



---

# ST2187 COURSEWORK REPORT

---

Business analytics, applied modelling and prediction



REYES JEREMIAH PULIDO

Student Number: 210500789

## Contents

<b>Dashboard 1</b> .....	1
<b>Dashboard 2</b> .....	2
<b>Dashboard 3</b> .....	3
<b>Dashboard 4</b> .....	4
<b>Dashboard 5</b> .....	5
References .....	i
Word Count.....	i

## Dashboard 1

The first dashboard provides an overview of how the company is doing throughout the years.

From Graph 1, it is shown that there is an increasing trend in the number of customers from 2018 to 2021. From 2018 to 2019 there was an increase in the number of customers by 21.249%, and from 2019 to 2020 there was an increase in the number of customers by 26.957% and from 2020 to 2021 there was an increase in the number of customers by 26.568%. This is good for the company as this displays that there is a certain level of customer loyalty and that the business is attracting more customers which will increase sales and in turn increase the profits of the company.

This is supported by Graph 2 which displays the increase in total annual profit from 2018 to 2021. This implies that the company is properly managing expenses and the cost of goods sold. From 2018 to 2019 there was an increase in total profits by 22.91%, and from 2019 to 2020 there was an increase in total profits by 33.47% and from 2020 to 2021 there was an increase total profit by 23.46%. The company's yearly Profit to Sales ratio is 11.02% in 2018, 11.47% in 2019, 11.95% in 2020, and 11.73% in 2021. Taking into consideration the variety of goods sold by the company to a variety of countries. the company can be considered an online retailer where the average Profit to Sales ratio is 10%<sup>1</sup>. This indicates that the company has a slightly above-average Profit to Sales ratio.

When we look at Graph 3, it is displayed the total sales of the company from 2018 to 2021. There is an increasing trend in the total sales of the company from 2018 to 2021. From 2018 to 2019 there is a sales growth of 18.03%, from 2019 to 2020 there is a sales growth of 28.11% and from 2020 to 2021 there is a sales growth of 25.86%. Considering that sales growth of more than 10% for small-cap and mid-cap companies is considered good<sup>2</sup>, the company is doing very well.

---

<sup>1</sup> According to a blog post on Shopify by Michael Keenan, the average profit-to-sales ratio for online retailers is 10%. <https://www.shopify.com/blog/profit-margin>

<sup>2</sup> According to Stockopedia, sales growth for mid-cap and small-cap companies is considered good. <https://www.stockopedia.com/ratios/sales-growth-ttm-838/>

## Dashboard 2

Referencing back to dashboard 1, there is little to no market presence in the Canada market. The second dashboard will provide some insight and an overview of the Sales in the Canada Market compared to the other Markets. Looking at the Canada market in Table 1, the Overview of the Markets table, Canada has a significantly low contribution towards company total sales of 0.38% in 2018, 0.60% in 2019, 0.56% in 2020, and 0.54% in 2021. Looking at the Canada market, it is shown that there is an average discount of 0% from 2018 to 2021, meaning that customers from Canada did not claim any discounts on their purchases. Not being able to claim discounts could have been a deterring factor for customers from Canada. The average shipping cost in Canada was \$16.63 in 2018, \$18.24 in 2019, \$21.25 in 2020, and \$19.67 in 2021 while the average shipping cost throughout all the markets was \$27.15 in 2018, \$25.86 in 2019, \$26.42 in 2020 and \$26.27 in 2021, as displayed in 'Table 3. Average Shipping Cost'. This indicates that shipping costs to Canada are below average compared to shipping costs across all the Markets. This means that shipping costs could not have been a deterring factor for customers from Canada. The company can attempt advertising in the Canada market to establish a presence in the Canada market while providing small amounts of discounts.

## Dashboard 3

The third dashboard provides an overview of the sales, profits, and quantity of goods sold from 2018 to 2021 for each category of goods sold.

Looking at Graph 4, it displays the quantity sold for each category of goods from 2018 to 2021. It is shown that there is an increasing trend in the quantity of goods sold for each category.

When we look at Graph 5, it is displayed the total sales of the company sorted by category from 2018 to 2021. From the graph, we can infer that there is an increasing trend in the Total Sales for all Categories.

Looking at Graph 6, it displays the profits made from each category of goods sold from 2018 to 2021. It displays an increasing trend in the profits made for each category of goods sold. The total profit made from furniture from 2018 to 2019 increased from \$53,696.93 to \$58,166.50 and the total profit made from Office Supplies from 2018 to 2019 increased from \$85,996.53 to \$102,101.18. However, from 2019 to 2020 there was a huge increase in profits made for both furniture and office supplies. The amount of profit made off Furniture increased from \$58,166.50 to \$84,166.50, an increase of 44.46% from the previous year. The amount of profit made off Office Supplies increased from \$102,010.18 to \$150,541.06, an increase of 47.57% from the previous year. This increase in sales and profit is attributed to the increase in the quantity of goods sold as well as the effects that coronavirus disease 2019 (COVID-19) had around the world. COVID-19 caused a lockdown around the world and many offices had to get their employees to Work-From-Home (WFH). Due to WFH, many workers had to purchase goods for their office setup for their efficiency. This caused an increase in the sales of goods sold by online retailers<sup>3</sup>, especially to consumers.

---

<sup>3</sup> According to an article on Census by Mayumi Brewster, there is an increase in sales of goods by e-commerce stores due to Covid-19. <https://www.census.gov/library/stories/2022/04/ecommerce-sales-surged-during-pandemic.html>

## Dashboard 4

Next, we will be looking at an in-depth analysis of the performance of goods sold organized by sub-category in dashboard 4.

Looking at Table 4, the total sum of profits earned for each sub-category of goods sold, there is one type of good that particularly stands out and it is the Tables sub-category. There is a negative net profit of \$64,083.39 from selling Tables from 2018 to 2021. This means that the company is making a loss from selling tables.

When we look at the other analytics like Graph 7, Average Shipping Cost sorted by Sub-category, it is shown that Tables have the highest average shipping cost, which means that Tables is the most expensive sub-category of goods to ship.

From Graph 8, Average Discount sorted by Sub-category, it can also be seen that customers are claiming discounts of higher value when purchasing tables. Higher discounts will lead to earning lesser profits from the goods sold which resulted in the company ending up earning negative profit selling tables due to the discounts. The high cost of shipping likely resulted in customers redeeming high discounts when purchasing the tables. One way to combat this would be to put a limit to what can be claimed for the discounts, especially higher-valued discounts.

## Dashboard 5

Finally, we will be looking at an overview of the customer segment in the fifth dashboard.

Graph 9 showcases a pie chart that displays the total profit by customer segment from 2018 to 2021. It is shown that the majority of the profits made by the company is from consumers, with profits of \$117,337.49 in 2018, \$165,626.78 in 2019, \$208,600.15 in 2020, and \$257,675.36 in 2021. There is an increase of 41% from 2018 to 2019, an increase of 26% from 2019 to 2020, and an increase of 24% from 2020 to 2021.

For the Home Office segment, from 2018 to 2019 there was an increase in the total profits from \$46,856.38 to \$50,872.51, which is an increase of 9%. From 2019 to 2020 there was an increase from \$50,872.51 to \$72,986.43, an increase of 43%. From 2020 to 2021 there was an increase from \$72,986.43 to \$106,293.85, an increase of 46%. From this Data, there is a huge spike in the profits made from Home Office customers from 2019 to 2021. This can be attributed to Covid-19, where many office workers needed to purchase office equipment for their usage while working from home. Due to Covid-19, many consumers would turn to e-commerce stores instead of going to physical stores to purchase the goods they need to minimize physical contact.

Graph 10 displays a world map showcasing a breakdown on the count of the total number of customers for each region as of 2021. There are 11,002 customers from the Asia-Pacific (APAC) region market, 10,294 customers from the Latin America (LATAM) region market, 10,000 customers from the European Union (EU) region market, 9,994 customers from the United States (US) region market, 5,029 customers from the Europe Middle-East and Africa (EMEA) region market, 4,587 customers from the Africa region market and 384 customers from the Canada region market.

## References

Mayumi Brewster, (2022, April 27). *Annual Retail Trade Survey Shows Impact of Online Shopping on Retail Sales During COVID-19 Pandemic.*

<https://www.census.gov/library/stories/2022/04/ecommerce-sales-surged-during-pandemic.html>

Michael Keenan, (2022, July 4). *6 Ways To Increase Profit Margin for Ecommerce Businesses.*

<https://www.shopify.com/blog/profit-margin>

Stockopedia. *Stockopedia explains Sales Growth.*

<https://www.stockopedia.com/ratios/sales-growth-ttm-838/>

World Health Organization, Geneva, Switzerland (2022, February 2). *Crucial changes needed to protect workers' health while teleworking.*

<https://www.who.int/news/item/02-02-2022-crucial-changes-needed-to-protect-workers-health-while-teleworking>

Annie Nova, (2020, June 3). *Working from home? You might be able to expense a new desk.*

<https://www.cnn.com/2020/06/03/companies-are-paying-for-their-workers-home-offices.html>

International Trade Administration, (2022, August 03). *Canada – Country Commercial Guide. Canada eCommerce.*

<https://www.trade.gov/country-commercial-guides/canada-ecommerce>

## Word Count

Excluding the cover page, content page, footnotes, and references, the total word count is **1478** words.