

Analyzing Factors Influencing Laptop Sales Prices

- **Objective:** Identify key factors affecting laptop prices to aid Cityville Electronics in pricing strategy.
- **Research Question:** What are the most significant factors affecting laptop sales prices?
- **Focus on 'core i' processors, considering processor tier, brand, number of cores, and RAM.**

Diagnostic

ANALYSIS

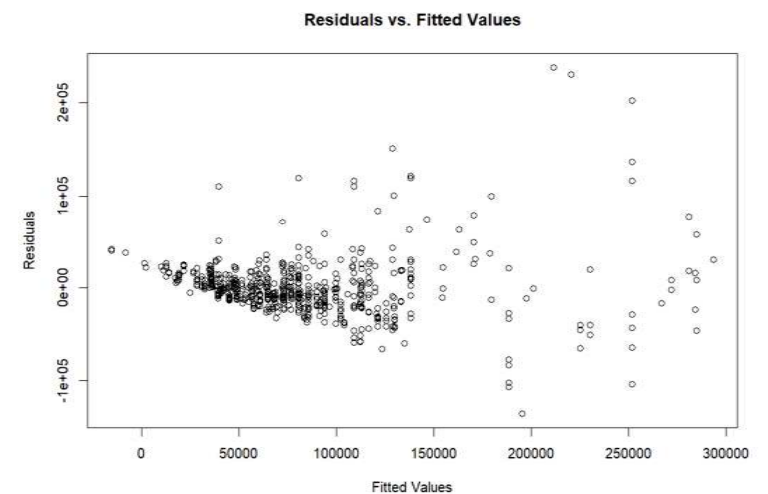
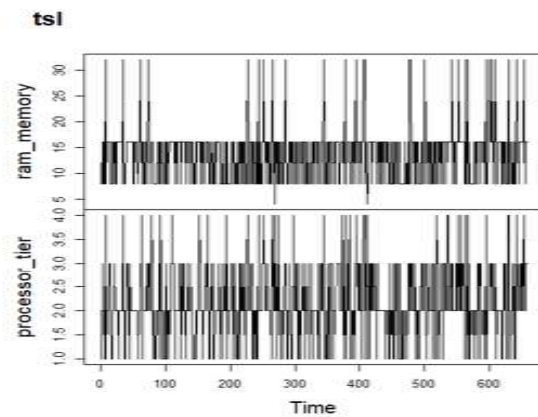
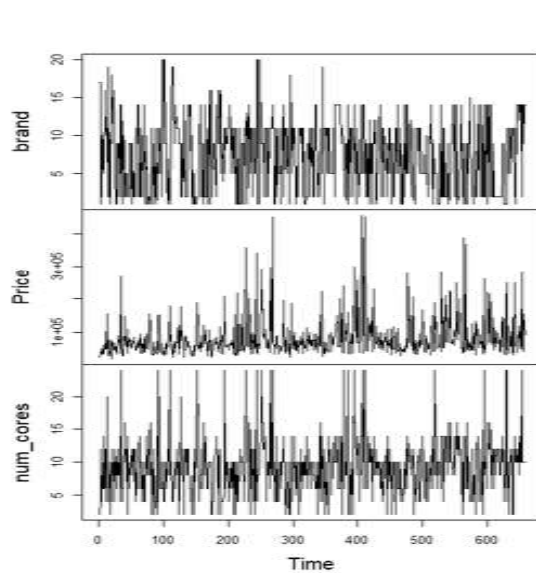
Checking on the 4 Assumptions :

1. Independence
2. Linearity
3. Homoscedasticity
4. Normality



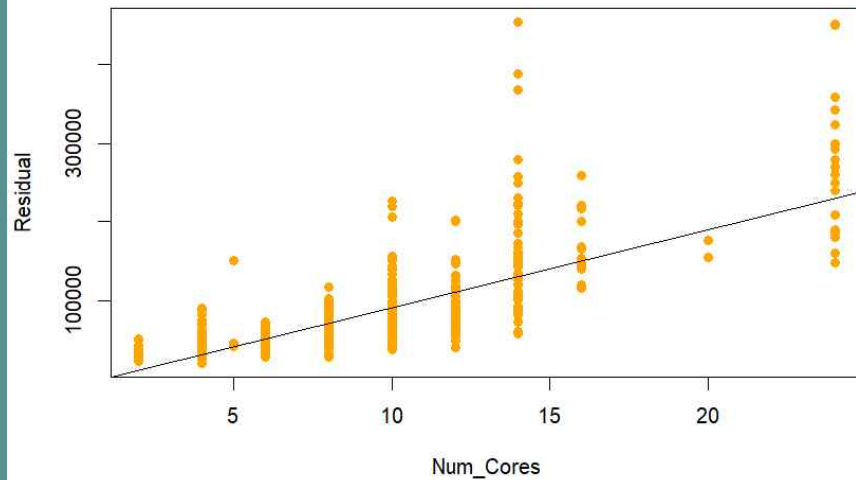
Independence

ANALYSIS

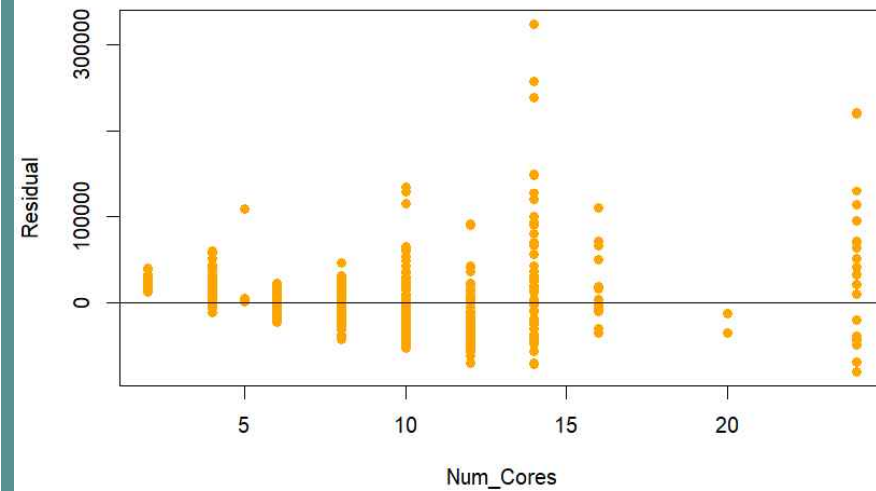


Linearity and Homoscedasticity

Residual vs Num_Cores Plot



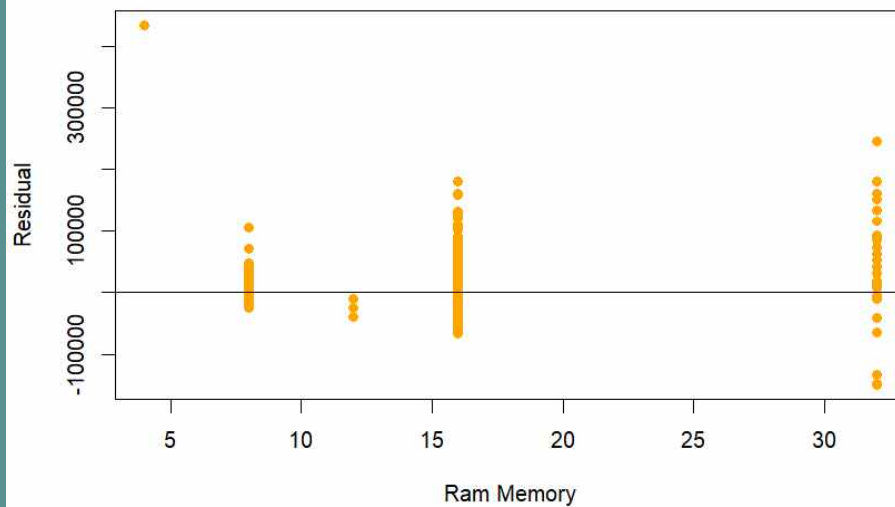
Log Transformation Residual vs Num_Cores Plot



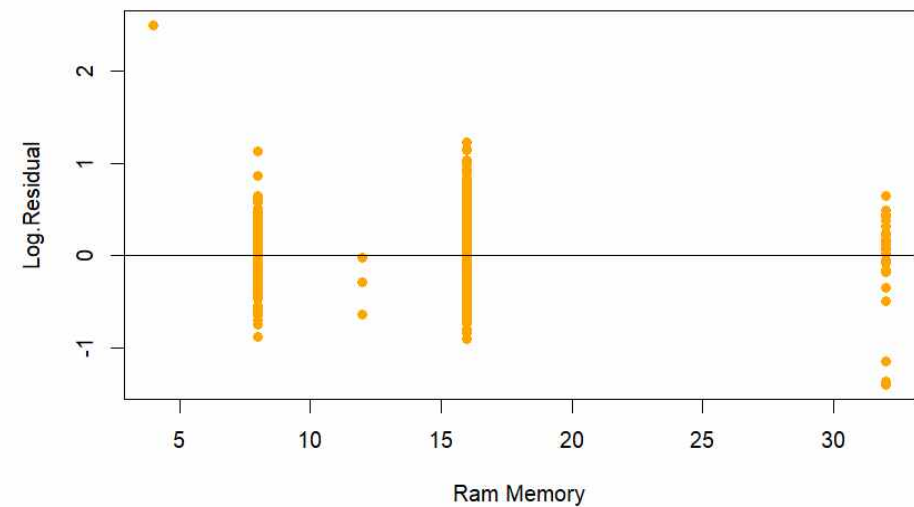
Linearity and Homoscedasticity

ANALYSIS

Residual vs Ram memory plot

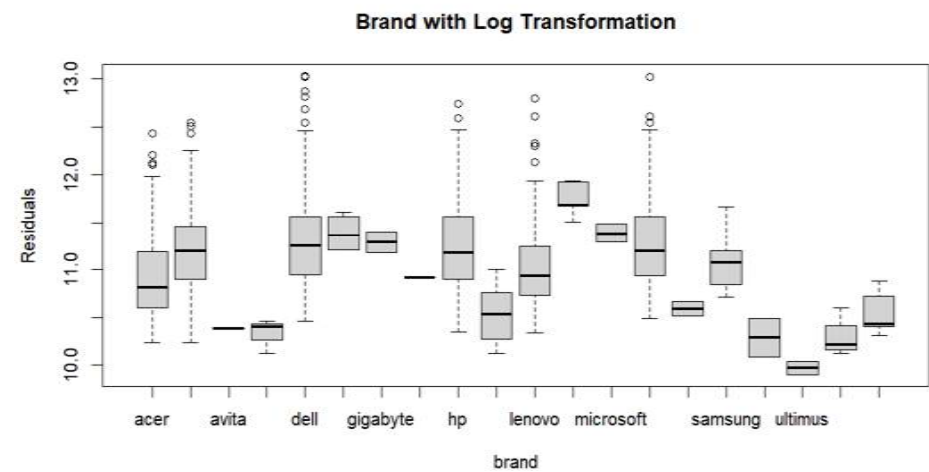
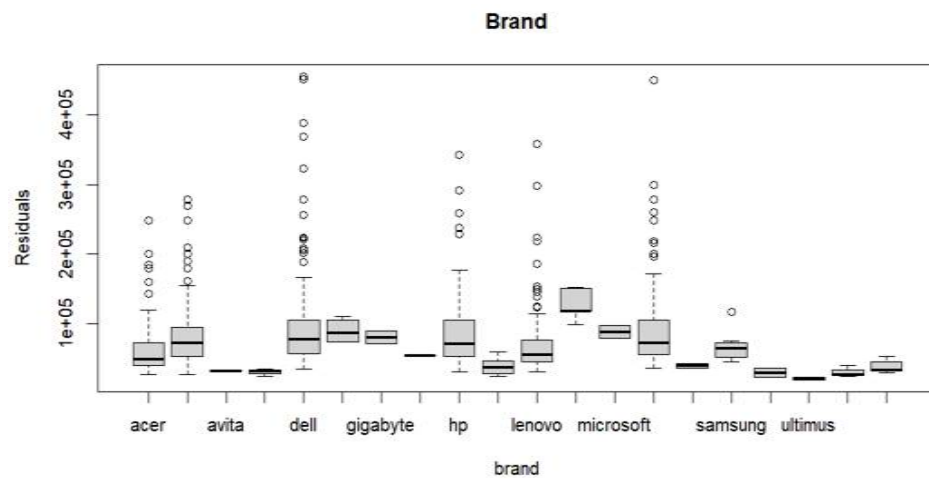


Log Transformation Residual vs Ram memory plot

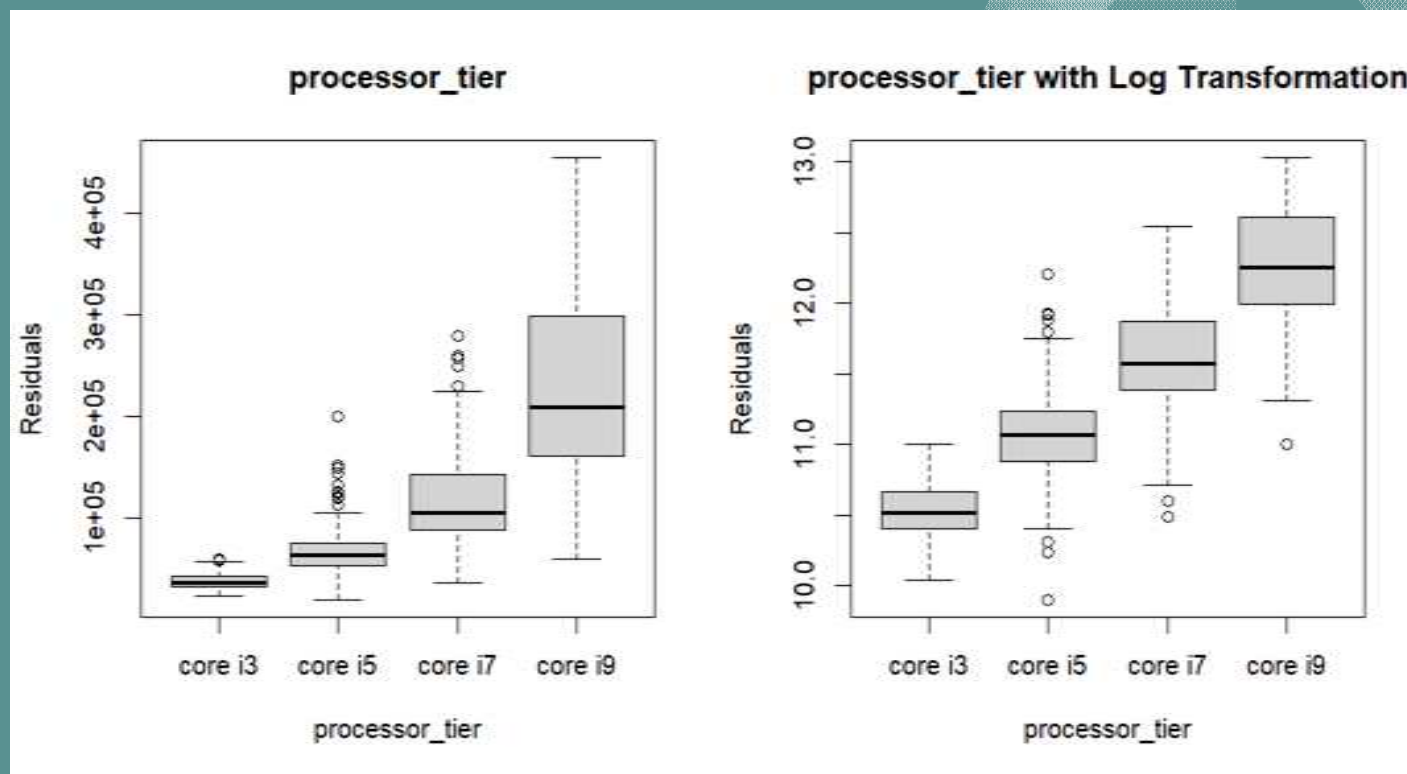


Homoscedasticity

ANALYSIS

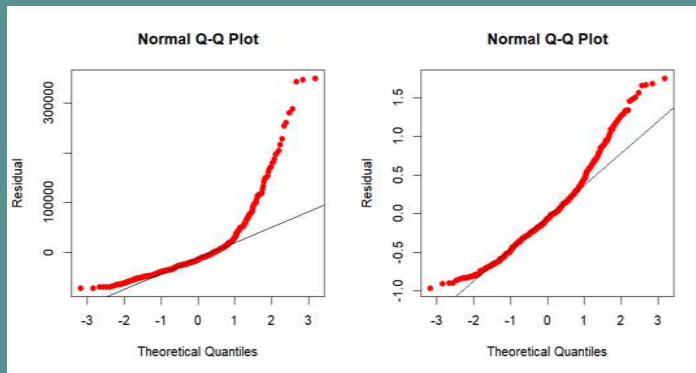


Homoscedasticity

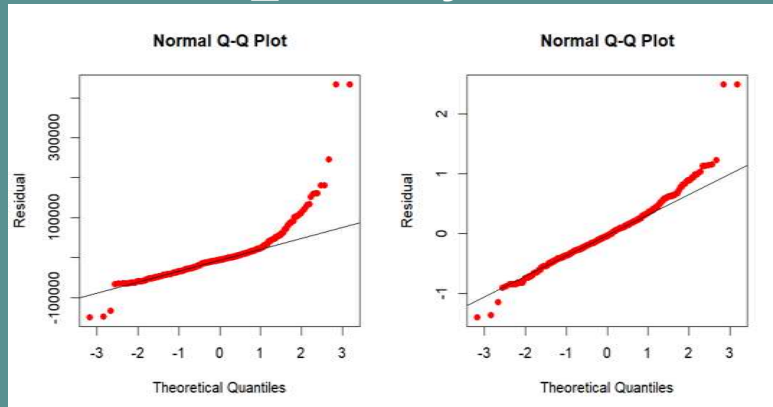


Normality

Brand

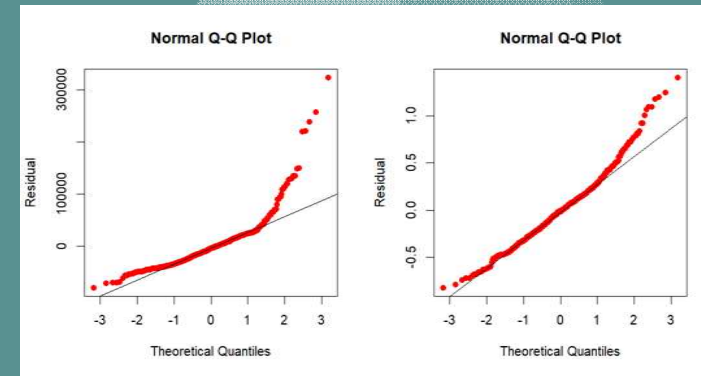


Ram_memory

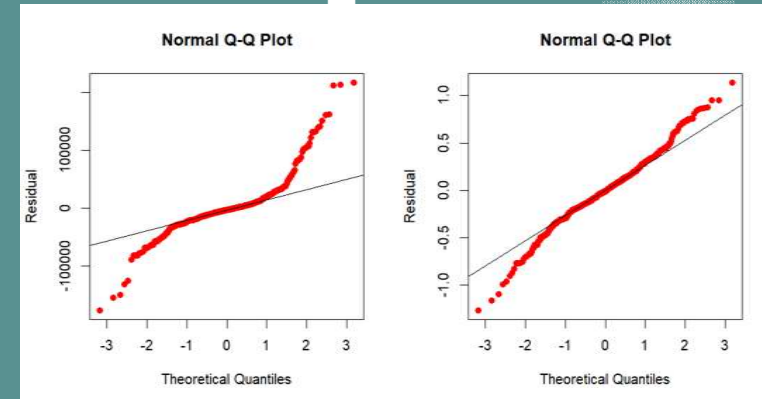


Num_Cores

ANALYSIS



Processor_tier



Model Validation

- Backward elimination
- Initial model of log price vs brands, number of cores, ram memory and the core i processors.
- We have used 0.05 for the p-value
- If the p-value is greater than 0.05 for the variable, we keep it in the model otherwise its removed from the model

Final Model Summary

- In our final model , there are no variables removed from initial model
- Processor tier core i7 and i9 have more significance than i5 core.
- Asus, Dell, HP, Lenovo, LG, Microsoft, MSI, Tecno, Ultimius, and Wings have significant positive coefficients, indicating higher prices compared to the other brands.
- Both the number of cores and RAM memory have positive coefficients, indicating that higher values of these variables are associated with higher laptop prices

Coefficients:

	Pr(> t)
(Intercept)	< 2e-16 ***
brandasus	3.86e-05 ***
brandavita	0.781887
brandchuwi	0.137673
branddell	6.96e-12 ***
brandfujitsu	0.536808
brandgigabyte	0.039688 *
brandhonor	0.874948
brandhp	2.80e-10 ***
brandinfinix	2.67e-08 ***
brandlenovo	1.34e-05 ***
brandlg	0.000654 ***
brandmicrosoft	0.009234 **
brandmsi	5.49e-05 ***
brandrealme	0.381616
brandsamsung	0.749084
brandtecno	0.018643 *
brandultimus	0.005173 **
brandwings	0.009115 **
brandzebronics	0.003782 **
num_cores	< 2e-16 ***
ram_memory	< 2e-16 ***
processor_tiercore i5	2.75e-15 ***
processor_tiercore i7	< 2e-16 ***
processor_tiercore i9	< 2e-16 ***

Model Fit

- Multiple R-squared is 0.8216
- The F-statistic is highly significant ($p < 2.2e-16$)
- The final multiple linear regression model suggests that processor tier (especially core i7 and core i9), brand, number of cores, and RAM memory significantly influence laptop prices.

Residual standard error: 0.2345 on 633 degrees of freedom
Multiple R-squared: 0.8216, Adjusted R-squared: 0.8148
F-statistic: 121.4 on 24 and 633 DF, p-value: $< 2.2e-16$

Key Findings and Statistical Insights

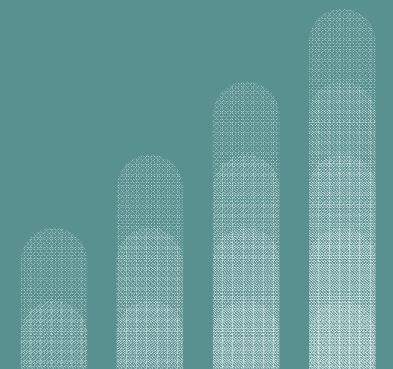
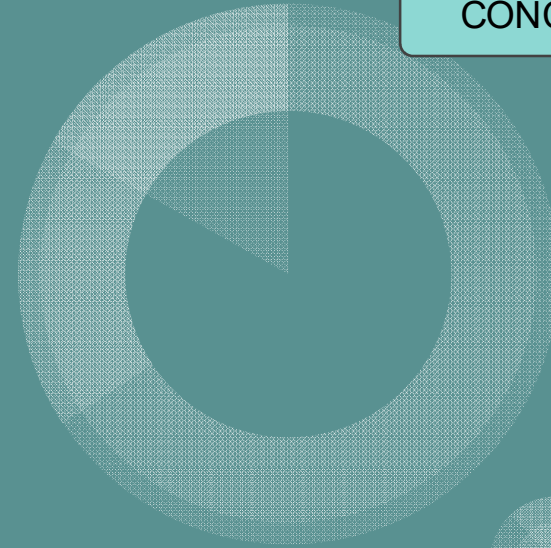
- Processor tiers (i7, i9) and certain brands (Asus, Dell, etc.) significantly impact laptop prices.
- Core count and RAM size positively correlate with price, indicating performance's value in the market.
- Statistical Significance: Highlighted by low p-values, confirming the impact of these factors on pricing.

Results and Implications

- **Model demonstrates strong predictive power with an R-squared value of 0.8216, explaining a large portion of price variability.**
- **Conclusions: Higher specifications and strong brand recognition are key to higher laptop prices, guiding strategic decisions for market positioning and pricing.**

Conclusion

CONCLUSION



Key factors affecting laptop sales price

- Higher-tier processors
- Brand reputation
- Core count, RAM size

Discussion

What implications do these findings hold for businesses like Cityville Electronics?

The significance of the findings

- Underscores the importance of investing in cutting-edge technologies to meet consumer demands.
- Leveraging brand reputation becomes imperative in justifying higher price points.

Weaknesses in this study

- Limitations: Our reliance on a single dataset may restrict the generalizability of our findings. Embracing diverse datasets and exploring multifaceted variables.
- Methodological Limitations: Methodological optimizations and exploring different modeling techniques will further enhance the predictive power and interpretability of models, ensuring the reliability of findings.

Thank you for watching!

