Module Code: CS3DV20

Assignment report Title: Data Integration and Visualisation

Student Enrolment Number: 30020691

Date (when the work is completed): 1/12/23

Actual hours spent on the assignment: 20

Introduction

The E-Commerce Amazon Sales Dataset, the dataset provided for this assignment, offers a broad view of e-commerce sales. Included are details about stock levels, product categories, sizes, colours, SKU codes, and data from several sales channels. This dataset is a useful source of information on a variety of business-related subjects and can be used to make recommendations for the business sector of concerns by using data visualisation to understand how e-commerce sales patterns are changing. With the aid of data visualisation, one can effectively extract valuable information from unprocessed data. It enables us to identify insights, patterns, and trends in the data that would be challenging to decipher in their raw, numerical form.

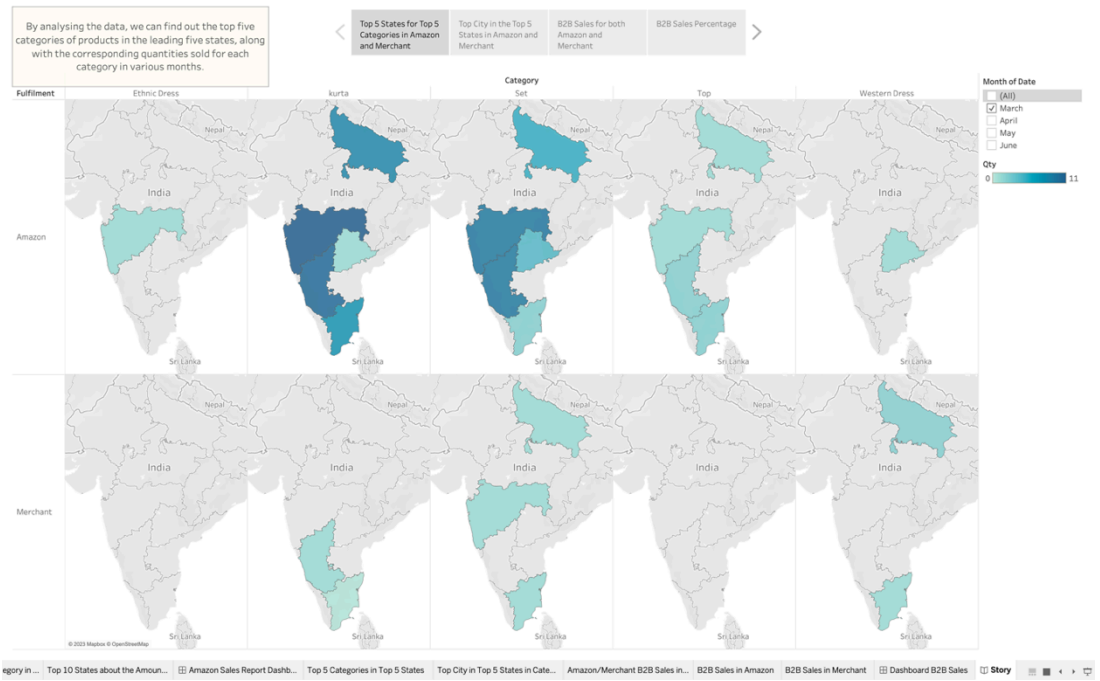
Finding Patterns and Trends - Although patterns and trends in data are not always obvious, visualisations can assist in spotting them. To illustrate whether sales are rising or falling, consider a line graph of sales over time.

Geographic Information - Maps can give an overview of how sales are distributed among various regions if the dataset includes geographic information.

Comparing Data - We can determine which areas are performing well and which ones require improvement by comparing sales across various categories or channels using bar charts or pie charts.

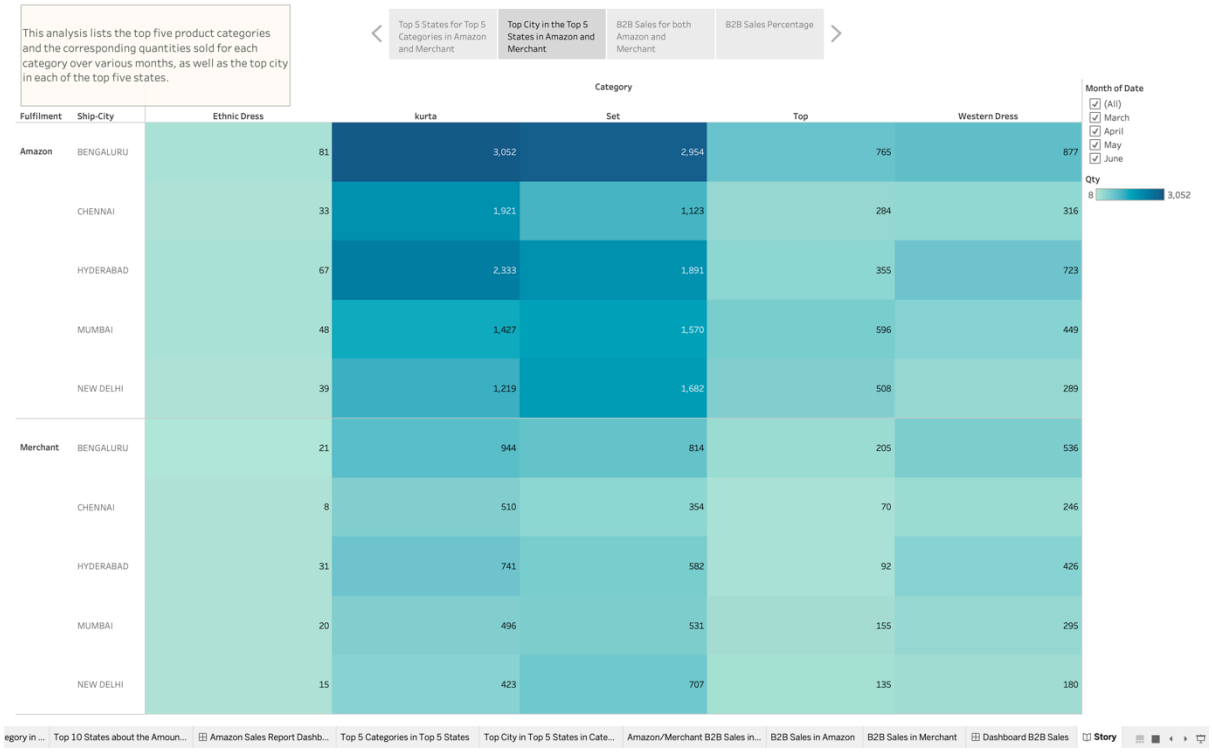
Story

This story shows the Top 5 categories being sold in Top 5 States and show what are the top city in each state and comparing the B2B and Consumer sales with Amazon and Merchant.

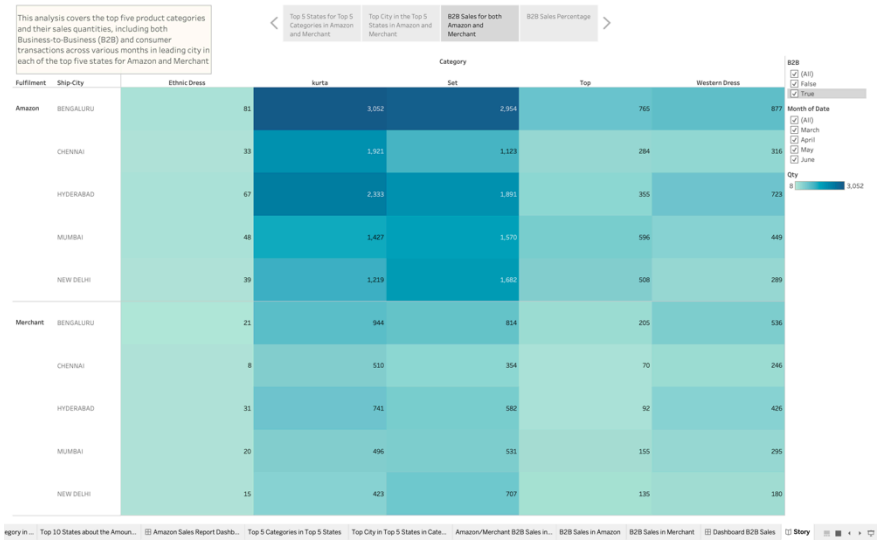


This shows the data to identify the top five categories of products in the leading five states and their corresponding quantities sold in various months provides valuable insights into regional consumption

patterns. Maharashtra emerges as the leading state, consistently outperforming others in terms of quantity sold across diverse product categories.



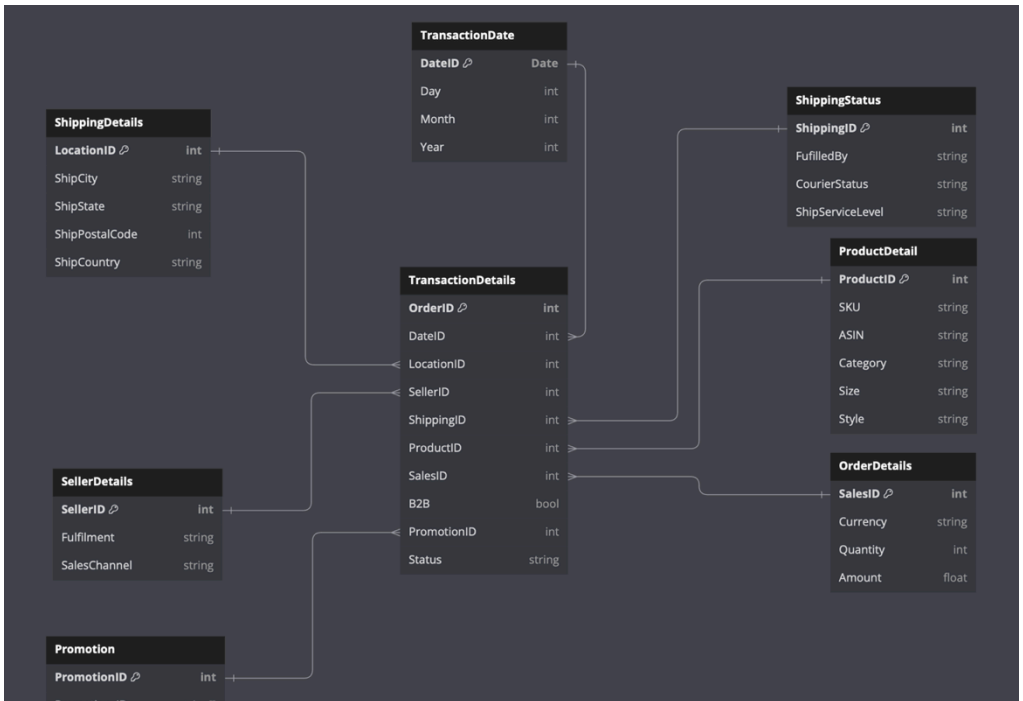
The top city in each of the top five states is listed here, along with the top five product categories and the corresponding quantities sold for each category over different months. When comparing the top states for each category, we can see that Bangalore, which is in the state of Karnataka, has the most sold quantity with the total of 7729 compared to Mumbai, even though the state Maharashtra had the most quantity when comparing the top states for each category this is because Maharashtra have multiple cities even if those cities do not have the highest quantity sold.



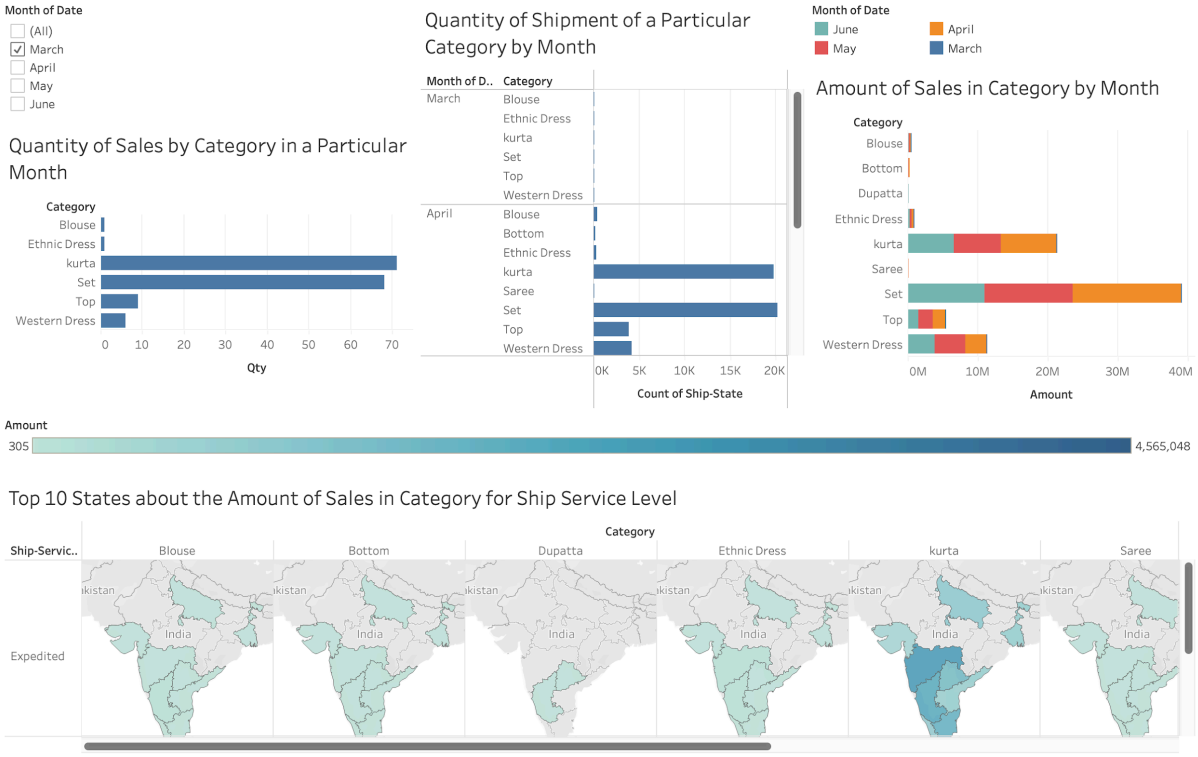
This is very similar to the above story but in this case, it can be filtered to see how many quantities out of these categories in the top City Business-to-Business (B2B) are and not B2B for Amazon and Merchant.

This is a PIE chart to visualise the B2B and not B2B for amazon and merchant for different cities.

Star Schema



Dashboard



dashboard showing different data for different categories to show the overview of sales

Recommendation

Sellers should take a comprehensive approach to optimising sales strategies, considering competitive dynamics, effective delivery methods, and customer preferences.

Prioritising efficient delivery methods to enhance customer satisfaction. Understand fulfilment processes, especially the benefits of fulfilment by Amazon (FBA) over fulfilment by Merchant (FBM), for smoother transactions and improved customer trust. After a thorough analysis, FBA is the best option because of its higher delivery success rates. Acknowledge the inherent risks associated with FBM and give FBA top priority to guarantee dependable and satisfying transactions.

Looking more closely at the sales dashboard reveals that April stood out as having the most sales. This observation resulted in the finding that there was a noticeable increase in promotional activities in April. It makes sense to assume that the increase in sales that month was partly caused by this barrage of promotions. To build on this achievement and sustain or even exceed these sales numbers in subsequent months, a calculated strategy would entail duplicating comparable marketing strategies for different categories.

I propose that the business use surveys to get input from customers to better determine when to launch marketing campaigns and promotions. Putting loyalty programmes in place can also entice customers to visit the same business again. While transactions and products are the focus of the current dataset, more customer-centric data should be gathered. For example, identifying the sector in which business clients operate, determining whether age affects a customer's preference for a particular category, and investigating the connection between product category and gender can result in more specialised advertisements and enhanced user experience.
The data analysis shows a trend in sales according to months. Because data collection was delayed, there weren't many sales in March. However, April had the most transactions, with slightly fewer in May and June. This points to a seasonal purchasing trend. When products are promoted in the run-up to these busy months, it can raise consumer awareness and increase the likelihood that they will choose Amazon over other retailers because they will be aware of the deals and discounts in advance.

Conclusion

Sales volume and number are highly influenced by category, with Maharashtra and Uttar Pradesh having a pronounced concentration of businesses. It has been noted, nevertheless, that most consumers buy for personal use as opposed to business. I suggest gathering more data over a longer period and taking seasonal variations into account to better understand trends over time. For example, there may be a spike in demand for some products during the summer, such as dresses. Furthermore, collecting data on the age and gender of customers would help with consumer trait analysis, enabling targeted marketing campaigns to reach audiences.