CDS512 - BUSINESS INTELLIGENCE & DECISION ANALYTICS

GROUP J

(SEMESTER 2/2022-2023)
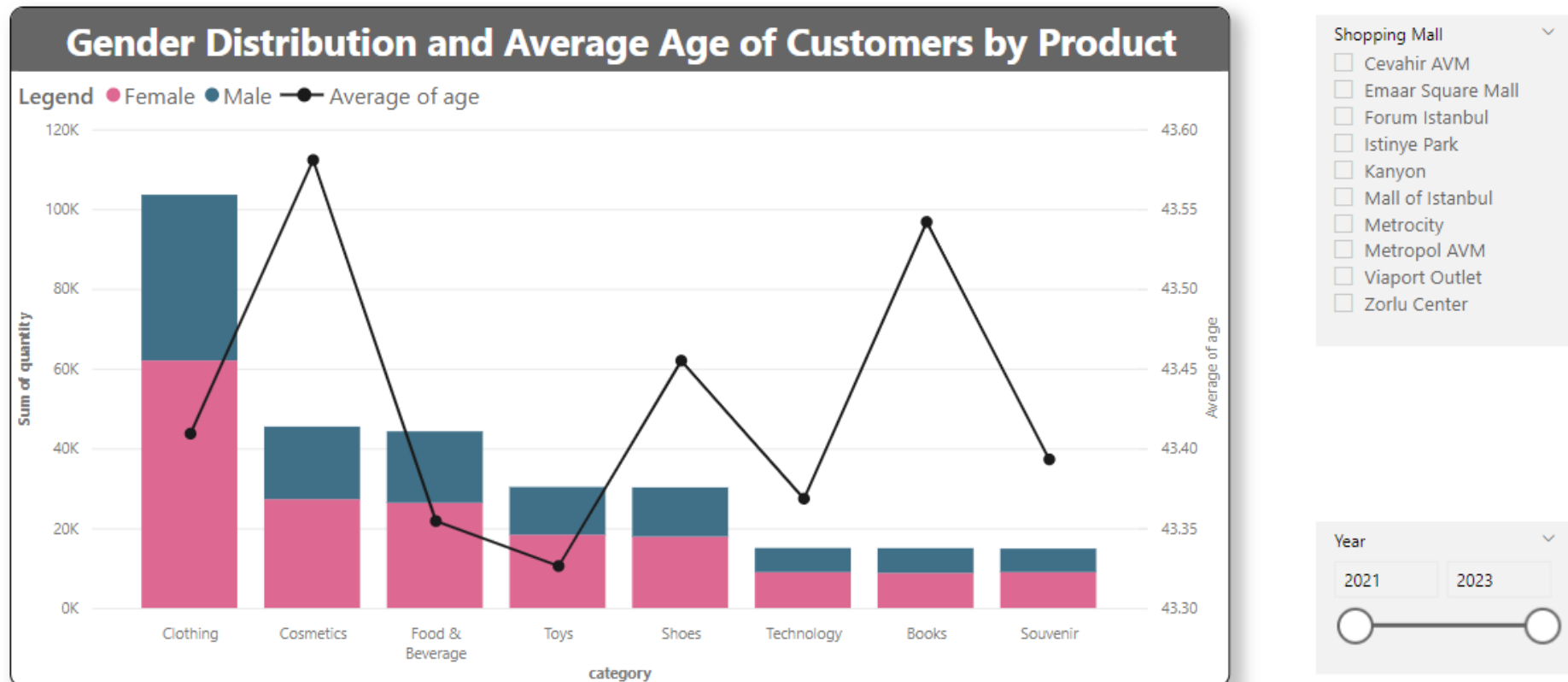
ASSIGNMENT 1

Name	Matric Number
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Submission Date	15th May 2023

Question 3:

What is the favourite payment method according to gender and age?

Age Group Guide

Group 1 – Gen Z	:	18 – 24 years
Group 2 – Millennial	:	25 – 40 years
Group 3 – Gen X	:	41 – 56 years
Group 4 – Baby Boomer	:	57 – 75 years

Frequency of Payment Methods by Gender

payment_method ● Cash ● Credit Card ● Debit Card
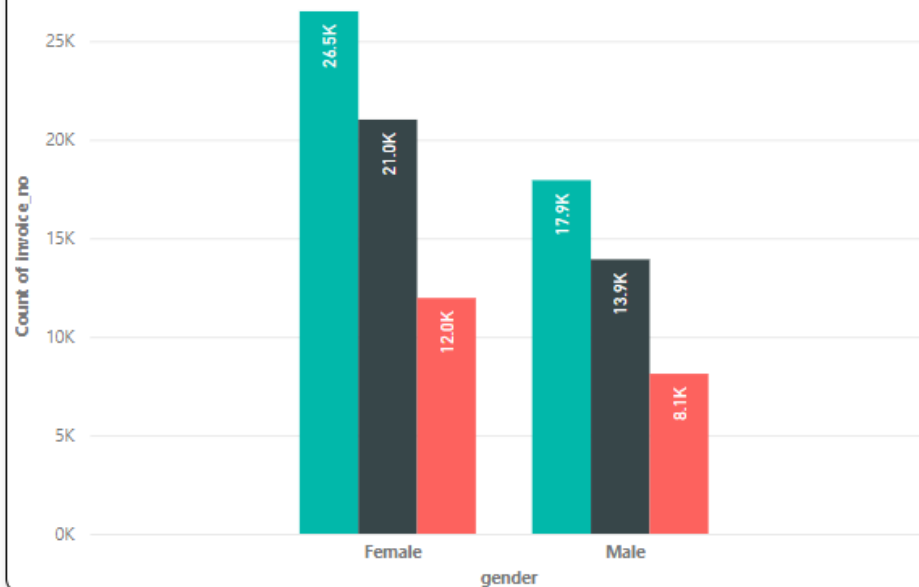
Frequency of Payment Methods by Age Group

payment_method ● Cash ● Credit Card ● Debit Card
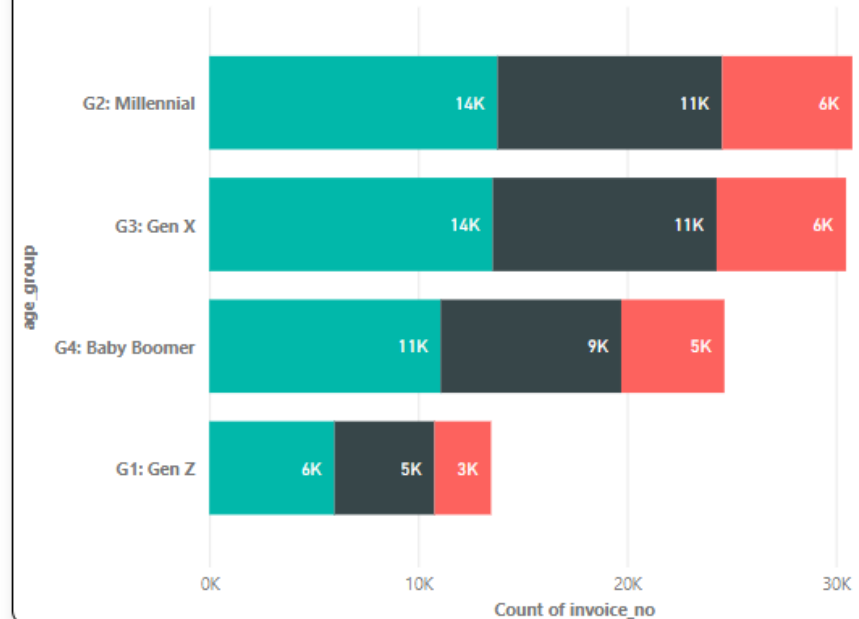
Question 4:

Which are the two most favourite items among the millennials and gen X customers?

Two Most Favourite Items of Millennials & Gen X

Age Group ● G2: Millennial ● G3: Gen X

Age Group Guide

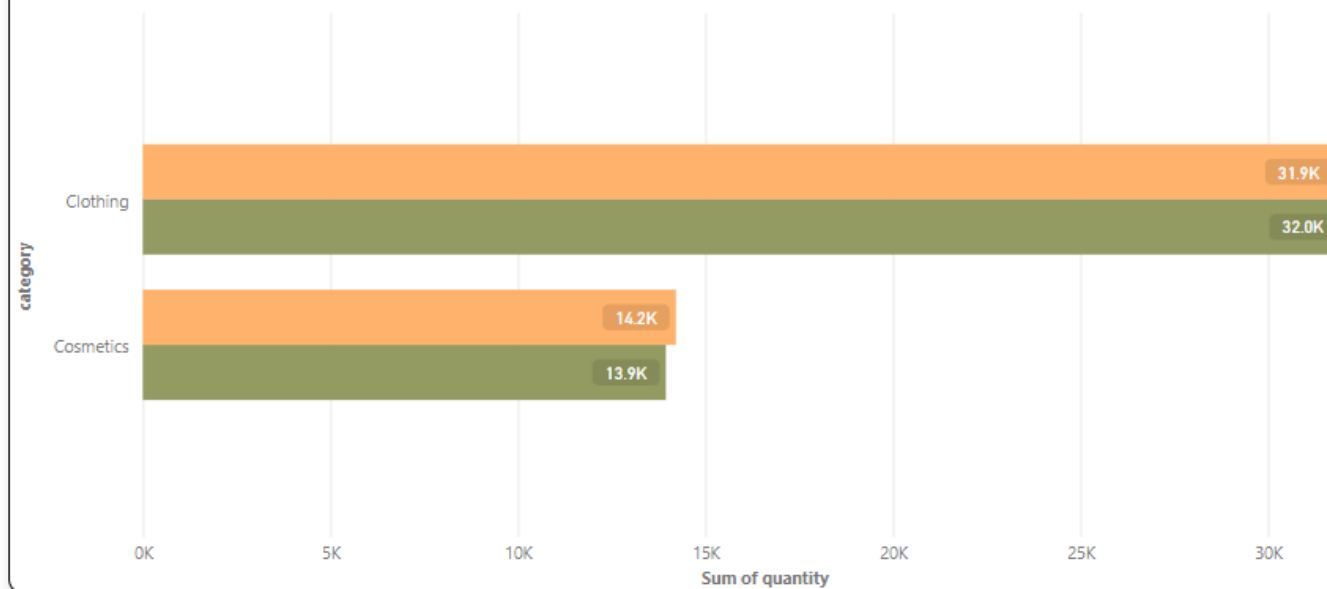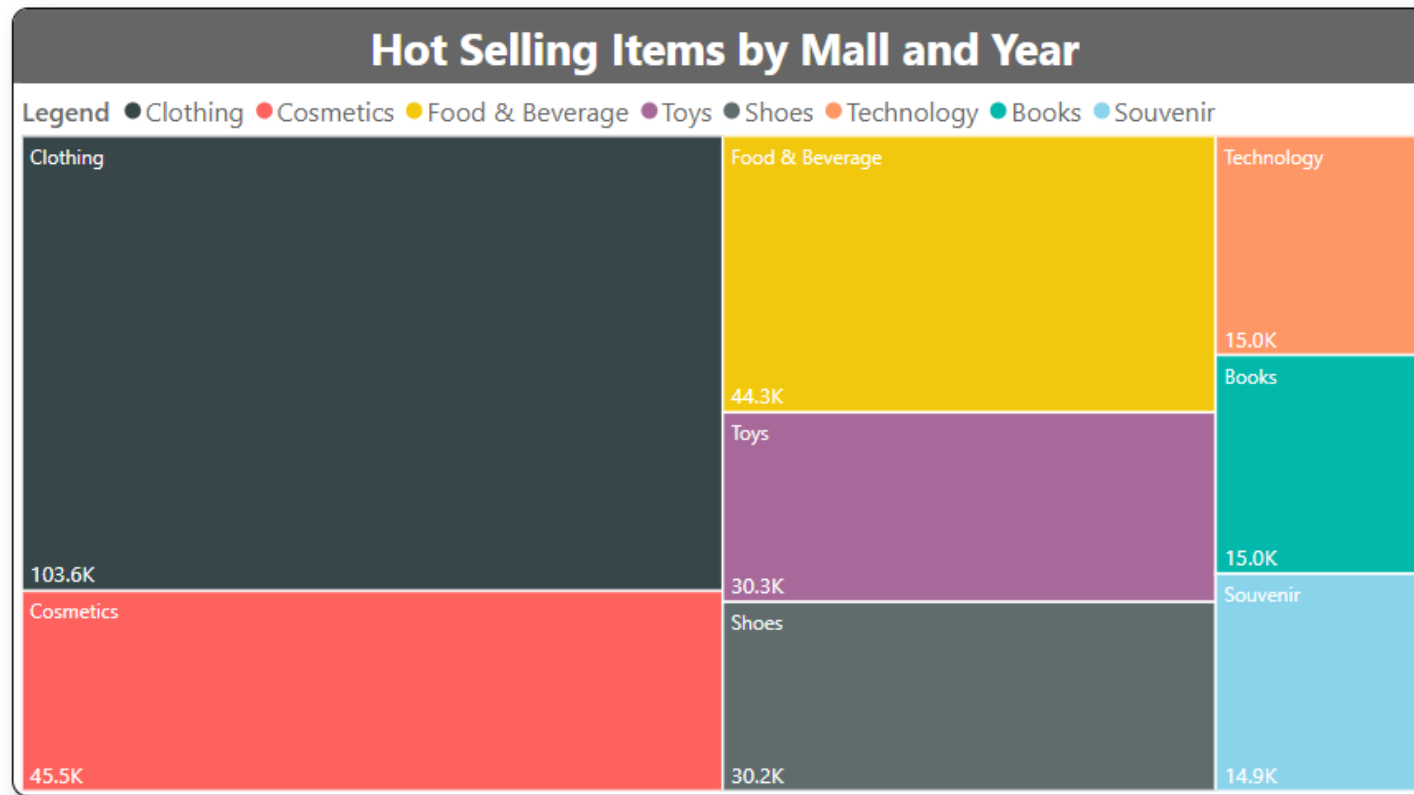| Group 1 - Gen Z | : | 18 - 24 years |
Group 2 - Millennial	:	25 - 40 years
Group 3 - Gen X	:	41 - 56 years
Group 4 - Baby Boomer	:	57 - 75 years

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Question 5:

What are the products available at the mall, and which products are the "hot" selling items for the different malls for all three years? Ensure that this information can be filtered by each year if required.

Hot Selling Items by Mall and Year

Legend ● Clothing ● Cosmetics ● Food & Beverage ● Toys ● Shoes ● Technology ● Books ● Souvenir

Clothing 103.6K	Food & Beverage 44.3K	Technology 15.0K
	Toys 30.3K	Books 15.0K
Cosmetics 45.5K	Shoes 30.2K	Souvenir 14.9K

Year
2021 2023

Shopping Mall
- ☐ Cevahir AVM
- ☐ Emaar Square Mall
- ☐ Forum Istanbul
- ☐ Istinye Park
- ☐ Kanyon
- ☐ Mall of Istanbul
- ☐ Metrocity
- ☐ Metropol AVM
- ☐ Viaport Outlet
- ☐ Zorlu Center

Malls Ranked by Popularity Based on Number of Transactions

Question 7:

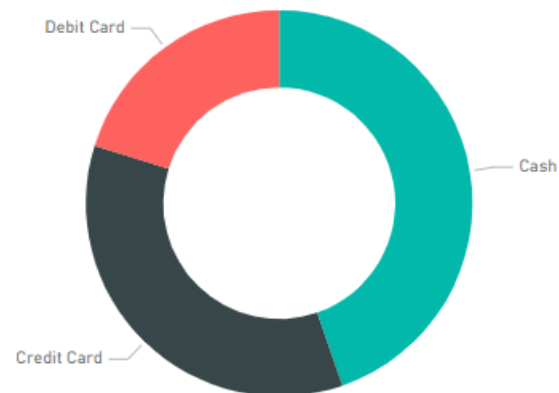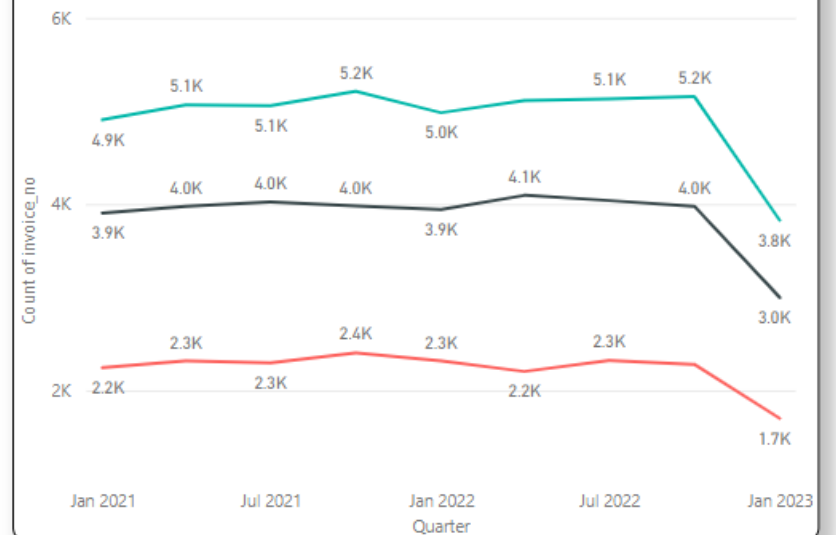What are the payment preference profiling of customers?

Payment Method Distribution

payment_method ●Cash ●Credit Card ●Debit Card

Trend of Payment Methods by Quarter
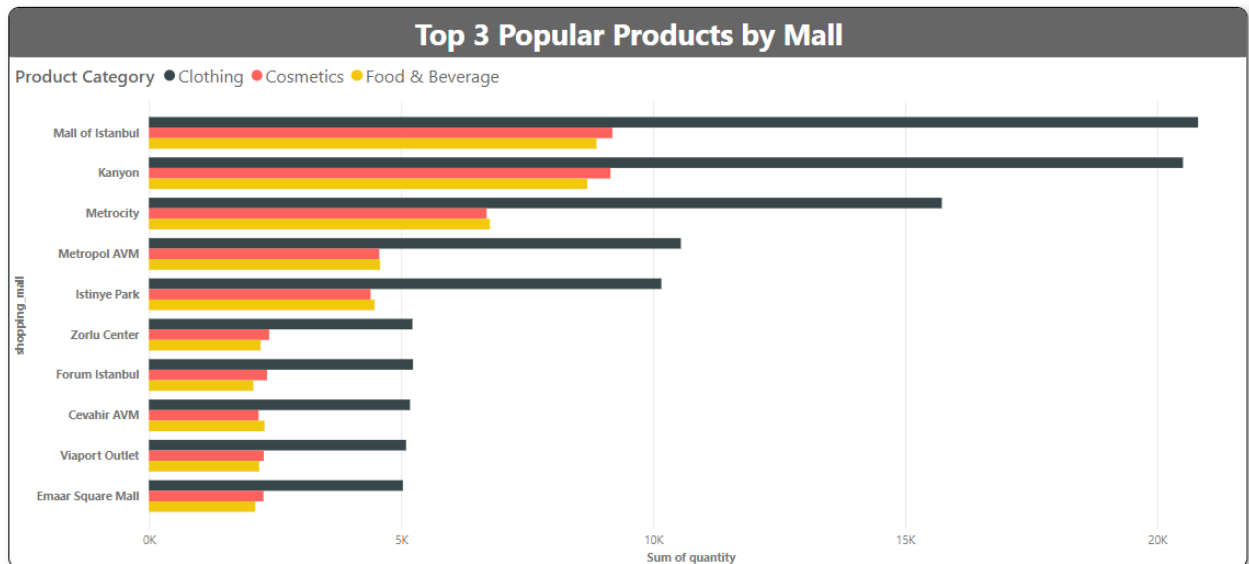
payment_method ●Cash ●Credit Card ●Debit Card

Question 8:

Do you think certain malls are more popularly known for certain products? Briefly discuss with the aid of the relevant visualizations, not exceeding one (1) page.

Top 3 Popular Products by Mall

We can see from the above visual that every mall is sharing the similar top 3 most popular products, which are Clothing, Cosmetic and Food & Beverage. This shows that regardless of the mall, the most popular products in this region remain quite consistent

Based on the visualization, Clothing is always the most popular product. Six out of 10 malls are having Cosmetic as the second most popular product, while the remaining are having Food & Beverage. Regardless which is the second most popular product, the total quantity of the second most popular product is only approximately half as many as the most popular product. This shows that Clothing is the most popular category by far.

This shows that all malls are equally popularly known for their Clothing products. The other products are not outstanding enough to make the malls to be exceptionally popularly known. This also could indicate that the region the malls are located in are very fashion-centred which leads to a large chunk of product sales coming from Clothing.

It is also an important point to note that sales revenue is different than total number of products sold. In this case, we refer to the number of product sold due to it being a better indicator of popularity.

Question 9:

What are the sales trend for each mall for the last three years, explain briefly aided by the appropriate visualizations,, not exceeding one (1) page.

Timeframe
☐ 2021
☐ 2022
☐ 2023
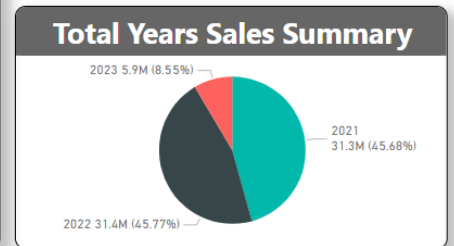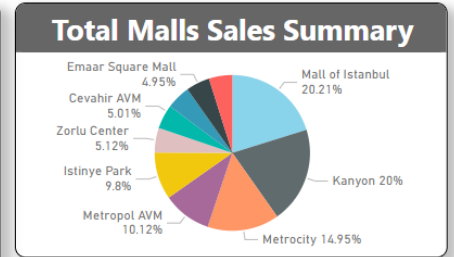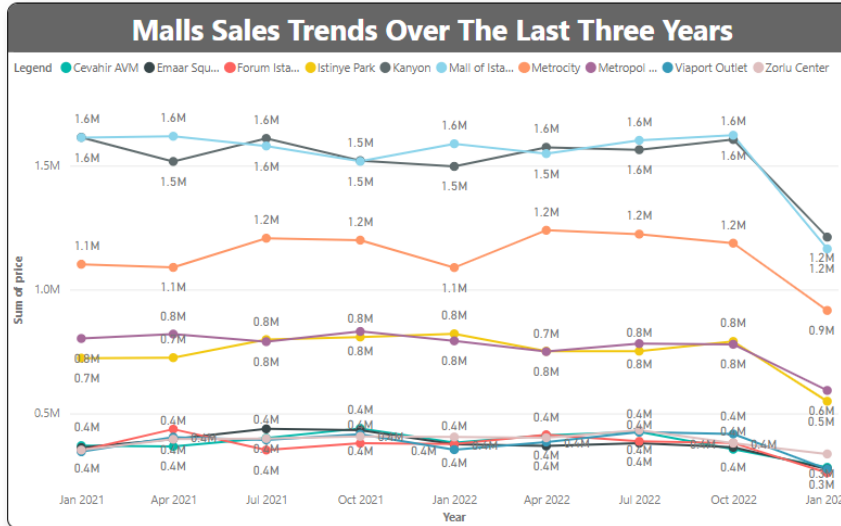
The diagram shows that there is a slight increase in total sales between 2021 and 2022 of 900 thousand, 2023 saw a drop in sales as it only had data for 2 months and 8 days.

We can see from the line chart that the ranking of the malls in terms of total revenue stays relatively consistent. There are some instances where some malls take over other malls in terms of total sales, but we can see that it usually stays within the group of malls which bring in a similar revenue. There are no instances where the malls move to a significantly higher or lower group.

The Malls of Istanbul, Kanyon, and Metrocity have contributed more than 50% of the total sales in recent years. Although these are not the most popular malls in terms of number of transactions, these malls bring in the highest revenue. This could indicate that these malls stock more items that lean towards the luxury shopping side.

Also, we can observe is when there is a sharp decrease in one of the malls there is a sharp increase in the adjacent mall as well in most of the cases. This indicates that the dip in sales is possibly caused by external factors such as economic situations, weather, seasonal factors as well as demographic evolution.

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Question 10

Create a Power BI dashboard that summarizes the results and insights from the analyzed data set and provides recommendations to increase profitability based on the analysis. Add visualizations that show the most frequently sold items, frequency of item combinations, and any patterns or trends in customer behavior. Use this information to make recommendations for pricing or promotional strategies to increase sales and profitability. Your visualizations and explanations should be no longer than two (2) pages.

Based on the above dashboard, there are a few important metrics that we need to pay attention to such as total sales revenue, total units sold, number of transactions and frequency of payment method. These metrics need to be looked at and understood in terms of customer demographics such as age and gender.

The most important metric of a business is always its total sales revenue. It is of crucial importance to understand significant drivers of the revenue in terms of the business. We can see from the Pareto chart on the top left of the dashboard, that only two product categories contribute to approximately 70% of the total sales revenue. These products are clothing and shoes. This shows that these malls are a popular for apparel shopping in general. An important pricing strategy which could drive sales is to provide bundled discounts for these categories, which would directly improve purchase volume of these popular products. Secondly, in-store events such as fashion shows, apparel product launches and social media influencer events will encourage customers to visit the store and subsequently purchase related items. Limited-time discounts and promotions would also create a sense of urgency among consumers and drive sales.

We can also see from the pie charts that the majority of sales comes from Millennials and Gen X in terms of age group, as well as female customers in terms of gender. It would be beneficial for the business to allocate more resources in targeted marketing for this particular demographic. Millennials and Gen X generally indulge in online shopping, hence it is crucial strategy to invest in websites as well as mobile apps to cater for their purchasing needs. Another important strategy is by using loyalty membership specifically catered to appeal to this demographic, such as online-only coupons. Another important aspect which would attract this demographic is sustainability. This generation of women especially are known to value sustainability and ethical fashion despite them being faced with a higher price tag. It would also help to decorate the mall in an aesthetically pleasing manner which would be attractive to this demographic.

The trend of the average age of customers is also decreasing by year. The business has to be mindful of this and continually revise pricing and promotional strategies as the age group of customers evolves. In terms of age, we can see that toys have the lowest average of customers while cosmetics have the highest average age of customers. Targeted advertisements on social media based on this information will be a very effective promotional strategy to attract customers.

In terms of mall popularity, we can see that the three most popular malls are the Mall of Istanbul, Kanyon and Metrocity. We can conduct mall events and activities in these particular malls in order to drive sales. We can also use these malls as case studies as to why they are performing so well in comparison to the other malls. As a strategy, we can conduct customer surveys in these malls in exchange for discount coupons or free gifts, in order to understand the factors that make these malls more appealing. Another interesting and often overlooked aspect, is payment methods.

We can see from the donut chart that the most popular method is cash and the least popular is debit card. We can use this information to promote preferred payment methods, by offering discounts and cashbacks for those payment methods. We can do this by demographics too, for example, older customers are more likely to pay by cash, hence we can offer special discounts for cash payments among older patrons, in order to encourage them to buy more items as well as diversify purchases. We can also apply this to bigger spenders, who based on the visuals also prefer cash payments.

In terms of general trend of total sales revenue, we can see that it is relatively consistent but with a very sharp decline in March 2023. This is due to there being insufficient data for 2023 and needs to be studied further.