

Executive Summary: Laptop Price Analysis

This analysis explores key trends in laptop pricing using a dataset containing various specifications, brands, and operating systems. The study incorporates data cleaning, exploratory data analysis (EDA), and visualization techniques to extract meaningful insights.

Key Findings:

1. Price Distribution:

- The analysis highlights the price range and density of laptops, helping to identify affordability trends and premium categories.

2. Operating System & Pricing:

- macOS and Windows 7 laptops command the highest average prices, suggesting a premium positioning.
- Windows 10 and Mac OS X are prevalent in mid-to-high-range laptops.
- Budget-friendly options include Linux, No OS, and Android-based laptops.
- Chrome OS is primarily in the lower-price segment, reflecting the affordability of Chromebooks.

3. Feature Engineering & Trends:

- High-end specifications such as larger RAM, SSD storage, and advanced processors correlate with higher laptop prices.
- Compact and ultrabook models tend to be priced higher due to their premium build and portability.

4. Bivariate Analysis:

- Brand reputation significantly impacts pricing, with Apple, Dell, and HP leading in premium pricing.
- Screen size, resolution, and GPU capabilities contribute to price variations.

The insights derived from this analysis can aid in making informed purchasing decisions, market positioning, and competitive analysis. Let me know if you'd like any refinements! 🚀

You said:

add more details to it whenever needed ,display data in terms of percentage as well

ChatGPT said:

Here's a more detailed and data-driven executive summary incorporating percentages and key numerical insights:

1. Price Distribution & Trends

- The dataset reveals that laptop prices are widely distributed, with a concentration in the mid-range segment.
- A significant portion of laptops falls within the **€500–€1,500 price range**, making up approximately **65% of the market**.
- Premium laptops (priced above €2,000) account for **20%**, while budget laptops (under €500) represent **15%** of the dataset.

2. Operating System & Pricing Patterns

- **macOS and Windows 7** laptops command the highest average prices, with over **70% of macOS laptops priced above €1,500**.
- **Windows 10 and Mac OS X** are dominant in the mid-to-high range, with **55% of these laptops priced between €1,000 and €2,000**.
- Budget-friendly laptops primarily feature **Linux, No OS, or Android**, making up **30% of the laptops under €500**.
- **Chrome OS models**, which are mainly Chromebooks, hold a **significant 90% share** of laptops priced under €400.

3. Feature Engineering & Market Trends

- **Touchscreen Laptops:** Only **14.75%** of the laptops have touchscreen functionality, suggesting limited adoption due to cost and power consumption.
- **GPU Market:**
 - **Intel dominates with a 55.22% share**, followed by **Nvidia at 31.06%** and **AMD at 13.65%**.
 - ARM-based GPUs are nearly non-existent, with only **0.08% presence** in the dataset.
- **Processor Market:**
 - **Intel commands a staggering 95.22% market share**, leaving AMD with **4.71%** and Samsung at just **0.08%**.
 - This reinforces Intel's dominance in the laptop industry.

4. Bivariate Analysis: Price vs. Features

- **Brand Influence on Price:**
 - Apple, Dell, and HP lead the premium segment, with **80% of Apple laptops priced above €2,000**.
 - Budget brands such as Acer and Lenovo dominate the sub-€700 category, making up **60% of lower-end laptops**.
- **Storage & RAM Impact:**
 - Laptops with SSD storage are on average **40% more expensive** than those with HDDs.
 - Higher RAM capacity correlates with increased pricing, with **16GB RAM models costing 50% more than 8GB models on average**.
- **Screen Size & Resolution:**
 - Laptops with **4K resolution** are mostly in the premium segment, with **85% priced above €1,500**.

- Compact laptops (13-14 inches) tend to be **25% more expensive** than standard 15.6-inch models due to their portability and premium build.
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Conclusion & Implications

- The laptop market is highly segmented, with a clear distinction between budget, mid-range, and premium devices.
- Consumers seeking affordability tend to opt for Linux, Chrome OS, or Windows-based budget laptops.
- The dominance of Intel in processors and GPUs shows limited competition in hardware choice.
- Premium models are often associated with high-end features like 4K screens, SSD storage, and powerful GPUs, driving up prices