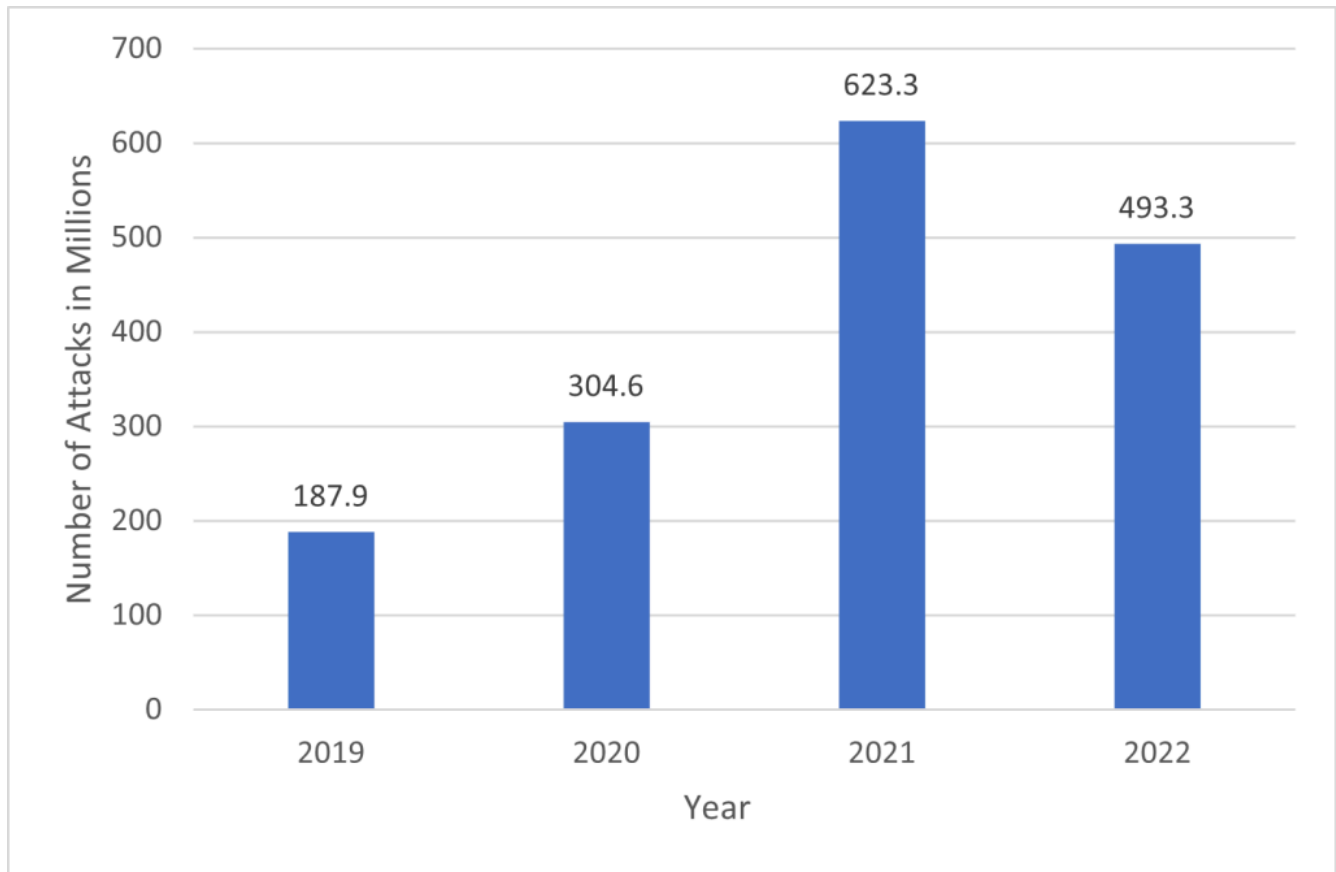


Figure 1 – Annual Number of Ransomware Attacks Worldwide [\[See image description.\]](#)

**Source:** Based on data from Petrosyan, A. (2023, August 31). [Number of ransomware attempts per year 2022](https://www.statista.com/statistics/494947/ransomware-attempts-per-year-worldwide/). *Statista*. <https://www.statista.com/statistics/494947/ransomware-attempts-per-year-worldwide/>

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Figure 2 – What Happened When Ransom Was Paid?

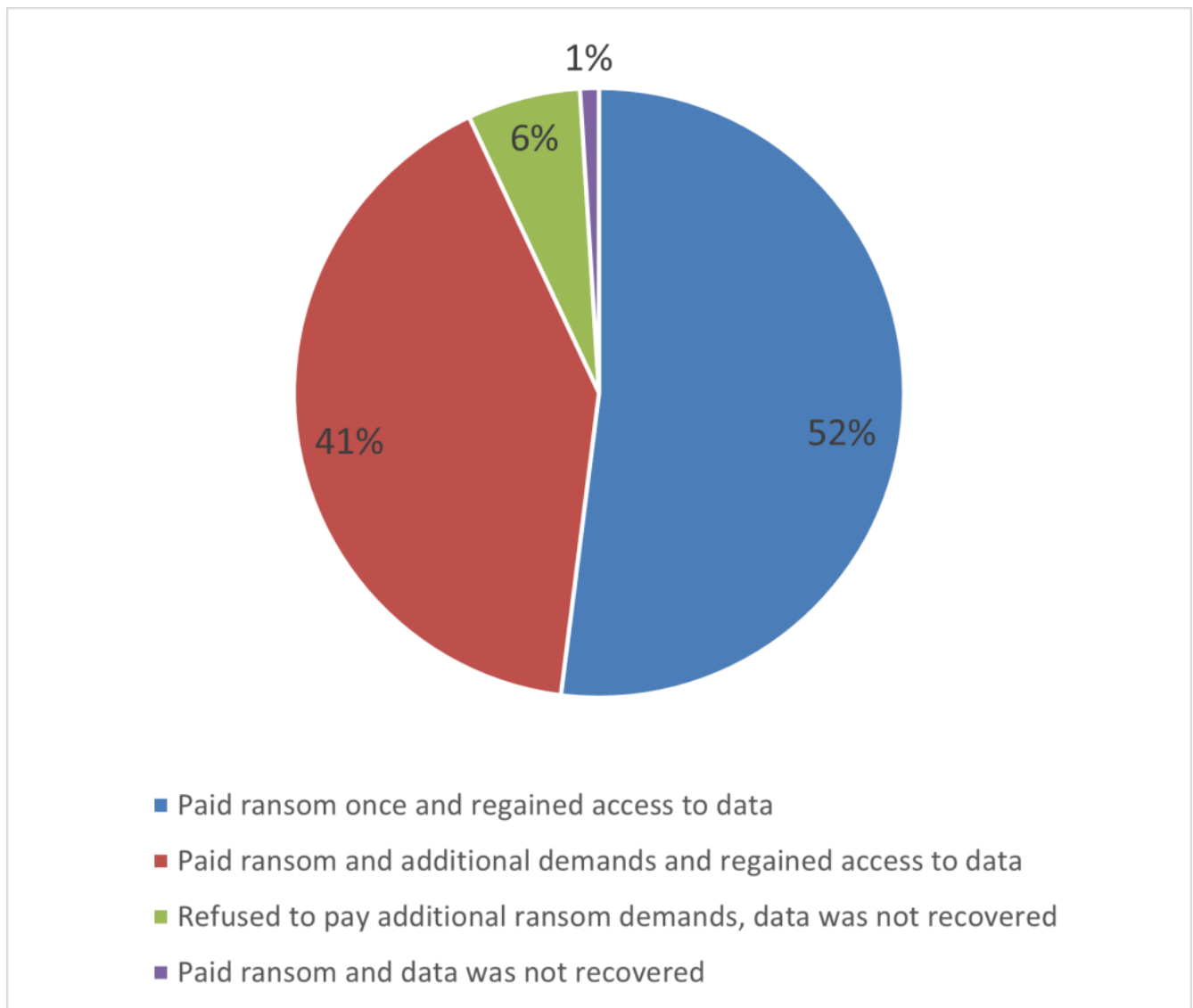


Figure 2 – What Happened When Ransom Was Paid? [\[See image description.\]](#)

**Source:** Based on data from Petrosyan, A. (2023, April 13) [Consequences of ransomware attacks for organizations following ransom payments worldwide in 2022](https://www.statista.com/statistics/1147471/outcomes-organizations-ransom-payments-it-professionals/). Statista. <https://www.statista.com/statistics/1147471/outcomes-organizations-ransom-payments-it-professionals/>.

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## Figure 3 – Summary Timeline of the LifeLabs Cyber Attack

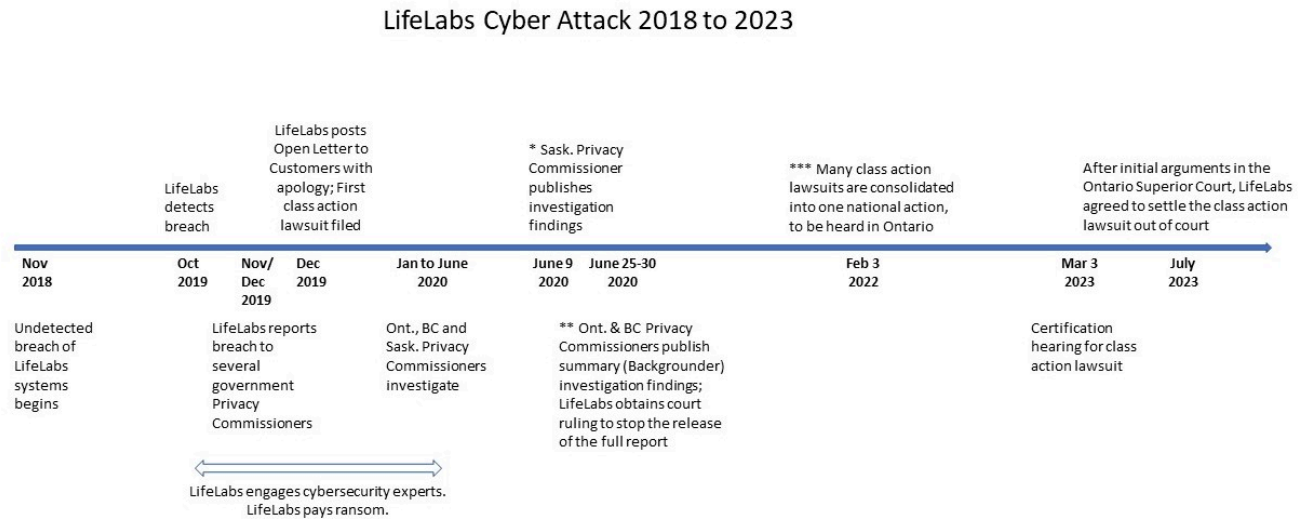


Figure 3 – Summary Timeline of the LifeLabs Cyber Attack 2018 to 2023. [See image description]

**Source:** Created by the author.

### Figure 3 Notes:

\* [June 9, 2020, Investigation Report on LifeLabs LP and Saskatchewan Health Authority \[opens a PDF\]](https://oipc.sk.ca/assets/hipa-investigation-398-2019-399-2019-417-2019-005-2020-019-2020-021-2020.pdf), Office of the Saskatchewan Information and Privacy Commissioner, <https://oipc.sk.ca/assets/hipa-investigation-398-2019-399-2019-417-2019-005-2020-019-2020-021-2020.pdf>

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## Image Descriptions

### Figure 1

A bar graph with year on the x-axis and the number of cyber attacks on the y-axis.

- 2019 is 187.9 million cyber attacks
- 2020 is 304.6 million cyber attacks
- 2021 is 623.3 million cyber attacks
- 2022 is 493.3 million cyber attacks

An arrow above the 2019 bar slopes up to the 2021 bar and is labelled 333% growth.

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## Figure 2

A pie chart shows the following data:

- Paid ransom once and regained access to data = 52%
- Paid ransom and additional demands and regained access to data = 51%
- Refused to pay additional ransom demands, data was not recovered = 6%
- Paid ransom and data was not recovered = 1%

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## Figure 3

A timeline of the LifeLabs cyber attack includes the following information:

Date	Action
November 2018	Undetected breach of LifeLabs systems begins.
October 2019	LifeLabs detects breach
October 2019 to June 2020	LifeLabs engages cybersecurity experts; LifeLabs pays ransom.
November & December 2019	LifeLabs reports breach to several government Privacy Commissioners.
December 2019	LifeLabs posts Open Letter to Customers with apology; First class action lawsuit filed.
January to June 2020	Ont., BC, and Sask. Privacy Commissioners investigate.
June 9, 2020	Saskatchewan Privacy Commissioner publishes investigation findings (See Note 1).
June 25 to 30, 2020	Ontario and BC Privacy Commissioners publish summary (backgrounder) investigation findings (See Note 2); LifeLabs obtains court ruling to stop the release of the full report.
February 3, 2022	Many class action lawsuits are consolidated into one national action, to be heard in Ontario (See Note 3).
March 3, 2022	Certification hearing for class action lawsuit.
July 2023	After initial arguments in the Ontario Superior Court, LifeLabs agreed to settle the class action lawsuit out of court.

Note 1: [June 9, 2020, Investigation Report on LifeLabs LP and Saskatchewan Health Authority \[opens a PDF\]](#), Office of the Saskatchewan Information and Privacy Commissioner, <https://oipc.sk.ca/assets/hipa-investigation-398-2019-399-2019-417-2019-005-2020-019-2020-021-2020.pdf>

Note 2: [June 25, 2020, Backgrounder: LifeLabs failed to protect personal information in 2019 breach \[opens a PDF\]](#), Information and Privacy Commissioner of Ontario and Information and Privacy Commissioner for British Columbia, <https://www.ipc.on.ca/wp-content/uploads/2020/06/2020-06-25-lifelabs-backgrounder-on-bc.pdf>

Note 3: [February 2022, Statement of Claim, Justice Belobaba, Ontario Superior Court of Justice \[opens a PDF\]](#), <https://waddellphillips.ca/wp-content/uploads/2022/02/LifeLabs-Fresh-as-Amended-Statement-of-Claim.pdf>

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# FRIENDLIER: GROWTH IN RE-USE

Richard S. Bloomfield

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*All figures in Canadian dollars unless otherwise noted.*

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In summer 2022, Shivansh Skuta reviewed the seed funding valuation of the reusable food container company, A Friendlier Company Inc. (Friendlier), presented by co-founders Kayli Dale and Jacquie Hutchings. Skuta was a seasoned investor in young start-up companies and had offered to review the request for seed funding<sup>1</sup> before Friendlier sought out other investors. Skuta was one of the initial investors in Friendlier and believed in its circular economy<sup>2</sup> and sustainability-focused business model, but they needed to ensure that the ask for other investors was feasible based on the company's projected financial position.

## History

### Friendlier

Friendlier was established in 2019 by CEO Kayli Dale and COO Jacquie Hutchings. Friendlier was a reverse logistics company for reusable, returnable packaging that aimed to eliminate single-use plastic takeout packaging entirely. Friendlier's three-step process made it easy for restaurants to be more eco-conscious. First, the restaurant customer could receive their order in a waste-free container. Second, the customer could scan the container's unique QR code via their smartphone or enter the code on the Friendlier website. Third, the customer could drop off the container in a return bin at any one of Friendlier's participating locations. Finally, within one to two weeks of drop off, the customer could claim their deposit return by requesting an e-transfer through the Friendlier platform.<sup>3</sup> See [Exhibit 1 – The Friendlier Process](#) for an illustration of this process.

Restaurants could begin their partnership with Friendlier by ordering a case of their reusable containers offered in a variety of sizes to accommodate differing demands. Friendlier provided restaurants with a no-commitment policy, allowing them to opt out at any time. Restaurants could reorder to replenish inventory in the same way they typically did with single-use products. After purchasing the containers, restaurants could begin to serve their meals using this premium, multi-use alternative. The collection, sanitation, and deposit returns were completed by the Friendlier team, allowing restaurants to focus on their typical operations. Since incorporation, Friendlier had partnered with over 100 businesses to bring more sustainable practices across Southwestern Ontario. These businesses were located in Guelph, Waterloo, Hamilton, London, Stratford, St. Marys, Ottawa, Collingwood, and the Greater Toronto Area (GTA).

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1. Seed funding was initial capital invested in a start-up company in exchange for equity or an equity stake upon conversion.

2. A circular economy was a model of production and consumption that attempts to share, lease, reuse, repair, refurbish, or recycle existing materials and products as long as possible to minimize the use of resources.

3. See the [Friendlier Company Inc. website](#).

Friendlier had been recognized as Canada's fastest-growing reuse company and received funding of \$100,000 from Sustainable Development Technology Canada.

## Kayli Dale and Jacquie Hutchings

Kayli Dale graduated from the University of Waterloo, located in Southwestern Ontario, with a Bachelor of Science in chemical engineering in 2020. Dale was highly involved in activities and societies during her undergrad. She was the Engineering Society director, an Orientation Day Leader, and the Waterloo Engineering Endowment Foundation (WEEF) class representative. Alongside these extra-curricular initiatives, Dale also worked as a co-op student for multiple companies. As a metallurgical fuels co-op student and a plant engineering co-op student, Dale was disheartened to see that sustainable corporate practices were not a priority to overall business operations.

Jacquie Hutchings also graduated from the University of Waterloo with a Bachelor of Science in applied science in 2020. Similar to Dale, Hutchings was a WEEF class representative and a part of the Engineering Fall Semi-Formal directorship team. In her third year of studies, Hutchings joined Dale on an exchange to Sweden, attending Lund University to study chemical engineering. This study term abroad provided the inseparable duo with the opportunity to learn from a new cultural perspective that emphasized minimalism and environmental sustainability. In comparing the North American practices with Sweden's, Dale and Hutchings indicated that they came back to Canada with a new passion: To live more purposeful lives and find ways to be friendlier to the planet.

Dale and Hutchings knew that when they graduated, addressing the climate crisis would be their first priority and that they wanted environmental sustainability to be at the forefront of their careers. Although they did not study business during their undergraduate degrees, they wanted to start their own company that aligned with these values. Their chemical engineering experience was valuable in creating the logistics systems required for Friendlier, and Dale created the first version of their smartphone app while they were still studying at the University of Waterloo. They originally prepared to launch a reusable cup system for events in the summer of 2020, but the COVID-19 pandemic required them to pivot toward the suddenly booming takeout packaging market. See [Exhibit 2 – Examples of Friendlier Containers](#) for examples of their most popular takeout packaging. The founders were able to launch with their first restaurant partner in Guelph late in 2020 and have since expanded across Ontario, including partnerships with SkipTheDishes and, more recently, Loblaws. Dale and Hutchings believed that their early success was rooted in Friendlier's vision and values. Friendlier continued to strive toward becoming a household name in the reusable packaging industry by substituting a single-use linear process with a circular process.

**Although they did not study business during their undergraduate degrees, they wanted to start their own company that aligned with [their] values.**

## Industry and Competitors

### Reusable Packaging Industry

The United Nations Environment Programme reported that nearly 7 billion of the 9.2 billion tonnes of plastic produced from 1950 to 2017 ended up in landfills or was dumped into rivers, lakes, and oceans.<sup>4</sup> As people became aware of the environmental impact dumping plastic had, there was a growing demand for sustainable packaging alternatives. As such, the global sustainable packaging market was valued at \$164 billion in 2020 and was expected to have a compound annual growth rate of 6.6% from 2022 to 2031.<sup>5</sup> Over the past five years, there had been a 71% rise in consumer searches for sustainable goods, and this rate was steadily increasing.<sup>6</sup> However, consumers needed sustainability to be affordable if they were to consider it a viable option. Although Canadians acknowledged that sustainable alternatives were more desirable over single-use plastics, the willingness to pay for them was limited. A Canada-wide survey revealed that 93.7% of respondents were personally motivated to reduce consumption of single-use plastic food packaging but less willing to pay a premium for sustainable alternatives.<sup>7</sup>

The Government of Canada had plans to ban single-use plastics and ensure the companies that manufacture and sell plastic products adhere to new standards.<sup>8</sup> The new regulations had been one of the driving forces behind the renewed interest in sustainable packaging companies. Two such companies are Dare Foods and Pactiv. Dare Foods was a family-owned business based in Canada. During its long 132 years, Dare Foods had developed strong relationships within the industry and a loyal customer base.<sup>9</sup> Meanwhile, Pactiv was a manufacturer and distributor of food packaging and food service products across North America and was owned by a parent company worth \$1.72 billion: Pactiv Evergreen. Pactiv had many manufacturing sites and distribution warehouses of its own, which gave it significant leverage over its competition. Although there were many other food packaging companies that offered similar services, Dale and Hutchings considered Dare Foods and Pactiv to be their main competitors in the industry.

### Customers

Rather than selling directly to independent restaurants, Friendlier sold their products to distribution companies that then sold to restaurants. By using packaging distributors, Friendlier was able to simultaneously save time and resources and also reach a greater number of restaurants. Additionally, Dale and Hutchings knew that it was important to have their product used more frequently, so they turned to contract food service companies, which included many corporate and university cafeterias, where people often throw out disposable containers immediately after use.

In general, Dale and Hutchings found that most food service businesses had much higher demand during December and, therefore, increased their orders from Friendlier in November. To prepare for this surge in demand each year, the founders anticipated needing an extra \$200,000 of cash to acquire inventory in October, and they were unsure if their current line of credit limit of \$300,000 would be sufficient.

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4. UN Environment Programme, n.d.

5. Businesswire, 2022.

6. Climate Action, 2021.

7. Charlebois et al., 2021.

8. Prime Minister's Office, 2019.

9. Dare Foods, n.d.



## Financial Request

Both founders were aware that global corporations were making large commitments to move away from single-use packaging<sup>10</sup> and that meant they would need the support of companies like Friendlier to meet these commitments. Given the prevailing trends, and the founders' belief that they had completed a proof of concept with large partners like Loblaw's, they projected their sales and deferred revenue to grow by 700% in 2022 and a further 250% in 2023. See the following exhibits for previous financial statements:

- [Exhibit 3 – A Friendlier Company Inc. Statements of Earnings](#)
- [Exhibit 4 – A Friendlier Company Inc. Statements of Retained Earnings](#)
- [Exhibit 5 – A Friendlier Company Inc. Statements of Financial Position](#)
- [Exhibit 6 – A Friendlier Company Inc. Statement of Cash Flows](#)
- [Exhibit 7 – Ratio Analysis](#)

To support rapid growth across all of Ontario, Dale and Hutchings expected that they would need to rent and equip two additional cleaning facilities, as well as increase their capacity at their Guelph and Ottawa locations. Total rent for all locations was expected to be \$220,000 annually for the next three years. They expected the cost of all the equipment needed would be close to \$690,000 and would have a useful life of 10 years. In addition, they would need to purchase three delivery trucks to support picking up and dropping off containers to their distributors. The trucks would cost \$60,000 each and were expected to last five years. All new assets would have no residual value and would be depreciated using the straight-line method. In addition to the assets required to support their growth, the founders would have to hire five additional full-time staff in 2022, doubling their wages, salaries, and benefits expense from the previous year. They expected wages, salaries, and benefits to be the same percentage of sales in fiscal 2023 as fiscal 2022.

The founders admitted that managing their supplier and customer accounts would be challenging during such a high growth phase of their business. However, Dale and Hutchings believed that they could expect their accounts receivable days to only increase by 10 days over fiscal 2021 next year. They also predicted that their strong relationship with the container manufacturer they worked with would allow them to extend their accounts payable days by 15 next year and a further 10 days in 2023. To support the growth projected, a significant increase in inventory would be required. Therefore, this was one of the reasons Friendlier needed to raise further funding for the business. The projected days of inventory would remain the same in fiscal 2022 and decrease to 365 days in fiscal 2023.

The founders expected that most other operating expenses, excluding cost of goods sold,<sup>11</sup> would likely increase at the same rate as sales growth, but they also knew there were at least some expenses that did not necessarily relate to sales growth. For example, Dale and Hutchings planned to spend \$80,000 and \$110,000 on advertising and promotion, and they knew that their insurance policy would increase to \$3,000 and \$5,000 in 2022 and 2023, respectively.

Dale and Hutchings both knew that the next stage of the business would require significant growth across all areas of their business and would require a large amount of capital to fund appropriately. Although the founders wanted to preserve equity ownership for themselves, they knew that it would not be possible to fund this growth with debt, given the cash flow implications this would have. The founders were hoping to raise between \$3,000,000 and \$5,000,000 in equity funding during their upcoming seed round but were not sure if this would be sufficient to support their growth.<sup>12</sup>

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10. Starbucks, 2022.

11. Dale and Hutchings expected that with economies of scale, their cost of goods sold would drop to 60% of sales in 2022 and 45% in 2023.

12. Dale and Hutchings assumed \$0 in cash for their upcoming projections.



Their existing long-term debts would remain the same as the previous year, and they expected the total bank charges and interest expense for the business to be the same dollar amount as fiscal 2021.

## Decision

In reviewing the 2022 Friendlier seed funding evaluation, Skuta was optimistic about the future of the company but knew they needed to better understand the capital required to determine whether the investment was viable. The owners believed strongly that businesses in the future would have to be built on a foundation of environmental sustainability, rather than simply “adding on” sustainable projects in an attempt to make consumers feel better about their choices. While Skuta agreed with the owners’ mission, they wanted to fully understand the capital Friendlier would require and needed to conduct a thorough review of the past financial performance of the company by analyzing the statement of cash flows and ratios as well as projecting two years of financial statements, including any extra cash risks predicted. Determined to gain a better understanding of the capital required, Skuta rolled up their sleeves and began their detailed financial review.

## Exhibits

### Exhibit 1 – The Friendlier Process



A promotional postcard illustrating the steps of the Friendlier process. [\[See image description\]](#). **Credit:** © The Friendlier Company, Inc. All rights reserved. Used with permission. This image may only be used and distributed as part of this case and may not be reused on its own.

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## Exhibit 2 –Examples of Friendlier Containers







Examples of the Friendlier food containers. **Credit:** © The Friendlier Company, Inc. All rights reserved. Used with permission. This image may only be used and distributed as part of this case and may not be reused on its own.



Examples of the Friendlier food containers. **Credit:** © The Friendlier Company, Inc. All rights reserved. Used with permission. This image may only be used and distributed as part of this case and may not be reused on its own.



An example of the Friendlier food containers. **Credit:** © The Friendlier Company, Inc. All rights reserved. Used with permission. This image may only be used and distributed as part of this case and may not be reused on its own.

[\[See image description.\]](#)

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## Exhibit 3 – A Friendlier Company Inc. Statements of Earnings (for the Years Ending December 31)

<b>Statement of Earnings Accounts and Subtotals</b>	<b>2021</b>	<b>2020</b>
<b>Revenue</b>		
Net Sales	\$79,206	\$8,415
<b>Cost of Goods Sold</b>		
Beginning Inventory	8,715	–
Purchases	128,340	10,995
Ending Inventory	80,818	8,715
Cost of Goods Sold	56,237	2,280
<b>Gross Profit</b>	<b>\$22,970</b>	<b>\$6,134</b>
<b>Expenses</b>		
Advertising and Promotion	\$24,817	\$2,673
Depreciation	4,168	–
Bank Charges and Interest <sup>13</sup>	377	113
General and Administration	12,011	1,044
Insurance	1,754	295
Meals and Entertainment	806	267
Rent	68,713	1,738
Professional Fees	5,097	896
Subcontractors	7,294	–
Travel	1,433	112
Wages, Salaries, and Benefits <sup>14</sup>	228,224	19,213



Statement of Earnings Accounts and Subtotals	2021	2020
<b>Total Expenses</b>	<b>\$354,693</b>	<b>\$26,350</b>
<b>Net Loss From Operations</b>	<b>\$(331,723)</b>	<b>\$(20,215)</b>
<b>Other Revenue and Expenses:</b>		
Grants	\$149,613	\$17,225
<b>Net Loss</b>	<b><u>\$(182,110)</u></b>	<b><u>\$(2,990)</u></b>

**Source:** Based on financial data supplied by A Friendlier Company Inc.

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## Exhibit 4 – A Friendlier Company Inc. Statements of Retained Earnings (for the Years Ending December 31)

Statement of Retained Earnings Accounts	2021	2020
Beginning retained earnings	\$(2,990)	–
Add: Net loss	\$(182,110)	\$(2,990)
Less: Dividends	–	–
<b>Ending Retained Earnings</b>	<b><u>\$(185,101)</u></b>	<b><u>\$(2,990)</u></b>

**Source:** Based on financial data supplied by A Friendlier Company Inc.

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## Exhibit 5 – A Friendlier Company Inc. Statements of Financial Position (as at December 31)

### ASSETS

13. No interest was charged on the long-term note; therefore, this expense represents only bank charges.

14. Approximately 50% of these costs were for fixed salaries.

Statement of Financial Position Accounts and Subtotals		2021	2020
<i>Current Assets:</i>			
Cash		\$429,856	\$34,637
Accounts receivable		20,401	4,155
Inventory		80,818	8,717
Income tax recoverable <sup>15</sup>		55,172	–
<b>Total current assets</b>		<b>\$586,247</b>	<b>\$47,509</b>
<i>Fixed assets:</i>			
Furniture and equipment <sup>16</sup>	\$12,350		
Less: Accumulated depreciation	<u>\$1,235</u>	\$11,115	
Vehicle <sup>17</sup>	\$19,551		–
Less: Accumulated depreciation	<u>\$2,933</u>	\$16,618	–
<b>Total fixed assets</b>		<b>\$27,733</b>	<b>–</b>
<b>Total assets</b>		<b><u>\$613,980</u></b>	<b><u>\$47,509</u></b>

## LIABILITIES AND EQUITY

15. Income tax recoverable was expected to grow by 50% in each of the next two years.

16. Useful life of 10 years.

17. Useful life of 5 years purchased part way through the fiscal year.

**Statement of Financial Position Accounts and Subtotals****Current Liabilities**

Accounts payable and accrued liabilities	\$5,438	\$1,463
Deferred revenue <sup>18</sup>	70,617	–
Due to shareholders	10,013	10,013

<b>Total current liabilities</b>	<b>\$86,068</b>	<b>\$11,476</b>
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Long-term debt	712,990	39,000
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<b>Total liabilities</b>	<b>\$799,058</b>	<b>\$50,476</b>
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**Shareholders' equity**

Capital stock	23	23
Retained earnings	(185,101)	(2,990)

<b>Total equity</b>	<b>(185,078)</b>	<b>(2,967)</b>
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<b>Total Liabilities and Equity</b>	<b><u>\$613,980</u></b>	<b><u>\$47,509</u></b>
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**Source:** Based on financial data supplied by A Friendlier Company Inc.

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18. Deferred revenue represented deposits owed to customers who returned their Friendlier containers.

## Exhibit 6 – A Friendlier Company Inc. Statement of Cash Flows (for the Years Ending December 31)

**Statement of Cash Flow Accounts and Subtotals****2021****OPERATIONS**

Net Loss	\$(182,110)
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**Adjustments to Cash Basis:**

Depreciation	4,168
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Accounts Receivable	(16,246)
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Inventory	(72,102)
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Income Tax Recoverable	(55,172)
------------------------	----------

Accounts Payable and Accrued Liabilities	3,975
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Deferred Revenue	70,617
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<b>Net Cash Flow from Operations</b>	<b>\$(246,870)</b>
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**Financing**

Due to Shareholders	\$ –
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Long-Term Debt	673,990
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Capital Stock	–
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<b>Net Cash Flow from Financing</b>	<b>\$673,990</b>
-------------------------------------	------------------

**Investing**

Furniture and Equipment	\$(12,350)
-------------------------	------------

Vehicle	(19,551)
---------	----------

<b>Net Cash Flow from Investing</b>	<b>\$(31,901)</b>
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<b>Beginning Cash</b>	<b>\$34,637</b>
-----------------------	-----------------

Total Cash Flow	395,219
<b>Ending Cash</b>	<b>\$429,856</b>

**Source:** Based on financial data supplied by A Friendlier Company Inc.

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## Exhibit 7 – Ratio Analysis

<b>Ratio Analysis</b>	2021	2020
<b>PROFITABILITY</b>		
<b>Revenue</b>	100.0%	100.0%
Cost of Sales	71.0%	27.1%
Gross Profit	29.0%	72.9%
<b>Expenses</b>		
Advertising and Promotion	31.3%	31.8%
Depreciation	5.3%	–
Bank Charges and Interest	0.5%	1.3%
General and Administration	15.2%	12.4%
Insurance	2.2%	3.5%
Meals and Entertainment	1.0%	3.2%
Rent	86.8%	20.7%
Professional Fees	6.4%	10.6%
Subcontractors	9.2%	–
Travel	1.8%	1.3%
Wages, Salaries, and Benefits	288.1%	228.3%
<b>Total Expenses</b>	447.8%	313.1%
<b>Net Loss from Operations</b>	-418.8%	-240.2%
<b>Other Revenue and Expenses:</b>		
Grants	188.9%	204.7%



<b>Net loss</b>	<b>-229.9%</b>	<b>-35.5%</b>
<b>LIQUIDITY</b>		
Current Ratio	6.8x	4.1x
Acid Test	5.2x	3.4x
Working Capital	\$500,180	\$36,033
<b>EFFICIENCY</b>		
Age of Receivables (Days)	94	180
Age of Payables (Days)	15	49
Age of Inventory (Days)	524	1,395
<b>STABILITY</b>		
Net Worth/Total Assets	N/A	N/A
Interest Coverage	N/A	N/A
<b>GROWTH</b>		
Revenue Growth	841%	–
Profit Growth	N/A	–
Asset Growth	1,192%	–

**Source:** Based on financial data supplied by A Friendlier Company Inc.

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## Image Descriptions

### Exhibit 1

A promotional graphic with four vertical panels.

- Panel 1 reads “How to be friendlier to the planet.”
- Panel 2 reads “Step 1: Order – request friendlier containers with your food order” over a photo of a salad in a takeout container
- Panel 3 reads “Step 2: Scan – scan the container using the A Friendlier Company app” over a photo of a person scanning a QR code on the bottom of the takeout container with their phone.
- Panel 4 reads “Step 3: Return – return your container to a collection bin,” over a photo of a hand dropping a clean container into a collection box labelled “reuse return.”

Below the four panels is a horizontal box with contact information: (519) 982-5685; [www.friendlier.ca](http://www.friendlier.ca); [info@friendlier.ca](mailto:info@friendlier.ca), and the Friendlier logo.

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## Exhibit 2

Three photos of blue Friendlier takeout food boxes in different sizes and widths, containing different types of foods, including French fries, burgers, salad bowls, fish and chips, and cheesecake.

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# PAYTON NEEDS A PROTOTYPE

Alexander Miller

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*All figures in Canadian dollars unless otherwise noted*

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On a hot July evening in the summer of 2022, Payton Mackey was walking back to her summer sublet in London, Ontario, Canada, frustrated and leafing through her prototype sketches. She had several product designs for her business, Fidgetry, and was anxious to get a physical product in her hands to show prospective customers. Her entrepreneurship program mentor had asked her why a prototype was so important. “I need to physically hold it; I need to know exactly what it will be before I can proceed,” Mackey had proclaimed. “How can I get customer feedback, build marketing materials, or do forecasting if I don’t have one?”

However, Mackey’s summer program was more than half over and each day she didn’t have a prototype stymied her progress even further. She found herself wondering how she would know what the right time and the right method was to get a physical prototype. Her mentor’s words stuck with her as she climbed the hill to her apartment. “Payton, you’ve done an amazing amount of research and seem to know every possible way to get a prototype, but your goal was to have this thing running by the time school starts again. You need to make a decision and put it in motion, there is no reason to come back next week still trying to decide.”

Mackey had all the information but needed to decide between six potential manufacturing partners ranging from small-scale and local to international, and between prototype specialists that all used different processes with different advantages. She also had to at least consider the idea of drastically changing her business plan and buying a pre-made product instead of commissioning the manufacturing herself.

## Background

### Payton Mackey

Originally from Kitchener-Waterloo area, Payton Mackey was a Dean’s Honor List student who had just completed her first year of business studies at Huron University College. Mackey enjoyed her first year and was looking to make the most out of her summer. She was accepted into the Morrisette Entrepreneurial Summer Internship and she was excited, as she felt this opportunity would give her plenty of business experience while still allowing her to visit home on the weekends.

Mackey’s goal was to design most of the business over the summer so that the operational demand would be minimal in the fall and winter when she was busy with her second-year studies. She also sensed that this business was about the learning experience and did not want to make a major personal investment in the business.

## Morrisette Institute for Entrepreneurship

The Morrisette Institute for Entrepreneurship was born out of the Ivey Business School at Western University and has expanded to serve students of all disciplines and faculties on their business journeys.<sup>1</sup> The Institute provided access to coaching, learning resources, and funding, and acted as liaisons between young entrepreneurs and the broader Western and London community.

The Summer Internship Program<sup>2</sup> accepted a cohort of 15 students each summer, giving them access to start-up funds, a shared office space, and workshops to develop their business from concept to successful venture. Over the summer, students were expected to create a viable business model, conduct market research, formulate a sales and marketing strategy, build a financial model, develop sales skills, engage with potential customers, and construct a minimum viable product through prototyping to present to focus groups from their demographic.

## Adult ADHD

Mackey decided to focus her business on adults with attention-deficit/hyperactivity disorder (ADHD). Mackey felt that, although society had made serious progress towards addressing and accepting ADHD in children, the market had not addressed the needs of adults with ADHD. Furthermore, Mackey wanted to start a business based on both profits and social good. For these reasons, she decided to focus on the needs of the adult ADHD demographic—one she was familiar with—and to address a pain point<sup>3</sup> of that market.

ADHD was a mental health disorder often characterized by one's difficulty focusing, atypical hyperactivity, and problematic impulsive behaviour. While ADHD was commonly recognized and treated in childhood, if a person with ADHD was undiagnosed into adulthood, it could lead to unstable relationships, poor work and school performance, and low self-esteem<sup>4</sup>. One of the symptoms Mackey often experienced was the impulse to fidget<sup>5</sup> with things. Fidgeting could cause adults with ADHD considerable anxiety in the workplace out of fear of causing a distraction and potential social misunderstandings.

## Fidgetry

Mackey created Fidgetry to address the need for adults with ADHD to fidget discreetly in the workplace. Mackey knew her product would be for a niche market but was unsure of the actual size of the market. Knowing the size and dynamics in the market would also help her assess her competition. She learned of a main competitor that seemed to have a large market share that was selling devices for \$25 each and had achieved a half million in sales over 10 years. It was early in the process, but Mackey envisioned an end customer price between \$9 to \$12 per unit, which would help her product remain competitive.

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1. Buchan, 2021.

2. Buchan, 2021.

3. Pain point was a term used to describe a typical struggle or grievance of a target market in their daily lives that they would in theory pay for a solution to.

4. Mayo Clinic, 2019.

5. Fidgeting was a term used to describe making small movements with your body, usually your hands and feet. It was associated with not paying attention and often reflected discomfort and restlessness.

## Mentorship Meetings

Huron University College offered students course credit for summer internships. Mackey combined the Morrisette Summer Internship opportunity with Huron's interdisciplinary course credit. This enabled her to not only take advantage of the workshops through the Morrisette Institute but also to be supervised by her former professor, who had a background in entrepreneurship.

Mackey presented her plans for the business, including her designs. She expressed her desire to get a prototype as soon as possible as the mechanics of the products would be the main selling points. Her mentor expressed concerns that the designs and business plan may change as she got feedback from the target market. He suggested waiting until after some focus groups with adult women with ADHD and their particular needs. However, Mackey felt that not having a physical prototype would limit the customer feedback she would get from interviews and focus groups.

## Design

### The First Design

Mackey had a talent for designing moving, dynamic jewelry pieces. She had drawn up several designs upon being accepted into the summer internship program (see [Exhibit 1 – Payton Mackey Sketches](#)). Her goal was to create a collection of professional accessories, whose moving parts would allow for discreet fidgeting.

### The Second Design

Mackey was struggling to figure out how to acquire a prototype and, in the meantime, conducted focus groups and interviews with the target market. After several discussions, she discovered that most of the individuals who had heard of fidget devices had tried them but tended to forget them. She also discovered that being discreet was more important than the type of fidgeting.

Based on this feedback, she expanded her potential product offering to include fidget devices attached to a keychain magnet. This way, the device would be portable, easy to remember, and could be used with one hand to avoid drawing attention. The commonality between products would be a magnet-based clasp on the keychain to allow easy removal of the fidget device from a set of keys or a purse.

Despite settling on a design, Mackey explored several methods to produce a prototype and needed to select a method promptly.

## Manufacturing Types

### Manufacturing Process

Mackey quickly learned a lot about manufacturing. She preferred that the final products all be made of metal to be durable enough for prolonged use. However, the prototype's main purpose was proof of concept and to get market feedback. Mackey had identified several manufacturing processes that could be used to make the prototype and products.

## CNC (Computer Numerical Control) Machine

A CNC machine<sup>6</sup> is a routing<sup>7</sup> device that carved or cut a programmed pattern into a material such as wood, metal, or plastic. The system used a three-direction axis to cut the right path into the material to carve out the desired components. Often several parts to the design were carved on one sheet of material and then assembled. Since some machines can cut patterns into many different materials, CNC manufacturing was prevalent in Ontario's auto industry. The entire CNC industry was valued at \$7.9 billion (US).<sup>8</sup> CNC manufacturing required an efficient design to minimize scrap material and make assembly simpler. [Exhibit 2 – Typical CNC Machine](#) demonstrates a typical CNC machine.

CNC Machines could cut directly from a .cad file<sup>9</sup> and a manufacturer would often offer in-house .cad or CAD file development. Mackey determined that CNC routing was, overall, more time-consuming than mold injections, described in the next section.

## Mold Injection

Injection molds, which were usually made from steel, contained cavities in the shape of the object being manufactured. Melted plastic was injected into the mold, filling the cavities. The mold would be cooled, and the resulting object would be ejected by pins. This process was similar to a Jell-O mold which was filled, then cooled, to create the final product. The idea was to make a mold with the negative space for the object you desired; the melted substance filled those spaces when added to the mold. It was possible to complete this process with melted metal powder instead of plastic in a mold made of a metal with higher melting point.<sup>10</sup>

Molds lasted a long time and could be used for high volume production with a low unit cost. They also produced significantly less scrap than a CNC. This was because you would only use materials to fill in the parts of the mold you desired with only the path between components resulting in scrap. However, the cost for mold development was high, and any minor flaws in the mold or changes in design would be an expensive error. Additionally, to create the mold impression Mackey might have needed a CAD file to 3D-print, or to CNC manufacture a prototype first—all of which would increase the cost and time it would take her to produce the device.

## Additive Manufacturing

Additive manufacturing was the process of creating an object by building it one layer at a time. This was most popularly known as 3D printing. It was the opposite of subtractive manufacturing, in which an object was created by cutting away at a solid block of material until the final product is complete. Though 3D printing was a much newer process, it had revolutionized manufacturing and become much more readily available due to its abundance of uses. See [Exhibit 3 – Typical 3D Printer](#) for an example of a 3D printer. The 3D printers themselves were expensive, but Mackey found that setting up a new design to produce was not as time-consuming and had a lower cost compared to injection molding. Overall, the scale for 3D printing better justified an initial investment. However, printing was a slow process and mass production was still better suited to the subtractive manufacturing processes. Additionally, while 3D prints of plastic are common, 3D prints of metal were still new and often prone to defects.

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6. ShopBot Tools, 2020.

7. Routing is the term for the shaping of a material using cutting and trimming, often at a high speed.

8. Mordor Intelligence, n.d.

9. cad is the extension for a 3D graphics file, created using computer-aided design software.

10. Rogers, 2015.

## Computer-Aided Design (CAD)

### CAD Design File

Mackey soon discovered she needed a CAD file to develop a prototype, no matter which manufacturing process she selected. These files consisted of a technical drawing, blueprint, schematic, or 3D rendering of an object.<sup>11</sup> She also needed special software to create, open, edit, and export these CAD files. Regardless of whether she wanted to print the prototypes herself, or use a local, North American, or international producer, she needed to have a CAD file made based on her sketches and designs. These files could be used to program 3D printers or CNC machines. She had identified three methods for creating this CAD file: She could learn to do it herself, contract out the task, or use a manufacturer's in-house designer.

### Learn CAD File Design

Mackey realized that, although she was not familiar with creating CAD files, she could gain free access to software to write her own CAD file. She could then use free online tutorials to learn how to create a design. She estimated a few weeks of tutorial and trial and error would result in a functional design for her product. However, she had reservations about the resulting quality of her product, given her limited experience, and wondered if multiple attempts would be needed when printing or producing the product from the file.

### Third-Party Contracting

Mackey was familiar with the freelance service provider marketplace Fiverr<sup>12</sup>. She realized that she could easily find several people on the service with experience creating CAD files based on sketch designs. Based on a preliminary search, she figured it would cost between \$60 and \$100 per design to have the files created. Mackey felt these professional designs would be much less likely to have beginner errors but worried they would still not fit the specifications of the manufacturer she partnered with.

### In-House Designers

Mackey had contacted several manufacturers who could produce the prototype and most of them offered an in-house designer to create the CAD file. Obviously, these files would work with their manufacturing process; however, they had minimum order quantities (MOQs) to ensure they'd recuperate the cost. Mackey had contacted a few manufacturers who required \$3000 to \$5000 worth of orders for each design before they would consider making the CAD file.

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11. Iqbal, 2020.

12. See the [Fiverr website](#) for more information.



## Manufacturer Selection

### Manufacturer

After Mackey had identified several options to make the physical prototypes, she figured she would likely need six to 10 prototypes for the first phase of the business.

### Local Mold Injector

Southwestern Ontario was also home to several manufacturers who used mold injections to produce plastic or metal products. Mackey had contacted one such manufacturer, Precise Casting Inc., to learn more about mold injections.<sup>13</sup> MOQs for molding were much higher cost than CNC machines because a custom mold had to be created. The MOQs for her design would be \$3000 per mold. She would have been able to use one mold per prototype design and would own the mold after creation. The mold would have contained all needed parts per prototype but still require some assembly and would cost \$0.30 per product for materials and \$1.20 per product for labour. This process seemed faster as there would be no delays in shipping and the cost to pick up a produced batch would be negligible, as the facility was within an hour drive of Mackey.

### Local CNC Operator

Mackey knew that she could get similar advantages with shipping if she used a local CNC operator within an hour's drive. The CNC operator required a base MOQ of \$4000 but one CAD file could be used for all six to 10 prototypes. The cost per product was a bit more at \$0.40 per unit and had similar labour costs. If she provided the CAD file, they would set the MOQ at \$1500.

### Local Additive Manufacturing

Mackey had found a Hamilton-based 3D printer, Canadian Additive Manufacturing Solutions (AMS), meaning she would be able to drive and pick up completed batches.<sup>14</sup> AMS offered in-house CAD design help or would use a file provided by Mackey. If an in-house designer helped create the CAD file, a MOQ of 200 units was required. If they produced from a CAD file Mackey provided, the MOQ was 50 units.

AMS would be able to produce a prototype quickly; however, each print run could take approximately four hours to produce one complete item. They could complete a working fidget device for \$14 per item. Mackey was concerned that most 3D printing companies produced stationary objects and might struggle with designs intended for prolonged movement.

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13. See the [Precise Castings Inc. website](#).

14. See the [Canadian Additive Manufacturing Solutions website](#).

## North American Prototype Specialist

Several facilities existed across North America who specialized in prototypes and working with small batch orders for start-up firms.<sup>15</sup> Mackey described these facilities as being for “problem projects” and were much more adaptable to unique design needs. These facilities required Mackey to use their in-house CAD development and had similar prices and MOQs to the local additive processes for in-house development. However, they would also include duties and tariffs that would impact cost, which she estimated at being an additional 2.5% in taxes and a \$35 flat fee to ship.

The advantage of this alternative was the company’s willingness to work with unique needs; however, the shipping times were longer (two to three weeks). Furthermore, Mackey was concerned because she wanted magnets in the design, and magnets could require specialty equipment and a company that demonstrated the willingness to take on the challenge.

## Offshore Production

Mackey had also contacted a number of international producers who could create prototypes to potentially implement into full scale production. These international producers had by far the lowest cost per unit at \$5, however with the offshore companies the shipping costs were \$200 and the times for the shipping were estimated at four to six weeks. Additionally, these producers required a two-month production time and the largest MOQ of \$5000.

## Community 3D Printer

Mackey did have access to 3D printers through a public library in Kitchener-Waterloo and a friend with a 3D printer also offered their assistance. The costs to use these were minimal. The prototypes would only take a few hours to print and be in hand immediately, however, the prototype would be plastic and not representative of the metal final product she wanted to produce. She was not open to the end product being made of plastic.

## Buy

Mackey’s mentor had suggested finding a product that was already available for sale on the website Alibaba.com but that was not necessarily targeted at this niche group or purpose. This alternative would change the nature of her business from a producer to more of a broker, bringing an existing product to a new market. They looked together and found several suppliers of the clasps she was envisioning, as well as dozens of fidget products that could be attached to them, see [Exhibit 4 – Fidgetry Products Pricing](#) for examples and pricing.

Mackey knew that she would want to order samples to vet suppliers if they went with this method. However, the challenge was that many of these distributors had MOQs or prohibitive prices for small quantities. They could also charge expensive shipping fees or have long delivery times, which could push back her business timelines.

Overall, this alternative would make her business more focused on creating a brand and proper distribution and marketing, rather than on product development. Her mentor challenged Mackey, suggesting that what she wanted already existed, explaining that “Goodyear didn’t invent the wheel, they simply learned how to market and distribute it better.” He warned her that inventing was costly and suggested that she focus on his true concern, which was how to

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15. For example, see the [Au Enterprises website](#).

reach such a niche market. However, Mackey really wanted the satisfaction of producing her own product with a design that better served the market.

## Decision

Mackey's mentor explained to her, "You are not marrying the decision. If you don't like the end product or the process, after you try it, just switch. If you're going to insist on a prototype to move forward, then get one." Mackey responded. "In theory it is easy, but practically I'll be busy with school again and don't want to go through this whole vetting process again. I'd like to find my producer now and know what the plan is."

As she reached her sublet after a long summer walk reflecting upon her prototype dilemma, Mackey realized that she was unlikely to find a perfect option and would need to compromise. She knew she would need to begin working with a provider immediately if she wanted to meet her summer add date deadline. However, selecting from among her narrowed list of six manufacturers would require her to identify her priorities. Mackey also knew that she had to explore the option of buying a premade product, even though she had never imagined she would consider this approach when she submitted her application to Morrissette. Now, resigned to making a compromise in her prototype design, Mackey wondered where she should start.

## Exhibits

### Exhibit 1 – Payton Mackey Sketches

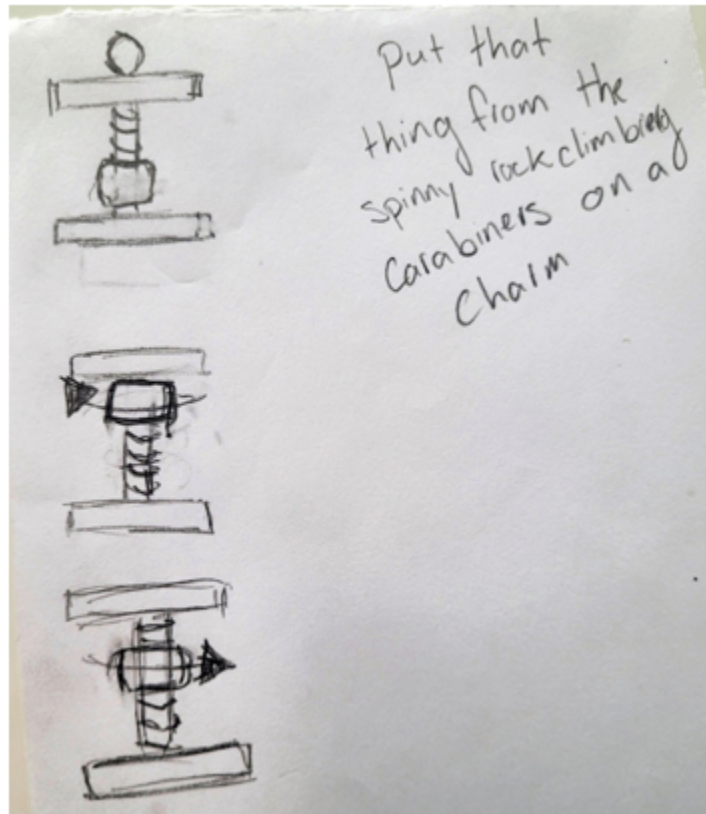


Exhibit 1a – An original concept drawing by Payton Mackey for the discreet fidgeting tool. [\[See image description\]](#). **Credit:** © Payton Mackey. All rights reserved. Used with permission. This image may only be used and distributed as part of this case and may not be reused on its own.

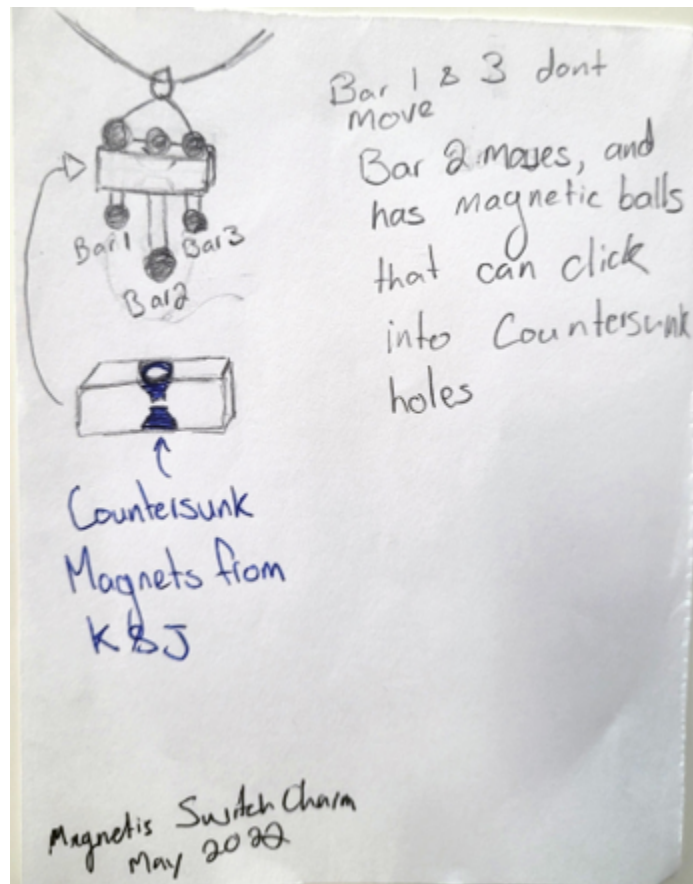


Exhibit 1b – An original concept drawing by Payton Mackey for the discreet fidgeting tool. [[See image description](#)].

**Credit:** © Payton Mackey. All rights reserved. Used with permission. This image may only be used and distributed as part of this case and may not be reused on its own.

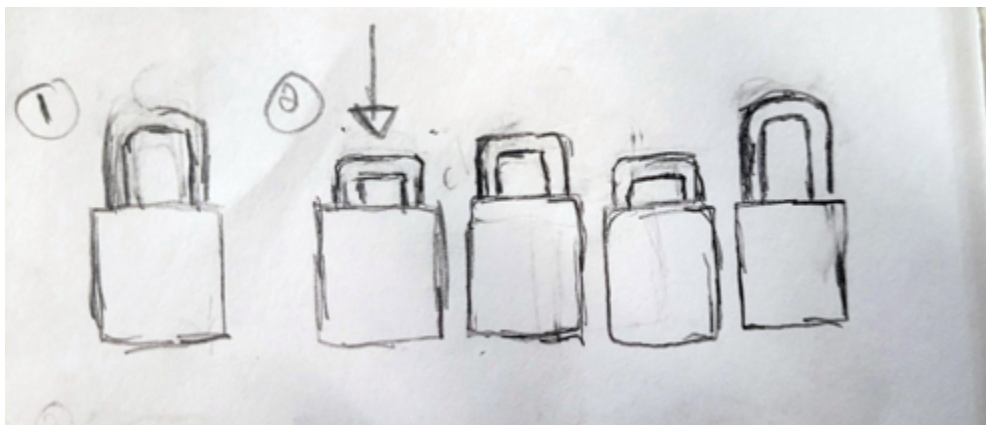


Exhibit 1c – An original concept drawing by Payton Mackey for the discreet fidgeting tool. [[See image description](#)]. **Credit:** © Payton Mackey. All rights reserved. Used with permission. This image may only be used and distributed as part of this case and may not be reused on its own.



## Exhibit 2 – Typical CNC Machine



Exhibit 2 – A CNC machine cutting a programmed route precisely into wood to produce parts. Credit: [Legcut1](#) by Brianwcallaghan, [CC BY-SA 3.0](#), via [Wikimedia Commons](#).

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## Exhibit 3 – Typical 3D Printer

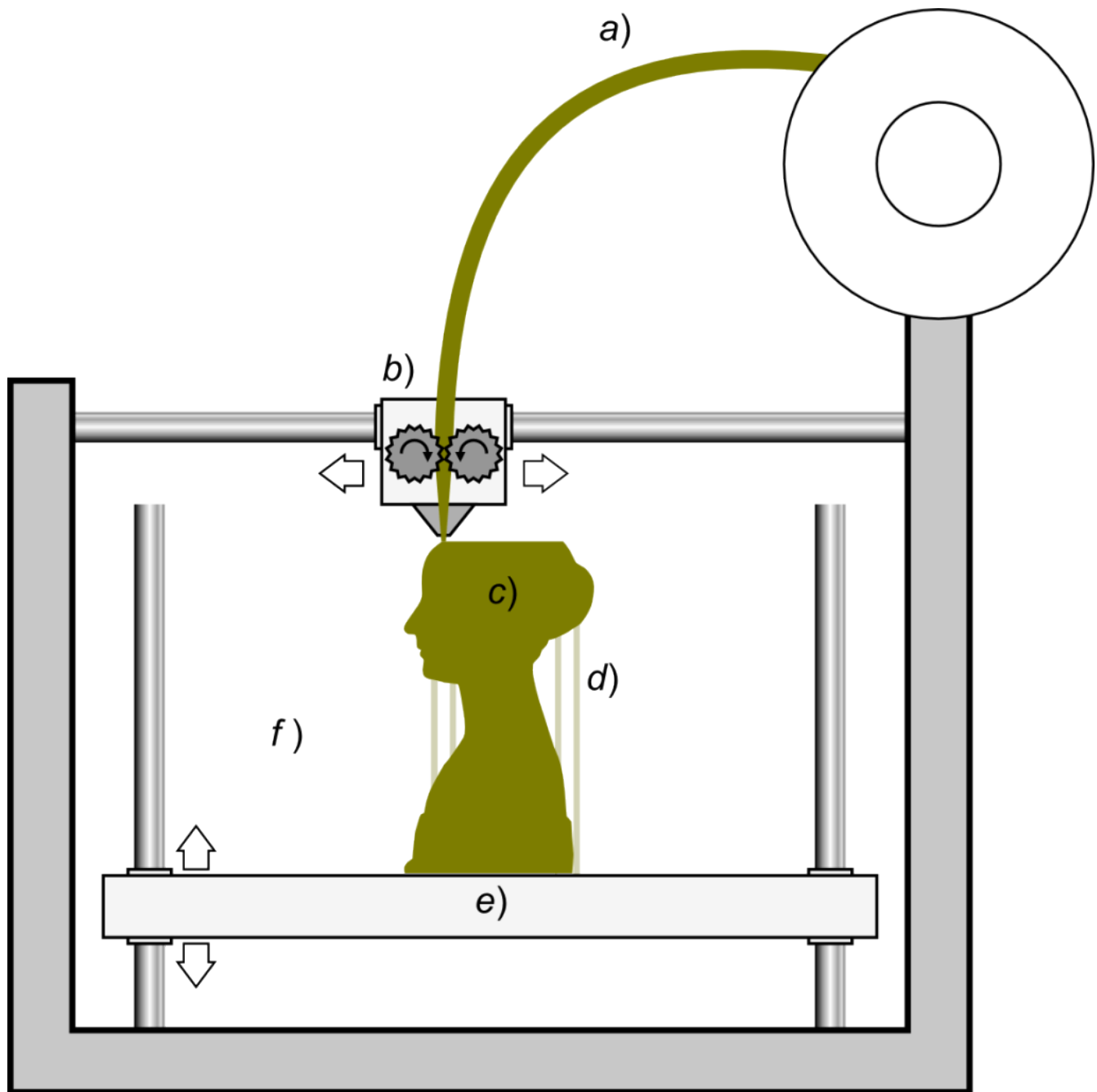


Exhibit 2 – Schematic representation of the 3D printing technique known as fused filament fabrication; a filament (a) of plastic material is fed through a heated moving head (b) that melts and extrudes the material, depositing it, layer after layer, in the desired shape (c). A moving platform (e) lowers after each layer is deposited. For this kind of technology, additional vertical support structures (d) are needed to sustain overhanging parts. [\[See image description\]](#). **Credit:** [Schematic representation of Fused Filament Fabrication 01](#) by Paolo Cignoni, [CC BY-SA 4.0](#), via [Wikimedia Commons](#), adapted by Cignoni, P from Scopigno R., Cignoni P., Pietroni N., Callieri M., Dellepiane M. (2017). [Digital fabrication techniques for cultural heritage: A survey](#). Computer Graphics Forum, 36(1): 6–21. <https://doi.org/10.1111/cgf.12781>

## Exhibit 4 – Fidgetry Products Pricing

Possible Products	Customization	MOQ	Order Quantity	Price Per Unit	Shipping Cost	Total Price Per Unit	Total Cost
Product #1	Yes	20/1000	100	\$0.08	\$41.84	\$0.4966	\$49.66
Product #2	Yes	200	200	\$0.72	\$104.54	\$1.2393	\$247.86
Product #3	Yes	1/100	100	\$0.65	N/A	\$0.6515	\$65.15
Product #4	No	100	200	\$0.85	\$114.41	\$1.41895	\$283.79
Product #5	Yes	10	200	\$0.39	N/A	\$0.3909	\$78.18
Product #6	No	200	200	\$1.70	\$39.96	\$1.8998	\$379.96
Product #7	Yes	60/300	120	\$2.74	\$136.31	\$3.875917	\$465.11
Product #8	Unsure	20	100	\$0.34	\$57.76	\$0.164	\$9.64
Product #9	Yes	12/50	100	\$2.30	N/A	\$2.3	\$230.00

**Source:** Based on market research completed by Payton Mackey.

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## Image Descriptions

### Exhibit 1– Payton Mackey Sketches

Photo A includes three sketches of an I-shaped tool with a spiral down the middle showing different positions of a ring on the spiral. A handwritten note says “Put that thing from the spinny rockclimbing carabiners on a charm.”

Photo B includes the sketch of a rectangular cube charm with three vertical bars numbered 1, 2, and 3, with balls on the top and bottom. The charm is on a large ring. An arrow pointing to the rectangular charm originates from another rectangular cube with a shaded hole in center and the handwritten label “Countersunk Magnets from K&J.” A handwritten note on the right of sketch says “Bar 1 & 3 don’t move, Bar 2 moves, and has magnetic balls that can click into countersunk holes.” A handwritten note on the bottom of the sketch says “Magnetis Switch Charm, May 2022.”

Photo C includes 5 sketches shaped like padlocks in a row; the first sketch is labelled 1, the second sketch is labelled 2 and has an arrow pointing down to it from above.

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### Exhibit 3–Typical 3D Printer

A schematic image which consists of a box with a large circle on the top right (labelled A) and with a platform at the bottom (labelled E) between two posts. Arrows above and below the platform illustrate that the platform moves up and down the posts. A silhouette of a female bust sculpture on the platform (labelled C) is being printed. An arced line from the large circle passes through two cogs in a small box labelled B on the top of the main box. Lines (labelled D) run from



the chin and back of the head down to the bottom of the bust. An arrow on either side of the small box illustrates that it moves back and forth to print the top of the head of the bust on the platform.

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# STATISTICAL PROCESS CONTROL AT HI-TECH SURFACTANTS

Ravi Sharma; Fatih Yegul; and Jane Gravill

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*All figures in U.S. dollars and Indian Rupees unless otherwise noted.*

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Harsh Bhardwaj, Managing Director of Hi-Tech Surfactants Pvt Ltd. (HTS) in India, met in person with a team of three professors, Ravi Sharma, Fatih Yegul, and Jane Gravill, at Conestoga College in Canada on October 17, 2022. Professor Sharma, who was also a management consultant, had been invited by Bhardwaj to review HTS's processes, visit the plant in India, and suggest improvements. HTS manufactured Wheel brand laundry detergent powder as an outsource partner of Hindustan Unilever Limited (HUL), a subsidiary of Unilever.

At this final meeting, Sharma presented these findings on behalf of the team:

Based on the data provided by your quality team your packaging process is not capable of meeting the tolerances specified by HUL. The bags are being overfilled to overcome this issue and to prevent bag weights from falling below lower specification limits. For 1 kg bags, the average weight is 1.53% more than that mentioned on the bags. For budgeted output of 55,000 tons, this means an excess usage of 841,500 kg of materials (Rs 33,660,000<sup>1</sup> per year at Rs 40/kg).

Professor Yegul then described the concept of statistical process control (SPC) and suggested to Bhardwaj that, “implementation of SPC will help in better control on the process variations and timely reviews of process capability and will minimize excess usage of material.”

Professor Gravill also highlighted the importance of reducing material usage to support sustainability. Bhardwaj recalled that his executives were very satisfied with the process controls and quality systems and that the allowance for material wastage set by HUL was not exceeded. Any more savings on material usage would benefit HUL but bring no financial benefit to HTS.

Bhardwaj had to decide. He could discuss the matter with HUL — even seek their help in implementing SPC — support the sustainability initiatives and negotiate to share the financial benefits. The other option was to maintain the status quo and operate within the allowed level of wastage. He could also ask for more analyses over longer periods and postpone the decision.

## Industry Background

The laundry detergent industry was dominated globally by two multinational giants Unilever PLC — with popular brands Sunlight and Surf — and Procter & Gamble Co. — with popular brands Tide and Gain. Unilever PLC was

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1. The equivalent of \$407,286, based on the exchange rate listed at [www.xe.com](http://www.xe.com) on October 17, 2022.

a British multinational consumer goods company headquartered in London, United Kingdom, with an annual sale of €52 billion, operating in 190 countries, employing 149,000 people, and with a mission to make sustainable living commonplace. Unilever was committed to making a continuous impact in the management of the environment and to a longer-term goal of developing a sustainable business. As Unilever’s website stated: “We strive to do more good for our planet and our society – not just less harm.”<sup>2</sup>

In India, per capita detergent consumption was 2.7 kg, as compared to around 10 kg in the United States. According to a report from Bonafide Research, due to the increase in population, urbanization, education, and the rising level of income and consumption, the overall detergent demand growth in India was 10% annually.<sup>3</sup> This growing demand was being serviced by HUL with Surf for high-end markets and Wheel for the lower-end. Proctor & Gamble in India has brands like Tide and Ariel. There were a few other popular brands competing with them — Nirma, Ghadi, and Ezee.

According to its 2023 annual report, HUL was the largest fast-moving consumer goods company in India and nine out of 10 Indian households were using HUL products.<sup>4</sup> The company had a wide range of products and brands including food (Horlicks, Boost, Knorr), homecare (Surf, Vim, Sunlight, Wheel), personal care (Dove, Ponds, Lakme), and refreshments (Lipton Tea, BRU coffee). “HUL is committed to establishing mutually beneficial relations with our suppliers, customers and business partners. We want to work with third parties who have values similar to our own and work to the same standards,” stated the HUL website.<sup>5</sup> HUL had 21,000 employees and annual sales of Rs. 453,110,000,000 (approx. \$5.48 billion).

Hi-Tech Surfactants Pvt Ltd. (HTS) was established in 1990 with a manufacturing facility in Sikandrabad, Uttar Pradesh, India (about 65 Km from Delhi), as an outsource supply-chain partner (a contract manufacturer) for HUL. HTS manufactured Active Wheel 2-in-1 brand detergent powder (Wheel) which, according to the HUL website, “is trusted by over 160 million Indian households for domestic clothes washing. Active Wheel comes packed with the power of real lemons and flowers; it removes visible dirt and kills invisible bacteria and leaves behind a trail of floral freshness. It is a dominant player in the mass fabric wash segment.”<sup>6</sup>

HTS employed approximately two hundred people and operated three shifts per day, six days a week. Maintenance was scheduled on Sundays. The investments in the large facility in a 10,000 square metre area and the high-end equipment gave HTS a design capacity of 65,000 tonnes per year. A brief prepared by HTS for presentation to visiting managers for HUL stated:

HTS is committed to winning the trust and confidence of HUL. We continuously change our pace with [the] changing environment. We ensure that these values percolate to all levels of our organization. We are proud to convey that employee turnover at HTS is almost nil in [the] last two decades. The congenial atmosphere and the rapport between the workforce and the management are attributable to this achievement.<sup>7</sup>

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2. Unilever, 2023.

3. Bonafide Research, 2022.

4. Hindustan Unilever Limited, 2023c.

5. Hindustan Unilever Limited, 2023b.

6. Hindustan Unilever Limited, 2023a.

7. Hi-Tech Surfactants, internal communication, n.d.

## Stakeholders and Differing Perspectives

Wing Commander Bhardwaj, holder of a VSM (Vishisht Seva Medal — awarded by the president of India for distinguished service of high order in the armed forces), took a premature release from the Indian Airforce. He took pride in acquiring Hi-Tech Surfactants (HTS), an unprofitable business, and turning it into a profitable enterprise. When Sharma asked him during one of their previous meetings about the secret of his success, Bhardwaj replied:

Whatever challenge or task I begin, I aim to achieve the best. I keep the goal in mind and take the workers along. I believe more in leading than in managing. I care for the well-being of all the workers, and my door is always open. I adhere to rigorous discipline, inculcated during my air force days. I aim for the best and always see room for continuous improvement.

Bhardwaj's son, Gaurav Bhardwaj (Bhardwaj Jr.) had completed a degree in hotel management and was further trained in management at ITC Hotels — a premier five-star hotel group. After a few years in the United States, he returned home to India and joined HTS. When Sharma started his consultation, Bhardwaj explained that “Bhardwaj Jr. is the executive director, and his knowledge of IT, finance, budgeting, operations, and quality is an asset to HTS.” See [Exhibit 1 – HTS Organization Chart](#).

When Sharma visited HTS in late 2021, he was given a guided tour of the plant. Bhardwaj introduced him to the executive team:

Gentlemen, I have invited Professor Sharma to review our systems with a fresh pair of eyes, an independent consultant's perspective, and suggest improvements to our quality and productivity.

Bhardwaj Jr. explained to Sharma:

We have the support of our principals, HUL. We implement systems and procedures under their guidance. We have an exhaustive quality control (QC) manual that we follow. There is a plethora of checks ranging from online checks, 24 hours in three shifts, every hour, to offline checks every shift, daily and weekly.

Shukla, the director, added:

HUL has *umda*<sup>8</sup> systems, and we follow them rigorously. Quality and process audits are done annually by British Retail Consortium (BRC) auditors — SGS, on behalf of HUL. Last year we received an AA rating in the audit. (See [Exhibit 2 – BRC Certificate from SGS – AA Grade](#)).

Bhardwaj then commented:

HUL has elaborate KPI<sup>9</sup> measures to monitor our efficiency, productivity, quality, and delivery [[Exhibit 3 – KPI Report for April to June 2021](#)]. HUL often raises the bar and demands better performance. To strengthen our relationship with HUL and have an edge over our competition, we need to innovate and improve continuously.

HUL had specified tight tolerances on the weights of each package (see [Exhibit 4 – Product SKUs Specifications](#)). During his visit to the facility, Sharma asked if all the packaging lines could meet the specifications. Bhardwaj Jr. replied that customer complaints were not an issue and added that they checked quality at every stage of the process. Sharma then asked if they had done any studies to assess the process capabilities statistically. Bhardwaj replied,

---

8. *top class, excellent*, in Hindi

9. key performance indicators

We have not, but if you can guide us, we would like to assess the capability of all our lines. It will help us in decisions of major overhaul or replacement of the lines.

Sharma explained statistical process control (SPC) to the team at HTS and suggested that they could implement it to ensure that the weights of detergent packs were at target levels and that variations were minimal. SPC could prevent excess material usage over the specified and help avoid related cost allowances ([Exhibit 5 – Loss Allowances](#)). Sharma also mentioned total quality management (TQM) and Six Sigma concepts, as well as target-oriented quality. He explained that these concepts were designed to not only improve quality but also minimize the “loss to society” and support sustainability. Bhardwaj agreed that the SPC and TQM concepts made sense, especially considering that Unilever’s and HUL’s missions valued sustainability, and these approaches were aligned with HTS’s efforts to minimize resource usage and support the environment.

## HTS's Manufacturing Process and the Challenge

HTS had a continuous process to manufacture, fill, seal, package, and ship four assorted sizes of SKUs<sup>10</sup> of Wheel packages to the HUL depots and its wholesale partners (re-distribution stockists). HUL drop-shipped raw materials and packaging materials at HTS. HUL also extended systems and procedures support for all aspects of the management, including the process, planning, and quality. A HUL representative was on-site full-time to support the success of the partnership.

Pre-printed PVC (polyvinyl chloride) film for packaging was received in rolls. Based on the production schedules, inkjet printing was done on these to show the SKU, the maximum retail price, and traceability information of the date and machine (see **Video 1**).

### Video 1: HTS Pre-Printing of Packaging Film



One or more interactive elements has been excluded from this version of the text. You can view them online here: <https://ecampusontario.pressbooks.pub/oatcj/?p=1064#oembed-1>

**Source:** Sharma, R. (2022, April 7). [HTS pre-printing of packaging film](https://www.youtube.com/watch?v=pq_7HsCdtqQ). [Video]. Youtube. [https://www.youtube.com/watch?v=pq\\_7HsCdtqQ](https://www.youtube.com/watch?v=pq_7HsCdtqQ)

The raw materials (about fifteen different ingredients) in the form of solids, powders, and some liquids were received, checked for quality, and stored. The process began at industrial vibratory sieves that filtered the raw materials. The materials were then mixed in central sigma mixers (see [Exhibit 6 – HTS Photo 3](#)) according to the bill of materials (recipe) in lots of approximately 2000 kg each. The next stage for the material was shearing in the cage mill and passing through more sieves. After this, the detergent was ready for packaging and stored as work-in-process in 800 to 900 kg bags. These work-in-process bags were conveyed to the packaging machines (see **Videos 2 and 3**), which used pre-printed packaging film (PVC) to fill and seal the detergent sachets.

10. stock keeping units

## Video 2: HTS Packaging Line Large Packs



One or more interactive elements has been excluded from this version of the text. You can view them online here: <https://ecampusontario.pressbooks.pub/oatcj/?p=1064#oembed-2>

**Source:** Sharma, R. (2022, April 7). [HTS packaging line large packs](https://www.youtube.com/watch?v=bkVn25F2a3U). [Video]. Youtube. <https://www.youtube.com/watch?v=bkVn25F2a3U>

## Video 3: HTS Packaging Line Small Packs



One or more interactive elements has been excluded from this version of the text. You can view them online here: <https://ecampusontario.pressbooks.pub/oatcj/?p=1064#oembed-3>

**Source:** Sharma, R. (2022, April 7). [HTS packaging line small packs](https://www.youtube.com/watch?v=Pl9TH_IPjfo). [Video]. Youtube. [https://www.youtube.com/watch?v=Pl9TH\\_IPjfo](https://www.youtube.com/watch?v=Pl9TH_IPjfo)

These sachets moved on conveyors up to the bagging stations (see [Exhibit 6 – HTS Photo 6](#)), where the sachets were counted and placed in larger bags known as gunny bags. Then the bags moved on the main conveyor, were stitched, weighed, and labelled (inkjet printed). They were then stacked on pallets and sent to the finished goods storage for onward shipment (see [Exhibit 6 – HTS Photo 2](#)).

HUL was linked with HTS by the enterprise resource planning (ERP) system called SAP. Weekly plans for production and delivery for each SKU were loaded every Friday. SAP also kept track of incoming materials and products shipped, as well as the operating efficiency. Blending formulae (recipes) were also controlled by HUL via SAP. The material requirement planning (MRP) system in SAP generated purchase orders and schedules for vendors of raw materials and packaging materials.

HTS's quality department checked the quality of incoming materials and subsequently at every stage of production. HUL gave HTS a quality manual, which was followed strictly in every detail. Prior to packaging, samples were checked to ensure product integrity. At the packaging stage, the operator picked five random samples every 15 minutes to visually inspect and weigh them. The packaging lines were also equipped with automatic photo inspection against misalignment in the two sides of the pre-printed film that is used to make the sachets. The larger shipping bags (gunny bags) were weighed 100%<sup>11</sup> before being labelled for shipment. The weight measurements for sachets and the shipping bags were digital and automatically recorded on a computer. Quality issues encountered in every shift were recorded, and rejected samples were viewed and discussed in a daily quality meeting. Action points were noted in the minutes of the meeting (see [Exhibit 7 – Sample of Minutes from a QC Meeting](#)). The finished products in gunny bags, ready to ship, were

11. each and every bag was weighed

also checked at random. A gunny bag would be cut open and the individual sachets inspected. The results were kept in defect incident reports (see [Exhibit 8 QC Defect Data Year 2021](#) and [Exhibit 9 – Rejection data \(Period January to December 2021\)](#)).

Weight variation, leakers, misaligned packaging, etc., were some common reasons for rejection. Inspection results were classified into three categories: green, yellow, and red. Green indicated the product was within acceptable limits and would proceed for shipment. Yellow needed further inspection to determine the action. Red would warrant stopping the line and fixing the problem. If the product rejected was in the red zone, all the products produced during the 15 minutes prior to the production of that product would be fully inspected. Rejected sachets were cut, and the product was retrieved and mixed with the next production batch within prescribed percentage limits. Costs of the packaging inspected material were written off, and the labour and production cost of reworking rejects needed to be considered.

When touring the plant, Sharma asked if there were any quality issues with the blending recipe (bill of materials), and Bhardwaj Jr. responded:

As a matter of fact, we had an issue recently. The HUL team made changes to the blending formula in SAP system. The change was not communicated to the shop floor, and one shift produced the mix with the old recipe. It had to be reworked to make the correction. This happened only once, and it was due to a key staff member working from home because of the COVID-19 pandemic.

Every year HUL and HTS negotiated terms based on forecasts and budgets (in 2020, the budget was for 55,000 metric tons; however, the actual output was 48,000 metric tons). HTS was paid a fixed amount for overheads based on budgets. Additionally, there was a variable cost per metric ton of production, payable to HTS. As Bhardwaj Jr. explained:

There is an agreed wastage allowance for raw materials and packaging materials. If more materials were used, due to excess wastage, HTS must pay for it. However, we do not benefit if our wastage is reduced below the allowed limits. Such material savings benefit HUL.

According to Bhardwaj Jr., during the three quarters beginning April 2021 to Dec 2021, the amount paid back due to excess usage of materials was just Rs 14,000 (approx. \$170), and production during this period was 33,875 metric tonnes.

HTS was committed to environmental protection, sustainability, and workers' health and safety. As Bhardwaj explained to Sharma: "We harvest rainwater, have installed a network of fire hydrants in the plant, have systems for dust and noise control, maintain oxygen levels in the plant, [and] provide reverse osmosis treated drinking water and health care to workers."

Apart from HTS, several other competitors in the country operated as contract manufacturers for HUL to produce Wheel detergent. To maintain the share of the total business as a manufacturer, HTS not only had to meet the expectations of HUL's KPIs but demonstrate innovation and excellence. The brief prepared for presentation to HUL executives stated,

Professional dedication and display of high order of initiatives received applause from all levels at HUL. HTS is the only contract manufacturer who found a mention in the HUL's webcast.<sup>12</sup>

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12. Hi-Tech Surfactants, internal communication, n.d.



## Bhardwaj's Decision

During his visit, Sharma had suggested gathering data over two different shifts and noting the weights of sample sachets from two packaging lines – one for large packs and the other multitrack for small packs. The Saturday night shift and the Monday morning shift (after the weekly maintenance on Sunday) were selected. Data collection was smooth, as all weighing machine data was captured automatically in a computer linked to them (see [Exhibit 10 – Process Data – Packaging Lines](#)). This weight data was saved in the computer but not connected to the SAP system.

After completing his initial review, Sharma proposed:

Once we analyze the data using SPC tools, we will get a better understanding of the present situation in terms of process capability and process control. We can then decide if efforts and investment in implementing these tools on an ongoing basis are justified.

Bhardwaj Jr. was a bit skeptical:

Fresh perspectives to review the process and quality are always welcome. However, any proposal needs to pass the test of norms for the rate of return on investments (ROI). We operate at 16% ROI.

Sharma appreciated the comment; still, he was optimistic:

Since quality systems are already in place, implementing SPC may require only marginal additional effort. I understand that SAP has a module for carrying out SPC computations. Alternatively, other off-the-shelf SPC software could also be used.

Sharma's market research had also revealed that stand-alone SPC software packages were available at approximately \$3000 per year. This would be a viable alternative if HTS could not utilize SAP's SPC module due to the complexity of the coordination required with HUL.

Bhardwaj needed to decide if a system for routine statistical analysis of their processes to assess their capabilities should be implemented. He was aware that the executive team believed that the process and quality systems were working well, and the company was meeting HUL's expectations. After all, the popular saying, "If it ain't broke, don't fix it," was supported with sound reasoning, especially from a financial perspective. Bhardwaj had also sensed a reluctance from his team to make changes, a complacency that pushed them to maintain the status quo. But he wanted HTS to excel.

At the end of his meeting in Canada, Bhardwaj was at a crossroads. Now that he had heard the full results of Sharma's analysis and the recommendations from Yegul and Gravill, Bhardwaj had to decide which path to take.

## Exhibits

### Exhibit 1 – HTS Organization Chart

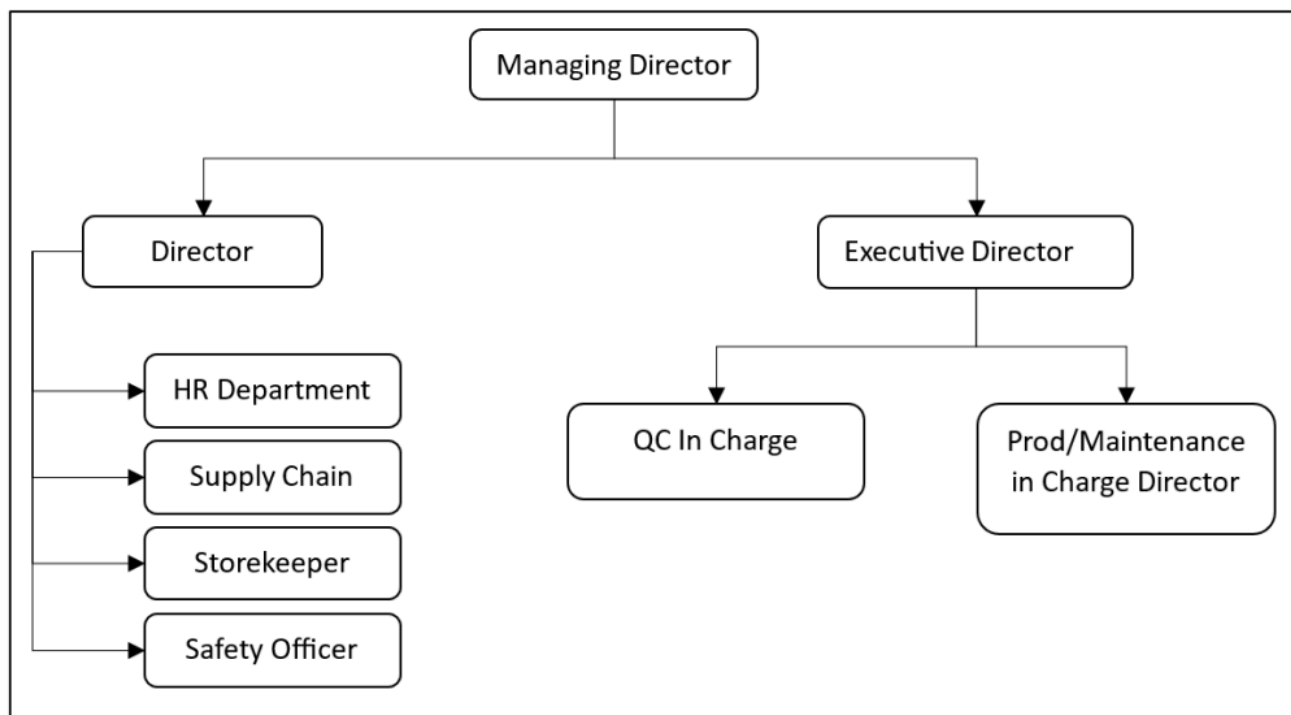


Exhibit 1 – The HTS Organization Chart [[see image description](#)]. **Source:** Based on information provided by Hi-Tech Surfactants Ltd.

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[\[back\]](#)

## Exhibit 3 – KPI Report for April to June 2021

Category	Description	Standard Score	Actual Score
World Class Service	Depot dispatch Compliance	1	1
	Output reliability compliance	1	1
Consumer Perceived Quality & Flawless Execution	WCM HH as applicable	1	1
	No of Depot Freezes	1.5	1.5
	DPMU	1.5	1.5
SHE	SHE MMS	1	1
E2E Competitive Cost	Productivity Improvement/Manpower/ wastage savings	1	1
Financial / Statutory /Hygiene	Compliance of CCP	1	1
	NCC/Cost actualization Data Submission within a month	0.5	0.5
	WC/EWS Data Submission within a month	0.5	0.5
Total score out of 10		10	10

**Source:** Data supplied by Hi-Tech Surfactants, Inc.[\[back\]](#)

## Exhibit 4 – Product SKUs Specifications

SKU	Min	Max	Sales (2020)	Machine
55g	52.5g	57.5g	195MT	Akash
115g	111.55g	118.5g	4,405MT	Akash
120g	117g	123g	7,700MT	Akash
500g	490g	510g	5700MT	Bosch Terra
1000g	990g	1010g	30,000MT	Bosch Terra

**Source:** Data supplied by Hi-Tech Surfactants, Inc.[\[back\]](#)

## Exhibit 5 – Loss Allowances

Supplier (HTS) shall bear the cost of components that exceed the applicable loss allowances below:

Raw Materials Unit Name	Allowance
Perfume	0.00%
Soda Ash	0.25%
PCC	0.25%
STPP	0.25%
Sodium Silicate	0.25%
Minerals	0.25%
Calcite	0.25%
Dolomite	0.50%
China Clay	0.25%
Colour	0.25%
Salt	0.50%
Speckles	0.25%
Bluton C	0.25%
All other chemicals	0.25%
Packaging Materials Unit Name	Allowance
Pouches, Laminate & Wrapper	2.00%
Sacks	0.00%
Over-Packing Allowance (Powder)	Allowance
0 to 29g	3.00%
30 to 199g	1.50%
200-499g	1.00%
500g & above	0.50%

**Source:** Data supplied by Hi-Tech Surfactants, Inc.

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## Exhibit 6 – HTS Photos



Photo 1 – Gate 2. Credit: © Ravi Sharma. All rights reserved. Used with permission.



Photo 2 – Finished Product. Credit: © Ravi Sharma. All rights reserved. Used with permission.



Photo 3 – Mixer. Credit: © Hi-Tech Surfactants Pvt Ltd. All rights reserved. Used with permission.



Photo 4 – Packing Station (a). Credit: © Hi-Tech Surfactants Pvt Ltd. All rights reserved. Used with permission.



Photo 5 – Packing Station (b). Credit: © Hi-Tech Surfactants Pvt Ltd. All rights reserved. Used with permission.



Photo 6 – Bagging Line. Credit: © Hi-Tech Surfactants Pvt Ltd. All rights reserved. Used with permission.

[\[back\]](#)

## Exhibit 7 – Sample of Minutes from a QC Meeting – Dated March 9, 2022

Number	Issue	Root cause analysis (RCA)	Corrective and preventive action (CAPA)
1	White line all SKUs found approx 3MM with eye mark out problem	Machine part tear & wear	Machine overhauling
2	Powder spillage on machine	Machine hopper gap observed	Gap to be covered
3	S/Acid digital indicator U/S inform (23.07.2019) to RKS	Indicator U/S	PO given for the new indicator
4	Speckles leakage from system	System not properly set	System has been set
5	Broomstick used in packing, process, RM Godown	Broom Stick used	Stopped
7	FG de-rap material not sieved regularly	Not done	Now being done
8	RM not weightment properly	Not done	Not proper weightment
9	Eye mark out on Bosch machines	Not done	Corrected
10	Overpacking all SKUs	Oversight	M/C no 3 done, M/C no 1 & 2 WIP

**Source:** Data supplied by Hi-Tech Surfactants, Inc.

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## Exhibit 8 – QC Defect Data Year 2021

SKUs	Defects total	Under weight	Leaker	White line	Lumps	Damage	Large pinhole	Off centre	Drop test fail	Weak perforation
1Kg	83	29	24	12	8	6	2	1	1	n/a
500gm	23	4	5	7	3	2	2	n/a	n/a	n/a
150gm	4	1	2	n/a	n/a	1	n/a	n/a	n/a	n/a
140gm	8	4	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a
130gm	4	1	3	n/a	n/a	n/a	n/a	n/a	n/a	n/a
120gm	12	6	6	n/a	n/a	n/a	n/a	n/a	n/a	n/a
60gm	6	4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2
55gm	5	3	2	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Total	145	52	46	19	11	9	4	1	1	2

**Grand Total:** 290

**Note:** n/a stands for not applicable. In this table, n/a means that the defect did not occur on the corresponding SKU.

**Source:** Data supplied by Hi-Tech Surfactants, Inc.

[\[back\]](#)

## Exhibit 9 – Rejection Data (Period January to December 2021)

Description	Qty (Mt)
Total FG Production	45968.000
Total FG Hold	1511.105
Total FG Rejected	4.404

**Source:** Data supplied by Hi-Tech Surfactants, Inc.

[\[back\]](#)



## Exhibit 10 – Process Data – Packaging Lines

**Table 1 – QC Data, Online Weight Checking (1kg SKU) for 28/02/2022 (Monday)**

Sample	Weight 1 (g)	Weight 2 (g)	Weight 3 (g)	Weight 4 (g)	Weight 5 (g)
1	1014	1015	1018	1011	1010
2	1015	1021	1017	1019	1015
3	1014	1015	1018	1016	1011
4	1019	1028	1017	1014	1015
5	1014	1017	1019	1014	1018
6	1016	1011	1015	1018	1011
7	1019	1014	1018	1011	1017
8	1014	1018	1021	1014	1010
9	1017	1019	1021	1018	1014
10	1017	1019	1011	1014	1018
11	1017	1019	1014	1011	1017
12	1018	1011	1015	1014	1013
13	1016	1017	1014	1011	1017
14	1019	1011	1014	1029	1034
15	1048	1029	1019	1018	1014
16	1025	1017	1019	1018	1014
17	1017	1019	1011	1014	1013
18	1011	1015	1018	1014	1011
19	1013	1011	1014	1017	1015
20	1011	1017	1019	1011	1016
21	1013	1011	1006	1000	995
22	1001	1014	1011	1016	1015
23	1016	1018	1014	1017	1019
24	1024	1014	1018	1016	1011
25	1015	1018	1017	1019	1011
26	1016	1018	1015	1014	1017
27	1016	1018	1014	1017	1014
28	1000	1011	1002	1007	1014
29	1013	1014	1010	1015	1011
30	1017	1019	1018	1017	1015
31	1018	1011	1011	1017	1015

Sample	Weight 1 (g)	Weight 2 (g)	Weight 3 (g)	Weight 4 (g)	Weight 5 (g)
32	1018	1016	1011	1015	1011

**Table Notes:**

- Sample size is 5.
- Frequency of check is every 15 minutes.
- Acceptable weight for 1 kg SKU is minimum 990 g.

**Source:** Data supplied by Hi-Tech Surfactants, Inc.

**Download:** [Exhibit 10 Table 1 in Excel \[opens Excel file\]](#)

**Table 2 – QC Data, Online Weight Checking (1kg SKU) for 05/03/2022 (Saturday)**

Sample	Weight 1 (g)	Weight 2 (g)	Weight 3 (g)	Weight 4 (g)	Weight 5 (g)
1	1011	1020	1011	1014	1020
2	1011	1020	1001	1014	1020
3	1016	1014	1011	1010	1015
4	1020	1011	1004	1020	1013
5	1010	1010	1014	1010	1011
6	1014	1020	1011	1014	1020
7	1016	1020	1011	1014	1016
8	1018	1010	1020	1011	1014
9	1020	1014	1010	1016	1020
10	1017	1014	1000	1017	1020
11	1016	1000	1008	1020	1011
12	1020	1016	1010	1011	1020
13	1020	1031	1000	995	1011
14	1000	1011	1020	1011	1010
15	1031	1028	1014	1020	1011
16	1010	1011	1020	1011	1016
17	1026	1011	1010	1016	1020
18	1011	1020	1011	1028	1028
19	1026	1011	1003	1011	1014
20	1001	1021	1011	1010	1016
21	1010	1016	1003	1011	1020
22	1031	1026	1019	1020	1011
23	1020	1016	1010	1013	1020
24	1020	1014	1020	1030	1016
25	1000	1011	1026	1011	1014
26	1020	1011	1001	1011	1010
27	1016	1011	1020	1010	1014
28	1000	1011	1002	1007	1014
29	1010	1016	1020	1016	1010
30	1011	1016	1020	1014	1017
31	1010	1003	1020	1016	1014

Sample	Weight 1 (g)	Weight 2 (g)	Weight 3 (g)	Weight 4 (g)	Weight 5 (g)
32	1045	1010	1018	1020	1016

**Table Notes:**

- Sample size is 5.
- Frequency of check is every 15 minutes.
- Acceptable weight for 1 kg SKU is minimum 990 g.

**Source:** Data supplied by Hi-Tech Surfactants, Inc.

**Download:** [Exhibit 10 Table 2 in Excel \[opens Excel file\]](#)

**Table 3 – QC Data, Online Weight Checking (1kg SKU) for 28/02/2022 (Monday)**

Sample	Weight 1 (g)	Weight 2 (g)	Weight 3 (g)	Weight 4 (g)	Weight 5 (g)
1	116	119	118	115	116
2	119	121	115	118	116
3	116	119	121	115	118
4	118	116	119	117	119
5	115	117	119	118	116
6	117	115	118	116	117
7	119	121	118	116	117
8	115	118	116	119	118
9	118	117	116	121	115
10	118	122	120	117	119
11	121	115	118	116	119
12	121	115	118	116	121
13	116	116	118	117	119
14	121	115	118	116	114
15	115	117	119	118	116
16	119	121	115	118	116
17	118	115	117	119	116
18	119	118	117	121	115
19	118	117	121	115	118
20	117	119	121	118	116
21	116	119	121	118	116
22	120	122	125	118	116
23	119	121	116	118	115
24	118	116	120	115	117
25	118	117	119	121	115
26	118	117	119	121	115
27	118	117	119	121	115
28	118	117	119	121	116
29	118	117	119	121	116
30	118	115	117	119	121
31	116	118	117	116	118



Sample	Weight 1 (g)	Weight 2 (g)	Weight 3 (g)	Weight 4 (g)	Weight 5 (g)
32	115	117	119	121	116

**Table Notes:**

- Sample size is 5.
- Frequency of check is every 15 minutes.
- Acceptable weight for 1 kg SKU is minimum 990 g.

**Source:** Data supplied by Hi-Tech Surfactants, Inc.

**Download:** [Exhibit 10 Table 3 in Excel \[opens Excel file\]](#)

**Table 4 – QC Data, Online Weight Checking (1kg SKU) for 05/03/2022 (Saturday)**

Sample	Weight 1 (g)	Weight 2 (g)	Weight 3 (g)	Weight 4 (g)	Weight 5 (g)
1	116	118	119	120	116
2	115	120	116	115	120
3	116	115	120	118	115
4	120	116	115	121	116
5	118	118	119	120	114
6	115	120	116	115	120
7	116	115	120	115	120
8	116	115	121	116	119
9	120	116	118	120	115
10	115	120	116	115	120
11	116	115	120	118	115
12	117	115	120	116	124
13	118	117	120	116	115
14	120	116	118	119	121
15	121	116	115	120	116
16	115	120	116	115	120
17	118	120	116	115	126
18	116	122	115	116	115
19	120	116	118	119	120
20	116	115	120	116	115
21	120	116	115	119	120
22	116	114	118	119	120
23	115	115	120	116	115
24	120	116	115	120	118
25	120	116	115	120	116
26	115	121	116	115	120
27	118	117	118	119	114
28	116	115	120	116	115
29	120	116	115	117	121
30	120	116	115	121	118
31	115	120	116	120	118

Sample	Weight 1 (g)	Weight 2 (g)	Weight 3 (g)	Weight 4 (g)	Weight 5 (g)
32	115	120	116	115	120

**Table Notes:**

- Sample size is 5.
- Frequency of check is every 15 minutes.
- Acceptable weight for 1 kg SKU is minimum 990 g.

**Source:** Data supplied by Hi-Tech Surfactants, Inc.

**Download:** [Exhibit 10 Table 4 in Excel \[opens Excel file\]](#)

[\[back\]](#)

## Image Descriptions

### Exhibit 1 – HTS Organization Chart

An organization flow chart with three levels: the top level is Managing Director, which flows to the second level, which lists Director (left) and Executive Director (right), indicating they both report to the managing director. Director flows to the third level with HR Department, Supply Chain, Storekeeper, and Safety Officer, indicating these positions report to the Director. Executive Director flows to the third level with QC in Charge and Prod/Maintenance in Charge Director, indicating these positions report to the Executive Director.

[\[back\]](#)

### Exhibit 2 – BRC Certificate from SGS – AA Grade

A photo of the certificate, which consists of two columns. The left and wider column includes the following legible text:

Certificate IN14/91407

This is to certify that

HI-TECH SURFACTANTS PVT. LTD

H- 5 & 6, Industrial Area, Sikandrabad, Dist – Bulandshahr (UP), Post-  
203205, India

SITE CODE 2044187

Has been [illegible] as meeting the requirements of

Global Standard for Consumer Products

Personal Care and Household

Issue 4: November 2016

Evaluation Level: Higher Level

Achieved Grade: AA

Audit Programme: Remote

For the following activities

Manufacture of Dry Detergent Powder by process of mixing and filling  
in laminates and packed in HOPE Sacks.

Product Categories: 7

Exclusions from scope: None

Date of Evaluation 18 March 2021

Certificate Issue Date 26 April 2021

Re-Evaluation Due Date: From 18 February 2022 to 15 March 2022

Certificate Expiry Date 23 April 2022

This is followed by a QR code with five lines of small text that is illegible and the text “Authorized by” and an indecipherable signature.

This is followed by six lines of small text that is illegible but appears to list SGS address and contact information and other details, including the text “Page 1 of 1”

The right column consists of the following logos and text:

SGS logo

SGS: BRC GS Process Certification logo

BRGS: Consumer Products Certificated logo

Auditor Number 20039

UKAS Product Certification logo

At the bottom of the image is a large icon of the globe on the left, with the letters SGS repeating across the certificate as they incrementally shift and change into the image of a bird with wings spread. This logo is followed by a paragraph of text that is too small to be legible.

[\[back\]](#)

## References

- Bonafide Research. (2022). [India detergent market overview, 2022-2028. Product code: 1151027.](https://www.giiresearch.com/report/bon1151027-india-detergent-market-overview.html)  
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# WORLDS CONVERGING: SUSTAINABLE FASHION MEETS E-COMMERCE

James H.W. Siew

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*All figures in Canadian dollars unless otherwise noted.*

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It was a cool breezy evening in April 2021, when two entrepreneurs, Chris Yong and Adam Baodunnov, were dining at their favourite restaurant in Melbourne, Australia, discussing their dilemma regarding the viability of their plan to enter the e-commerce marketplace with a focus on sustainable fashion. Despite their lengthy corporate experience, e-commerce and sustainable fashion were two new domain areas for the entrepreneurial pair. There were many unknown elements. Yong had recently given up a high-paying, stable job in the corporate world in Malaysia to move to Australia with his family. Baodunnov had had many entrepreneurial endeavours, though some were much more successful than others. After much deliberation, Yong and Baodunnov made the decision to buy Local Threads, a Melbourne-based start-up aimed at providing a marketplace website for sustainable and ethical fashion, representing Australia's independent brands in the sustainable fashion space.<sup>1</sup> The duo saw an opportunity to expand the reach of this start-up, which aimed to contribute to sustainable fashion, and decided to employ their expertise: combining entrepreneurial start-up know-how with e-commerce and marketing savvy. By the time they finished dessert, they had decided to pursue this new enterprise. They believed in the promise that driving a sustainable fashion business was a worthwhile mission, although they did not necessarily perceive themselves as paragons of the “sustainable leader.”

Why Local Threads? Since its inception in 2019, the company had expanded to a network of 150 brands that provided over 30,000 products to its customers.<sup>2</sup> It had grown rapidly within two years but hit a plateau. Baodunnov and Yong saw potential to scale up business operations and realize even more organic growth. In mid-2021, Local Threads was finally acquired by Baodunnov as primary shareholder together with Yong, and he had also convinced other Chinese capital investors to participate in this opportunity. These investors were very technically savvy and had an extensive background in e-commerce businesses. However, these investors were not as familiar with the concept of sustainable business management. Conversely, the mostly Australian independent producers had fully embraced sustainability and were unfamiliar with e-commerce and digital marketing technology. Motivated by this new vision, Baodunnov and Yong needed to decide on the best strategy for Local Threads to operate successfully in this transition to the e-commerce environment that offered new opportunities while maintaining its existing customers and sustainable business management practices that the original company was founded upon. The entrepreneurial business partners needed to be sure that their sustainable fashion start-up would be proven as a viable digital marketplace website for sustainable fashion and ethical fashion. Local Threads also needed to be profitable to meet their stakeholder expectations within the first two years. Effectively, their new sustainable business idea had to be sustainable and they needed to develop a leadership strategy to meet this objective. Where should they start?

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1. Ayeni, 2019.

2. C. Yong, personal communication, February 7, 2022.



## Background

Baodunnov and Yong had spent time in search of viable projects and potential business ventures after they met in 2020. They had heard about an enterprising student by the name of James Adcock, who built the Local Threads online business in early 2019 because he wanted to “do something positive for society.”<sup>3</sup> At the time, Adcock was a student at the University of South Australia and had independently established an online business for sustainable fashion on a part-time basis. While Adcock was very enterprising, he was still a full-time university student with limited commercial skills and exposure to scale the business. Baodunnov thought that this was an interesting opportunity and together with Yong, met with Adcock to discuss possibilities. Yong and Baodunnov took over Local Threads from Adcock, who stayed on as a resource on a part-time basis.

In July 2021, Adam Baodunnov and Chris Yong formally re-launched Local Threads as an e-commerce company with a mission to be “the largest marketplace for ethical fashion from Australia’s best independent brands.”<sup>4</sup> Local Threads positioned itself as a digital marketing organization that partnered with sustainable fashion brands to provide its customers with clothing that represented the latest fashion trends and that also supported local Australian businesses with sustainable practices.

## Overview of the Sustainable Fashion Industry

Sustainable fashion is one of the critical industries that has joined the sustainability management movement. Sustainable fashion is also referred to as “ethical fashion,” “eco-fashion,” “eco clothing,” or even “conscious clothing.”<sup>5</sup> The “eco” prefix suggests a greater emphasis on the environmental aspects of sustainable fashion. However, sustainable fashion also addresses inequality and inequity caused by the notorious use of human exploitation in outsourced production in countries where labour is cheaper. Clothing manufacturers in these countries keep costs down but are rife with poor working conditions, meager wages, and even child labour. The fashion world itself has been the subject of interest among sustainability advocates and environmental economists because of the impact that mass consumption, ever-changing trends and tastes, and environmental pollution has on the world. Globalization has continually driven mass the production of clothing at increasingly lower prices. The production process is also one of the chief contributors to pollution. Constant changes in tastes in consumer buying behaviours have also rendered clothing a highly disposable commodity, where discarded clothing ends up in landfills.<sup>6</sup>

Sustainable fashion was a way to address these systemic problems by advocating and fostering positive change in the fashion industry towards greater ecological integrity and human justice: How clothing was produced, who produced it, and how long the life span of a product was before it was disposed of. Sustainable fashion was also aimed at advocating and fostering change within consumer behaviour towards fashion products and the fashion system toward greater ecological integrity. Sustainable fashion was more than just addressing fashion as a heavily commoditized product. It was also about addressing the players within the sustainable fashion and ethical fashion space.

According to Yong, the sustainable fashion industry in Australia offered a glimmer of hope and the promise of opportunity. Australian consumer attitudes and buying behaviours had positively changed in recent years, and the

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3. Ayeni, 2019.

4. Local Threads, n.d.

5. Wilson, 2021.

6. Wilson, 2021.

country was ranked “fifth most-sustainable-fashion-conscious country”<sup>7</sup> in the world, trailing the UK, Ireland, New Zealand, and Finland. In addition, while Australian consumers tended to support local businesses historically, due to largely industry protectionist policies that imposed import tariffs on apparel from other countries, change had also taken place. Australian clothing manufacturers were also increasingly competing on a more design-focused basis, repositioning and revitalizing the internal fashion industry as a much more creative one, supplanted by green consciousness.<sup>8</sup> Yong remarked that he had confidence that the Australian local market provided enough viable and potential business conditions to make the Local Threads platform work. Based on growing patterns of online shopping behaviour in Australia, Local Threads would operate as a digital marketplace. Yong recalled that he and Baodunnov spent long days researching this space. They were convinced that one of the pivotal strategic reasons to build an online marketplace was that there was no need to manage physical inventory and operate a warehouse.

## Co-Owners as Future Leaders?

Baodunnov and Yong seemingly had the necessary leadership traits and business credentials to lead this re-imagined start-up into new frontiers and to drive business growth. They had complementary strengths and brought rich experience to the table. Baodunnov had been described as a “serial entrepreneur,” and over the course of his illustrious entrepreneurial career, founded and led five different projects and successfully exited three of them. One of his projects was sold to the largest company in China before he migrated to Australia. He had expertise in data-driven business, product designing, fundraising, and data-driven performance marketing. Baodunnov also had considerable experience in branding. Adam was a graduate of Peking University and Chinese European International Business School.

Yong admitted that he had never managed an e-commerce business before. However, prior to his move to Australia from his native Malaysia, Yong built a career spanning over 20 years in various global IT companies such as Microsoft, Oracle, and IBM, in various strategic marketing leadership roles. He also had practical experience driving retail businesses, having served as managing director and country director in large-scale retail organizations with a turnaround of 1500 staff in the electronics and furniture industries.<sup>9</sup> A graduate of Monash University, Yong had earned a professional reputation as a commercial and marketing specialist as well as a seasoned business leader.

## Initial Organizational Changes

After Baodunnov and Yong transitioned into their new roles as co-founders of Local Threads, they kept Adcock on as an advisor on a part-time basis. Adcock was still connected to the business he had built from scratch. The immediate challenge facing Yong and Baodunnov was transforming what was effectively a “one-man” e-commerce platform into a scalable business. Yong and Baodunnov also needed to quickly learn how to run an e-commerce and digital marketing business themselves. Yong admitted that his expertise was based on his considerable corporate experience managing a brick-and-mortar business. Together with his business partner, he had to accelerate his learning into how digitally savvy customers conduct research, compare products, make buying decisions, and perform online transactions on an e-commerce platform.

From an internal point of view, the new team endeavoured to learn as much as they could about search engine optimization, user interface traffic, and data analytics. For example, click-through rate (CTR) was used to measure the

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7. Pullar, 2022.

8. Craik, 2015.

9. De La Pena, 2022.

success of an online advertising campaign for a particular website. CTR was defined as the ratio of users who click on a specific link to the number of total users who view a page, email, or advertisement.<sup>10</sup> CTR became increasingly important in an e-commerce business and was very different from how customers behaved in a retail store. The more the Local Threads website matured, the more brand recognition increased. And the more brand recognition increased, the more potential customers were likely to “click” on the website and browse. The other challenge was managing return on ad spent (ROAS), which was the measurement of how effective and efficient a specific digital marketing campaign was.<sup>11</sup> Local Threads was an online marketing platform that represented over a hundred and fifty brands throughout Australia. The new owners regarded these new and unique elements as a complex science, but one that was simply a re-perceiving of any marketing challenge.

**The more the Local Threads website matured, the more brand recognition increased. And the more brand recognition increased, the more potential customers were likely to “click” on the website and browse.**

While there were differences that were algorithm-based, customer behaviour was the same as in any business. The fundamentals of marketing still applied, except that they were not anchored in customer user interface and eCommerce constructs. Baodunnov already had a strong foundation in digital marketing, and coupled with Yong’s expertise in strategic marketing, they knew that they had a strong unique selling proposition to offer. Creating brand recognition was another obstacle to overcome. The enterprising co-founders referred to this initial stage as their “brand building phase.”<sup>12</sup> Building on their corporate experience, Local Threads needed to put into place operational processes such as order fulfillment and pre- and post-sales customer service, taking from best practices in the corporate world. Baodunnov also built a dashboard to support the monitoring of a series of metrics that measured complex statistics such as daily customer traffic and sales conversion rates.

Both co-founders also adopted a comprehensive sustainable fashion brand rating system, the “IndeeFactor Rating System,” which assigned points in several categories—people, planet, animals, circularity, and economy—which are specifically linked to the UN Sustainable Development Goals (SDGs).<sup>13</sup> The aim of the IndeeFactor Rating System was to ensure that all fashion brands demonstrated transparency and commitment toward sustainability business practices. This provided prospective customers with confidence that they were buying clothing from true sustainability-driven companies. Acceptance into the Local Threads marketplace meant all partner organizations went through this rigorous selection process to ensure that they provided value to their customers. The value proposition also included both an assurance that customers have access to latest fashion trends, as well as support of local businesses that espoused sustainable practices.

Baodunnov and Yong then proceeded to recruit six highly talented individuals within the Melbourne area to join the company, using funds from the investors. Each of these new hires were experienced digital marketing professionals but were new to the concept of sustainability and sustainable fashion. However, they quickly learned from Baodunnov and Yong, who both spent time in team meetings and one-on-one coaching sessions. Before long, the new hires were given various positions such as digital marketing analytics, customer interfacing, and order fulfillment, and they were involved in directly engaging with existing partner organizations and using the IndeeFactor Rating System as a tool to qualify prospective organizations. Both Yong and Baodunnov shared the responsibility of coaching, guiding, and teaching their team members about various business and management aspects of both a digital e-commerce marketplace and

10. Mackey, 2021.

11. BigCommerce, n.d.

12. A. Baodunnov, personal communication, February 22, 2022.

13. IndeeFactor, n.d.

sustainable fashion. The new hires expressed an appreciation for this form of empowering leadership, as Yong reflected. Local Threads was off to a good start.

## Challenges Encountered

While some proven marketing strategies and tactics were applied to the new sustainable business venture, the entrepreneurs recognized unique needs in this space that required management attention. The process of building a brand and using marketing techniques for the Local Threads digital platform were similar to their experience, but the owners realized that many Local Threads customers were also price sensitive. One of the unique selling propositions of sustainable fashion was the commitment that customers are “buying” into a more sustainable world. The other commonly perceived notion was that buyer motivation was also based on the Australian consumer’s willingness to support local enterprises—after all, search engine optimization analytics suggested that “buy Australian,” “Australian sustainable fashion,” “Australian brand” were popular key words.<sup>14</sup> Yong and Baodunnov had to develop other strategies to balance these dynamics. Australian customers were willing to support local brands and to “buy responsibly” but they also wanted a good deal. Discounts still mattered! Local Threads provided free shipping within Australia, so they needed to determine strategies to better manage their sales margins in the process.

On the supply side, competition in the fashion marketplace was fierce. One of the key tasks that the Local Threads team faced was approaching and convincing sustainable fashion brands to sign on to their e-commerce platform. These fashion brand organizations varied in size: While many were small-to-medium start-ups, others were already established brands that sold their clothing through major retailers and even department stores. The challenges were presented on two extremes. On the one hand, the established larger brands required detailed justification to agree to join a relatively new e-commerce platform that, in their eyes, was just another sales channel, and one that had not been in operation for a long period. In addition, larger well-known brands had the added layer of having to seek higher management approval in any major decision. On the other hand, smaller start-ups sometimes lacked the business savvy to recognize that this was a viable way to scale up their sales and marketing efforts. These smaller start-ups also needed to understand that their product would not “sell itself” just because it was listed on a website. Baodunnov shared about his challenge to educate newcomers to Local Threads on the intricacies of operating through a digital platform. “We had to spend time with some of these smaller new companies who don’t really know how to run a business or scale up production and sales, especially through a digital platform,” he shared.<sup>15</sup>

**One of the key tasks that the Local Threads team faced was approaching and convincing sustainable fashion brands to sign on to their e-commerce platform.**

The sustainable fashion industry was also subject to the same exogenous elements that affected any clothing and apparel company. Fashion was a highly seasonally driven business, where holiday sales could drastically affect revenues. There were variability and fluctuations regarding the number of orders placed. Frequent price changes were another significant game changer, since consumers would typically make purchasing decisions on what they perceived to be a bargain. During the Christmas season, sustainable fashion labels typically had semi-exclusive deals with major department stores or large retailers.<sup>16</sup> For example, one single product, such as a jacket, could receive an order of 300 items for one retailer. The retail selling price for the product might be AUD\$220 per jacket. However, to be competitive, Local Threads would be required to sell the same item at AUD\$200 plus offer free delivery, affecting margins and profitability. Local Threads

14. A. Baodunnov, personal communication, February 22, 2022.

15. A. Baodunnov, personal communication, February 22, 2022.

16. C. Yong, personal communication, January 18, 2023.

adopted the drop ship model, in which it did not hold any inventory and the customer received the product directly from the supplier. In such cases, Local Threads was not able to enjoy the same semi-exclusive seasonal deals simply because it was perceived as a relatively smaller distribution channel than a large retailer or department store.

Local Threads was also supported by angel investors and capital investors representing Chinese entrepreneurs. These Chinese investors were very technically savvy and had an extensive background on how e-commerce businesses operated. According to Baodunnov, they agreed to invest in this business model based on the opportunity to tap into the Australian market through an e-commerce platform. However, these investors were not familiar with the concept of sustainability management and operated under a different paradigm for ethical business practices.<sup>1718</sup> To ensure their continued investment support, they required a positive return on investment. However, Baodunnov remarked that he wanted these Chinese investors to change the way that they perceived a sustainability-based business opportunity; he explained that it was not just based on financial gains but that it reflected a future way of doing responsible business through a much more “noble” pursuit. Conversely, many of the Australian independent brands within the Local Threads network had fully embraced sustainability but were unfamiliar with e-commerce and digital marketing technology.

Coupled with language barriers and business cultural barriers, this ecosystem presented challenges as well as opportunities to bring the “best of both worlds together.” Yong and Baodunnov, together with their small team, had a unique opportunity to lead and drive the business by providing business acumen, inter-cultural sensitivity, and technical know-how. Yong was Chinese Malaysian by birth, and he had an Australian university degree, plus years of international work experience in the corporate sector. Malaysia was one of the countries in Southeast Asia that had a unique business culture, blending Eastern and Western ways of working. Baodunnov was ethnic Uyghur from China and had extensive international experience, having started and successfully exited several companies in China, Turkey, and Australia. Adam Baodunnov was multilingual and could conduct business discussions in English and Mandarin, navigating the subtle nuances of doing business the Chinese way. Baodunnov had built an extensive network among Chinese investors through his previous projects, and he was able to locate and convince them of the elegant simplicity of the Local Threads business model.

One other challenge Local Threads faced was how to effectively manage its workforce. In addition to the small team of six employees based in Australia, Local Threads had to make recruitment and onboarding decisions. The Australian-based employees focused on partner organization engagement but could not keep pace with order fulfillment, which was a laborious process. Baodunnov and Yong then proceeded to recruit a separate team of order fulfillment staff based offshore in the Philippines. This strategic recruitment decision was justified from a cost efficiency and cost management point of view. However, internet reliability and power outages were among the issues encountered that presented challenges in including these offshore staff members as part of the team, in addition to other remote management considerations. Yong and Baodunnov practiced people-centric management, and were able to coach, supervise, and interact with staff; however, the entrepreneurs explained that managing those who were geographically isolated from the parent company in Melbourne was not easy. They jokingly said that videoconferencing via Zoom at all hours of the day became the new normal for the team.

## The Road Ahead

Yong and Baodunnov explained that the decision to buy and scale up a promising start-up was filled with a mix of apprehension and hope. They saw potential in Local Threads as a viable digital marketplace website for sustainable

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17. Local Threads, n.d.

18. C. Yong, personal communication, February 7, 2022.

fashion and ethical fashion representing Australian brands, despite the initial challenges in managing a multitude of issues. The entrepreneurial pair was effectively juggling several elements simultaneously, facilitating different stakeholders and managing organizational matters while learning about the business. Given the challenges ahead, Yong and Baodunnov knew they needed to develop and execute the best leadership strategy for Local Threads to transition to the next phase of its growth aspirations. They were under pressure to deliver profitable business outcomes to meet investor expectations. They were also cognizant of the fact that start-ups could either fail or succeed within the first few years in the current economy. Baodunnov and Yong even expressed how they often contemplated whether they had made the right decision to embark on such an endeavour. They knew they needed to develop a leadership strategy tailored to the unique needs of this sustainable e-commerce start-up to be successful. Where should they start? What is in store for the dynamic duo in the next chapter of their journey?

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