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9B21B010

MJD MANUFACTURING: CAPITAL BUDGETING DECISIONS DURING A PANDEMIC

Dante Mascarin wrote this case under the supervision of Yaqi Shi and Ryan Hudgins solely to provide material for class discussion. The authors do not intend to illustrate either effective or ineffective handling of a managerial situation. The authors may have disguised certain names and other identifying information to protect confidentiality.

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In the winter of 2020, the world faced the worst public health crisis in recent history—COVID-19. The COVID-19 pandemic affected all individuals and organizations in one way or another. As a result of new public health guidelines, most businesses experienced a decrease in sales, threatening the existence of some industries and causing many employees to be laid off or furloughed. However, other industries were presented with opportunities.

In April 2020, Ivey Business School HBA graduate Emma Harris, chief executive officer of automobile parts manufacturer MJD Manufacturing (MJD), recognized the potential opportunity to invest in new machinery and retool some of MJD’s operations to produce COVID-19 supplies. Specifically, Harris was considering whether MJD should produce personal protective equipment (PPE) to meet the increased demand and offset the headwinds faced in the automobile parts manufacturing industry. Her rough calculations indicated a potential total capital investment of around CA$10 million[[1]](#endnote-1) for the retooling and equipment investments across two options.[[2]](#endnote-2) However, the duration of the COVID-19 pandemic was very uncertain. If the crisis ended quickly, then MJD might not break even on a potential capital investment. Alternatively, if the crisis endured for a long time, then MJD might miss out on a huge opportunity. Harris sat down to apply her HBA skills and analyze the decision at hand.

THE COVID-19 PANDEMIC

COVID-19 was a highly contagious disease caused by “severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).”[[3]](#endnote-3) The disease was first identified in December 2019 in Wuhan, Hubei, China, and quickly spread throughout the world, resulting in millions of cases within the first few months of the outbreak.[[4]](#endnote-4)

Given that COVID-19 was a new disease, the research and information available was scarce and imprecise relative to other medical research. One thing that was commonly accepted among public health experts was that mass vaccine distribution would likely be an effective solution in getting “back to normal.”[[5]](#endnote-5) The big question was—when, if at all, would a vaccine be available?

Some public health experts projected that an effective vaccine for mass distribution could be available as early as 2021−2022, roughly 24 months after the initial outbreak.[[6]](#endnote-6) Other public health experts projected that a vaccine may not be available until 2023 due to the lengthy clinical trial process.[[7]](#endnote-7) This would suggest a longer time frame of demand for PPE, closer to 48 months. However, some public health experts and scientists believed that a vaccine for the novel coronavirus would neverbe found and that COVID-19 would becomethe “new normal.”[[8]](#endnote-8) In that case, it was projected that 96 months (eight years) would elapse before demand for COVID-19-related equipment (i.e., PPE) would return to pre-COVID-19 levels.

When assessing the possibility of a potential vaccine, public health experts turned to the scientific community’s response to similar diseases in the past. Specifically, public health experts looked at the two diseases most similar to COVID-19: the original SARS-CoV (circa 2003) and the Middle East respiratory syndrome (MERS)-CoV (circa 2012).[[9]](#endnote-9) In both precedent cases, there had been no successful development of a vaccine.[[10]](#endnote-10) The time line of a potential vaccine had vast implications for Harris’s decision on whether to shift from manufacturing automobile parts to manufacturing PPE.

THE AUTOMOBILE PARTS MANUFACTURING INDUSTRY in ontario

The automobile parts manufacturing industry was composed of businesses that produced motor vehicle parts and accessories, such as auto body parts; air bags; wheels; and components for cooling, exhaust, and fuel systems.[[11]](#endnote-11)

The size of the automobile parts manufacturing industry in the province of Ontario was about CA$5 billion, representing over 180 operating companies with over 12,000 employees.[[12]](#endnote-12) For comparative purposes, the size of the automobile parts manufacturing industry in the United States was US$265 billion, representing 4,300 operating companies.[[13]](#endnote-13)

Larger players in the industry had pursued consolidation strategies, which allowed them to achieve economies of scale and offer a wide variety of products.[[14]](#endnote-14) However, there was still broad fragmentation in the industry, such that smaller players comprised approximately 75 per cent of the market in Ontario.[[15]](#endnote-15) These smaller players, such as MJD, produced much more niche and specialized products tailored to fit specific automobile parts, sizes, and models.

The industry in Ontario had recently been experiencing negative growth, shrinking by 5.3 per cent per year over the past five years.[[16]](#endnote-16) The demand for automobile parts was cyclical and dependent on sales of new cars as well as aftermarket demand.[[17]](#endnote-17) As a result, volatility in commodity prices, changes in the relative valuation of the Canadian dollar, and shifts in consumer spending related to the pandemic all affected revenue for automobile parts manufacturers.[[18]](#endnote-18)

In measuring the financial success of an automobile parts manufacturing company, the key metrics that analysts looked at were return on equity (ROE) and return on assets (ROA) (see Exhibit 1).

MJD MANUFACTURING

Located north of Toronto in Barrie, Ontario, MJD Manufacturing was started in 1961 by Joseph Harris in his garage, when he was making windshield wipers by hand for a local automobile manufacturer. MJD had been privately owned and operated by the Harris family since its inception. Emma Harris was the third generation of the Harris family to run the company.

Since 1961, MJD had grown organically to a company with over 40 employees and more than $27 million in revenues in 2019. MJD prided itself on its commitment to its community and its employees. The company had been deeply involved in community initiatives and charity campaigns since its inception.

The Harris family tree was quite extensive, so there were many shareholder voices that needed to be considered when deciding on strategic alternatives for the company (see Exhibit 2). When making organizational decisions, 80 per cent of shareholders needed to vote in favour of the proposal.

MJD operated three core automobile parts manufacturing segments: windshield wipers for compact vehicles, airbags for compact vehicles, and tailored plastic trim for driver-side and passenger-side windows (see Exhibits 3 and 4). Each year, MJD shareholders received a special dividend, representing the profit split, which resulted in a relatively low retained earnings account (see Exhibit 4). The operating expenses for each product line were proportionate to the product line’s revenue as a percentage of total revenue.

MJD had three different pieces of core equipment—one for each segment (see Exhibit 4). Historically, MJD targeted a 6−8 per cent ROA and a 10−12 per cent ROE. If MJD made new investments, Harris wanted to aim for a 9−10 per cent ROA and a 12−14 per cent ROE. (See Exhibit 1 for peer benchmarking data for MJD.)

THE PERSONAL PROTECTIVE EQUIPMENT INDUSTRY

The PPE industry was well known to *some* professionals, but the COVID-19 pandemic brought the industry into the spotlight. Examples of PPE included disposable masks (e.g., N95 masks), respirators, gloves, face shields, and more. Historically, the PPE industry catered to first responders, the military, health-care workers, miners, and some other niche industries.[[19]](#endnote-19) Now, with new health practices in place during the pandemic, PPE had some application to every industry and job function, since they provided “a barrier to help prevent potential exposure to infectious disease.”[[20]](#endnote-20)

Globally, the PPE market was worth roughly US$60 billion in 2019.[[21]](#endnote-21) The COVID-19 pandemic the following year resulted in the PPE market seeing extraordinarily high levels of growth—but it was unknown for how long this growth would last. Over the 12 months beginning May 2020, it was estimated that Ontario would need 1.2 billion masks (both medical and non-medical grade), and the Canadian mask market *alone* was projected to be worth $3.5 billion by the end of that period.[[22]](#endnote-22)

Given the unexpected spike in demand for PPE, the municipal, provincial, and federal governments in Canada were providing grants to manufacturing companies that were willing to invest in production facilities. For instance, the Ontario government pledged $50 million in funding for manufacturers to retool their factories for the production of PPE and medical supplies.[[23]](#endnote-23) Additionally, in March of 2020, the federal government committed to spending over $2 billion on PPE for health-care workers.[[24]](#endnote-24) Although the production of PPE for medical purposes in Canada was subject to more regulatory guidelines than the production of PPE for mass distribution,[[25]](#endnote-25) it was easier to secure safer, longer-term contacts for medical grade PPE.

THE INVESTMENT OPPORTUNITY

In April of 2020, Harris recognized the potential opportunity to retool some of MJD’s manufacturing operations and invest in new machinery to produce PPE. Harris believed her equipment and workers were best positioned to potentially produce two different kinds of PPE: face shields and N95 masks.

Face Shields

Harris knew there was an opportunity for her company to produce face shields and sell them to the government for medical use (see Exhibit 5). MJD’s windshield-wiper manufacturing machine could be retooled to produce face shields. If Harris decided to retool MJD’s windshield-wiper manufacturing machinery, she would forgo all revenues and avoid all costs related to selling windshield wiper equipment. In 2019, the book value of the windshield-wiper manufacturing machinery was $7.9 million (see Exhibit 4), and Harris expected the retooling investment to cost $4.5 million.

Given MJD’s size and involvement in the community, Harris was confident that she would be able to secure a minimum of $0.5 million and a maximum of $1.0 million in government grants to produce face shields. Since the investment required a retooling of the current equipment, there would be no salvage value.

If MJD decided to produce face shields, Harris was confident that she would be able to secure a contract with the Government of Ontario for 2.5 million units per year throughout the pandemic. If she was not able to secure the contract with the government, MJD would have a difficult time selling the face shields.

Face shields would cost about $1.65 per unit to produce and would sell for around $3.10 per unit at wholesale via government contracts. In addition to these expenses, MJD would incur $1.6 million per year in operating expenses associated with the production of face shields.[[26]](#endnote-26)

Revenue and cost of sales were expected to grow 3 per cent per year, whereas operating expenses were expected to grow 2 per cent per year. In addition, Harris estimated that she would spend 25 per cent of her time working on the production and sale of face shields if MJD decided to go forward with this investment opportunity.[[27]](#endnote-27) Lastly, the face shields would have 20 days of inventory.

N95 Masks

Harris also wanted to consider producing N95 masks, as these were in incredibly high demand (see Exhibit 6). It was projected that the masks would only be in demand for the next 24 months at a minimum and 48 months at a maximum. MJD would be able to sell N95 masks to both the government and the public.

None of MJD’s equipment could be retooled to produce N95 masks, so new equipment would need to be purchased. It would cost $5.75 million to purchase the top industrial machinery for N95 mask production. The Government of Ontario was offering $1.0-million grants to manufacturing companies that were willing to produce disposable masks for broad use. Harris had already reached out to her municipality and confirmed that MJD qualified for this grant.

Given the short demand cycle, Harris expected a relatively low salvage value on the equipment. The equipment depreciated at 5 per cent per year on a straight-line basis and would be able to be sold for 40 per cent of its net book value.[[28]](#endnote-28)

By a quick back-of-the-envelope calculation, Harris was able to determine low-, base-, and high-case sales scenarios on a per-unit basis for sales to the public over the next four years. In the low case, MJD would sell 4 million masks in the first year, growing at 500,000 masks per year. In the base case, MJD would sell 5 million masks in the first year, growing at 750,000 masks per year. In the high case, MJD would sell 6 million masks in the first year, growing at 1 million masks per year. In each case, sales would be made through e-commerce and retail channels, with 70 per cent of sales coming from e-commerce.

Although there was currently high demand for N95 masks, Harris would also need to assemble a team in order to get the masks to market. Harris would need to spend $0.95 million per year on operating expenses, which would grow by 3.5 per cent per year.[[29]](#endnote-29) N95 masks would cost $0.52 per unit to produce, and the cost of goods sold would increase by 2 per cent per year. MJD would sell N95 masks for $0.85 per unit through wholesale retail channels and for $1.15 per unit through e-commerce channels. In addition, Harris anticipated spending 35 per cent of her time working on the production and sale of N95 masks.

DECISION AND ADDITIONAL CONSIDERATIONS

Harris sat down to review and independently evaluate both investment options. Before analyzing the investment opportunities, she first had to consider how long the COVID-19 pandemic might last, as the time line of the pandemic underpinned the potential investment decision. Harris also had to weigh this potential investment against growing MJD’s current business. Harris was confident in her ability to assemble and manage teams—especially in the manufacturing industry—but she needed to decide whether she wanted to embark on this new challenge. Before analyzing any of the new investment options, Harris first wanted to compare the average of the 2018−2019 financials to MJD’s peers.

If Harris thought an investment was the right move, then she would need to consider how to finance a potential investment. With only $1.7 million in retained earnings, MJD would have to seek external financing—through either bank debt or an external equity investment (see Exhibit 4). On the one hand, Harris knew it would be tough to convince her family that taking on more debt was a good idea. Unlike large institutional players, family-owned businesses were usually less inclined to take on debt. If MJD were to take on more debt, Harris would need to prove that the firm could handle it. It was important that MJD did not exceed a debt ratio of 0.45, which was slightly above the 0.42 average of MJD’s competitors (see Exhibit 1). On the other hand, Harris knew that bringing in external shareholders was something that had never been done before and could provoke resistance from the current shareholders.

Lastly, given MJD’s historical involvement in the community, it was important for Harris to look beyond the numbers and think about how she could help her community, both locally and nationally, during the crisis. At a time when many businesses were having to furlough or lay off staff, Harris wanted to make sure that MJD could continue to provide steady wages for all of its employees. Given the fluidity of the COVID-19 pandemic, Harris knew that she had to act fast and make a decision about the potential investment opportunities soon.

EXHIBIT 1: PEER BENCHMARK DATA FOR AUTOMOBILE PARTS MANUFACTURING IN ONTARIO (2018−2019 AVERAGE)



Note: EBITDA = earnings before interest, taxes, depreciation, and amortization; EBT = earnings before tax.

Source: Created by the case authors.

EXHIBIT 2: HARRIS FAMILY TREE

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Source: Created by the case authors.

EXHIBIT 3: MJD MANUFACTURING HISTORICAL INCOME STATEMENT (IN CA$ THOUSANDS)

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Note: The 2020 forecast represents projections for the status quo without considering the effect of the pandemic. EBITDA = earnings before interest, taxes, depreciation, and amortization; EBT = earnings before tax.

Source: Created by the case authors.

EXHIBIT 4: MJD MANUFACTURING HISTORICAL BALANCE SHEET  
(IN CA$ THOUSANDS)



Note: PPE = personal protective equipment.

Source: Created by the case authors.

EXHIBIT 5: FACE SHIELDS

A picture containing person, room

Description automatically generated

Source: Staff Sgt. Cristina J. Allen, “New Jersey National Guard,” April 10, 2020, The National Guard Photostream, flickr, accessed March 3, 2021, www.flickr.com/photos/thenationalguard/49777226476/, licensed under CC BY 2.0 (creativecommons.org/licenses/by/2.0/).

EXHIBIT 6: N95 MASKS

Diagram

Description automatically generated

Source: Banej, “3M N95 Particulate Respirator,” Wikimedia Commons, June 23, 2013, accessed March 3, 2021, https://commons.wikimedia.org/wiki/File:3M\_N95\_Particulate\_Respirator.JPG, licensed under CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0/deed.en).

ENDNOTES

1. All currency amounts are in Canadian dollars unless specified otherwise. [↑](#endnote-ref-1)
2. MJD had an 8 per cent cost of capital and a 20 per cent CCA (capital cost allowance) rate on all investments. [↑](#endnote-ref-2)
3. Mayo Clinic Staff, “Coronavirus Disease 2019 (COVID-19): Symptoms and Causes,” Mayo Clinic, July 3, 2020, accessed July 13, 2020, https://www.mayoclinic.org/diseases-conditions/coronavirus/symptoms-causes/syc-20479963. [↑](#endnote-ref-3)
4. World Health Organization, *Coronavirus Disease 2019 (COVID-19): Situation Report 94*, 2-9, April 23, 2020, accessed July 14, 2020, https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200423-sitrep-94-covid-19.pdf. [↑](#endnote-ref-4)
5. McKinsey & Company, “On Pins and Needles: Will COVID-19 Vaccines ‘Save the World’?,” McKinsey, July 29, 2020, accessed July 30, 2020, https://www.mckinsey.com/industries/pharmaceuticals-and-medical-products/our-insights/on-pins-and-needles-will-covid-19-vaccines-save-the-world. [↑](#endnote-ref-5)
6. [Ibid.](https://www.mckinsey.com/industries/pharmaceuticals-and-medical-products/our-insights/on-pins-and-needles-will-covid-19-vaccines-save-the-world) [↑](#endnote-ref-6)
7. Ciarán Lawlor, Josh Kellar, Emily Serazin, Andrew Rodriguez, Philip Berk, and Ahad Wahid, MD, “The Timelines and Implications for COVID-19 Vaccines,” BCG, May 14, 2020, accessed July 25, 2020, https://www.bcg.com/publications/2020/covid-vaccines-timelines-implications. [↑](#endnote-ref-7)
8. Byram W. Bridle and Shayan Sharif, “Fast COVID-19 Vaccine Timelines are Unrealistic and Put the Integrity of Scientists at Risk,” The Conversation, June 15, 2020, accessed July 15, 2020, https://theconversation.com/fast-covid-19-vaccine-timelines-are-unrealistic-and-put-the-integrity-of-scientists-at-risk-139824. [↑](#endnote-ref-8)
9. [Ibid.](https://ovc.uoguelph.ca/news/fast-covid-19-vaccine-timelines-are-unrealistic-and-put-integrity-scientists-risk) [↑](#endnote-ref-9)
10. Ibid. [↑](#endnote-ref-10)
11. IBIS World, “Auto Parts Manufacturing in Ontario - Market Research Report,” August 27, 2020, accessed September 1, 2020, https://www.ibisworld.com/canada/market-research-reports/auto-parts-manufacturing-industry-ontario/. [↑](#endnote-ref-11)
12. Ibid. [↑](#endnote-ref-12)
13. First Research, “Automobile Parts Manufacturing Industry Profile,” First Research, June 22, 2020, accessed August 1, 2020, http://www.firstresearch.com/Industry-Research/Automobile-Parts-Manufacturing.html. [↑](#endnote-ref-13)
14. Ibid. [↑](#endnote-ref-14)
15. IBIS World, op. cit. [↑](#endnote-ref-15)
16. Ibid. [↑](#endnote-ref-16)
17. First Research, op. cit. [↑](#endnote-ref-17)
18. IBIS World, op. cit. [↑](#endnote-ref-18)
19. Grandview Research, “Personal Protective Equipment Market Size, Share & Trends Analysis Report Summary,” February 2020, accessed July 17, 2020, https://www.grandviewresearch.com/industry-analysis/personal-protective-equipment-ppe-market. [↑](#endnote-ref-19)
20. Government of Canada, “Personal Protective Equipment (COVID-19): Overview,” July 2, 2020, accessed July 13, 2020, https://www.canada.ca/en/health-canada/services/drugs-health-products/covid19-industry/medical-devices/personal-protective-equipment/overview.html. [↑](#endnote-ref-20)
21. Grandview Research, op. cit. [↑](#endnote-ref-21)
22. Allam Advisory Group, *2020 Canadian PPE Mask Industry Outlook: Executive Summary*, May 2020, accessed August 1, 2020, https://www.allamadvisorygroup.com/wp-content/uploads/2020/05/Canada-ppe-mask-industry-outlook-2020-Allam-Advisory-Group-1.pdf. [↑](#endnote-ref-22)
23. *Manufacturing AUTOMATION*, “Ontario Pledges $50M for Businesses to Retool Manufacturing for COVID-19 Solutions,” April 2, 2020, accessed July 14, 2020, https://www.automationmag.com/ontario-pledges-50m-for-businesses-to-retool-manufacturing-for-covid-19-solutions/. [↑](#endnote-ref-23)
24. The Canadian Press, “New Ventilators Promised in Days as Industrial Response to COVID-19 Kicks In,” BNN Bloomberg, March 31, 2020, accessed July 14, 2020, https://www.bnnbloomberg.ca/new-ventilators-promised-in-days-as-industrial-response-to-covid-19-kicks-in-1.1415265. [↑](#endnote-ref-24)
25. Government of Canada, op. cit. [↑](#endnote-ref-25)
26. This included $450,000 in depreciation expenses (based on the straight-line depreciation method). [↑](#endnote-ref-26)
27. Her annual cash compensation was $250,000 in 2019 and was anticipated to grow by 3 per cent in 2020. [↑](#endnote-ref-27)
28. MJD calculated depreciation on the book value net of government grants. [↑](#endnote-ref-28)
29. These operating expenses included the depreciation expense. [↑](#endnote-ref-29)