



Excel Project Report

Online Shopping Analytics: Sales & Customer Insights

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Contents

Sr. No	Section	Page No.
1.	Title	3
2.	Objective	3
3.	Executive Summary	3
4.	Observations	4
5.	Dashboard Overview	7
6.	Insights Recommendations Future Improvements	9 10
7.	Appendix: Data Source & Preparation, Challenges & Solutions, Dashboard Pictures	11

Title

Online Shopping Analytics: Sales & Customer Insights

Objective

The objective of this dashboard is to help businesses understand customer behaviour and sales patterns in a clear and data-driven way. By analysing trends in sales, user activity, browser and payment preferences, and time spent on the platform, the dashboard supports better marketing, improved customer experience, and smarter decision-making.

Executive Summary

The platform maintains **steady monthly sales**, with slight peaks in **January, December, and October**, likely due to **festive periods**. The most active buyers are between the ages of **25–54**, showing **strong and consistent purchasing activity** across this group.

Chrome is the top browser used, followed by **Safari**, which shows **high mobile engagement**. **Cards** and **Digital Wallets** are the most preferred **payment methods**, reflecting **trust in digital options**. Users who spend **10–15 minutes** on the platform generate the **highest sales**, suggesting **strong engagement** and **better chances of conversion**.

Observations

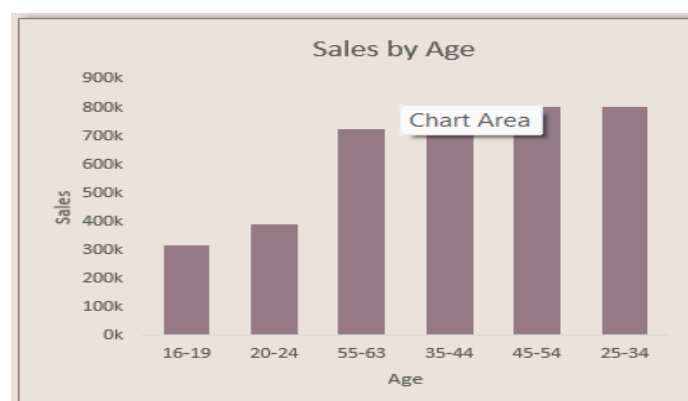
- **Sales Trends**

- **January (₹330,794.70), December (₹330,464.59), and October (₹327,801.46)** recorded slightly higher sales, suggesting a mild seasonal impact, possibly due to holidays or festive periods.
- **February** showed the **lowest** sales at **₹287,639.67**, which may reflect reduced customer activity or limited promotional efforts during this period.
- **Monthly sales** remained **fairly consistent**, ranging from **₹287K to ₹331K**, indicating steady demand throughout the year without **major fluctuations**.



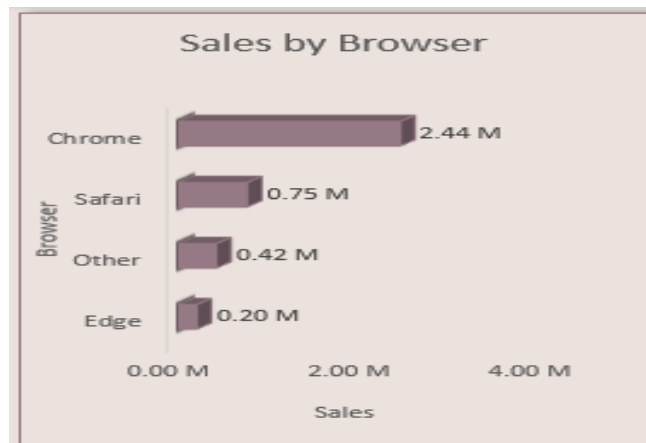
- **Customer Behaviour by Age Group**

- The highest sales came from the **25–34 (₹798,020.55)**, **45–54 (₹797,919.58)**, and **35–44 (₹793,188.35)** age groups, showing they are the most active buyers.
- The **55–63** group had moderate sales at **₹720,397.42**, indicating good engagement.
- Younger groups **16–19 (₹315,457.47)** and **20–24 (₹386,529.07)** had the lowest sales, suggesting lower purchasing activity.



- **Browser Preferences**

- **Chrome** dominates (**63.42% - 65.05%**) across all age groups.
- **Safari** is the **second most used browser (19.37%–20.65%)**, suggesting a mix of desktop and mobile usage, though exact device type isn't specified.
- **Other browsers**, including **Edge**, have minimal adoption with **usage at 10.96% and 5.13%** respectively.



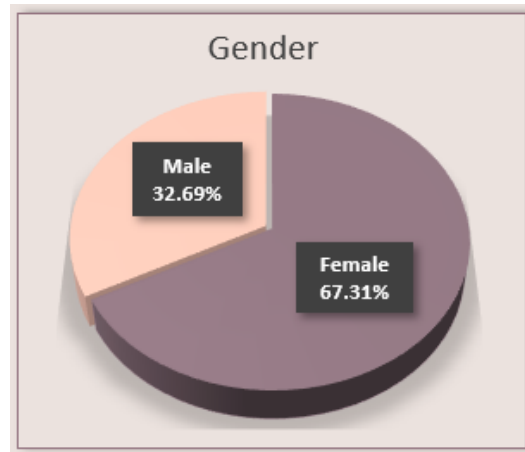
- **Payment Preferences**

- **Cards (30.02%)** are **the most preferred** payment method, followed closely by **Digital Wallets (28.99%)**, while **PayPal (22.12%)** and **Other methods (18.87%)** are **less** commonly used.



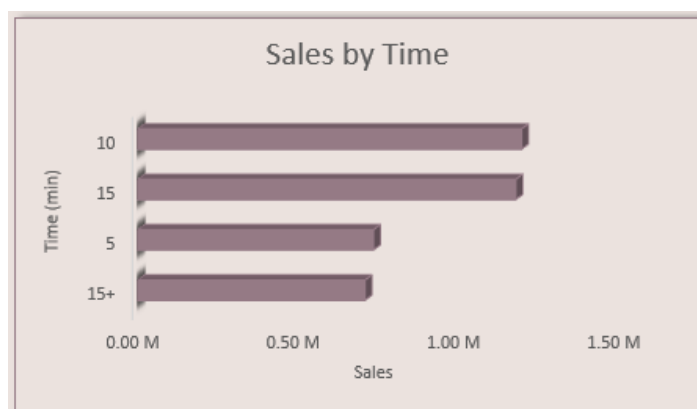
- **Sales Distribution by Gender**

- The **total sales** from **female** customers amounted to **₹25.65 lakhs**, nearly double that of **male** customers at **₹12.46 lakhs**, contributing to an **overall sales** figure of **₹38.11 lakhs**.

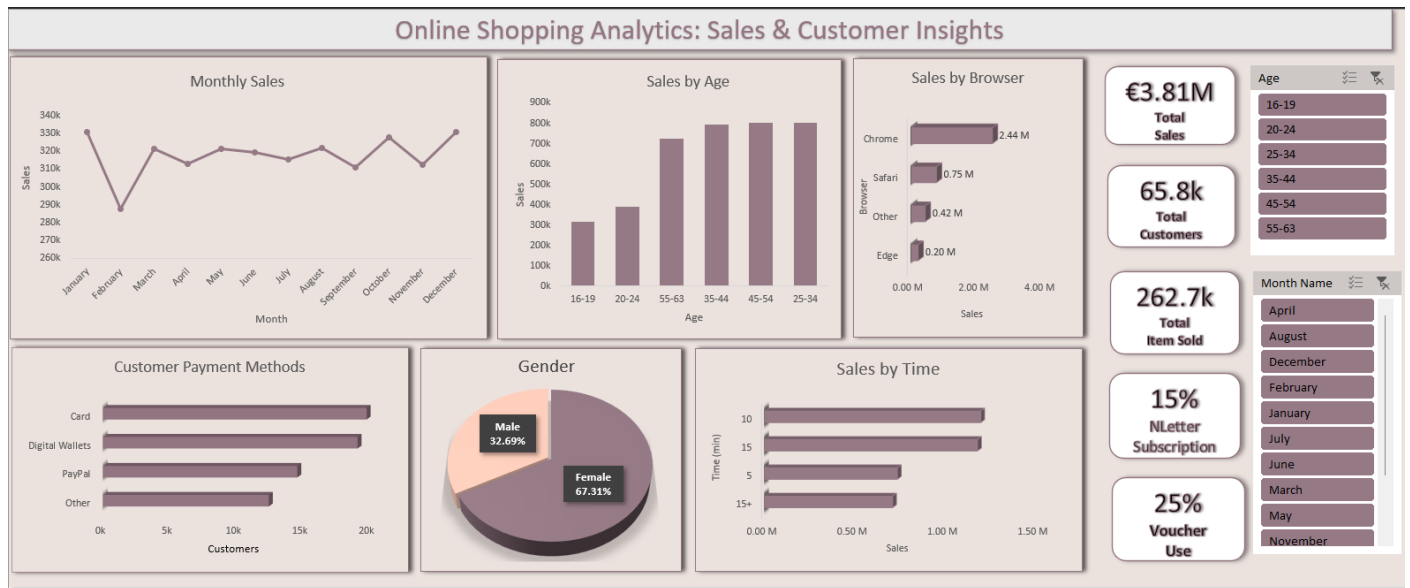


- **Time Spent on the Platform**

- **10–15 min** sessions drive the **most sales (₹11.94L & ₹11.76L)**, showing strong user engagement and intent.
- **5 min** sessions **still contribute well (₹7.33L)**, likely from quick, goal-focused users.
- **15+ min** sessions see **lowest sales (₹7.07L)**, hinting at browsing without purchase or decision fatigue.

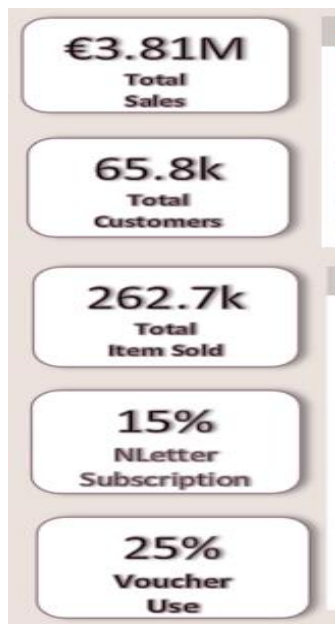


Dashboard Overview



Key Visualizations Used:

Key Metrics (KPIs):



- **Total Sales:** €3.81M
- **Total Customers:** 65.8K
- **Total Items Sold:** 262.7K
- **Newsletter Subscription Rate:** 15%
- **Voucher Usage Rate:** 25%
- These KPIs help analyse customer engagement, purchasing trends, and promotional effectiveness.

- **Dashboard Charts**

- **Line chart:** Shows the monthly sales trend over a year.
- **Column charts:** Compare sales across different age groups.
- **Bar charts:** Indicate customer payment method preferences, sales based on time spent, and browser usage.
- **Pie chart:** Displays the gender distribution of customers.

Filters & Slicers for Interactivity:

- Age Slicer: Filters data by customer age group.
- Month Name Slicer: Filters data by month.

Insights

- **Sales Patterns:** Sales remained **stable** throughout the year with slight **increases** in **January, October, and December**, hinting at seasonal or festive influence. **February** saw a **drop**, possibly due to reduced customer activity.
- **High-Value Age Segments:** The **25–54 age** group emerged as the **highest** contributors to overall sales, indicating they are the platform's most engaged and purchasing users.
- **Browser Usage Behaviour:** **Chrome** remains the **dominant** browser choice, suggesting users prefer a fast and familiar interface. **Safari's** usage indicates **significant engagement** across devices, while others like **Edge** are **less popular**.
- **Payment Method Trends:** Users **largely prefer Cards** and **Digital Wallets**, showing trust in fast and secure digital transactions. **PayPal** and **Other** methods are **less** favoured.
- **Gender-Based Contribution:** **Female** customers account for approximately **67% of total sales**, indicating they are the dominant purchasing demographic.
- **User Engagement & Session Duration:** Users spending **10–15 minutes** on the platform contribute the **highest revenue**, indicating this is the ideal engagement window. Short visits (**around 5 mins**) still **perform well**, while longer sessions (**15+ mins**) may involve **indecision** or **just browsing**.

Recommendations

- **Boost Seasonal Campaigns:** Focus marketing efforts during January, October, and December to leverage the seasonal shopping spikes. Introduce special offers in February to improve performance in that low-sales month.
- **Target Active Age Groups:** Create tailored promotions for the 25–54 age group, as they contribute the most to sales. Consider loyalty programs or personalized product suggestions for them.
- **Engage Younger Users:** Launch campaigns or student discounts to increase engagement and conversion among the 16–24 age group, who currently spend less.
- **Optimize for Chrome and Safari:** Since most users access the platform via **Chrome** and **Safari** on both **mobile** and **desktop**, ensure the site is **fast, responsive**, and **user-friendly** across devices to retain traffic and boost conversions.
- **Promote Preferred Payment Options:** Highlight Cards and Digital Wallets during checkout to encourage faster payments. Consider offering incentives (like cashback) for using underused methods like PayPal to diversify usage.

- **Encourage Optimal Session Time:** Design content and product journeys that guide users to spend 10–15 minutes on the site—this timeframe drives the most sales. Use features like quick filters, recommendations, or limited-time deals to keep them engaged effectively.

Future Improvements

- **Customer Segmentation by Activity & Spend:** Go beyond age segmentation and classify customers based on purchase frequency and basket size to identify and retain high-value customers.
- **AI-Driven Personalization:** Use time spent, age group, and preferred payment methods to deliver tailored product recommendations, deals, and reminders for higher engagement.
- **Monthly Trend Comparison by Demographics:**
Breaking down monthly sales trends by age group and gender can help detect more specific seasonal behaviours within each segment.
- **Payment Preferences by Demographic Segments:**
Evaluating payment method preferences across age and gender will allow for better alignment of checkout experiences with user expectations.

Appendix

Data Source & Preparation

Data Source:

- The dataset was sourced from **Kaggle**: [Online Shop Customer Sales Data](#).
- **License**: Data files © Original Authors.
- Data format: **CSV**

Data Cleaning & Transformation

No missing values or duplicate entries found.

- **Updated Categorical Values:**
 - Gender (0 → Male, 1 → Female)
 - Payment Methods (0 → Digital Wallets, 1 → Card, 2 → PayPal, 3 → Other)
 - Browser (0 → Chrome, 1 → Safari, 2 → Edge, 3 → Other)
 - Newsletter Subscription (0 → Not Subscribed, 1 → Subscribed)
 - Voucher Usage (0 → Not Used, 1 → Used)
- **Fixed Total Sales Calculation:**
 - Corrected the formula in the "Revenue_Total" column and renamed it to "Total Sales."
- **Data Type & Currency Formatting:**
 - Fixed inconsistent data types in Purchase Value and Total Sales columns.
 - Manually formatted values to ensure proper currency representation.
- **Created Additional Analysis Columns:**
 - **Age Grouping** (via Power Query).
 - **First Day of Month Column:**
=EOMONTH(D2,-1)+1
 - **Time Column (Grouped):**
=IFS(V2<=5,"5",V2<=10,"10",V2<=15,"15",V2>15,"15+")

Challenges & Solutions

- **Incorrect Total Sales Calculation**

- Challenge: The formula for the Revenue_Total column was misapplied, leading to incorrect sales figures.

Solution: The formula was corrected, and the column was renamed Total Sales for clarity.

- **Handling Mixed Data Types in Currency Columns**

- Challenge: Purchase Value and Total Sales contained inconsistent data types (text and numbers), causing formatting issues.

Solution: Data type inconsistencies were manually corrected, and values were formatted as proper currency.

- **Optimizing Age Group & Time-Based Analysis**

- Challenge: The Age Group column needed better segmentation for meaningful insights.

The Time Group initially had formatting issues, affecting grouping accuracy.

Solution: Used Power Query for age grouping and applied corrected time-based formulas for better segmentation.

Dashboard Pictures

Fig 1: Using Age group slicer

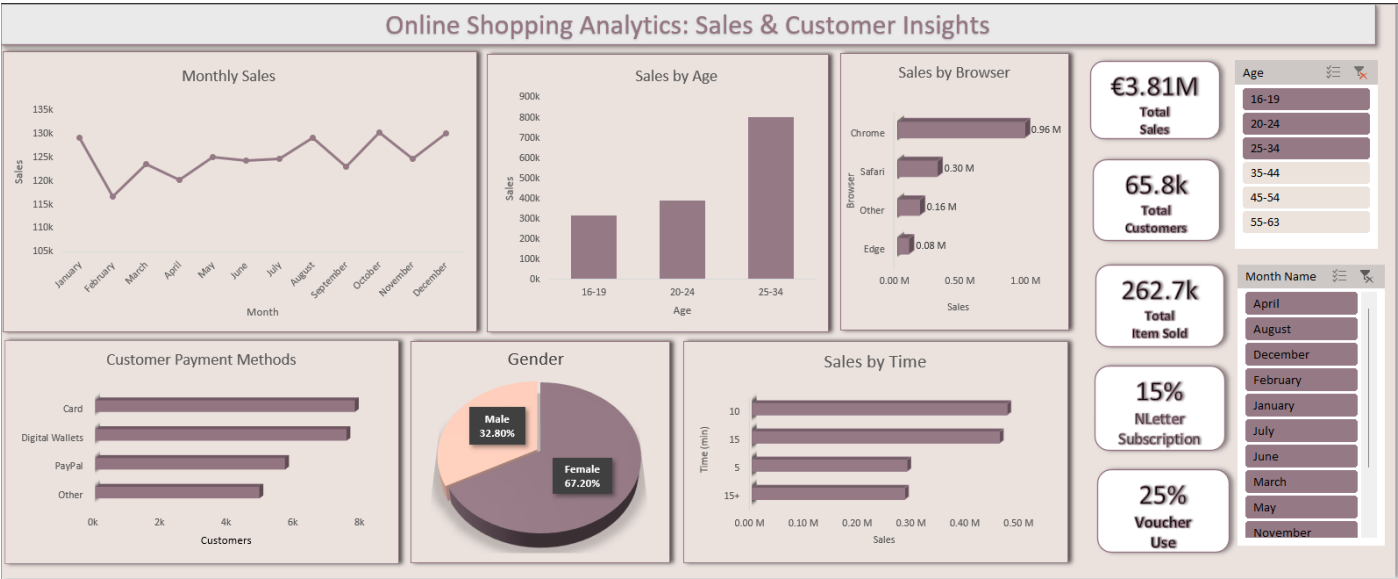


Fig 1: Using Month name slicer

