

# Data Analysis Report

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## Introduction

This essay will analyse the financials of New-Peth Shoes Ltd., a shoe retailer situated in the United Kingdom. Extensive information is provided for the time period beginning in the first quarter of 2017 and ending in the fourth quarter of 2020. This information covers sales, profitability, product categories, consumer behaviour, and distribution channels. The purpose of this study is to examine New-Peth's sales results and make recommendations on how the firm may improve moving forwards. The bulk of the research consists of an analysis of the data and some suggestions for further action that help New-Peth increase its sales and provide the groundwork for future growth.

## Data Driven Business Intelligence

### Analysis with Visuals

#### General Sales and Profit Analysis

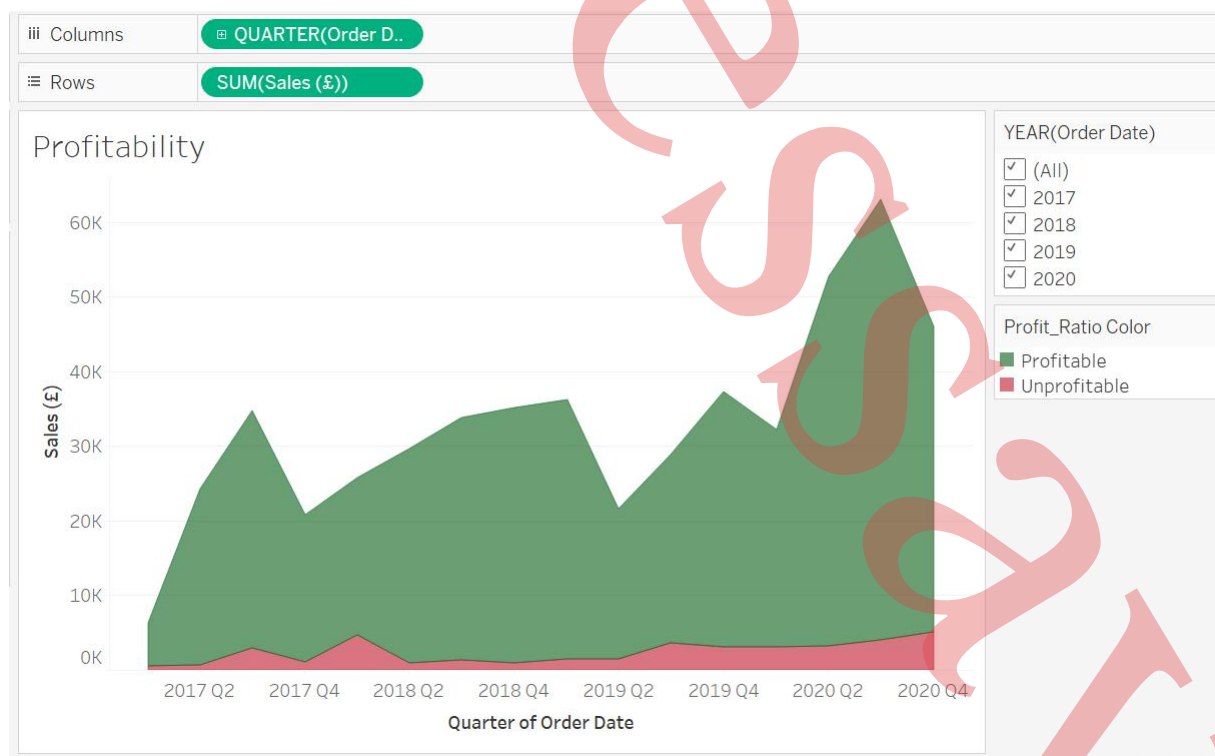


Figure 1: Profitability Analysis

New-Peth Shoes Ltd's sales showed an overall growth trend from the first quarter of 2017 to the fourth quarter of 2020, and reached a peak in Q3 of 2020, nearly 60k pounds. Sales volumes with negative profit margins have always accounted for a very low proportion, although the overall trend has not increased significantly. According to different years, the peak season of sales is not fixed. In order to achieve sales goals, New-Peth needs to pay attention to control unprofitable sales behavior.

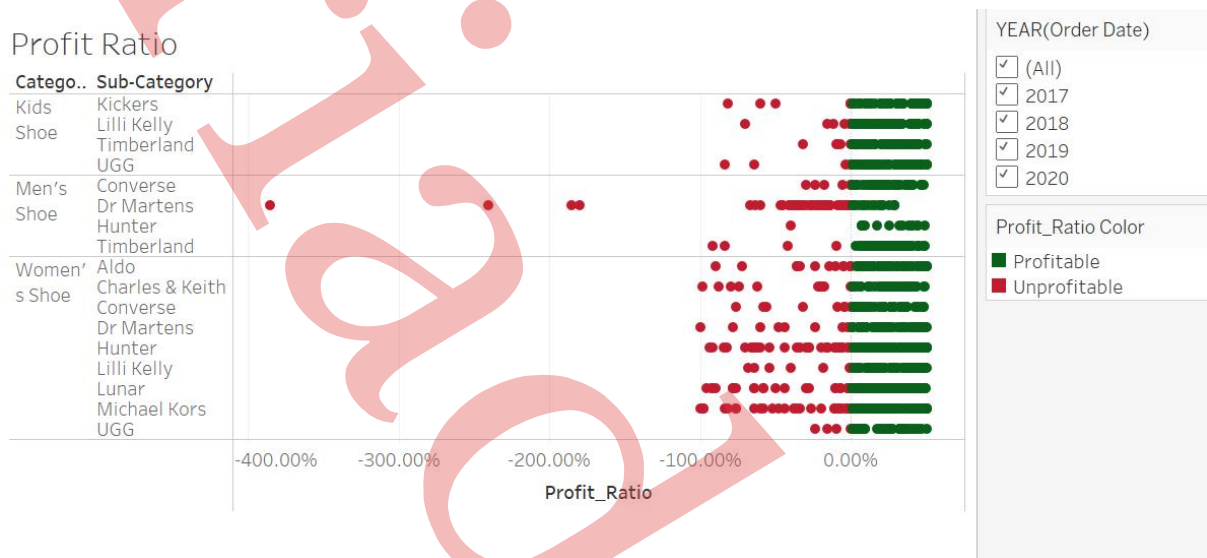


Figure 2: Profit Ratio Analysis

New-Peth has both positive and negative profit ratios. Most of the negative profit margins appear in the category of women's shoes. However, in the sales of men's shoes, there have been many sales behaviors with extremely low profit margins, all of which occurred in the sub-category of Dr Martens, and even reached nearly -400%. Neth-Peth should no longer sell products that generate extremely low profit margins in Dr Martens, and New-Peth should also conduct a more detailed analysis of women's footwear to understand the differences between different product categories and trends in consumer purchasing decisions, In order to optimize the sales strategy. New-Peth should also analyze the sales strategy of women's shoes, find out the reasons for the negative profit margins, and take steps to solve these problems. This effort may include improving product quality, reducing costs, repricing or other promotional tactics.

### Sales

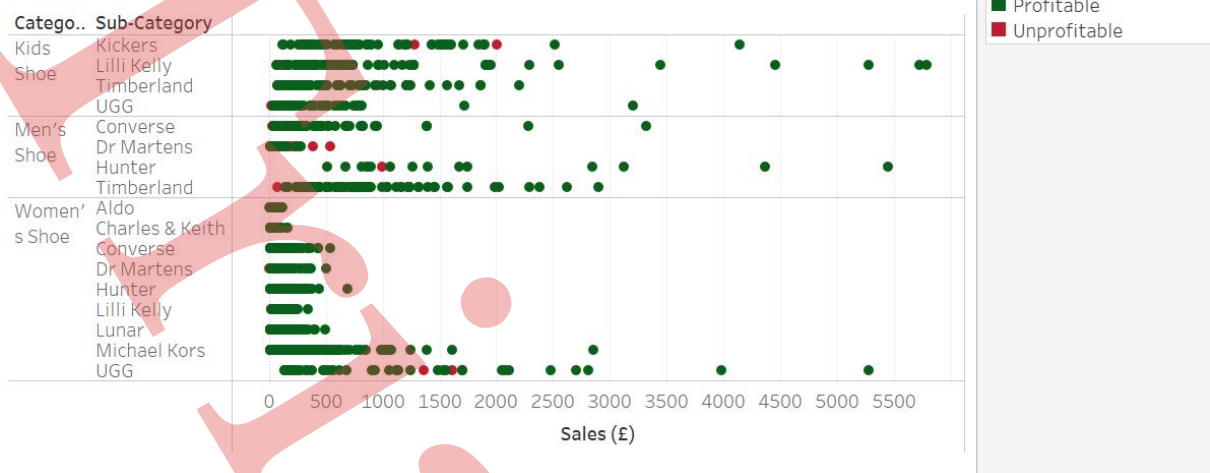


Figure 3: Profit Ratio of Sales

Most of the sales of products are concentrated in the range around 1,000 pounds. Kids' shoes from Kickers and Lilly Kelly, and men's shoes from Timberland outperformed other product categories. Neth-Peth could step up promotions on Kickers and Lilly Kelly children's shoes and Timberland men's shoes, further boosting their sales.

### Sales, Profit, and Profit Ratio

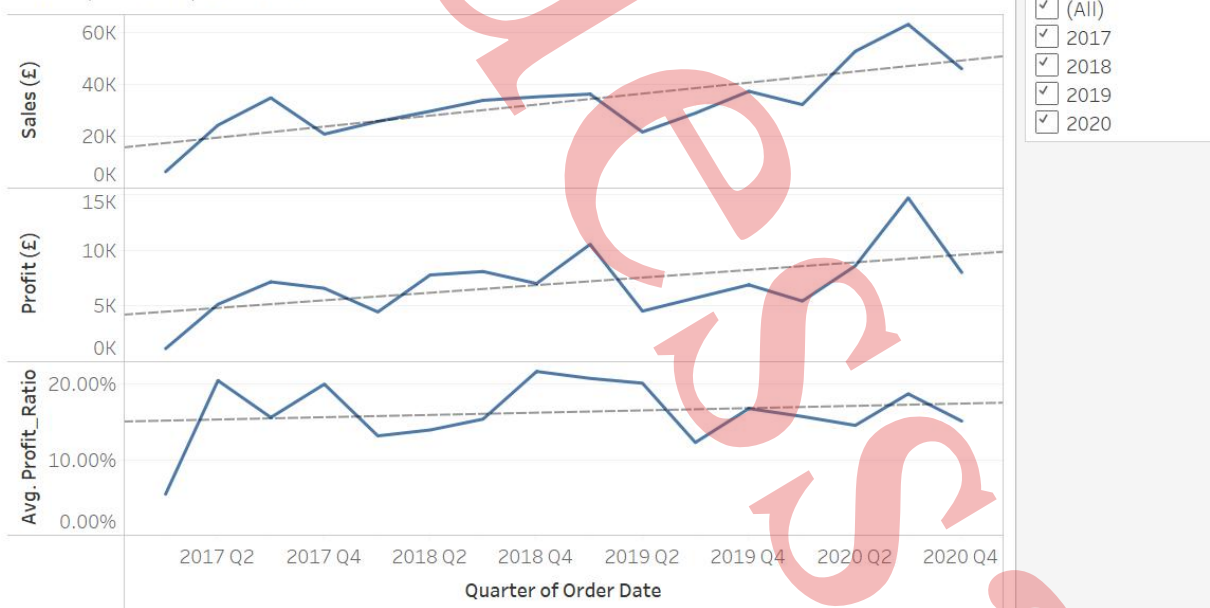


Figure 4: Trend Analysis

The company's total sales, total profit and average profit margin showed an overall upward trend, and the trend of total sales and total profit was basically the same. While average profit margins have risen, the rate of growth is flattening. Although New-Peth's sales and profits are increasing year by year, attention should be paid to improving the profit margin of the product, such as reducing costs and increasing selling prices.



Figure 5: Customer Profitability

The R-squared value is 0.633788, which means that there is a strong linear correlation between profit and sales. More specifically, this R-squared value shows that about 63.38% of the variation in profits can be explained by the variation in sales. In addition, the standard error is 114.171, which means that the error of forecasting profit will usually not exceed 114.171. Finally, the p-value is less than 0.0001, which means that the correlation between profit and sales is very significant and the two are closely related. New-Peth can optimize its marketing strategy to increase sales in order to increase profits. This may include increased advertising, promotions and other marketing activities to attract more consumers and increase sales.

### Forecasting Analysis

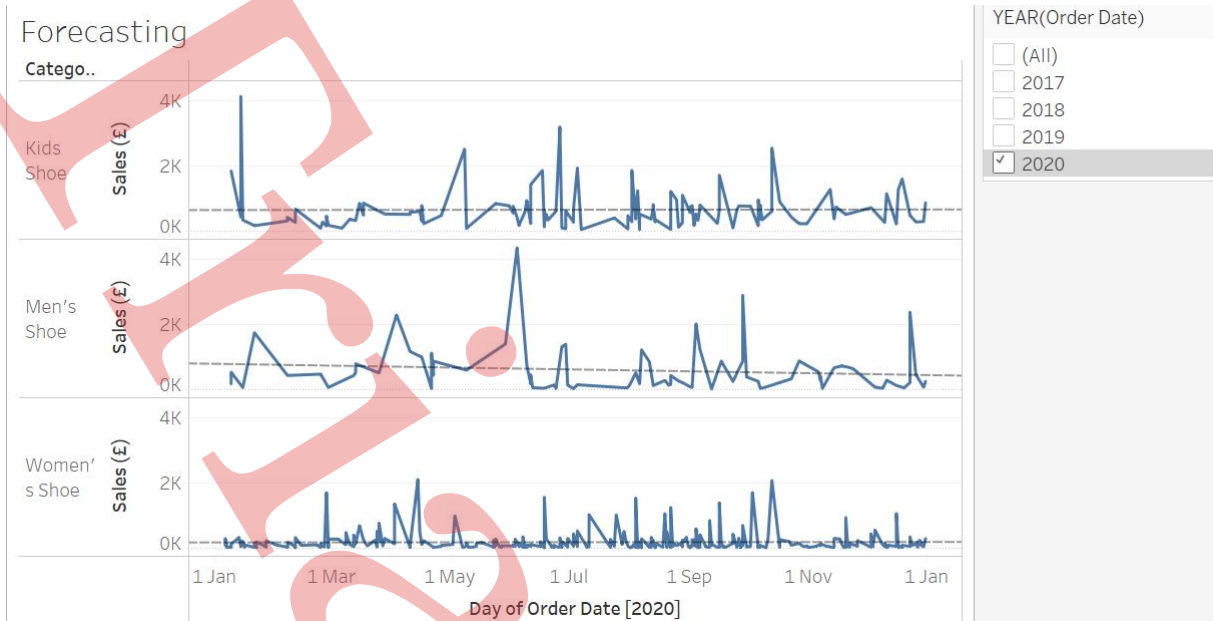


Figure 6: Sales Forecasting

The sales forecast for 2020 shows that the sales of children's shoes and women's shoes are showing a slow growth trend, but the sales of men's shoes at the end of the year are not as good as at the beginning of the year. So New-Peth should increase the sales of children's shoes and women's shoes to increase the overall sales and total profits. However, judging from the trend of all years, the sales of children's shoes show a downward trend, so it is necessary to focus on the actual sales of children's shoes and analyze the reasons behind it.

### Shipping Analysis

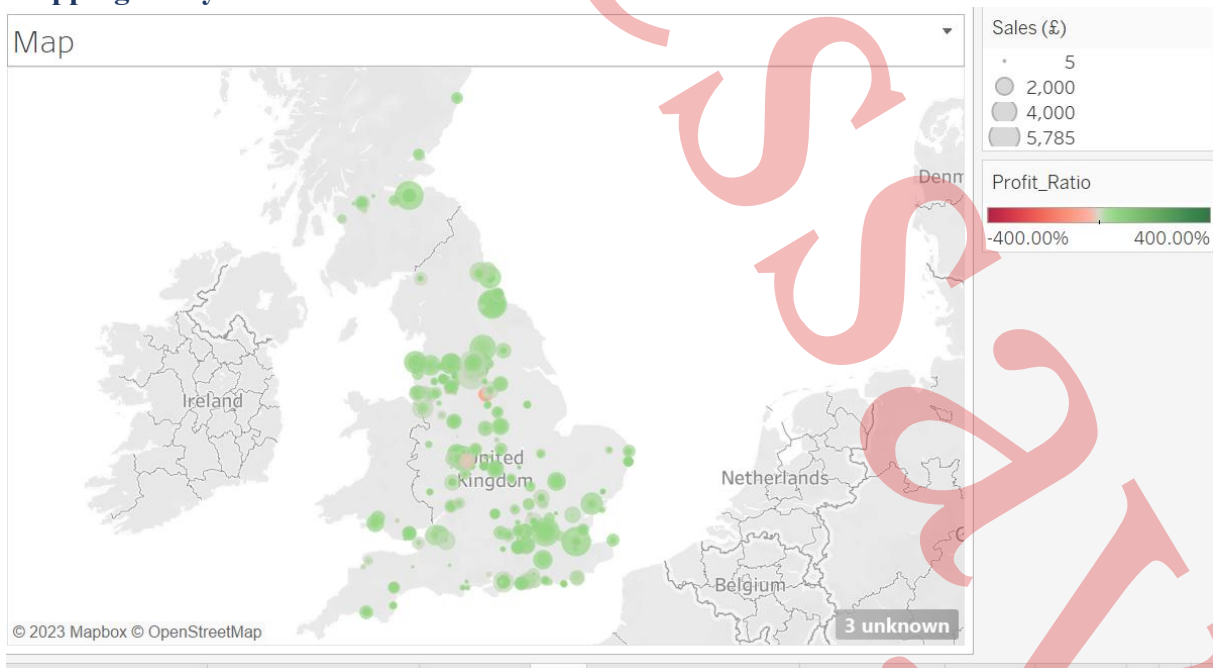


Figure 7: Sales Map

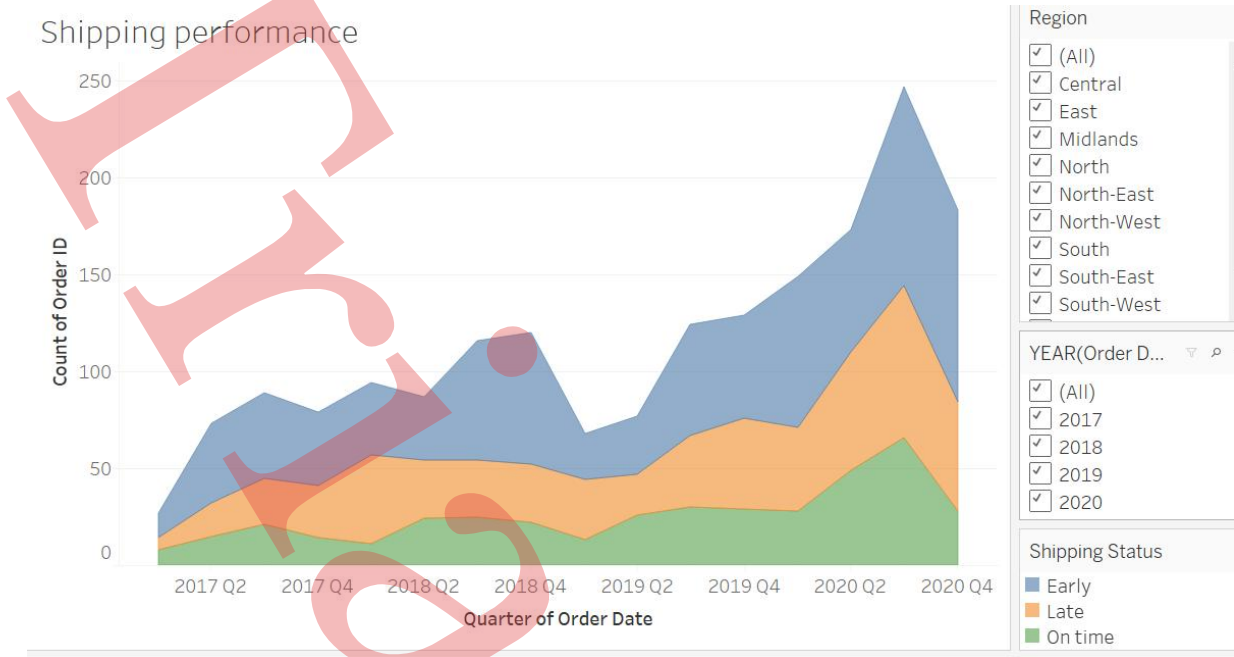


Figure 8: Shipping Status

It is not difficult to observe from the figure that the sales activities are mainly concentrated in the central and southern parts of the UK, and few orders are generated in the west. In 2020, "Early" accounted for the most of the product's Shipping Status, and the proportion of "Late" decreased in the last quarter. However, if you only choose the western region, you will find that the proportion of "Late" has increased, especially in the last quarter. Therefore, it is necessary to focus on marketing activities in the central and southern parts of the country and increase sales channels in the west of the UK.

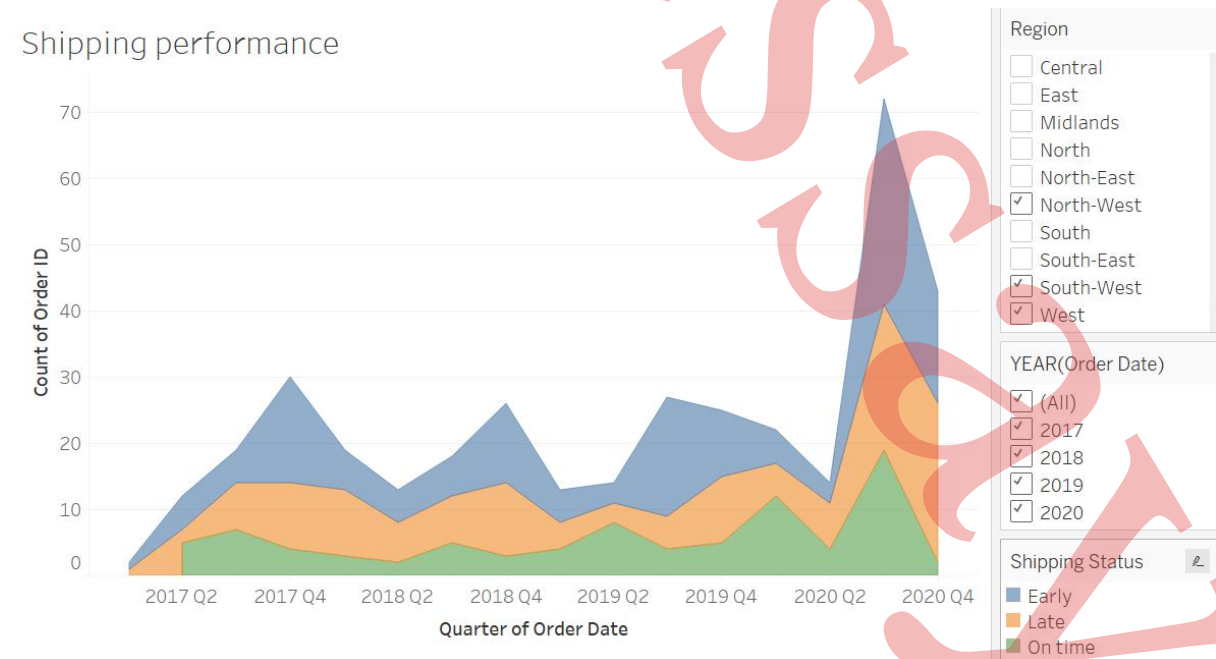


Figure 9: Shipping Status in Western Areas of the UK

## Market Basket Analysis

Market Basket

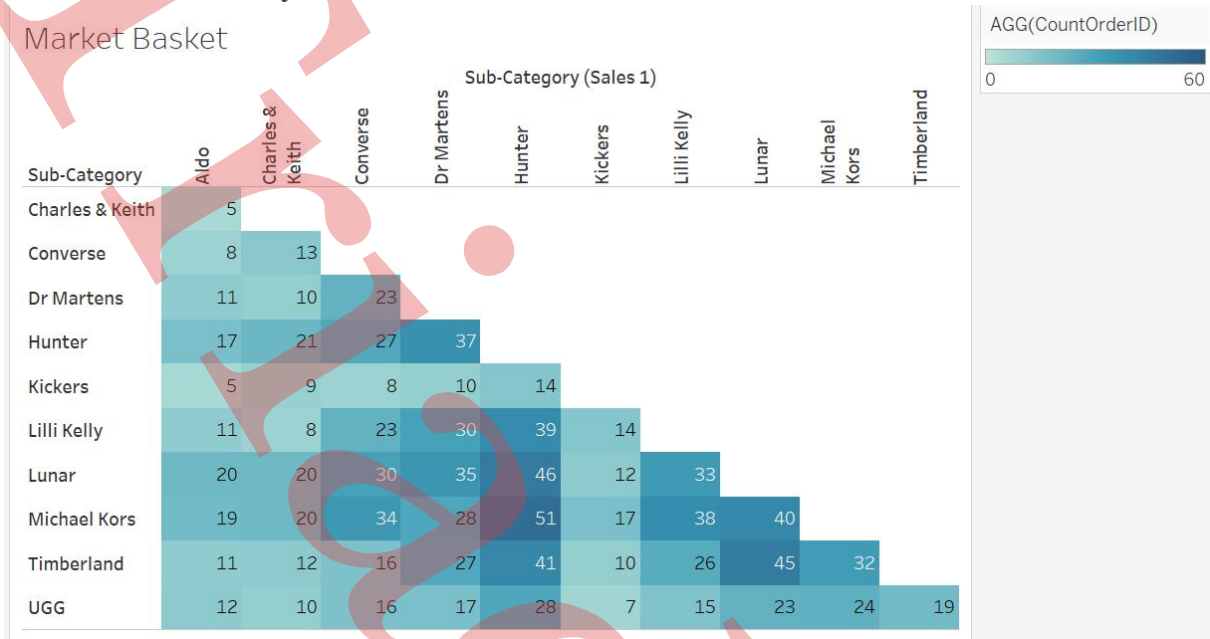


Figure 10: Market Basket Analysis

According to the analysis, there is a strong correlation between certain two products of New-Peth. Based on this result, New-Peth can adopt a combined sales strategy, such as combining the two shoes Hunter and Micheal Kors, or combining the two brands Timberland and Lunar to attract more consumers. Through combined sales, New-Peth can better meet the needs of consumers and increase sales and market share. In addition, this sales strategy can also enhance brand awareness and competitiveness, further promoting the development of the company's business.

## Customer Analysis

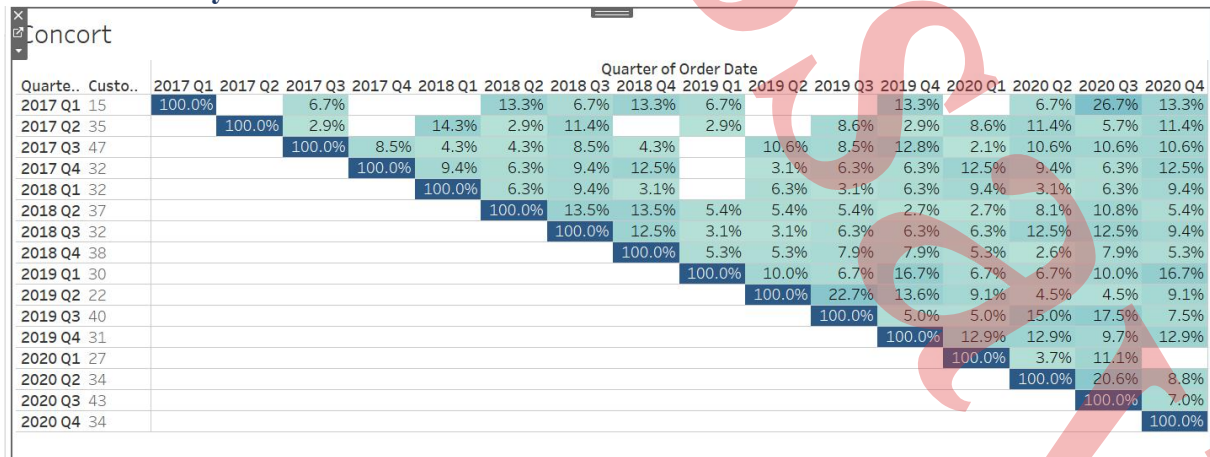


Figure 11: Customer Retention Rate



According to the data provided, among the new customers in each quarter, only an average of nearly 10% of the customers will continue to buy shoes in New-Peth in the future. This shows that New-Peth is facing challenges in retaining new customers, while also exposing the company's lack of customer retention. In order to increase sales, New-Peth needs to focus on improving customer retention, that is, by attracting and retaining more old customers, sales can be increased.

Columns	Number of orders per..
Rows	CNTD(Customer ID)

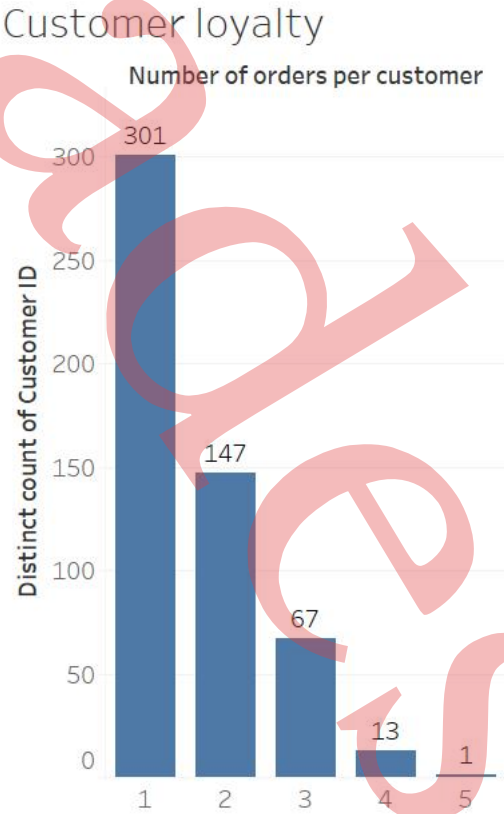


Figure 12: Customer Loyalty

Most consumers will only buy one pair of shoes, while less than half of consumers will buy two pairs of shoes at one time. This shows that New-Peth faces the challenge of increasing the number of purchases per customer, while also exposing the company's lack of customer conversion rate. New-Peth should introduce more attractive packages and combination sales programs to encourage consumers to buy multiple pairs of shoes.

**Summary of Key Metrics of Business Performance**

New-Peth Shoes Ltd. has exhibited a favourable trend in sales, with Q3 of 2020 marking the highest point of revenue generation, suggesting a robust financial performance. The analysis of profitability presents a combination of ratios, wherein the profit margins in women's shoes are negative, and the sub-category of Dr Martens in men's shoes exhibits low-profit margins. In order to mitigate these concerns, it is recommended that New-Peth undertake an optimisation of their product offerings and pricing strategies. Furthermore, it can be observed that Kickers and Lilly Kelly's children's shoes, along with Timberland's men's shoes, exhibit superior performance compared to other product categories, thereby offering a potential avenue for targeted marketing initiatives. Although the mean profit margin has exhibited an upward trend, the pace of its expansion is decelerating. In order to sustain profitability, New-Peth ought to give precedence to cost minimization, improvement of product quality, re-pricing, and implementation of other promotional strategies. The relationship between profit and sales is highly correlated, indicating that New-Peth can achieve additional sales growth and profit increase by optimising its marketing strategy through intensified advertising and promotions. Therefore, it is imperative for New-Peth to invest in enhancing its marketing efforts.

### **Areas of Interest and Insights**

A thorough examination of women's footwear is imperative for comprehending the distinctions among product classifications and the purchasing patterns of consumers. The present study aims to offer significant insights to enhance the sales strategy for women's footwear, mitigate unfavourable profit margins, and arrive at informed determinations regarding product quality, pricing, and promotional activities. The company New-Peth should prioritise efforts towards augmenting the sales of footwear designed for children and women, given the sluggish growth trajectory anticipated for the year 2020. Additionally, it is recommended that the organisation conduct an analysis of the factors contributing to the decline in sales of children's shoes, in order to devise efficacious strategies for improvement. The regional distribution of sales activities in the UK suggests that New-Peth should prioritise its marketing efforts in the central and southern regions, while also considering the possibility of expanding its sales channels in the western region. By utilising robust correlations between specific pairs of products that have been identified through market basket analysis, New-Peth has the ability to devise integrated sales tactics, such as packaged deals, with the aim of drawing in a larger customer base, boosting revenue, and augmenting brand recognition and

competitiveness. In order to enhance customer retention, New-Peth could allocate resources towards augmenting their customer service, implementing loyalty programmes, and providing a pleasant shopping atmosphere. Implementing appealing packages and combination sales initiatives can effectively enhance sales and customer loyalty by motivating customers to purchase multiple pairs of shoes.

## **Recommendation**

First, New-Peth should maintain its advantages and keep good sales performance. To boost product profitability, New-Peth must identify and eliminate low-margin products. In-depth analysis of sales data is required to identify money-losing products and categories, after which a decision must be made on whether to eliminate them or to enhance their pricing and marketing. Besides, New-Peth's focus should be on advertising and selling more of their most popular products. Brands like Kickers and Lilly Kelly for kids and Timberland for men are included. To achieve this goal, businesses might build targeted marketing strategies and promote specific products more heavily.

To increase its market presence and customer base, additional-Peth may consider expanding its product range to include a larger selection of shoes. Researching the marketplace for unmet needs can help in this regard, as can developing new offerings with those needs in mind. New-Peth can cash in on the growing interest in fitness by introducing a line of athletic shoes, or it can appeal to consumers concerned about the environment by introducing a line of sustainable shoes made from environmentally friendly materials. Increasing New-Peth's product offerings is a great way to increase the company's share of the market, differentiate itself from the competition, and foster brand loyalty.

Since there are few customers in the West, and most of the customers buy only one pair of shoes in a single order. New-Peth should invest in online sales to reach more customers and increase sales, as increasing numbers of individuals are making purchases online. The company has to make an easy-to-navigate mobile app and website, offer discounts and expedited delivery options to customers, and more. This is doable via either establishing its own in-house system or forming strategic agreements with already established e-commerce

giants like Amazon, transcending the physical limitations. Putting resources into online sales has allowed New-Peth to reach customers it would not be able to reach in-store, increase brand recognition, and create a more convenient shopping experience for tech-savvy customers.

Due to the rather low customer retention rate, New-Peth should increase revenue and customer loyalty by enhancing the New-Peth buying experience. Customers are more likely to remain loyal if a loyalty scheme has been established and they are treated well. Improving customer retention is crucial for long-term success. New-Peth should prioritise enhancing the New-Peth buying experience to increase customer loyalty. By investing in customer service training, customer relationship management tools, and technology, New-Peth can provide its customers with better service and make their shopping experience more pleasant. If New-Peth prioritises building genuine relationships with its customers, it will see a rise in both customer retention and sales as a result of positive word of mouth.

The expansion of New-Peth's distribution outside its present brick-and-mortar locations has the potential to boost sales and bring in new consumers. The retailer may form partnerships with similar businesses, open locations in other regions, or enter new markets. By collaborating with other stores, New-Peth may reach a wider audience and gain greater traction in more markets. New-Peth's potential to attract a larger audience and strengthen its position as a market leader might benefit from an expansion into further areas. By exploring unknown regions, New-Peth may gauge growth potential and identify new markets to expand into.

If New-Peth wants to stay up with consumers' ever-changing preferences, it has to increase its investment in market research. This may help with things like discovering new growth opportunities, adapting products and marketing strategies to match customers' ever-changing wants, and keeping one step ahead of the competition. New-Peth should dig out the truth of different sales performance in Women's shoes, for example, and the reasons behind. By keeping tabs on market and consumer trends, New-Peth can position itself for further expansion and success.

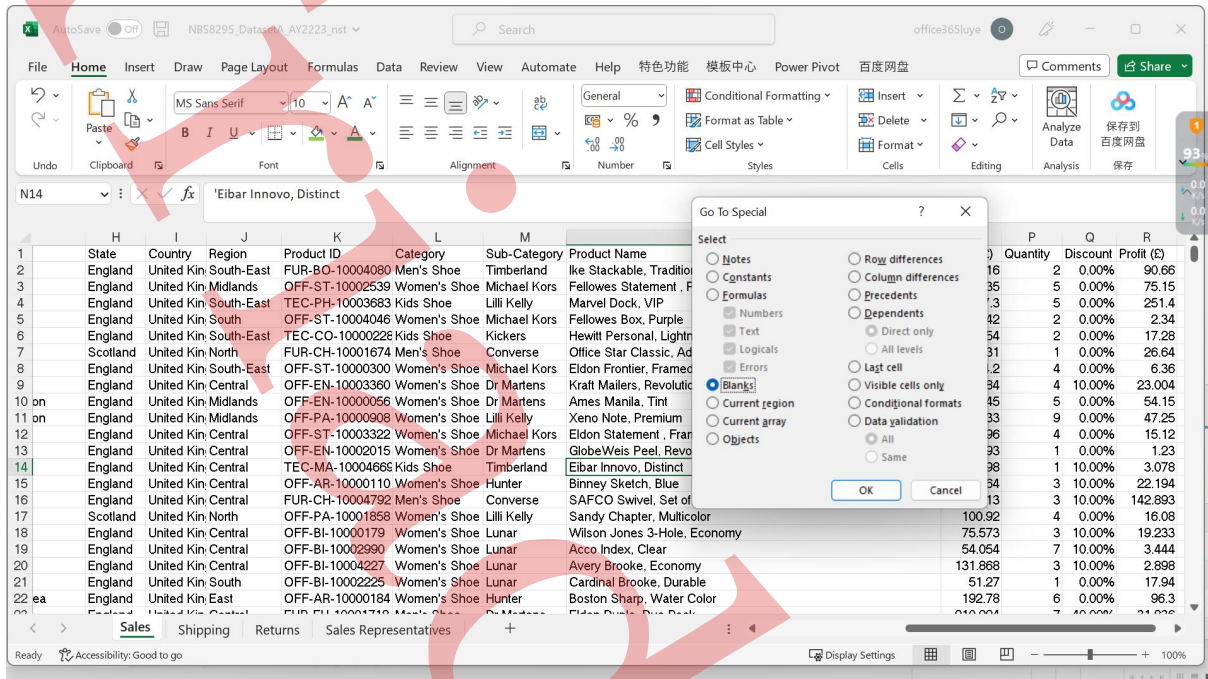
The investment in data analysis tools by New-Peth will aid the company in refining its sales approach and identifying new opportunities for expansion. The company may utilise the data

to gain a deeper understanding of its sales and clientele, as well as to make educated business decisions. New-Peth can increase its income, marketing effectiveness, and product offerings by examining sales data and customer responses.

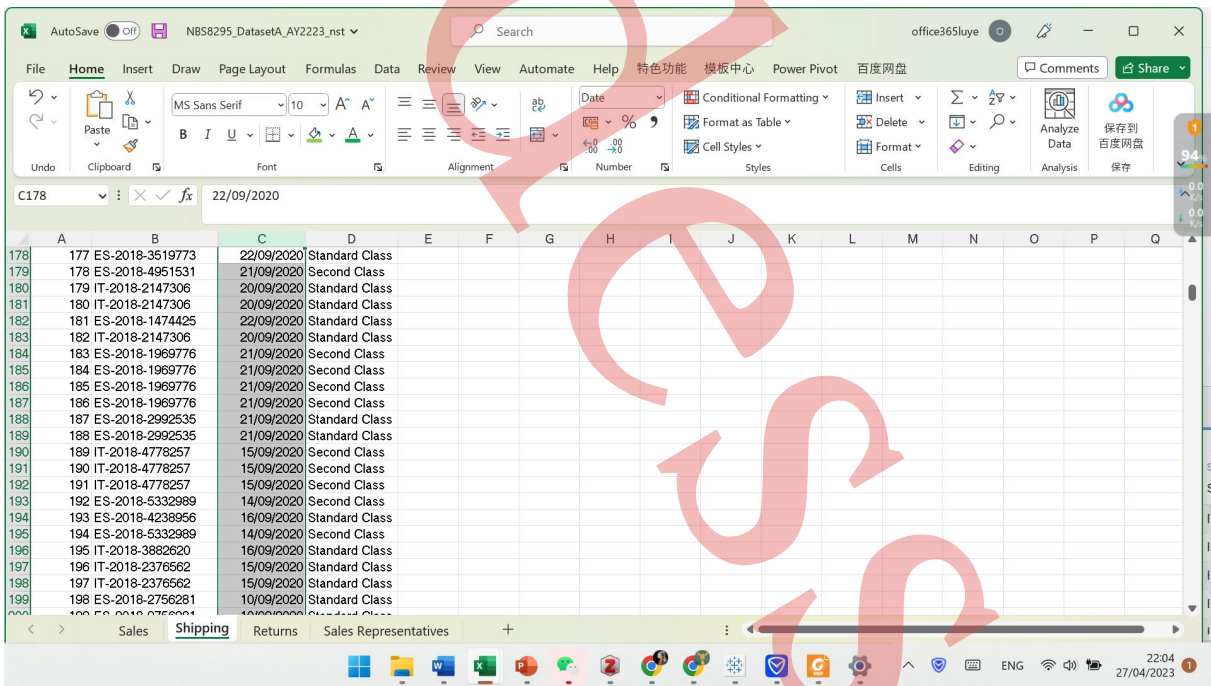
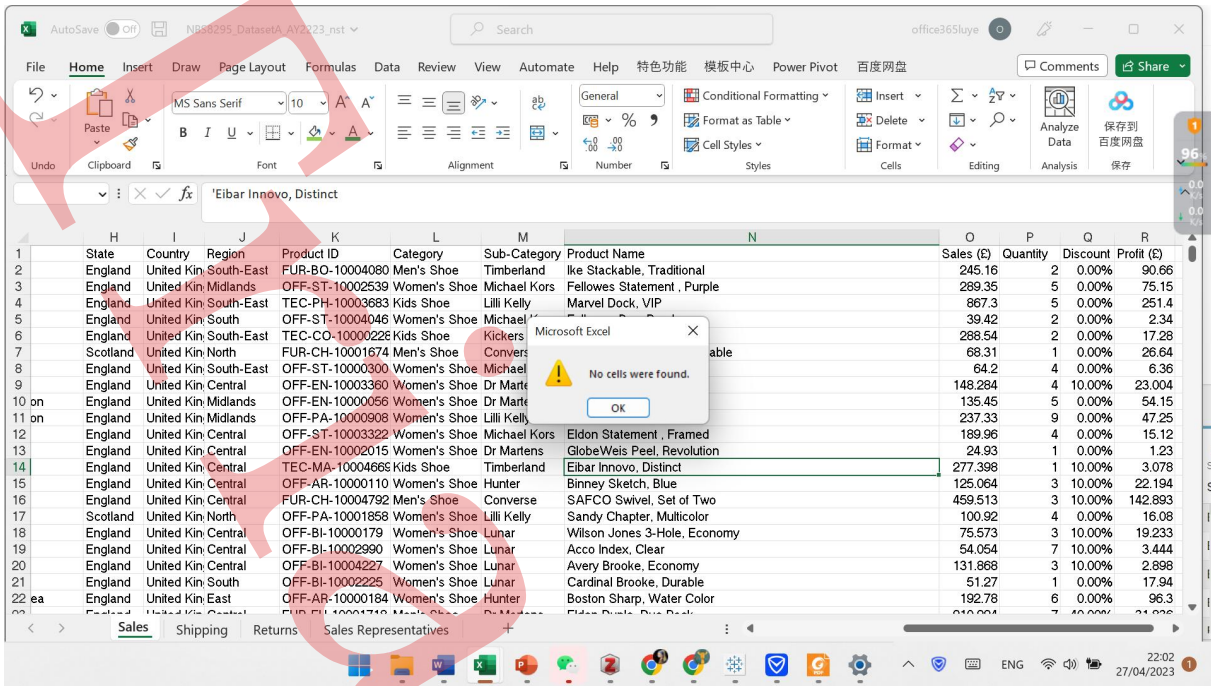
By adhering to these recommendations that are based on data analysis, New-Peth can enhance its business performance, stimulate sales expansion, and establish a favourable position for itself in the fiercely competitive shoe retail sector.

# Appendix A

## Data Cleansing



During the process of analysis, a meticulous examination of the data was conducted with a specific focus on identifying any instances of null values present within the forms. After conducting a comprehensive inquiry, it became evident that there were no occurrences of null values detected in the form. This discovery exhibited uniformity among all other analysed forms, resulting in a consistent outcome. This suggests that the process of data collection was meticulous and efficient, with no instances of absent or deficient information within the forms.



A verification process was conducted to confirm the numeric type of the date column that appeared in several forms, in order to ensure the accuracy and consistency of the data. Based on the examination conducted, it has been determined that the date column is accurately represented as a numeric type.