GL -GRADED PROJECT

SQL PROJECT - CODED

NUPUR SARKAR

Table of Contents

Project Problem Statement:

You are hired by a chain of online retail stores **"Reliant retail limited"**. They provide you with **"orders"** database and seek answers to the following queries as the results from these queries will help the company in making data-driven decisions that will impact the overall growth of the online retail store.

1.Write a query to display customer full name with their title (mr/ms), both first name and last name are in upper case with customer email id, customer creation date and display customer's category after applying below categorization rules:

   i. If customer creation date year <2005 then category a

   ii. If customer creation date year >=2005 and <2011 then category b

   iii. If customer creation date year>= 2011 then category c

Hint: Use case statement, no permanent change in table required. [note: tables to be used -online_customer table]

Business Insights and question that we can answer through this query solution:

"How can we categorize our customers based on their creation dates to better understand their engagement levels and tailor our communication strategies accordingly? Provide insights into customer demographics, such as their titles, email addresses, and categorized creation dates, to optimize customer relationship management."

Code O/p : As mentioned the first 5 rows of the output from the query is shown below

FullName	CUSTOMER_EMAIL	CUSTOMER_CREATION_DATE	Category
Ms. JENNIFER WILSON	jen_w@gmail.com	01-06-1991	Category A
Mr. JACKSON DAVIS	dave_jack@gmail.com	12-06-2001	Category A
Ms. KOMAL CHOUDHARY	ch_komal@yahoo.co.IN	26-06-2002	Category A
Mr. WILFRED JEAN	w_jean@gmail.com	12-01-2006	Category B
Ms. ANITA GOSWAMI	agoswami@gmail.com	13-03-2006	Category B

Table 1(Categorywise customer's Firstname)

Now Business Insights that we can get from this result is shown in below graphs:

Figure 1(Customer Distribution Category
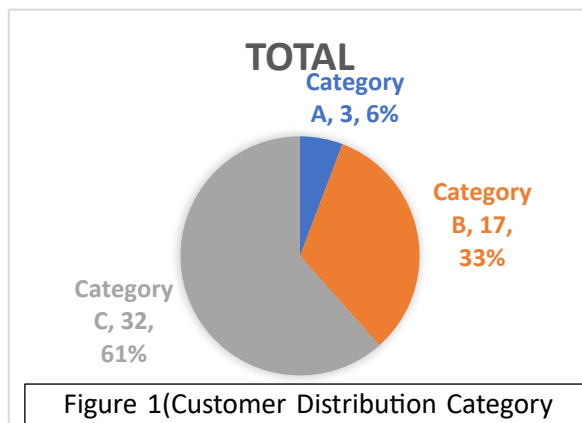
Insights : 61% of customers are from category C which are created after 2011

2. Write a query to display the following information for the products, which have not been sold: product_id, product_desc, product_quantity_avail, product_price, inventory values(product_quantity_avail*product_price), new_price after applying discount as per the below criteria. Sort the output concerning the decreasing value of inventory_value.

  i. If product price > 20,000 then apply 20% discount

  ii. If product price > 10,000 then apply 15% discount

  iii. If product price =< 10,000 then apply 10% discount

Hint: use case statement, no permanent change in table required. [note: tables to be used -product, order_items table]

Code O/p: Top 5 rows from the result of this query

PRODUCT_ID	PRODUCT_DESC	PRODUCT_QUANTITY_AVAIL	PRODUCT_PRICE	INVENTORY_VALUE	NEW_PRICE
99999	Samsung Galaxy Tab 2 P3100	50	19300	965000	16405
99997	Sony Xperia U (Black White)	50	16499	824950	14024.15
99998	Nikon Coolpix L810 Bridge	50	14987	749350	12738.95
99995	LG MS-2049UW Solo Microwave	100	4800	480000	4320
99996	Nokia Asha 200 (Graphite)	100	4070	407000	3663

Table 2(Inventory Details of Products not sold)

Business Insights
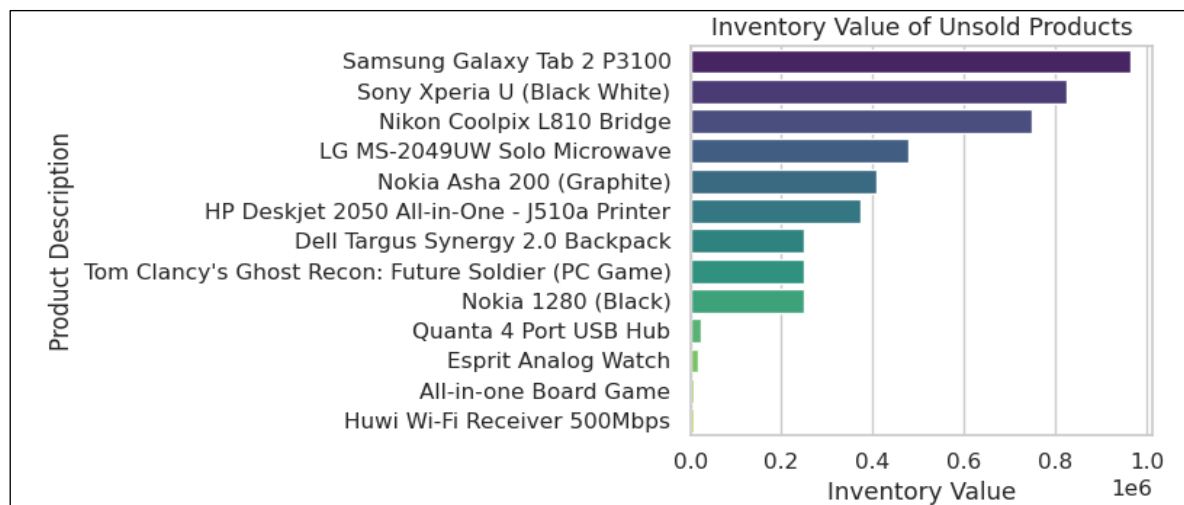
Figure 2(Inventory Value of Unsold Product

1. **High-Value Inventory Risk**: The Samsung Galaxy Tab 2 P3100 has the highest inventory value, representing a significant investment and potential risk if it remains unsold.
2. **Significant Mid-Range Inventory**: Products like Sony Xperia U and Nikon Coolpix L810 Bridge have high inventory values and substantial discounts, indicating their importance to the business.
3. **Lower Price Range Strategy**: Lower-priced items like LG microwaves and Nokia phones are stocked in high quantities with smaller discounts, suggesting a strategy to sell high volumes at lower margins.
4. **Tiered Discount Approach**: The discount strategy is tiered to balance between maintaining profit margins and increasing sales, with higher-priced items receiving more significant discounts.
5. **Marketing Focus Needed**: High stock levels for certain products highlight the need for targeted marketing and promotional efforts to prevent overstocking and reduce holding costs.

3. write a query to display product_class_code, product_class_description, count of product type in each product class, and inventory value (p.product_quantity_avail*p.product_price). Information should be displayed for only those product_class_code that have more than 1,00,000 inventory value. sort the output concerning the decreasing value of inventory_value.[note: tables to be used-product, product_class]

Code O/p :

PRODUCT_CLASS_CODE	PRODUCT_CLASS_DESC	PRODUCT_TYPE_COUNT	INVENTORY_VALUE
3000	Promotion-High Value	4	2564300
2050	Electronics	4	1665600
3001	Promotion-Medium Value	3	1261900
2055	Mobiles	2	1092500
3002	Promotion-Low Value	3	749250

Table 3(Products with Inventory >1 lakh)
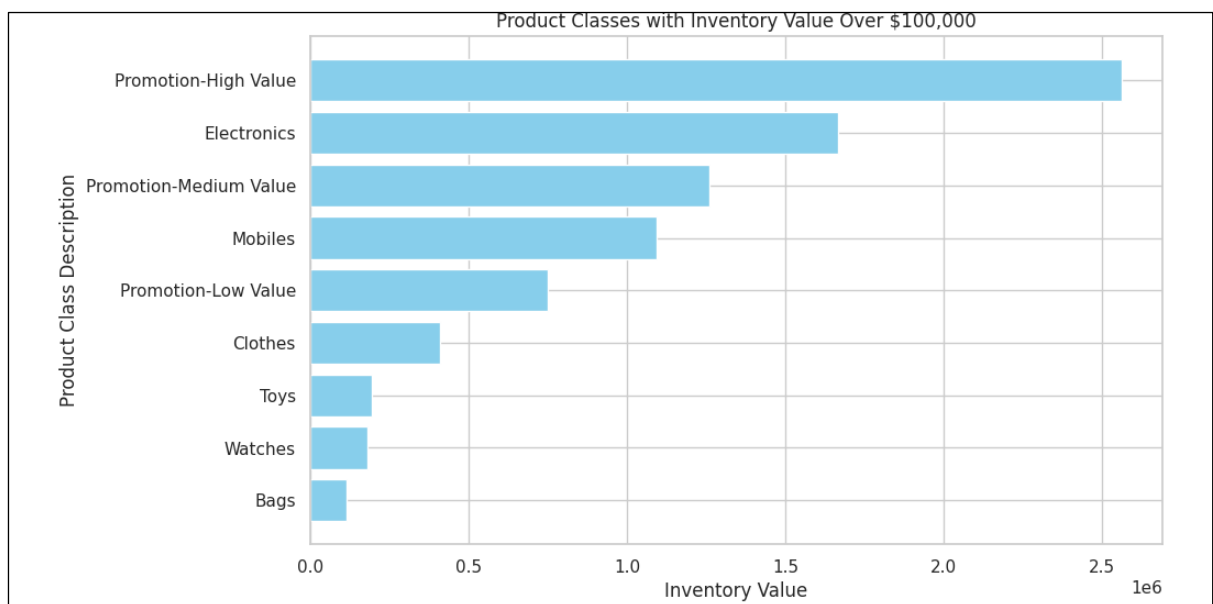
Figure 3(Product classes with Inventory Values)

Business Insights:

- **High Inventory Values:** "Promotion-High Value" and "Electronics" categories indicate substantial investments.
- **Promotional Products:** Significant inventory across various value tiers highlights the importance of promotional strategies.
- **Focused Investments:** "Mobiles" and "Clothes" show concentrated inventory, indicating key focus areas.

- **Diverse but Smaller Categories:** "Toys," "Watches," and "Bags" have lower but diversified inventory values.

Recommendations:

- **Review High-Value Categories:** Assess sales performance in "Promotion-High Value" and "Electronics."
- **Diversify Key Categories:** Expand product variety in "Mobiles" and "Clothes."
- **Targeted Marketing:** Highlight the variety and promotional products in marketing campaigns.
- **Adjust Inventory Levels:** Use demand forecasts to prevent overstock or stockouts.

4. Write a query to display customer_id, full name, customer_email, customer_phone and country of customers who have cancelled all the orders placed by them(use sub-query)[note: tables to be used- online_customer, addresss, order_header]

Objective: Identify customers with complete order cancellations to improve customer retention and satisfaction.

CUSTOMER_ID	FULL_NAME	CUSTOMER_EMAIL	CUSTOMER_PHONE	COUNTRY
41	Tharman Shanmugaratnam	tharshan@yahoo.co.sg	8572898929	Singapore

Table 4(Customers who have cancelled their products)

Business Insight: The customer, Tharman Shanmugaratnam from Singapore, has cancelled all their orders, highlighting a need for targeted follow-up to understand and resolve the issues, enhancing overall customer satisfaction and retention.

5. Write a query to display shipper name, city to which it is catering, number of customer catered by the shipper in the city and number of consignments delivered to that city for shipper dhl[note: tables to be used-shipper, online_customer, addresss, order_header]

Code O/p :

SHIPPER_NAME	CITY	NUMBER_OF_CUSTOMERS	NUMBER_OF_CONSIGNMENTS
DHL	Abington	1	1
DHL	Amherst	1	1
DHL	Bangalore	3	5
DHL	Birmingham	1	1
DHL	Brooklyn	1	1

Table 5(DHL Shipper Details)

Find out how DHL is performing in terms of customer reach and operational efficiency across different cities.

DHL has a varied customer base across different cities:

- Abington, Amherst, Birmingham, Brooklyn, Dharmapuri, Hosur, and W. Alibio each have 1 customer and 1 consignment.
- Bangalore stands out with 3 customers and 5 consignments.
- Hyderabad follows with 2 customers and 2 consignments.

This distribution highlights potential areas for targeted marketing and operational adjustments based on varying levels of customer engagement and shipping activity across cities.

6.Write a query to display customer id, customer full name, total quantity and total value (quantity*price) shipped where mode of payment is cash and customer last name starts with 'g' [note: tables to be used-online_customer, order_items, product, order_header]

Objective: What is the total quantity and value of products purchased by customers who made cash payments and whose last names start with 'G'?

CUSTOMER_ID	CUSTOMER_FULL_NAME	TOTAL_QUANTITY	TOTAL_VALUE_SHIPPED
6	Anita Goswami	25	93237
24	Brian Grazer	4	4010

Table 6(Customer details who made cash Payment)

Business Insights:

Anita Goswami has ordered a substantial quantity of 25 units, resulting in a high total shipment value of $93,237. This suggests she is a key revenue generator, warranting strategies focused on maintaining her satisfaction and potentially exploring opportunities for upselling.

Brian Grazer, in contrast, has ordered 4 units with a total shipment value of $4,010. This indicates a lower volume of purchases but still contributes to revenue. Understanding the preferences and needs of such customers can help in tailoring marketing and service strategies to enhance their engagement and loyalty.

7. Write a query to display order_id and volume of biggest order (in terms of volume) that can fit in carton id 10 -- [note: tables to be used-carton, order_items, product]

ORDER_ID	TOTAL_VOLUME
10039	97500

Table 7(Volume of Biggest order)

8. Write a query to display product_id, product_desc, product_quantity_avail, quantity sold, and show inventory status of products as below as per below condition:

a. For electronics and computer categories,

   i. If sales till date is zero then show 'no sales in past, give discount to reduce inventory',

   ii. If inventory quantity is less than 10% of quantity sold, show 'low inventory, need to add inventory',

   iii. If inventory quantity is less than 50% of quantity sold, show 'medium inventory, need to add some inventory',

   iv. If inventory quantity is more or equal to 50% of quantity sold, show 'sufficient inventory'

b. For mobiles and watches categories,

   i. If sales till date is zero then show 'no sales in past, give discount to reduce inventory',

   ii. If inventory quantity is less than 20% of quantity sold, show 'low inventory, need to add inventory',

   iii. If inventory quantity is less than 60% of quantity sold, show 'medium inventory, need to add some inventory',

   iv. If inventory quantity is more or equal to 60% of quantity sold, show 'sufficient inventory'

 c. Rest of the categories,

   i. If sales till date is zero then show 'no sales in past, give discount to reduce inventory',

   ii. If inventory quantity is less than 30% of quantity sold, show 'low inventory, need to add inventory',

   iii. If inventory quantity is less than 70% of quantity sold, show 'medium inventory, need to add some inventory',

   iv. If inventory quantity is more or equal to 70% of quantity sold, show 'sufficient inventory'

   [note: tables to be used-product, product_class, order_items] (use sub-query)

Code O/p :

PRODUCT_ID	PRODUCT_DESC	PRODUCT_QUANTITY_AVAIL	QUANTITY_SOLD	INVENTORY_STATUS	Column1
201	Sky LED 102 CM TV	30	6	SUFFICIENT INVENTORY	
202	Sams 192 L4 Single-door Refrigerator	15	6	SUFFICIENT INVENTORY	
203	Jocky Speaker Music System HT32	19	3	SUFFICIENT INVENTORY	
204	Cricket Set for Boys	10	10	SUFFICIENT INVENTORY	
205	Infant Sleepwear Blue	50	7	SUFFICIENT INVENTORY	

Table 8(Inventory Status in different conditions applied)
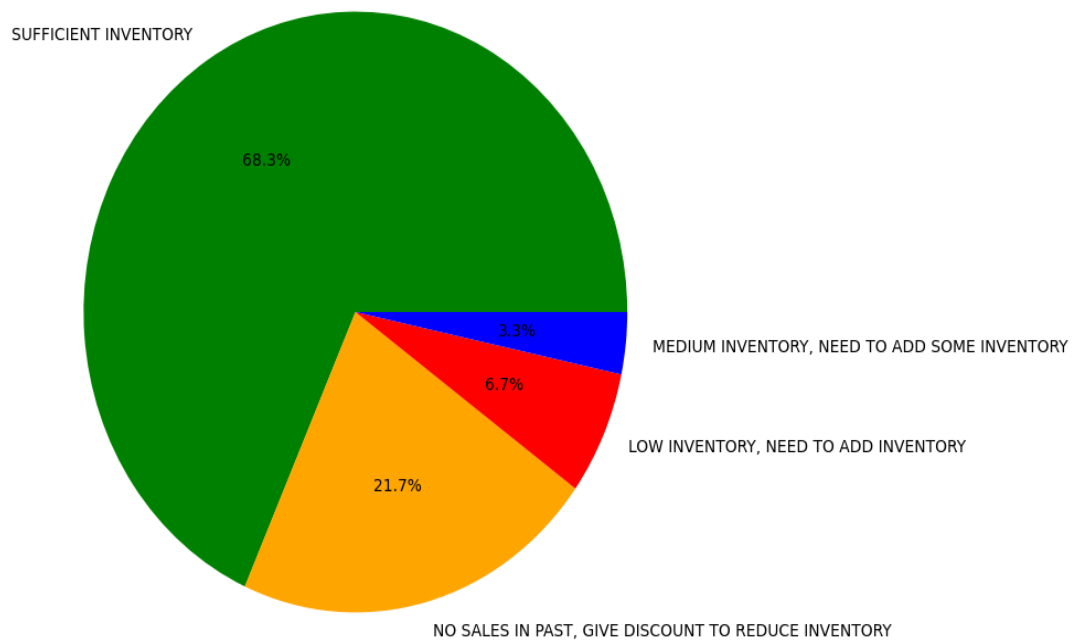
Figure 4(Inventory_Status wise product Deistribution)

Business Insights:

Sufficient Inventory:

Many products have balanced stock levels (e.g., "Sky LED 102 CM TV," "Barbie Fab Gown Doll"). Continue regular monitoring.

Low Inventory:

Restock in-demand items like "Phils Wah Collection Juicer JM12" and "Cindy HMPOC Pencil Box" to prevent stockouts.

No Sales in Past:

Discount or clear out items with no sales (e.g., "Esprit Analog Watch," "Nokia 1280 (Black)")

Medium Inventory:

Monitor and restock items like "Supreme Fusion Cupboard 02TB" to maintain inventory levels.

Product Category Performance:

Electronics and fashion items have healthy stock levels, indicating steady demand.

Recommendations:

Restock low inventory items to avoid missed sales.

Discount non-moving products to clear inventory.

Optimize inventory based on sales data and forecasts.

Discontinue non-performing items to focus on better-sellers.

Gather customer feedback to adjust product offerings.

These steps will help maintain optimal inventory levels, boost sales, and improve overall efficiency.

9. Write a query to display product_id, product_desc and total quantity of products which are sold together with product id 201 and are not shipped to city bangalore and new delhi. Display the output in descending order concerning tot_qty.(use sub-query)

[note: tables to be used-order_items,product,order_header, online_customer, address]

PRODUCT_ID	PRODUCT_DESC	TOTAL_QUANTITY_SOLD
218	Shell Fingertip Ball Pen	20
219	Ruf-n-Tuf Black PU Leather Belt	4
216	External Hard Disk 500 GB	3
233	HP ODC School Bag 2.5'	3
207	Remote Control Car	2

Table 9(Products sold with 201 and not shipped to blore and New Delhi)
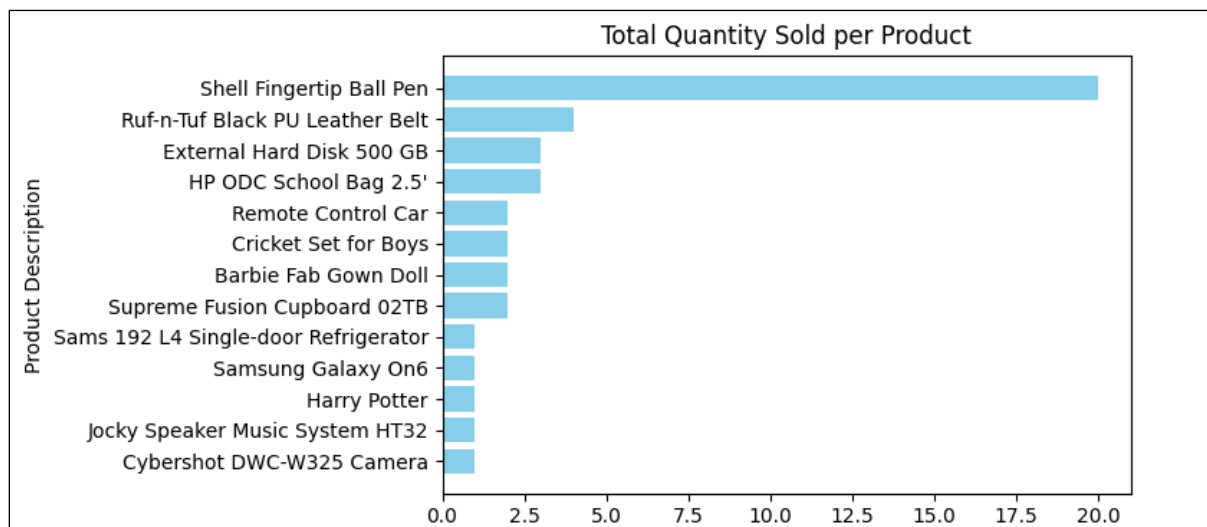
Figure 5(Total quantity sold per product)

Business Insights:

Top **Selling Product**: The Shell Fingertip Ball Pen is the highest-selling product with a total quantity sold of 20. This indicates high demand for this product.

Moderate **Sellers**: The Ruf-n-Tuf Black PU Leather Belt, External Hard Disk 500 GB, and HP ODC School Bag 2.5' have moderate sales with quantities sold of 4 and 3 respectively. These products have a steady demand and could be prioritized for maintaining inventory levels.

Low **Demand Products**: The rest of the products have sold only 1 or 2 units each. These products might need promotional efforts to boost their sales or an analysis to understand the low demand.

14

Sales **Distribution**: The majority of the sales are concentrated on a few products while the rest have significantly lower sales, suggesting a need for a better marketing strategy for the lower-performing products.

10. Write a query to display the order_id,customer_id and customer fullname and total quantity of products shipped for order ids which are even and shipped to address where pincode is not starting with "5" [note: tables to be used- online_customer,order_header, order_items, address]

Code O/p :

ORDER_ID	CUSTOMER_ID	CUSTOMER_FULLNAME	TOTAL_QUANTITY_SHIPPED
10008	7	Ashwathi Bhatt	25
10022	23	Anna Pinnock	2
10024	32	Hans Zimmer	2
10028	23	Anna Pinnock	2
10030	52	Suchirithaa Ekanayake	2

Table 10(Products shipped for even order ids to pincode starting with 5)

Figure 6(Total_quantity_shipped for even order_ids customers)
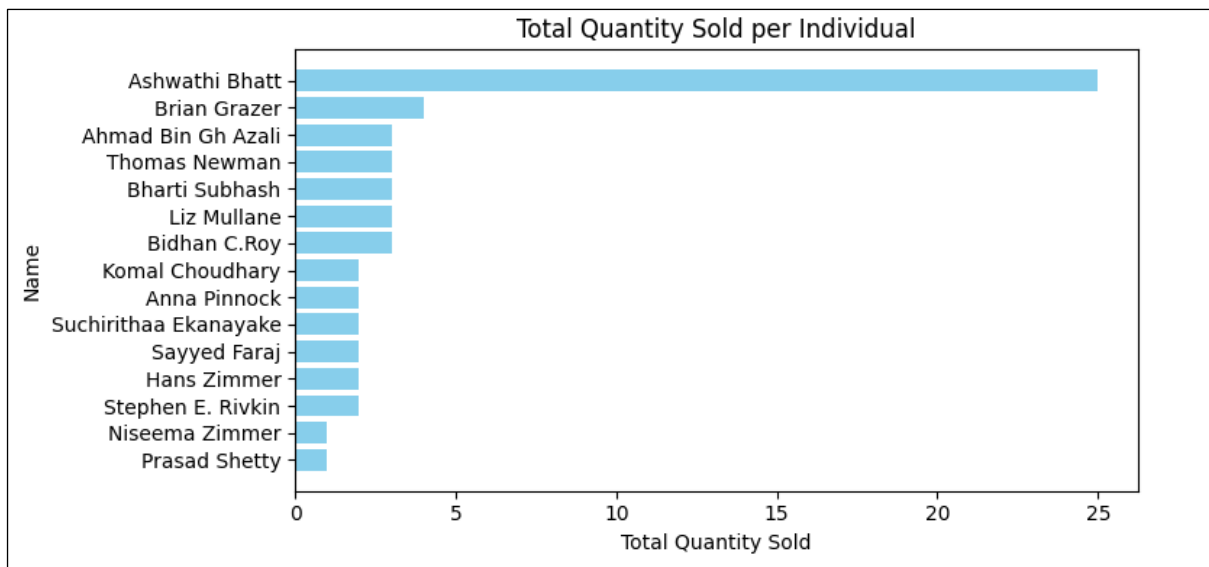
Business Insights:

Top **Performer**: Ashwathi Bhatt stands out as the top performer with a total quantity of 25. This indicates a significant contribution compared to others.

Moderate **Performers**: Individuals like Ashwathi Bhatt (7 units), Brian Grazer (4 units), Liz Mullane (3 units), Bharti Subhash (3 units), and several others have moderate contributions.

Low **Performers**: The majority of individuals have contributed 1-2 units, indicating a lower level of performance or involvement.

Concentration **of Contributions**: The distribution shows a high concentration of contributions from a few individuals while the majority have low contributions. This could suggest a need to engage and motivate lower-performing individuals more effectively.

Overall Business Recommendations Based on Insights

1. Inventory Management and Sales Data Analysis

Top Performing Products:

Shell Fingertip Ball Pen: The highest selling product with 20 units sold.

Moderate Sellers: Products like Ruf-n-Tuf Black PU Leather Belt and External Hard Disk 500 GB show steady demand.

Low Performing Products:

Products with minimal sales (e.g., Barbie Fab Gown Doll, Supreme Fusion Cupboard 02TB) need promotional efforts or inventory review.

Actionable Recommendations:

Focus on High Demand Products: Ensure sufficient stock for top-performing products to avoid stockouts.

Promotions for Low Sellers: Consider discounts or marketing campaigns for low-demand products to increase their sales.

Inventory Optimization: Regularly review and adjust inventory levels based on sales performance data.

2. Employee Performance Data

Top Performer:

Ashwathi Bhatt: The standout performer with a significant contribution.

Moderate and Low Performers:

Individuals like Brian Grazer, Liz Mullane, and Bharti Subhash have moderate contributions.

Many individuals have low contributions, indicating potential areas for improvement.

Actionable Recommendations:

Recognize and Reward Top Performers: Implement recognition programs to incentivize high performance.

Training and Development: Provide additional training and support to low-performing employees to improve their productivity.

Engagement Strategies: Develop strategies to engage and motivate all employees, ensuring a more balanced distribution of contributions.

3. Product Sales and Inventory Status Analysis

Inventory Status:

Low Inventory: Items like 'Phils Wah Collection Juicer JM12' and 'Cindy HMPOC Pencil Box' need restocking.

No Sales in Past: Items such as 'Esprit Analog Watch' and 'Sony Xperia U' with no sales need discounts to clear out inventory.

Actionable Recommendations:

Restocking Strategy: Prioritize restocking for products with low inventory levels to meet demand.

Clearance Sales: Implement clearance sales or discounts for products with no recent sales to reduce excess inventory and free up storage space.

Sales Monitoring: Continuously monitor sales trends and adjust inventory management strategies accordingly.

4. Detailed Product Performance Data

Top Contributors:

Shell Fingertip Ball Pen: Leading with 20 units sold.

Consistent Sellers: Products like HP ODC School Bag 2.5' and External Hard Disk 500 GB show consistent sales.

Actionable Recommendations:

Strengthen Supply Chains: Ensure robust supply chains for top-selling products to maintain availability.

Product Promotions: Enhance visibility and promotional efforts for moderate sellers to boost their sales further.

Performance Review: Regularly review product performance to identify trends and adjust marketing strategies.

Overall Business Recommendations

Inventory Management:

Maintain optimal inventory levels for high-demand products.

Implement discount strategies to clear out products with no recent sales.

Regularly review and adjust inventory based on sales data.

Marketing and Promotions:

Increase marketing efforts for low-performing products.

- Use targeted promotions to boost the sales of moderate sellers.
2. **Employee Performance**:
    - Recognize and reward high performers.
    - Provide training and support to improve the productivity of low performers.
    - Engage and motivate employees to ensure balanced contributions.
3. **Sales Monitoring**:
    - Continuously monitor sales trends to adjust strategies.
    - Use data-driven insights to make informed decisions about product stocking and marketing.

These recommendations will help optimize inventory management, enhance marketing strategies, improve employee performance, and ultimately drive business growth.