

TerpBuy: Project Report

Executive Summary

By: Vishesh Dabas

Introduction:

The Following report consists a summarized analysis of TerpBuy's warehouse data stored as a SQL Database. The aforementioned Database provides an insight into different aspects of its customers, products, departments and orders.

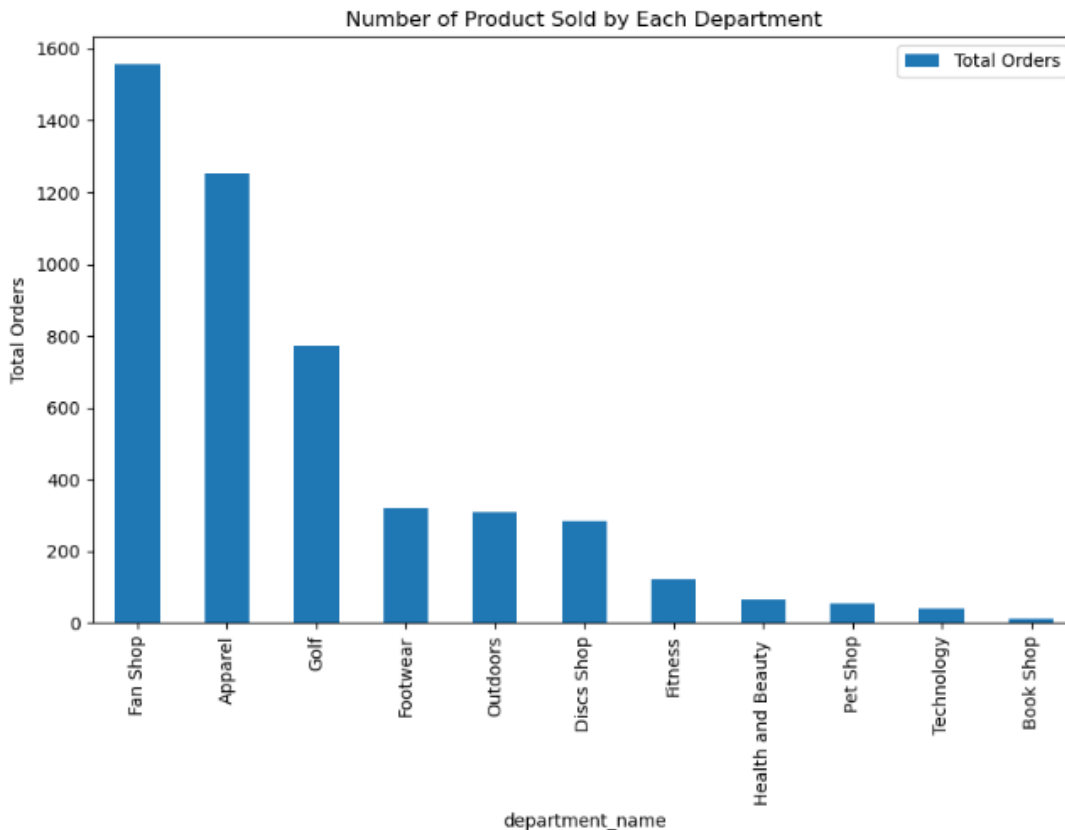
Analysis process:

We have provided a detailed report to display the various MySQL Queries that were the subjected to this analysis along with certain visual representations, created in Jupyter Notebook of selected data to generate the forthcoming analysis.

Derived Analysis:

Insight #1 (highest priced products v/s highest sales achieved per department)

The following concludes the Data derived from MySQL query #2 Generating a list of 'High-Priced' Products i.e. products having a selling price of \$100+, along with the graphical representation of the total number of sales per department in TerpBuy, as visaulised below.



(a) An extensive analysis of the data shows the highest number of sales are being made by the 'Fan Shop' department, closely followed by the 'Apparel' department,

- There are certain 'High-valued' Products from the 'Fan Shop' department like 'Diamondback Womens Serene Classic Comfort Bi' which gives us a clear insight on the products that are being preferred by Terpbuy's existing customer base, as this might help generating more sales of 'High-valued' products or prioritise the re-stocking of such products to not lose the opportunities to sell 'High-valued' inventory.
- This insight could also be used to provide enough proof for justifying promotional campaigns to attract more sales of such products.

(b) The products from ('Book shop': Department #8) are sold the least and have a trend of least MSRP (Maximum Selling Retail Price) per product, being compared to other products in other departments.

- This provides conclusive evidence for TerpBuy to **shift marketing and sales focus towards** products in :

i. Department #7 ie. **Fan Shop**,

ii. Department #4 ie **Apparel** and

iii. Department #10 ie **Technology**;

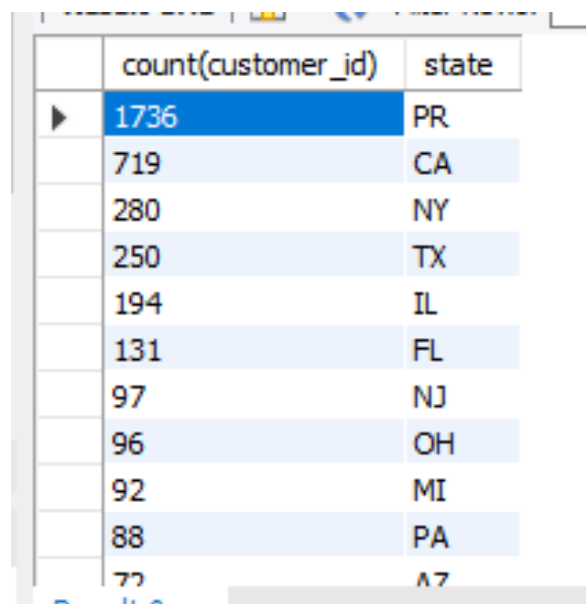
in the given order, as shown by the number of sales and the number of in-demand and high-value products from these departments is higher than other departments. This will help increase the number of sales of 'High-value' products.

Insight #2 (Evaluation of customer data)

(a) Further analysis of the customer and sales data reveals a **significantly higher** number of **customers** residing in the state of **Puerto Rico 'PR'**.

(b) This is shown in the image below, representing the output of a MySQL query, generating the total count of all customers across all states.

The **1st column shows the Total count of customers** residing the state mentioned in the adjacent column.



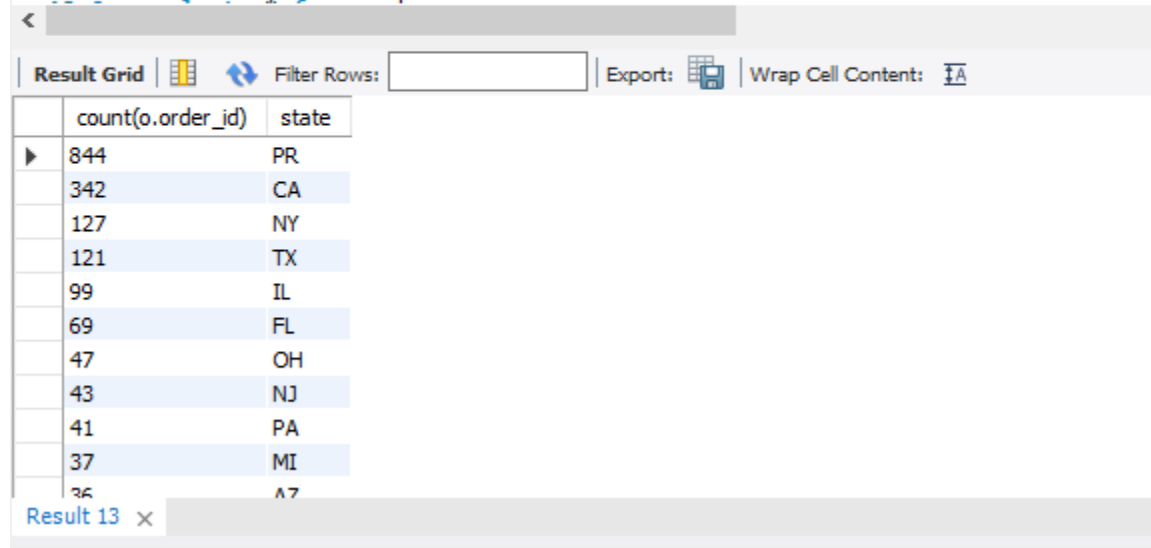
The image shows a screenshot of a MySQL query result. The table has two columns: 'count(customer_id)' and 'state'. The data is as follows:

count(customer_id)	state
1736	PR
719	CA
280	NY
250	TX
194	IL
131	FL
97	NJ
96	OH
92	MI
88	PA
77	AT

- (c) Puerto Rico ('PR') also ranks the highest, in terms of the number of orders placed per state , followed by California ('CA'), New York ('NY') and Texas ('TX')

This can be seen in the image below representing the number of orders placed, per state, where the **1st column represents the total number of orders placed** from the state mentioned in the adjacent column.

```
9 • select count(o.order_id), c.state from orders o
10 inner join customer c on c.customer_id = o.customer_id
11 group by c.state;
12
```



	count(o.order_id)	state
▶	844	PR
	342	CA
	127	NY
	121	TX
	99	IL
	69	FL
	47	OH
	43	NJ
	41	PA
	37	MI
	36	AZ

Result 13 x

- (d) We can generate a lose conclusion towards the ethnicity of Terpbuy's existing customer base and expand upon serving the given community better, since the highest ranked states in the number of customers and the number of orders placed per state, also has a high population density of Latin Americans, which could lead the further marketing and expansion decisions to improve the customer retention rate amongst the Latin American population.

- (e) The given analysis also provides us an opportunity to explore the factors leading to an increased popularity of the TerpBuy platform amongst the Latin American population and vic-versa.

Answering such questions as:

#1 What would be the cost of generating more popularity amongst other ethnicities in U.S.A.?

#2 How much customer retention amongst Latin Americans could be at risk if the marketing efforts are altered to favour the ethnic majority in the U.S.A. to target a larger population?

Insight #3 (Providing better service to existing customers)

- (a) The given sales data shows a significant decline in the sales of TerpBuy, As seen in the visual below, it shows the total orders placed at TerpBuy in 2021 are significantly lower than its best performing year i.e. 2019.



- (b) It only leaves us to wonder what factors could have caused the decline in the graph above as we can see clearly in the **first year of operations TerpBuy did manage to increase their sales**, however post-2019 the sales kept declining, considering the fact that E-commerce as an industry did see a spike in customer activities due to COVID-19 induced lockdowns.
- (c) Some factors associated with the ordering/shipping experience of TerpBuy's existing customers could reveal some insight on the consistent decline of orders post-2019, such as, the **information on delayed orders**; discovered in Query #6 which revealed the **most orders that are delayed** to reach the customers in Puerto Rico, New York, California, Texas, Illinois (States with highest number of existing customers) **have been shipped from cities; Hyderabad, Delhi and Mumbai also have the longest delay times**, thus focusing on improving logistics support from these cities could be a better decision.

The following image shows the SQL query providing highest delay times from all the cities that ship TerpBuy's orders to the U.S.A. The second column shows **the longest delay on time of 4 days** across the states in India, delivering to the U.S.A.

```

72 • select o.order_city ,(actual_shipping_days-scheduled_shipping_days)
73      from orders o inner join customer c on c.customer_Id = o.customer_Id
74      where c.state in ('PR','NY','CA','TX','IL');
75

```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: | Fetch rows:

	order_city	(actual_shipping_days-scheduled_shipping_days)
▶	Raipur	4
	Hyderabad	4
	Brahmapur	4
	Kulti	4
	Mumbai	4
	Kollam	4
	Patna	4
	Delhi	4
	Mangalore	4
	Patiala	4
	Cuttack	4

Result 19 x

(d) Another Factor that can be put into consideration will be the ‘**Segment**’ of customers that are being served by TerpBuy.

We can conclude that there is a need to **emphasize focus towards Corporate Segment customers in Puerto Rico (‘PR’)** since there is a customer ‘BlueO’Neal’ that has not placed an order.

BlueO’Neal resides in the state that has the Highest number of customers along with the highest number of orders placed, as shown in the Query #10 (image below)

```

145 -- ans 10 Vishesh Dabas, 18/09/2023
146 • select c.first_name, c.last_name, c.city, c.state, c.zipcode from customer c
147      where c.customer_Id not in (select o.customer_Id from orders o ) and c.segment = 'CORPORATE'
148      order by c.last_name, c.first_name ;
149

```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: |

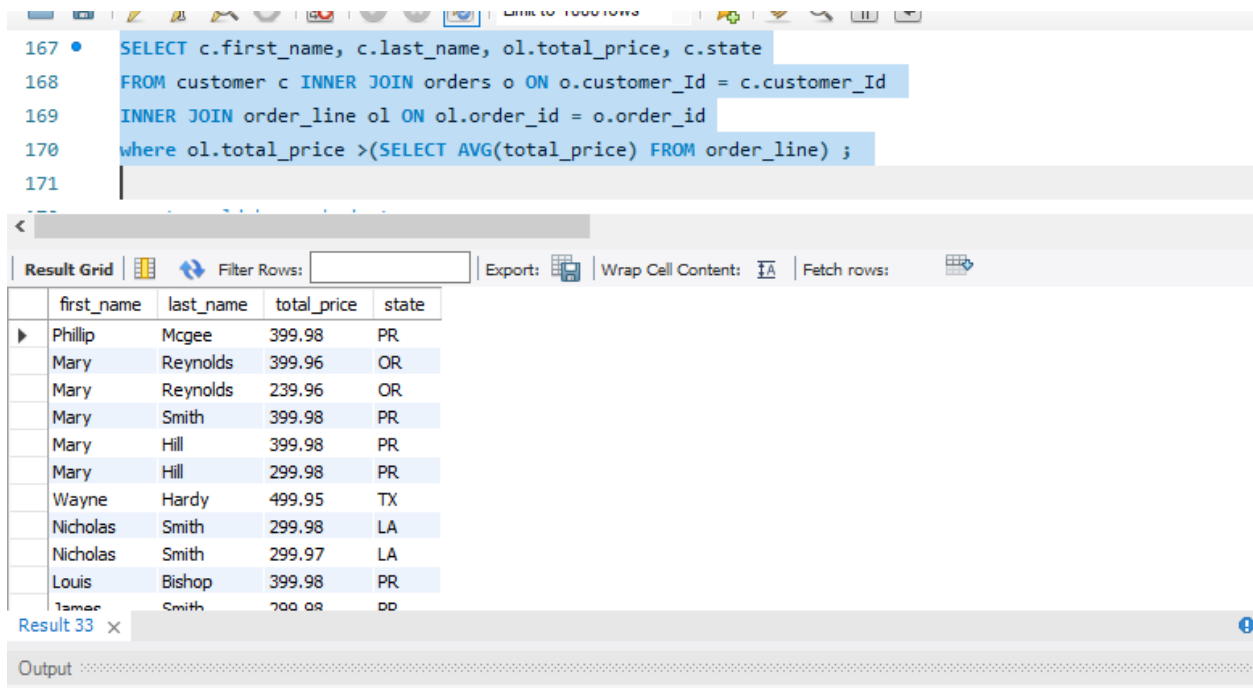
	first_name	last_name	city	state	zipcode
▶	BlueOneal		Caguas	PR	00725
	Peter	Acosta	Caguas	PR	00725
	Eliana	Adams	Detroit	MI	48221
	Ryan	Adkins	East Brunswick	NJ	08816
	Sarah	Adkins	Salt Lake City	UT	84119
	Ethan	Alexander	La Crosse	WI	54601
	Gregory	Allen	Morristown	NJ	07960
	Aphrodite	Alvarez	Caguas	PR	00725
	Mary	Anderson	Caguas	PR	00725
	Samantha	Anderson	San Jose	CA	95124
	Maru	Andrewe	Laredo	TX	78040

customer 32 x

(e) Serving Premium Customers in Puerto Rico ('PR')

Our analysis shows us a list of 'Premium Customers' who spend more than the average spending across all customers. The following image shows [a higher density of 'Premium customers' comes from Puerto Rico](#), thus it is a very solid evidence to **direct more sales and marketing efforts towards customers in Puerto Rico especially in the Corporate Segment.**

The following image shows a SQL Query listing all the 'Premium Customers' of TerpBuy



```
167 • SELECT c.first_name, c.last_name, ol.total_price, c.state
168 FROM customer c INNER JOIN orders o ON o.customer_Id = c.customer_Id
169 INNER JOIN order_line ol ON ol.order_id = o.order_id
170 where ol.total_price > (SELECT AVG(total_price) FROM order_line) ;
171
```

	first_name	last_name	total_price	state
▶	Phillip	Mcgee	399.98	PR
	Mary	Reynolds	399.96	OR
	Mary	Reynolds	239.96	OR
	Mary	Smith	399.98	PR
	Mary	Hill	399.98	PR
	Mary	Hill	299.98	PR
	Wayne	Hardy	499.95	TX
	Nicholas	Smith	299.98	LA
	Nicholas	Smith	299.97	LA
	Louis	Bishop	399.98	PR
	Tamara	Smith	200.00	OR

Result 33 x

Output

Conclusion

While it cannot be concluded that the decline in the sales of TerpBuy could only be linked to their logistics and order delays, but with the data that has been presented it certainly calls for **more action towards serving the existing customer base**, better and to **market more towards Latin American communities** across the states as TerpBuy, as a shopping platform is more popular amongst Latin American population of the U.S.A.

Some steps that could be taken towards this goal could be to incorporate an increase in the hiring of Spanish-speaking sales representatives to serve the Latin American community better and provide them with a better shopping and customer service experience, to increase the customer retention rate along with facilitating an increase in popularity, amongst the Hispanic community by providing better representation to the community amongst the customer-service staff, since Spanish is the second most spoken language in the U.S.A.

It may not be the most beneficial to abandon the existing customers since the overall sales of TerpBuy have been on a constant decline for 2 years and thus its integral to improve on the strengths of the company rather than neglecting them to market to other ethnic groups. It could've been a good proposition to market 'MORE' to other ethnic groups and increase TerpBuy's overall presence, if the company would have at-least maintained their number of sales per year, but since the overall sales have been declining it shows the former (improving the experience of existing customers and targeting Hispanic population) to be a better strategy, moving forward as it would create a strong foothold of Terpbuy among the Latin American/ Hispanic communities in the U.S.A.