1. Executive Summary

Presently 'BitsAndBobs' Australia is experiencing worrying downward trends in sales with its entire organisation under a financial pressure. It is therefore crucial to carry out an extensive review of the company's branch performance as well as sales figures in each of its ten sales divisions across Australia at this point onward. The purpose of this analysis is to help the management in determining whether office consolidation can reverse the falling sales and lead to cost cutting so that the future of the enterprise will be on course.

'BitsAndBobs' has been forced to take a new serious look at their strategy, with falling sales in many different products. However, financial performance which closely relates to reduced sales measures is an emerging issue, especially for over ten offices in Australia.

This wide-ranging analysis of the declining revenue streams focuses on identifying the intricate causes behind the trend. The central hub of Sydney is important as it incorporates each other part, starting with the vibrant hub of Sydney and ending with tranquil parts of Perth. Market trends such as consumer tastes are also unique for each office. 'Cases and Bobs' operations are complicated by issues of complexity within these multidimensional areas as well as in the regionals.

Revealing the deep trends and directions of the sales field forms the basis which helps the company define its present positioning. This comprehensive evaluation will involve identification of strong points in as well as weaknesses regarding the marketing realm. Such insights will serve as a lighthouse in the course of laying strategies towards determining the direction the company shall take.

This examination is geared towards guiding strategic decisions, particularly on possible office consolidation. This aligns with the push toward cost cutting, whilst aiming to enhance the future sustainability of profits in the company. It is comprehensive in that it seeks to map 'BitsAndBobs' way out of liquidation, reinvention, and sustainability within the competitive Australian market.

Based on this, Wagga Wagga has the highest sales amounting to '$19,022,700.8450′, whereas the lowest being Wollongong reporting at '$9,388,122.29 These are cornerstones upon which strategies are built and which define a path to a bright future for the company.

2. Problem Statement

The situation in 'BitsAndBobs' Australia points out a worrying tendency accompanied by an unavoidable falling sales and a declining financial status for the organization as a whole. There is an immediate requirement for penetrative analysis of the operations within the company with regards to their branch performance as well as sale results in Australia's ten divisions. Detailed information on this is sought after with the view of providing directions for possible office consolidation. Essentially, major attention should be directed towards the decline in sales. Cost cutting should be pursued as well, aimed at enhancing the stability and expansion of the business in the future.

Falling sales numbers and many product lines at 'BitsAndBobs' sound the alarm for reconsidering and reshaping the strategic direction of all business processes in company. Sales metrics have also been affected by the high winds blowing towards financial performance as more than 10 offices exist within Australia.

An elaborate examination of the company's slumping revenue streams is aimed at unraveling the complex reasons behind such a fall. In the bustling city of Sydney and serene suburbs of Perth every office has an important piece of this jigsaw. Every narration has taken a unique form due to factors like consumer preferences, market trends, and office specifics. These regional dynamics are multilayered and make 'Bits And Bobs' operations even more complicated.

Uncovering the hidden tendencies and directions in the sales situation helps explain where the organization stands currently. This analysis analyzes all aspects of sales through an extensive assesment that identifies strong points and weaknesses in sales spectrum. These provide the directions that will guide the way forward of setting up a strategic direction for the company.

This examination has a deep purpose which aims at guiding strategic decisions, especially as far as the merger of company offices are concerned. The strategic objective is in line with the cost reduction measure and enhancing the long term profitability of the firm. This detailed investigation will determine which route 'BitsAndBobs' should follow to revival, reinvention, and sustainable leadership in Australia.

3. Data Model/Data Load Process

We first loaded the .xlxl file into the sql server database. The default table with name '[AssignmentTwo2023Data_-313404010 - Assignment 2 Data]' was created. Then we further created 4 tables customer, sales, item and staff. We inserted the values into the tables using the sql queries. After creating the tables, we applied operations to increase the validity of the records we have in our database. The more discussion is below:

1. Checking Dublicate records

Each receipt contains many items. For instance the receipt '108344' has 10 different items beings purchased by a single customer name 'Rachel Johnson' and the sales person name is 'Alex Wright'

	Receipt_ID	(No column name)
1	113548	2
2	110631	9
3	102141	10
4	119121	6
5	105058	6
6	106409	3
7	109280	5
8	117770	6
9	100790	10
10	116419	5
11	110677	6

2. Data Integrity Constrains

We have checked that there is no negative value in item_price column as well as in item_quantity column because they can not be zero.

Sale_Date	Receipt_Id	Customer_ID	Customer_First_Name	Customer_Surname	Staff_ID	Staff_First_Name	Staff_Surname	Staff_office	Office_Location	Reciept_Transaction_Row_ID

3. Checking Null Values

We also included a check point to exclude the rows that contain null values. Because null values can cause inconsistency as well as wrong analysis. Which can also lead to wrong prediction as well. But fortunately, there was no null value found.

Sale_Date	Receipt_Id	Customer_ID	Customer_First_Name	Customer_Surname

4. Analysis

During the analysis phase, we have used 2 different approaches to analyze the data. This is because of our requirement and another reason is to find the maximum helpful insights from our datset that has been given. The 2 approaches are:

1. **Analysis of combined offices**
   In this approach we have combined the data of all the offices, and then find the insights like top 3 selling products, 3 least selling products, and top 3 salesperson based on the combined data irrespective of the office location. The details are discussed in the next section.

2. **Analysis of indivisul office**
   In this approach we seperated the offices and for each office we found the top 3 selling products, least 3 selling products and top 3 salesperson of each office which are in total 30 because we have 10 offices.

4.1 Combined Anlysis

a) 3 Most popular items based on the past data

However, the best-selling item for the year is the Mitre Saw, which has so far accounted for a massive sum of '20811'. The second best-selling model is the Drill Bit 3mm, which also sold '20,586'. With a total sales amount of 20577, Drill Bit 5mm secures the third place. Notably, these items have contributed immensely in terms of the overall sales recorded during the year and have become dominant sales items. The fact that they are always demanding more of these products and consistently have very large selling numbers means these items are an important part of BitsAndBobs sale and determine consumer tastes and market trends.

Sales Quantity for Items
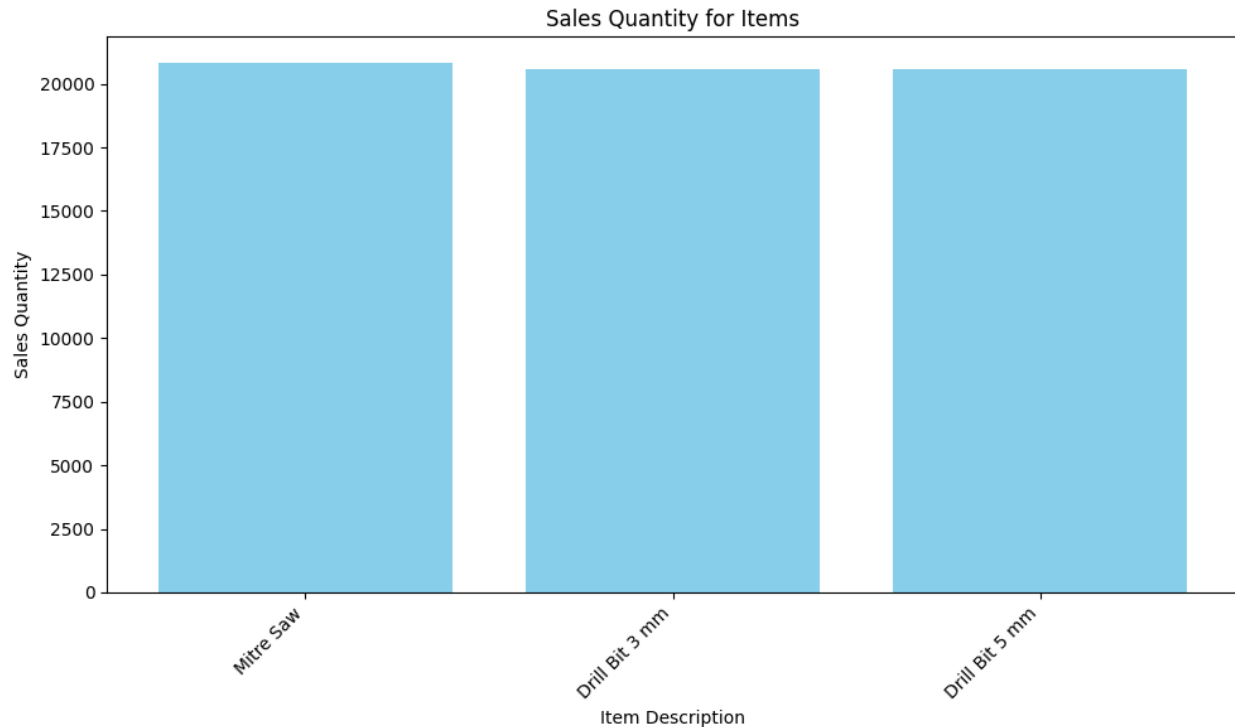
b) 3 Least popular items based on the past data

Based on our findings, the item named Drill Bt 6mm with total sales quantity of **'19481'** Then we have the Scre Driver Set which has less sales than Brill Bit 6mm. And we have the least sales of Ruler.

Sales Quantity of Items
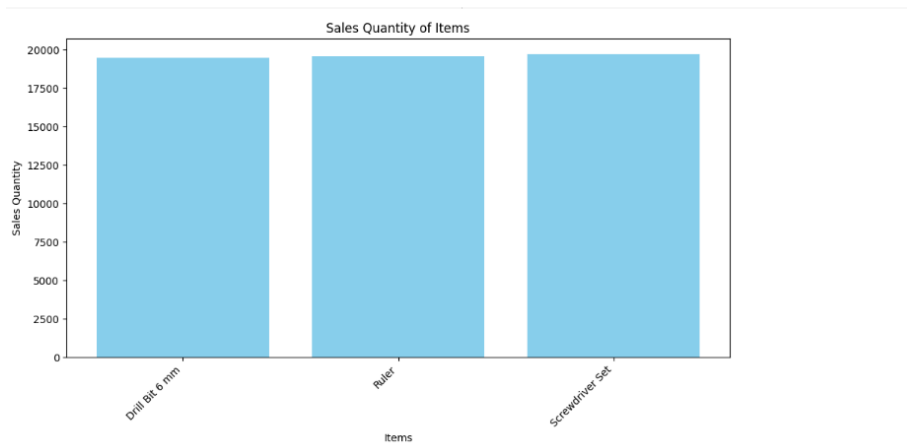
c) Top 3 sales person

The best salesperson according to the approach 1 is Anna Kelly with the highest sales **'24865.0499053001'**, then Joseph Reed with the sales **'22632.0500130653'**. And at the 3rd position we have Jake Cox with sales of **'21897.1998960972'**

Sales Amount by Salesman
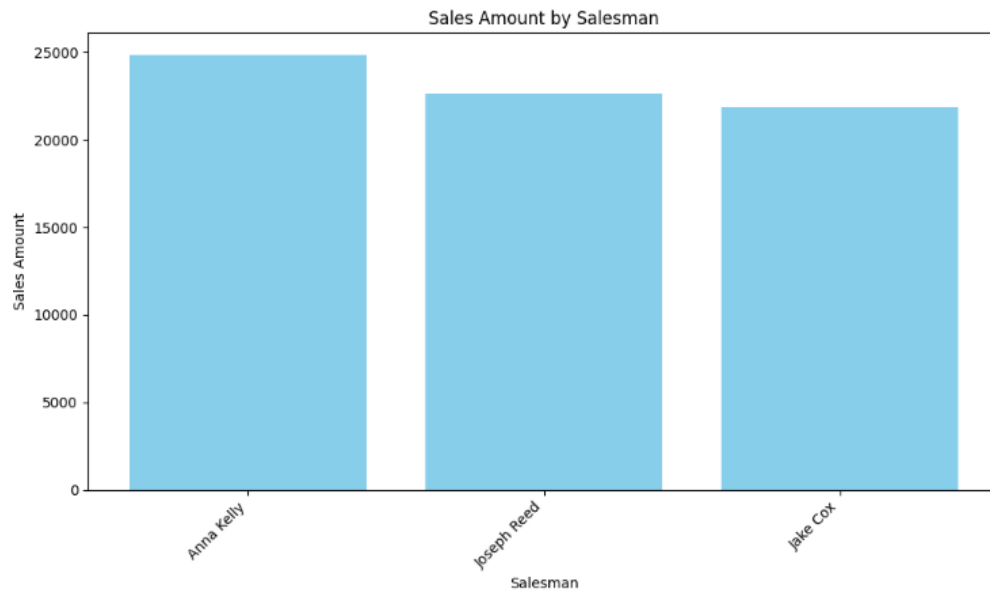
4. 2 Separate Analysis

Problem1: Top selling items of each office

1. Adelaide

Office_Location	Item_ID	Item_Description	TotalQuantitySold
Adelaide	2	Screwdriver Set	1881
Adelaide	16	Socket Set	1856
Adelaide	25	Drill Bit 8 mm	1846

2. Brisbane

Brisbane	24	Drill Bit 7 mm	1864
Brisbane	30	Drill Driver Hex head	1808
Brisbane	6	Paint Roller Kit	1807

3. Drawin

Darwin	10	Cordless Drill Kit	2051
Darwin	27	Drill Bit 10 mm	2042
Darwin	20	Drill Bit 3 mm	2038

4. Hobart

Hobart	22	Drill Bit 5 mm	2144
Hobart	18	Garden Hose	1900
Hobart	10	Cordless Drill Kit	1885

5. Melbourne

Melbourne	8	Hacksaw	2436
Melbourne	22	Drill Bit 5 mm	2384
Melbourne	14	Square	2376

6. Newcastle

Newcastle	26	Drill Bit 9 mm	2176
Newcastle	13	Ruler	2153
Newcastle	24	Drill Bit 7 mm	2144

7. Perth

Perth	4	Box of Nails	2185
Perth	20	Drill Bit 3 mm	2157
Perth	16	Socket Set	2151

8. Sydney

Sydney	5	Tape Measure	2374
Sydney	28	Drill Driver Phillips ...	2371
Sydney	7	Mitre Saw	2328

9. Wagga Wagga

Wagga Wagga	14	Square	3566
Wagga Wagga	21	Drill Bit 4 mm	3478
Wagga Wagga	25	Drill Bit 8 mm	3405

10. Wollongong

Wollongong	16	Socket Set	1765
Wollongong	8	Hacksaw	1696
Wollongong	5	Tape Measure	1674

Problem 2: Least Selling Product of Each Office

1. Adelaide

Adelaide	29	Drill Driver Flat Head	1537
Adelaide	20	Drill Bit 3 mm	1562
Adelaide	17	Punch	1573

2. Brisbane

Brisbane	25	Drill Bit 8 mm	1397
Brisbane	4	Box of Nails	1471
Brisbane	2	Screwdriver Set	1494

3. Darwin

Darwin	1	Hammer	1563
Darwin	8	Hacksaw	1663
Darwin	6	Paint Roller Kit	1680

4. Hobart

Hobart	5	Tape Measure	1465
Hobart	8	Hacksaw	1500
Hobart	27	Drill Bit 10 mm	1561

5. Merbourne

Melbourne	5	Tape Measure	1939
Melbourne	11	Grinder	1962
Melbourne	13	Ruler	1980

6. Newcastle

Newcastle	11	Grinder	1756
Newcastle	2	Screwdriver Set	1765
Newcastle	17	Punch	1866

7. Perth

Perth	23	Drill Bit 6 mm	1767
Perth	13	Ruler	1810
Perth	14	Square	1829

8. Sydney

Sydney	27	Drill Bit 10 mm	1947
Sydney	9	Box of Screws	1966
Sydney	2	Screwdriver Set	2027

9. Wagga Wagga

Wagga Wagga	16	Socket Set	2945
Wagga Wagga	23	Drill Bit 6 mm	3001
Wagga Wagga	28	Drill Driver Phillips ...	3010

10. Wollongong

Wollongong	14	Square	1383
Wollongong	17	Punch	1422
Wollongong	24	Drill Bit 7 mm	1424

Problem 3: Top 3 salesperson of each office

1. Adelaide

68.00	Isaiah	Cruz	Adelaide	21110.4998941422
138.00	Jade	Kelly	Adelaide	18382.4000256062
122.00	Austin	Morris	Adelaide	18177.2500667572

2. Brisbane

35.00	Adam	Diaz	Brisbane	18243.0499658585
55.00	Maddie	Foster	Brisbane	16296.1999979019
95.00	Kaitlyn	Scott	Brisbane	16255.0500354767

3. Darwin

173.00	Jordan	Brown	Darwin	20550.0000779629
188.00	Sam	Cotton	Darwin	19371.4000558853
200.00	Kyle	Thomas	Darwin	18531.3000035286

4. Hobart

159.00	Grace	Bailey	Hobart	17547.5000305176
85.00	Jose	Diaz	Hobart	17305.4501018524
63.00	Nicholas	Jones	Hobart	16547.9998927116

5. Melbourne

136.00	Jasmine	Rodriguez	Melbourne	20825.0499298573
145.00	Rachel	Gonzalez	Melbourne	20178.1499290466
119.00	Carlos	King	Melbourne	16999.1999657154

6. Newcastle

2.00	Joseph	Reed	Newcastle	22632.0500130653
6.00	Evan	Denning	Newcastle	16533.499920845
10.00	Jonathan	Jenkins	Newcastle	15635.7498488426

7. Perth

22.00	Tony	Young	Perth	19266.1499223709
150.00	Kyle	Gutierrez	Perth	18968.0000963211
126.00	Emma	Williams	Perth	17736.3999457359

8. Sydney

56.00	Anna	Kelly	Sydney	24865.0499053001
79.00	Caleb	Nguyen	Sydney	20391.7500100136
44.00	Lexi	Green	Sydney	19068.599894762

9. Waga Waga

104.00	Jake	Cox	Wagga Wagga	21897.1998960972
186.00	Jake	Wilson	Wagga Wagga	19559.8999540806
24.00	Isabella	Green	Wagga Wagga	18901.5998814106

10. Wollongong

139.00	Ryan	Holliday	Wollongong	18515.0499620438
187.00	Savannah	Jones	Wollongong	18064.9998457432
152.00	Grace	Walker	Wollongong	17748.9000580311

4. 3 Sales Prediction for the Next Year

4.3.1 Linear Regression

Using just a basic machine learning predictive model – specifically linear regression –the projected sales for the coming year demonstrate that Wagga Wagga office ought to have shown up best in sales performance. To start with, the anticipated sales for all the offices amount to 1414845.06. The forecasting model takes into account the past sales and holds that orders from

office are directly proportional with total sales. Linear regression would merely give an elementary idea of future sales directions but highly sophisticated models are normally applied in precision sales forecasts and particularly with the complex sales trend time series involving diverse aspects associated with sales trend developments.

```
Sales Prediction for Next Year:
The predicted total sales for all offices in the next year: 1414845.06
Best performing office:
Office Location    Wagga Wagga
Row Total          1902270.85
Name: 8, dtype: object
```

Random Forest

We were not satisfied by the results of the LG algorithm, that is why we thought to use another algorithm named random forest. Which works on the decision tree basis. The results are:

```
Sales Prediction for Next Year:
The predicted total sales for all offices in the next year: 1161245.87
```

4.4 Best Performing Office

Best performing office is Wagga Wagga with the highest sales of '1902270.84506345' and the least performing office is Wollongong with the toal sales of '938812.297796726'

Total Sales per Office Location
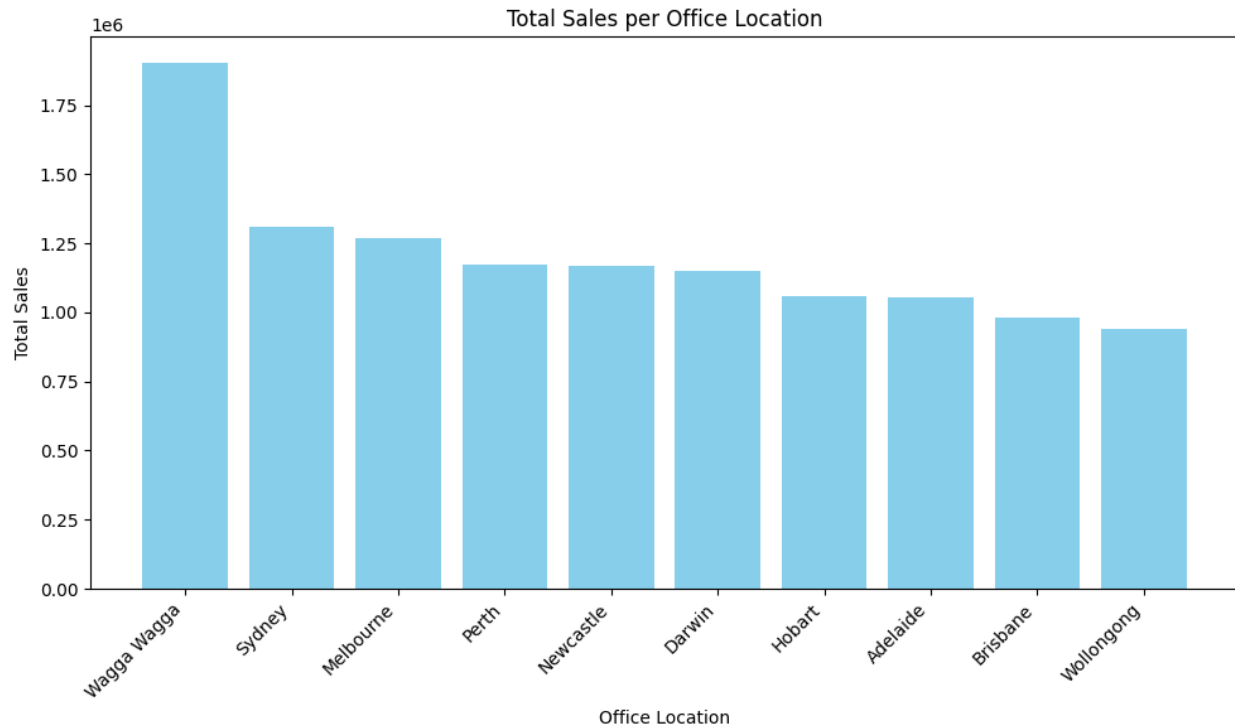
5. Business Recommendations

1. **Office Consolidation for Efficiency:** Consolidate offices strategically (pay attention to unsuccessful location such as Wollongong). This is consistent with an effort to trim unnecessary expenses across underperforming locations, focusing instead on highly performing ones. This will help to enhance operational efficiency and will lay a sound foundation for reinvigorating of competitive edge.

2. **Salesperson Training and Recognition Programs:** Facilitate the implementation of sales training programs that will enable the replication of successes achieved by Anna Kelly, Joseph Reed and Jake Cox throughout all branches. To keep the spirit of healthy competition and also retain motivation among various players, establish recognition and reward programs for top performers in the sales team.

3. **Product Diversification Strategy:** The best-selling products are Mitre saw, Drill bit 3mm, and Drill bit 5mm. Nevertheless, it is wise for the company to widen its range of

products. Consider launching new and probably trendy merchandise or improving stagnant goods. Carry out market research to know what customers want and how they change and modify the stocks according to shifts in the business environment.

4. **Operational Process Optimization:** Carry out a comprehensive evaluation of organizational operational processes across the firm. Ensure effective inventory control, revise customer order tracking processes, as well as use technology to improve productivity in repetitive activities. listade 4: describe the types of support you provided to these groups. listade 5: discuss how the support that I gave these groups was essential to them. This enhances efficiency of operations thus leading to high productivity.

5. **Market Expansion and Customer Outreach:** Seek growth through increased market penetration. Targeting marketing strategies specific to different tastes of customers. Attend community events, maximize on digital marketing platforms, and take advantage of social media sites to expand the customer base and increase the visibility of the brand.

Adding to these suggestions, closing down the most underperforming offfice at Wollongong would probably mean to concentrate on the better performing ones, while cutting on costs. In the area of downsizing the company should adopt an approach aimed at consolidation of operating units so as to reduce the operating costs as well as reposition itself in accordance with the above analysis findings. The aim is to cut back on unproductive ventures, focus on profit reenforcement areas and maintain a thriving firm within Australia.

6. DashBoard

In the last we have created an interactive dashboard using the microsoft tools named as 'PowerBi'. The graphas has been showed in the image. Moreover, we have added a query engine to search for some specific questions.

BitsAndBobs

Ask a question about your data

Try one of these to get started

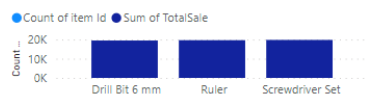| count customer ID | show top selling items | total staff office over time | what is the total staff office | total staff office by sale date | how many staff first names are there |

Top 3 sales man

Sum of Total Sales by First name

Least 3 selling products

Count of item Id and Sum of TotalSale by item Description

Count of item Id Sum of TotalSale

Top 3 selling items

Sum of TotalSale by item Description and item Id

item Id 7 20 22