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1.0 INTRODUCTION

3cycle limited is a bicycle production company with a fiscal year of 52- or 53-week period that ends on the last Saturday of September, 3cycle's headquarters is in Texas USA. 3cycle recorded revenue of $20m in the 2020 fiscal year, this achievement helped achieve recognition as one of the more profitable small-medium enterprises. The company started business with production of bicycles in 2008, by 2017 3cycles began sales of clothing and accessory merchandise.

When the COVID-19 pandemic hit in March of 2020, the deadly virus caused a global lockdown. In attempts to combat the deadly virus, people sought to stay healthy all round and turned to exercise and dieting (Fleming, 2021). According to Silveira *et al (*2020), increased exercise helps improve immuno-vigilance and immune competence; which help in the control of pathogens. Silveira's study showed that the reduction of pathogens can be the deciding factor of the lethality of the COVID virus in individuals. The new shift in health mindset caused by the COVID-19 virus and the global lockdown (Kale, 2020), lead to a resurgence of bicycle sales worldwide (Bernhard, 2020). The increased demand of bikes 2020, continued all year round and analysts have forecasted this to be leading up to a new revolution of transportation in the near future (Harrabin, 2020).

In 2020, 3cycle reached a revenue of $20m, this is the highest revenue the company has made since inception; 3cycle reached this figure due to increased bicycle sales. However, the company had an 11% decline in revenue in the following year. With rising concerns with sales performance, 3cycle is looking for a structured strategy to maximise bicycle and all-round sales to yield increased revenue in its already established economic markets.

In this report, I will analyse 3cycle's sales performance across a 6-year span in order to identify trends and establish a strategy to help bolster sales performance.

2.0 THEORETICAL FRAMEWORK

Business analytics refers to developing an understanding of business models by evaluation of underlying metrics that support the business model (Palepu *et al*, 2020), business analytics serves as a bridge between business models and data analytics. Business analytics can be applied in numerous ways: to assess a firm/company's strategic strength, to assess risk/opportunity. Predictive analysis and much more (Wyn and Williamson, 2016). The incorporation of data analysis to business is the use of documented data to make informed decisions and strategy. The recent involvement of business analytics to business models have delivered excellent results, According to Harvard research, business analysis has led to numerous benefits: increased productivity, reduced risks, reduced costs, faster decision-making, improved programs, and superior financial performance (Parks and Thambusamy, 2017). Unlike business related theories, data analysis is systematic in nature. Analytic techniques

include: discovery, data preparation, model planning, model building, operationalization and communication of results.

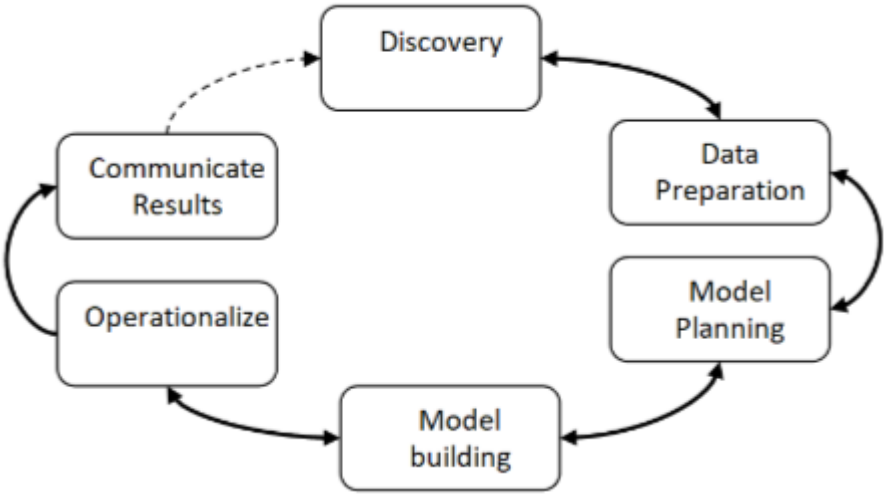


Figure 1: Analytics techniques (Bonthu and Bondu, 2017).

Sales is the life force of all business models, without sales businesses will go bankrupt due to lack of capital retention and profit generation. According to Lambert and Dugdale (2012), sales performance is a metric that is built faster by leveraging on trusted client to business relationships; they coined that strategies should be coined around: public perception, nature of relationship, promotion, customer service and customer behaviour. In an attempt to build competitive advantage amidst peers, small medium enterprise must maximise available resources to help compete against bigger firms (Ogunyemi and Fusch, 2020).

Engel (2000), described advertising as a strategy used by institutions to educate, remind and deliberately persuade customers to buy a product. Advertising is used to present products, ideas and reach a target audience. In addition, findings are also similar with studies done by Ashkan (2016) and Akanbi and Adeyeye (2011) which revealed that advertising has an impact on sales increase. Mullin (2010), argued that sales promotion is used to increase volume, induce trial, increase repeat purchase, increase customer loyalty, increase product usage, create interest, create awareness and create brand awareness. Syeda et al, (2011) in their research on impact of sales promotion on organisations' profitability and consumer's perception in Pakistan, it was revealed that sales promotion has a positive effect on brand loyalty hence increase in organisational profitability. Marketing is an ever evolving power house in today's business model, the addiction of new technology has made the reach of new levels of marketing possible. Social media is being widely used by almost all and even the companies, in spite of their size have started using social media to advertise and promote themselves. Big brands make use of social media to convey their strong existence and friendly

customer relationship, while smaller brands have used this form of marketing to ensure growth of market share for their target audience (Saravanakumar, 2011).

3.0 OBJECTIVES

In this section, I will provide the report objectives, following the problem statement of 3cycle and the above theoretical framework. The objectives of this report are as follows:

- Data discovery of 3cycle's sales data dating from 2016 through 2021.
- Data preparation of 3cycle's sales data using Microsoft excel.
- Model planning and building to build a dashboard for business analytics.
- Critical analysis of visualisations in the built dashboard.
- Recommend strategies to improve sales performance.

4.0 METHODOLOGY

In this section I will discuss the methodology used to accomplish my report objectives. For this I will discuss: data discovery, data preparation, model planning and building.

4.1 DATA DISCOVERY

The data used for this report is secondary data, the data source used was Kaggle.com. The selected dataset consists of sales data from 2016 through to 2021. I selected this data because it possessed well defined columns that can be used to analyse a company's sales data for given years. The presence of important columns: Sales quantity, Revenue, Country, State, Product type, Age group and Gender, made the dataset convenient to conduct relevant analysis.

4.2 DATA PREPARATION

Before data can be analysed it has to go through a preparation stage whereby the data is readied for the process of model planning (Stieglitz *et al*, 2018). Data preparation involves checking whether the data available is of good quality or not in order to start building the model (Bonthu and Bondu, 2017). The dataset from Kaggle was fairly well defined, however, there was a little data preparation to be done. I had to delete the purchase date column, this column had no direct influence on the analysis because the month and year of purchase had separate columns. I also had to filter the year column to correctly adjust all data to a 6 year time span, this was needed to help give structure and provide a trend for the data. The next step was to transform the primary data to a table, this would further allow me to create numerous related pivot tables from the primary data.

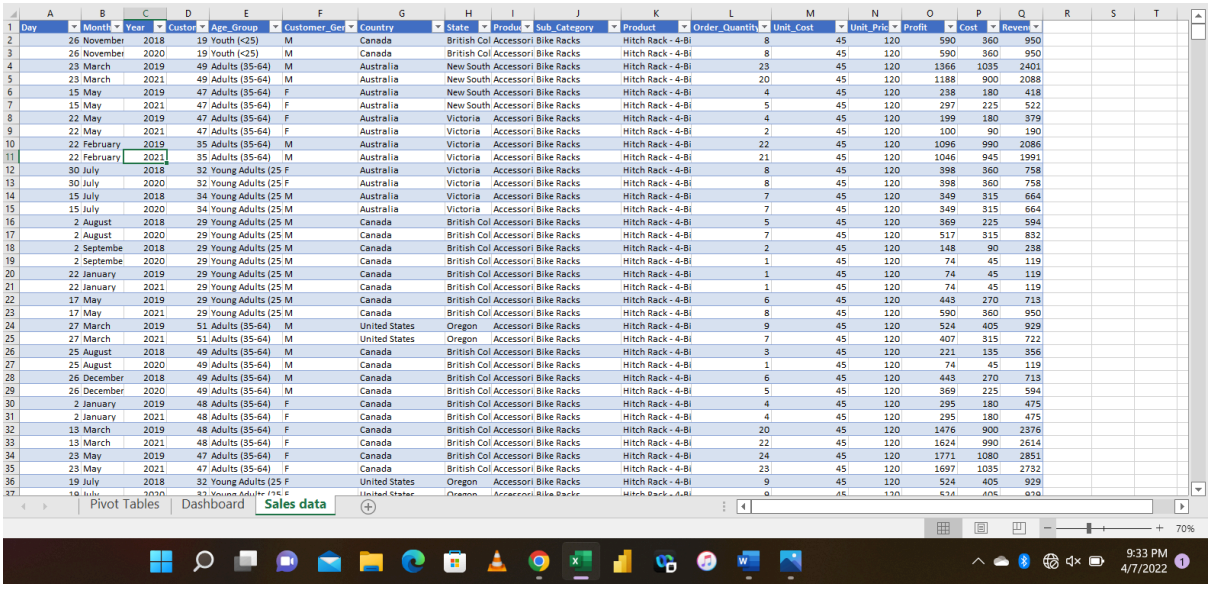


Figure 2: Prepared data

4.3 MODEL PLANNING AND BUILDING

Model planning involves finding whether an idea which is available is good to try for a model is crucial. In this phase, the team finds out the process, methods, and order it needs to follow for the model building (Bonthu and Bondu, 2017).

After data preparation, I had successfully prepared the data for model planning. In the model planning phase, I had to create pivot tables to help streamline the data I needed to do quality analysis. Below I go into analysis of the purpose of each pivot table in the model planning:

Table 1: Reflected the revenue share for product categories through a 6 year span. From analysis of the table, bike revenue had decreased by 10%; this was the only product group that declined in revenue in 2021 compared to the prior year, this concludes that reduction in bike sales is the sole reason for revenue decline in 2021.

Table 2: Shows the total order quantity for each of 3cycle's products.

Table 3: Reflected the product category order distribution amongst all age groups, this was done to give insight to which population generates the most bike revenue.

Table 4: Shows the product category order distribution amongst gender (male and female).

Table 5: Reflected the product category sales across all of 3cycle's operating countries, this was done to give insight to country sales numbers in order to build strategy.

Table 6: Shows the product category sales distribution across all months of the year, I used this to show data on customer purchase behaviour.

After the model planning phase, the next phase is model building. Model building involves executing the model plan. In this stage, the team members put together datasets for training, production and testing functions (Bonthu and Bondu, 2017).

Upon creation of my relevant pivot tables in the model planning stage, I created slicers to help manipulate my pivot tables to show different ranges of data; I created slicers for: Year, Month, Product category, Gender and Country. Once that was done, I moved focus to visualisation of the pivot tables. The purpose for each visualisation is as follows;

Area chart: This chart shows the total revenue distribution between all product categories over the six-year span. It shows the trend in revenue generated.

3-D Pie chart: This chart shows the total order quantity for each product category.

Clustered Column chart: This chart shows the product category order quantity figures across all age groups, this chart gives insight to which products are more popular amongst each age group.

Stacked Column chart: This chart reflects the gender sales distribution across the age groups. This chart gives insight to which gender for each age group purchases more products.

Stacked Bar chart: This chart reflects the product category sales distribution in 3 cycles operating countries. This visualisation helps give insight to 3cycle's most profitable regions for different products.

Stacked Bar chart 2: This chart shows the product category sales distribution across all months of the year. I used this visualisation to establish a connection between product categories and customer purchase behaviour.

5.0 CRITICAL ANALYSIS

Area chart: The visualisation showed noticeable decline in revenue from 2020 to 2021. Closer analysis showed that the reason for this decline was due to decline in Bike revenue; I discovered this by using slicers to compare visualisations. This visualisation is useful for identifying 3cycle's trend in revenue generation and loss.

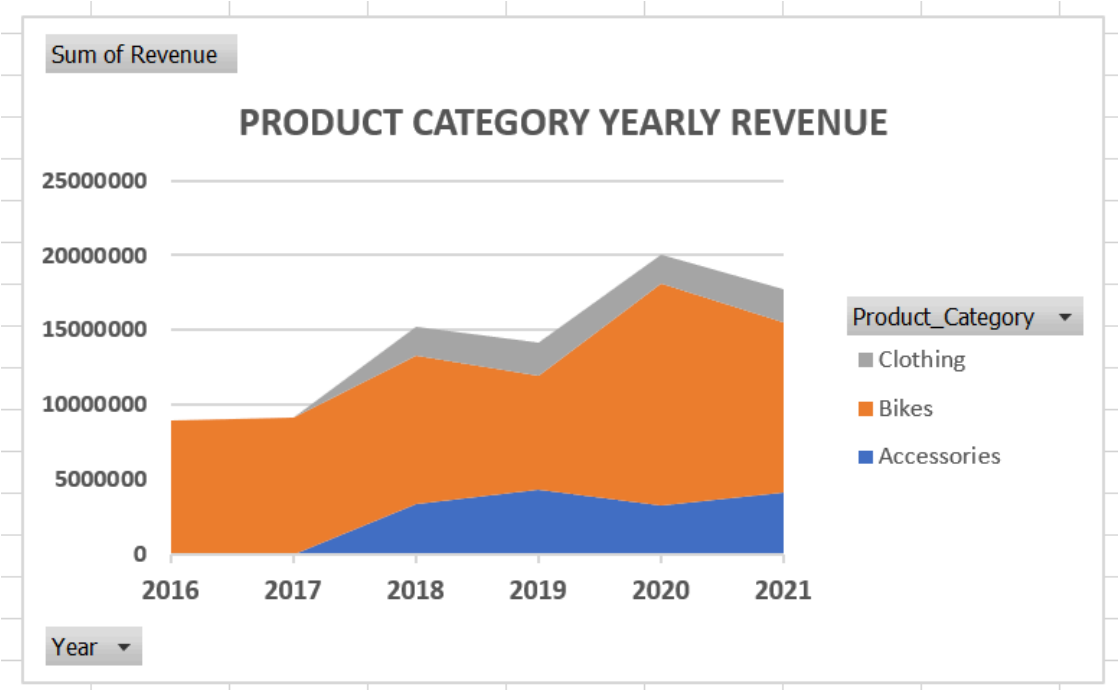


Figure 3: Area chart.

3-D Pie chart: This chart showed the total order quantity by product category. Bike sales was the only product category that declined in 2020, hence establishing Bike sales as the sole reason for the revenue decline in 2020. This chart is crucial for recognition of 3cycle's relative sale numbers.

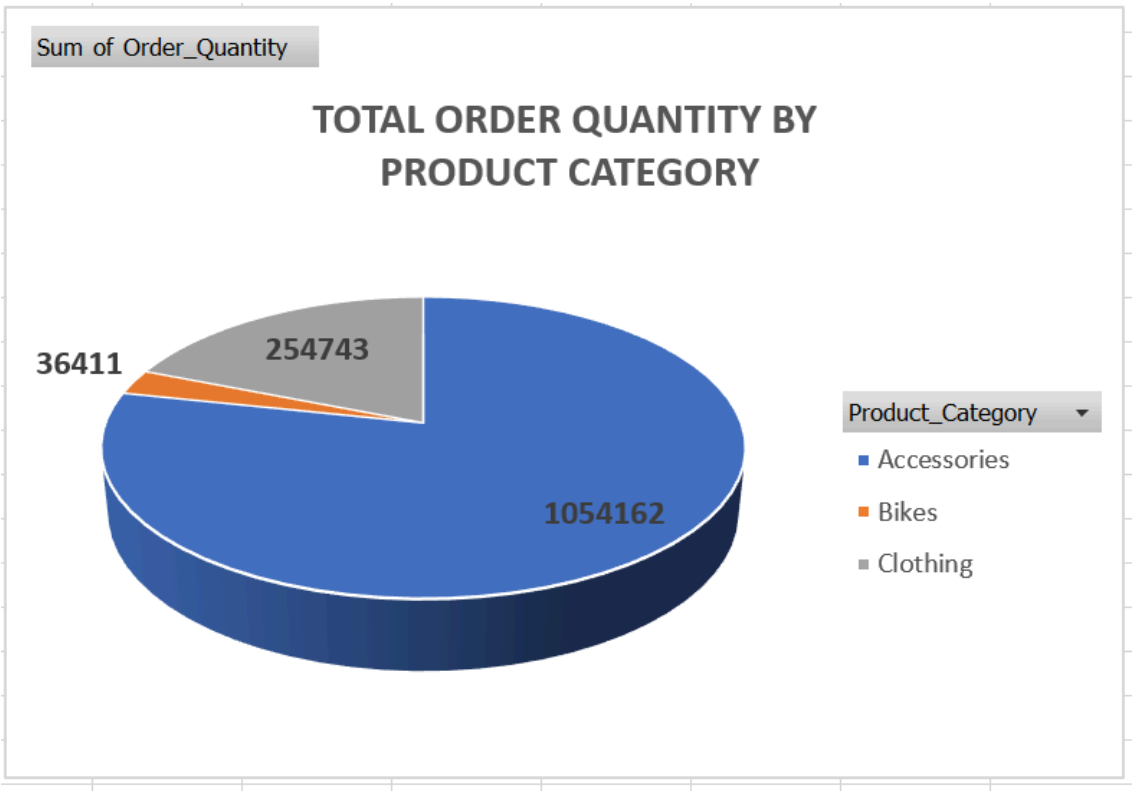


Figure 4: 3-D Pie chart.

Clustered Column chart: The visualisation showed product category order quantity across different age groups. The visualisation shows that across all product categories, Accessories and Clothing account for the most sale order numbers, Bikes account for the least sales for 3cycle. This chart also shows that all 3cycle products are mostly purchased by adults (aged 35-64) and young adults (aged 25-34) respectively. The senior population accounts for the least sales across the board. This visualisation helps give a clear picture of 3cycle's product category sales across various age groups, this chart will help identify the strength of different age groups in order to create a strategy.

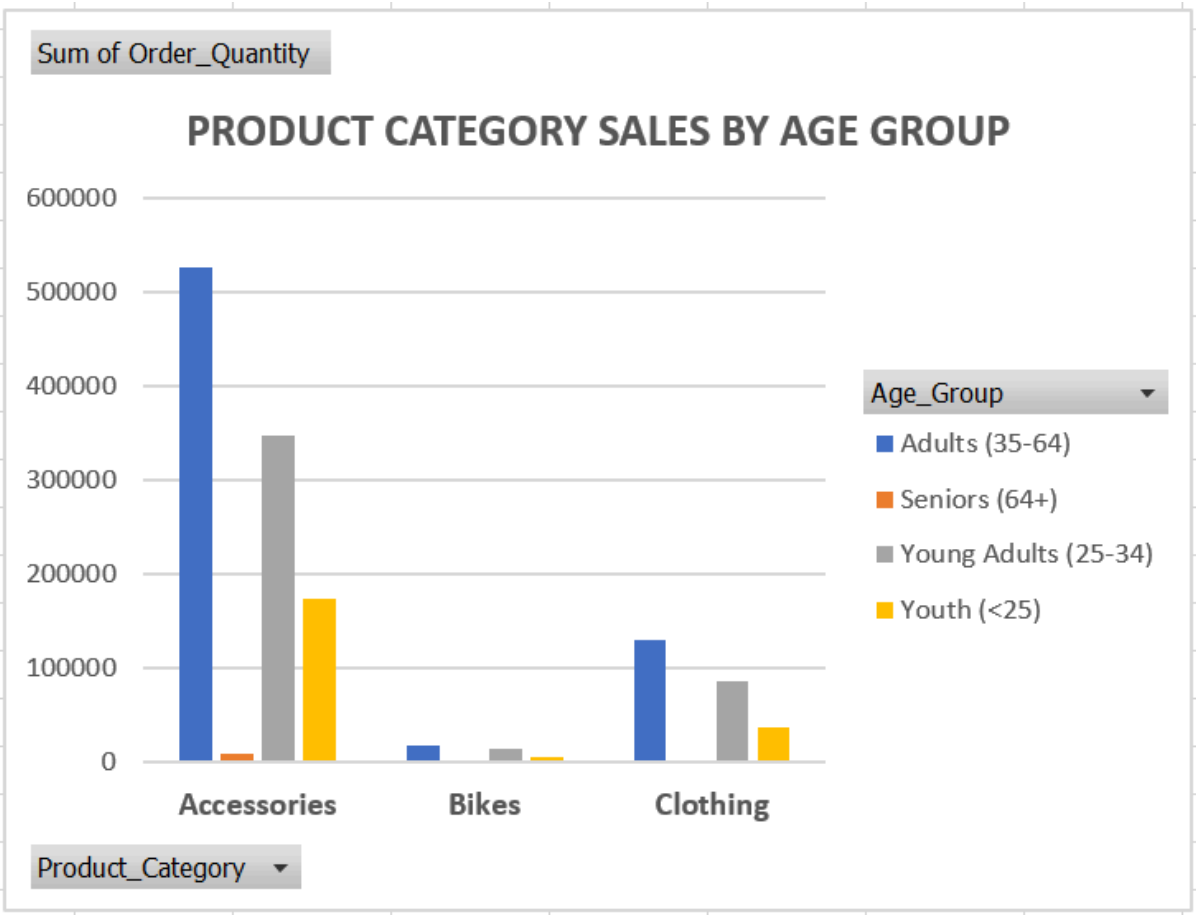


Figure 5: Clustered Column chart.

Stacked Column chart: This chart reflects the gender sales distribution across the age groups. From this visualisation, it is evident that there is no gender divide amongst all the age groups; each gender accounts for at least 45% of the market share across all the age groups. This visualisation was important to identifying potential gender divides across age groups and product categories; identification of gender divide is important in order to create appropriate strategy.

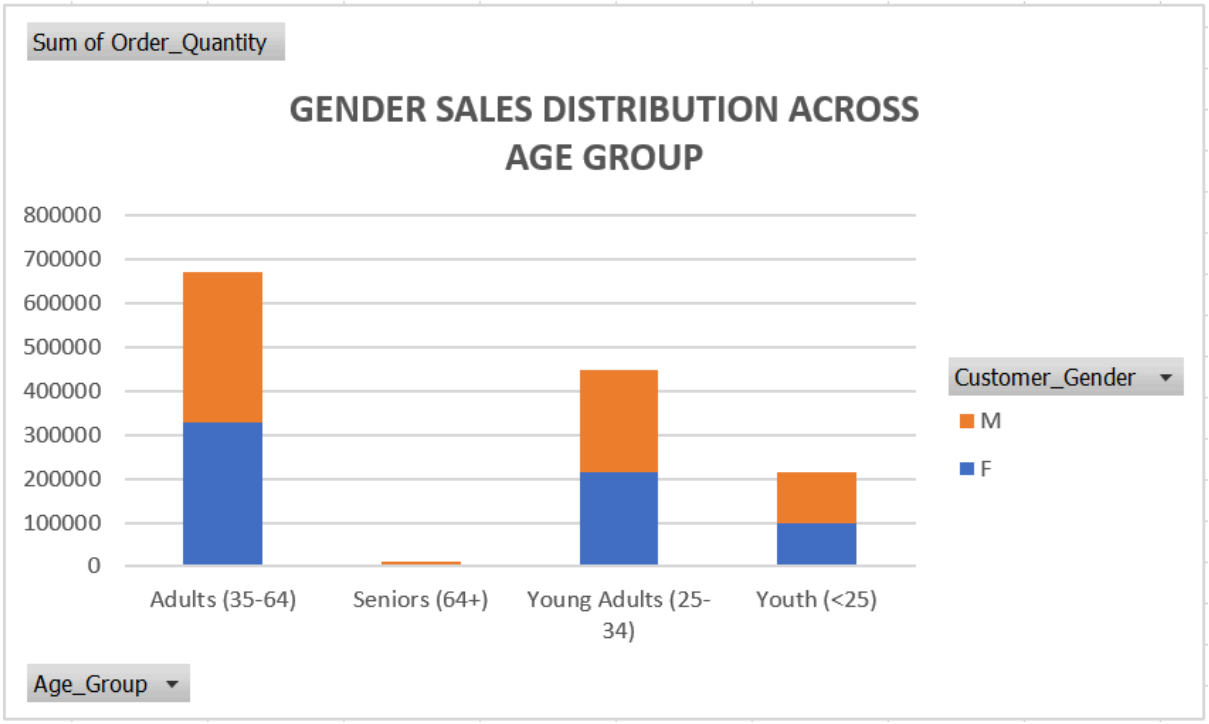


Figure 6: Stacked Column chart.

Stacked Bar chart: 3cycle operates in 6 countries: The United States of America, Australia, United Kingdom, Canada, France and Germany. The data showed that the United States of America and Australia have the highest total order quantity among 3cycle's operating countries, Canada has the third most order quantity across the board and Germany has the least sales across the board. The trend in product category sales is quite similar to total order quantity sales. The U.S and Australia lead each individual product sales respectively, Canada comes third for Clothing and Accessory sales and the United Kingdom comes third for Bike sales. Germany, Canada and France have the least sales in Accessory, Bike and Clothing sales respectively.



Figure 7: Stacked Bar Chart.

Stacked Bar chart 2: This chart shows the product category sales distribution across all months of the year. This visualisation gives a fair depiction of which months and quarters have the highest sales. December accounts for the highest total order number, however, the second yearly quarter has the best average sale numbers, the same trend applies to Accessory and Bike sales. For Clothing sales, the fourth quarter averages the highest sales and peaks in December.



Figure 8: Stacked Bar chart 2.

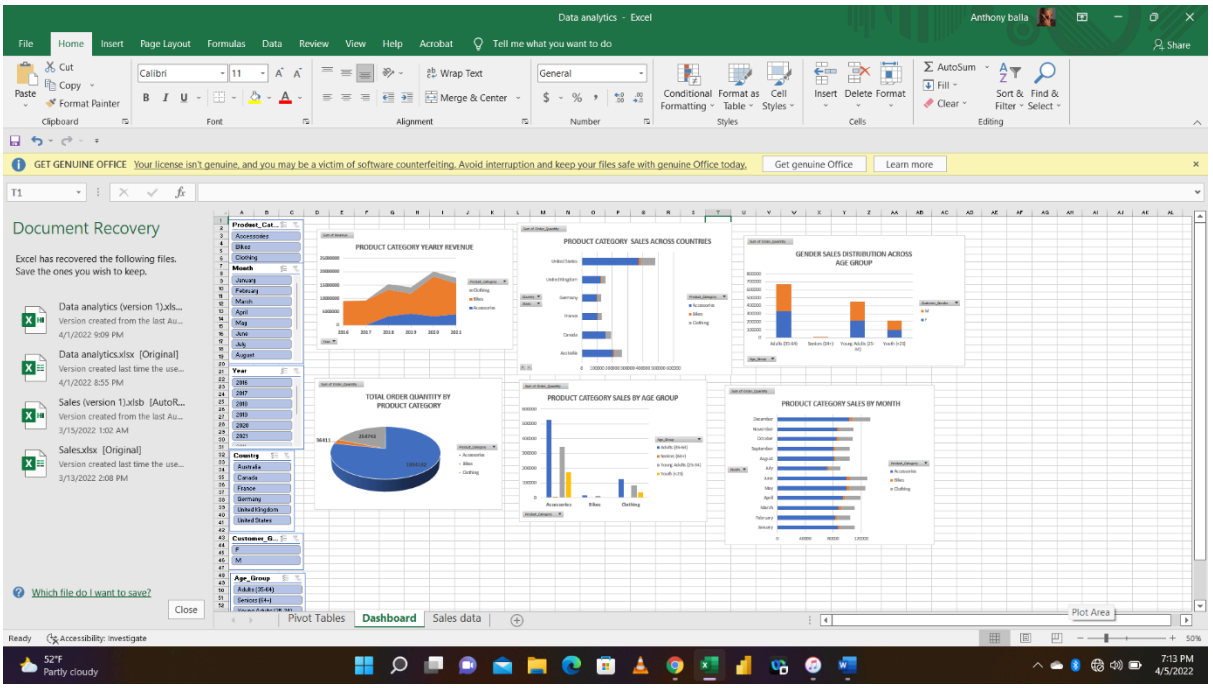


Figure 9: Suggested analysis dashboard.

6.0 CONCLUSION

This report I analysed and evaluated 3cycle Limited's sales data and recommended strategies to help maximise product sales. I started my analysis by filtering the secondary data I obtained from Kaggle. Next, I prepared the data for model planning and building. For model planning I created pivot tables to streamline data I needed for my analysis and created pivot charts to depict information deduced from the data. I visualised my pivot tables into pivot charts for my model building and used the depictions to analyse the data properly. Upon Analysis, I made 3 recommendations to how 3cycle can improve revenue across the board.

7.0 RECOMMENDATION

These are my recommendations on how to boost company sales:

- **Increase supply in more profitable regions:** From analysis, 3cycle makes most of its revenue from the US and Australia. High demand with all things unchanged leads to a change in equilibrium price and appreciates supply and vice-versa (University of Minnesota Libraries, 2016). 3cycle needs to focus its resources on areas with higher demand to create higher revenue yield. In the case of Bike sales, no country other than the US, United Kingdom and Australia have produced over 1000 sales in a calendar year, it would be profitable to relocate resources to the US and Australia to capitalise on the demand.
- **Centre marketing strategy around adults and young adults:** 3cycle is most popular amidst the adult and young adult age group. 3cycle should centre marketing strategy and resources to pull more of its target age group. I recommend investing in social media campaigns and open house events in the US; social media marketing has proven to be most efficient for the adult population (Auxier and Anderson, 2021). The US is 3cycle's most profitable market, with a population of 329 million (The World Bank, 2019), the potential in the American market is something to be looked into.
- **Implementation of action plan in the second quarter:** 3cycle's most profitable quarter is the second quarter and makes the most sales in the December quarter. 3cycle should capitalise these months to execute marketing plans and incorporate higher supply, this will push up revenue.
- **Usage of Power BI:** In the future, 3cycle should adopt Power BI. Power BI is a data analysis tool, it has a more robust in comparison to Microsoft excel (Negrut, 2014). It handles and processes data better and has a robust scale of visualisations.

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