LAPTOP SALES ANALYSIS

By

SAYAN ROY

Introduction

In an increasingly digital world, laptops have become essential tools for education, work, entertainment, and daily communication. With rapid shifts in consumer preferences and buying behavior—driven by technological advancement, remote working trends, and digital payment adoption—understanding sales performance has become critical for businesses operating in the tech retail sector. This project, titled **"Laptop Sales Analysis,"** provides a comprehensive data-driven examination of laptop purchasing trends to help guide strategic business decisions.

Using a combination of **SQL, Python, and Power BI**, this analysis explores laptop sales across various dimensions, including customer demographics, city-wise demand, purchase timing, payment methods, and product performance. By identifying patterns and anomalies, the project offers actionable insights to improve marketing strategies, optimize inventory, and enhance customer engagement.

The data reveals that metropolitan cities such as **Hyderabad, Bengaluru, Delhi, and Kolkata** dominate laptop purchases, highlighting higher digital adoption and tech-driven lifestyles in urban centers. Notably, **younger buyers (age 20)** and **female customers** are emerging as significant customer segments, suggesting new opportunities for targeted marketing campaigns. A considerable number of customers are also purchasing **multiple laptops**, indicating growing digital needs in both households and businesses.

Sales trends show seasonal peaks in **August** (academic year) and **December** (festive and year-end), while **UPI** stands out as the preferred payment method, reflecting a shift toward digital and cashless transactions. However, challenges such as **negative customer reviews** and **low sales on Tuesdays** indicate areas for improvement in customer service and promotional timing.

By leveraging these insights, businesses can align their offerings with market demand, improve customer satisfaction, and explore new growth opportunities. This analysis ultimately serves as a roadmap to drive smarter sales strategies and strengthen market presence in the competitive laptop retail landscape.

Business Statement

As the demand for laptops continues to rise across various consumer segments and regions, businesses face the challenge of understanding where, when, and why customers make purchasing decisions. Inconsistent sales performance across cities, age groups, and time periods—combined with increasing competition and shifting customer expectations—makes it critical to identify actionable insights from sales data.

This project aims to answer the core business question:

"How can the company use sales data to identify high-performing customer segments, optimize product offerings, and improve sales strategies across different markets and timeframes?"

By analyzing customer demographics, regional sales patterns, seasonal trends, payment behaviors, and product preferences, the company can:

- **Improve demand forecasting and inventory management**
- **Target high-value customer segments with tailored promotions**
- **Enhance marketing strategies based on peak buying periods**
- **Address gaps in customer satisfaction and brand perception**
- **Explore new market opportunities in underperforming regions**

Dataset

Datasource- Skillfied Mentor

Dataset Description-

The Sales Data.csv dataset contains 5000 entries and 15 columns, with no missing values. The dataset provides detailed information about sales transactions. The columns include a mix of numerical data (integers) for quantities, prices, dates, and ratings, and categorical data (objects) for identifiers, names, locations, and methods. This dataset appears suitable for analyzing sales trends, customer behavior, and product performance.

Analysis

SQL

1.Cities where laptops are sold.

City
Hyderabad
Ghaziabad
Bhopal
Rajkot
Visakhapatnam
Faridabad
Ludhiana
Kolkata
Patna
Indore
Agra
Srinagar
Nashik
Chennai
Kalyan
Kanpur
Jaipur
Vasai-Virar
Meerut
Vadodara
Nagpur
Surat
Ahmedabad
Delhi
Pune

- **Market expansion & revenue growth**-Wider geographic reach means access to more customers, leading to higher sales volumes and diversified revenue streams. The company can reach upto Tier 1, 2, and 3 cities captures different customer segments.
- **Stronger brand presence**-Operating in multiple cities enhances brand visibility and recognition also strengthen the position of the company as a trusted and national-level player.

2.Youngest customer to buy a Laptop.

transaction_id	day	month	year	week_name	brand	laptop_model	units_sold	price_per_unit	customer_name	gender	customer_age	City	payment_method	customer_rating
TXN03742	19	December	2024	Thursday	Apple	MacBook Air	4	76874	Mannat Sethi	F	18	Hyderabad	UPI	3

- **Shifting demographics & early brand engagement**-Indicates that younger customers are tech-savvy and willing to invest in premium products which

creates an opportunity for early brand loyalty—if a customer starts with Apple young, they're more likely to remain loyal over time.

- **Influence of youth purchasing power-**Shows that Gen Z or even younger consumers have access to disposable income or influence family purchase decisions that also suggests growing acceptance of premium/luxury tech among younger demographics.

3.People are buying more than one laptop.

Neelofar Sunder	2
Nitara Sundaram	2
Neelofar Bala	2
Kanav Kala	2
Sumer Sami	2
Akarsh Karpe	2
Romil Tella	2
Trisha Wali	2
Prisha Konda	2
Miraan Chahal	2
Ayesha Sangha	2
Parinaaz Kulkarni	2
Aradhya Chowd…	2
Trisha Bala	2

- **Multiple -user households & digital adoption-**Households may need one device per family member for work, school, or entertainment. This reflects growing digital dependence, especially post-pandemic.
- **Corporate or institutional buying-** Could indicate purchases for employees, students, or team members that indicates B2B or B2E (Business to Employee) sales opportunities and long-term contracts.

Python

1.Find number of male & female customers.
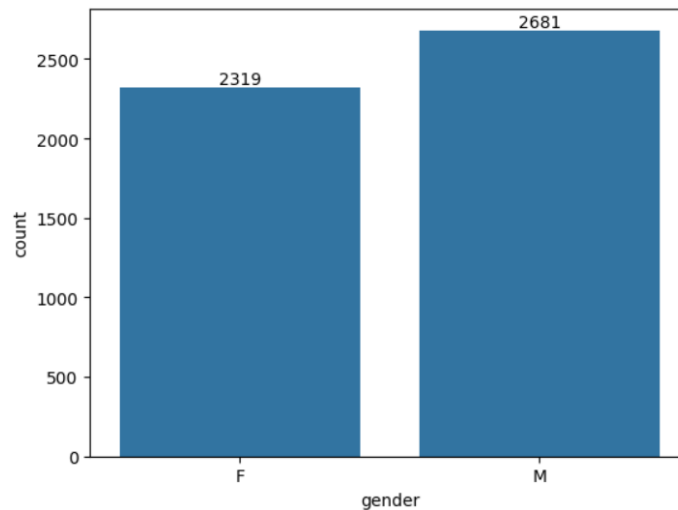
- **Target audience insight-**Women may be a stronger or growing demographic for laptop purchases, so marketing strategies could focus more on their preferences.

- **Customer behaviour-**Suggests a shift or trend in tech consumption habits, possibly reflecting professional, educational, or lifestyle changes.

2.No. of customer by age.
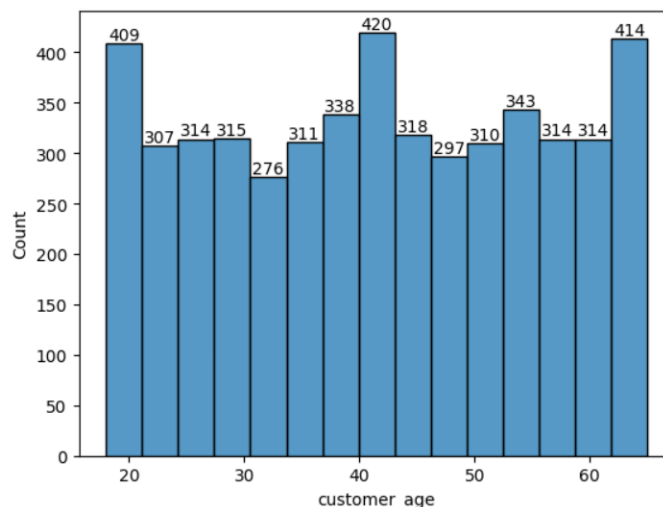
### Age of 20,42,65 are mostly buying laptops.

- **Age 20-**Mostly college students or young professionals who are buying laptops for education, gaming or entry-level jobs. They prefer affordable, portable or stylish models.

- **Age 42-**Generally mid-career professionals. They are buying laptops for work, productivity or business use. They tend to prefer performance-focused, reliable laptops, possibly corporate purchases or replacements for outdated devices.
- **Age 65-**Generally older adults/retirees who are buying for personal use, communication, or entertainment. They may prioritize ease of use, screen clarity, or support.

Age of 32 & 47 years are less buyers of laptop.

- **Age 32-**Many are already settled in careers, may already own a laptop. They are less likely to upgrade unless there's a strong need. Their focus might be on family expenses, housing, or mobility over tech upgrades.
- **Age 47-**Often in mid-senior roles where work devices are company-provided. Also they are less involved in tech purchases unless for family. They may prefer tablets or shared devices at home.

3.City wise no. of customers.
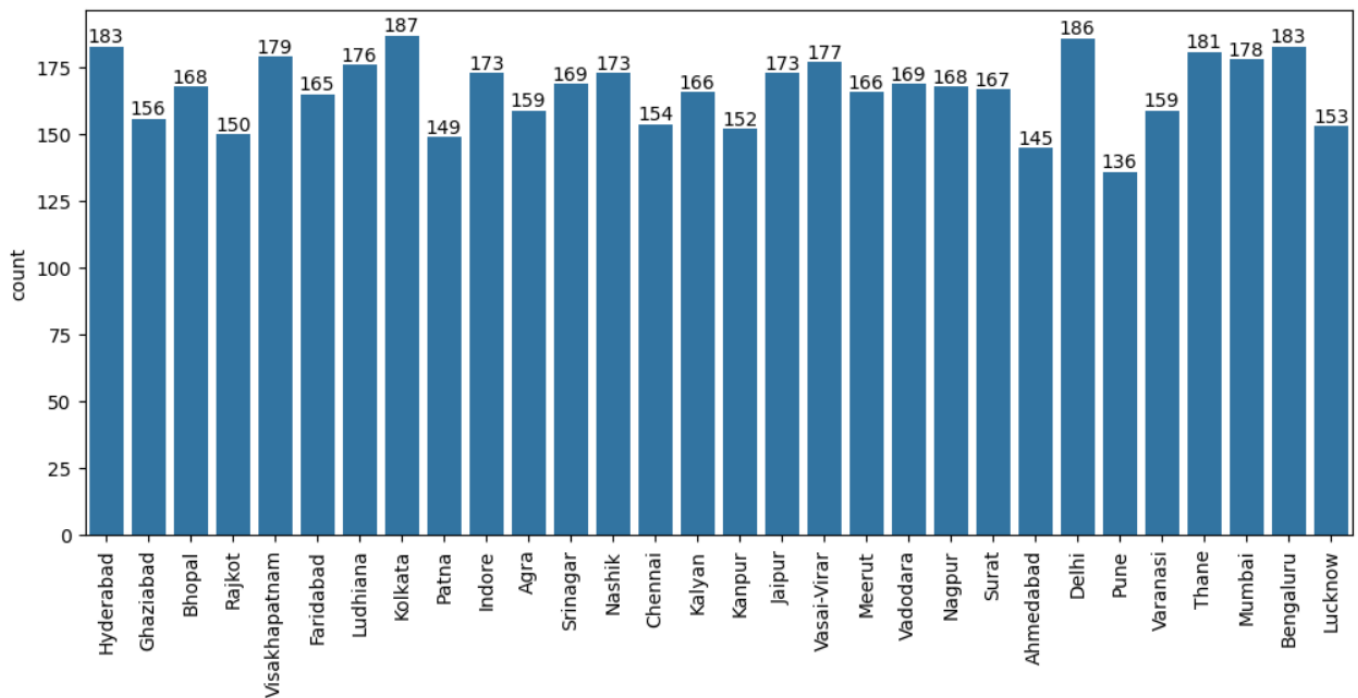
Hyderabad, Kolkata, Delhi, Bengaluru has more customers.

- These are major metropolitan cities with large populations and high digital adoption.
- People in these cities are more likely to use laptops for work, education, or entertainment.
- Bengaluru and Hyderabad: Known as IT and startup hubs → high demand for laptops among tech professionals.

- Delhi and Kolkata: Have large numbers of students, office workers, and business users.
- You might need to ensure higher stock levels and faster delivery options in these cities.

Pune, Ahmedabad, Patna, Rajkot, Lucknow has lower sales rates.

- Residents may prioritize mobile devices over laptops, especially in smaller cities.

- Tech adoption or digital education might be slower or less emphasized.
- Could represent untapped potential if barriers (pricing, accessibility, language, etc.) are addressed.

4.Month wise sales.
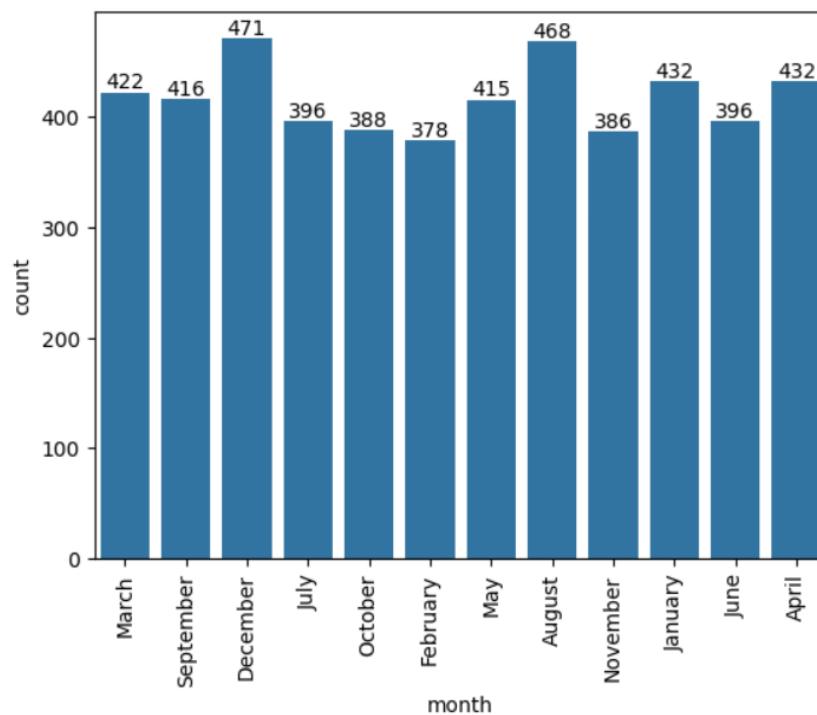
## Maximization of sales is seen in August & December.

- **August**-Universities and colleges reopen → high demand from students.
- **December**-Year-end holidays and festive sales (like Christmas, New Year, or local festivals).So,people buy laptops as gifts or personal upgrades.

Sales reduce in February & November.

- **February**-Consumers often cut back on spending after heavy expenses in December–January & also no major festivals, school/college admissions or sale events.
- **November**-In some years, major Indian festivals (like Diwali) fall in October, so buying shifts earlier.After Diwali/Dussehra sales, demand drops off.

Microsoft Power Bi

1.Types of payment method.
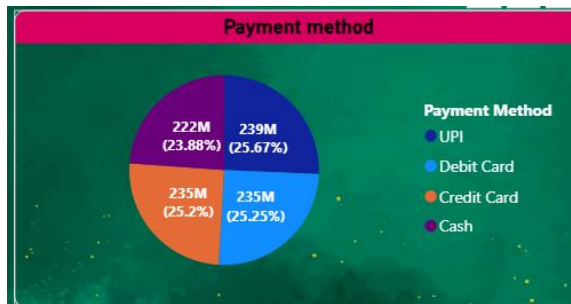
- **High digital adoption among customers-**Shows that your customer base is digitally savvy and prefers cashless, fast transactions, indicates a shift toward modern, convenient payment behavior.

- **Faster payments settlements-** UPI provides instant settlements, improving cash flow and liquidity for the business. Also reduces waiting time compared to traditional banking or card payments.

2.Review Analysis
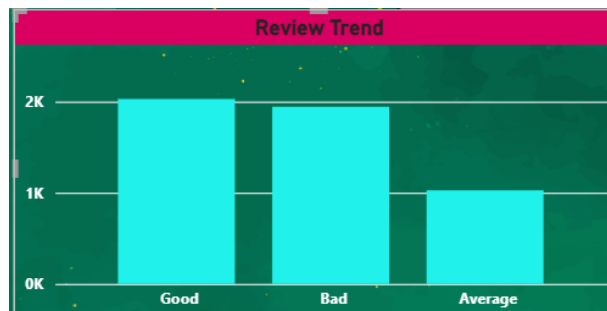
A lot of people are giving bad review after purchasing laptop. Below are the solutions-

- Always acknowledge the customer's concern publicly. Apologize and offer to resolve the issue privately (email or phone)
- Ensure your product pages have accurate specs, images, warranty info and delivery timelines. Avoid overpromising or vague claims.
- Ensure your staff handles queries with empathy, product knowledge and accountability. Empower them to offer fast replacements or refunds where justified.
- Reach out to satisfied customers and ask them to share their experience. Consider offering a small incentive (e.g., discount on next purchase) for genuine reviews.
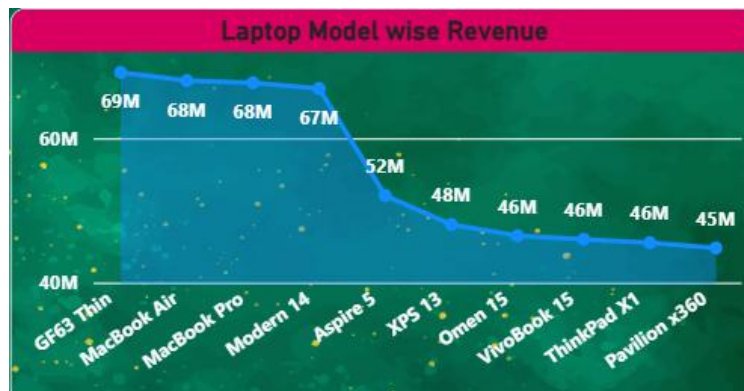
3.Weekday wise revenue-

Monday shows large sells but Tuesday shows less sells.

- Tuesday may be a slow day, revealing a gap or weak engagement. This is a chance to target customers with mid-week promotions or flash sales.
- Boost ads and campaigns on Mondays to capitalize on momentum. Create **"**Tuesday-only" offers to pull traffic on slower days.

4.Revenue from laptop model.

GF63Thin,MacBook Air, Macbook Pro, Modern 14,Aspire 5 are best selling laptops.

- These models are meeting customer needs in terms of performance, price, design, or brand value. This indicates your current inventory and product lineup is aligned with market demand.
- These models should be prioritized for stock replenishment**,** bulk ordering or early restocking**,** special bundling or promotional offers
- Popular products = chances to increase revenue via: Accessories (bags, mice, cooling pads),Extended warranties, Software (MS Office, antivirus, cloud services).

Key findings & insights

1.Geographic & City-Wise Trends

- **High Sales Cities**: Hyderabad, Bengaluru, Delhi, and Kolkata are leading in laptop sales.
  - o **Insight**: These Tier-1 cities show high digital adoption, indicating strong demand from tech professionals, students, and business users.
- **Low Sales Cities**: Pune, Rajkot, Patna, Lucknow, and Ahmedabad.
  - o **Insight**: These Tier-2/3 cities represent untapped potential—sales may improve with better pricing, regional marketing, and offline outreach.

2.Customer Demographics

- **Age Groups**:
  - o **High Purchasing Ages**: 20 (college students), 42 (mid-career professionals), and 65 (retirees).
  - o **Low Purchasing Ages**: 32 and 47—may already own laptops or rely on company-provided devices.
  - o **Insight**: Segment marketing by age-based needs—education, business, or personal use.
- **Gender**:
  - o More **female customers** than male.
  - o **Insight**: A rising demographic for laptop purchases; opportunity for women-centric design, marketing, and usability features.

3.Buying Patterns

- **Multiple Purchases**:
  - o Some customers are buying more than one laptop.
  - o **Insight**: Indicates B2B, B2E, or family/household demand—opportunities for bundle deals and corporate contracts.
- **Review Trends**:
  - o Significant number of **negative reviews**.
  - o **Insight**: Address with better post-sales support, accurate product info, and customer service training. Encourage positive reviews via incentives.

4.Time-Based Sales Trends

- **Best Months for Sales**: August (back-to-school) and December (holiday/festival season).
- **Low Sales Months**: February and November.
  - o **Insight**: Plan major promotions, inventory, and marketing pushes around peak seasons.
- **Weekday Sales**:

- High on Mondays, lowest on Tuesdays.
  - Insight: Capitalize on Monday momentum and launch mid-week deals to boost Tuesday engagement.

5.Payment Preferences

- **UPI is the most used payment method**.
  - Insight: Customers prefer fast, digital, and cashless transactions. Highlights opportunity for partnerships with UPI apps (e.g., cashback offers).

6.Product Performance

- **Top-Selling Laptop Models**:
  - GF63 Thin, MacBook Air, MacBook Pro, Modern 14, Aspire 5.
  - Insight: These models meet customer expectations on performance, price, and design—should be prioritized in inventory, promotions, and upselling (e.g., accessories, warranties).

Recommendation

1. Geographic Strategy

- **Double down on Tier-1 cities** (Hyderabad, Bengaluru, Delhi, Kolkata) by:
    - o Ensuring higher inventory levels.
    - o Offering same-day/next-day delivery options.
    - o Running localized promotions.
- **Explore growth in Tier-2/3 cities** (Pune, Patna, Rajkot, Lucknow) by:
    - o Launching price-sensitive models and EMI schemes.
    - o Using regional ads and influencer marketing.
    - o Setting up offline demo or partner retail points.

2. Targeted Marketing

- **Youth-Centric Campaigns**:
    - o Focus on age 20 buyers with "Back-to-College" deals, affordable bundles, and student loyalty programs.
- **Female-Focused Promotions**:
    - o Highlight portability, design, and ease-of-use.
    - o Use gender-inclusive messaging and testimonials in advertising.
- **Senior Buyers (Age 65+)**:
    - o Emphasize user-friendly features, support services, and entertainment use cases.

3. Product & Inventory Optimization

- Prioritize **top-performing models** (GF63 Thin, MacBook Air/Pro, Aspire 5, Modern 14) for:
    - o Early restocking, bundling (with bags, MS Office, antivirus), and upselling accessories.
- Offer **multi-device bundles** or "family packs" to tap into households purchasing more than one laptop.

4. Time-Based Campaign Planning

- **Maximize August & December** with:
    - o Back-to-School and Year-End sale events.
    - o Flash sales, limited-time bundles, and online ads.
- **Boost weak periods like February & November** with:
    - o Clearance sales, exchange offers, and student/first-time buyer incentives.
- **Use Tuesday as a recovery day**:
    - o Launch "Tech Tuesday" deals to increase weekday conversions.

5. Payment Strategy

- Promote **UPI as the preferred payment method**:
  - Highlight benefits at checkout.
  - Partner with UPI apps (PhonePe, GPay, Paytm) for cashback/discount offers.

6. Customer Experience & Review Management

- **Respond quickly to negative reviews** with empathy and resolution.
- Ensure product pages are transparent (accurate specs, warranty, delivery).
- Incentivize **positive reviews** post-purchase with small discounts or accessories.
- Train support teams in product knowledge, soft skills, and fast issue resolution.

Conclusion

The **Laptop Sales Analysis** provides a comprehensive and data-driven understanding of customer behavior, regional demand, and market trends in the evolving tech retail landscape. Through the use of SQL, Python, and Power BI, the study uncovered valuable insights into who is buying laptops, where sales are strongest, and when purchasing peaks occur—offering a clear roadmap for strategic action.

Key findings highlight the dominance of Tier-1 cities like **Hyderabad, Bengaluru, Delhi, and Kolkata**, alongside the rising influence of **young buyers and female customers** in the market. High-performing laptop models such as **GF63 Thin, MacBook Air, and Aspire 5** consistently align with customer expectations in terms of price, design, and performance. Seasonal spikes in **August and December** further emphasize the importance of timed marketing and inventory planning. The widespread use of **UPI payments** reflects high digital adoption, while **negative reviews and mid-week sales dips** signal areas where customer experience and promotional timing need improvement.

Together, these insights point to multiple opportunities: expanding in underserved regions, tailoring marketing to younger and female demographics, strengthening product offerings, and improving post-sale engagement. By addressing gaps and leveraging growth areas, the company can drive smarter sales strategies, improve customer satisfaction, and stay competitive in a fast-paced digital economy.

In conclusion, this project not only highlights current performance but also provides a strategic foundation for growth. Businesses that act on these insights can enhance their brand presence, optimize operations, and better meet the expectations of a diverse and increasingly tech-savvy customer base.