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| **Data Set: Advertising** |
| **Question / Problem:**   1. **Calculate the correlation coefficient (r value of the two variables)** 2. **Create a scatter plot with trendline, regression equation and r2 value** 3. **What percentage of the dependent is explained by the Radio advertising budget** 4. **If the Radio advertising budget is increased by €3527 what would the estimated sales increase by?** 5. **Comment on the general use of the model for estimating the sales increase based on the Radio advertising budget** |
| **Variables:**  **• ID -** product id (nominal - identifier)  **• Radio –** advertising expenditure allocated to radio in €1000s (numerical) **– Independent Variable**  • **Sales-** of a product in 200 different markets in 1000s of units (numerical) **– Dependent Variable** |
| **Techniques used:**  The relevant data, being the Radio and Sales column was extracted to a new sheet.  The correlation coefficient was calculated to measure the strength and direction of the relationship between Radio ads and Sales  A scatter plot with trendline was created using the data to visualize the relationship between Radio ads and Sales. It helps to check if the data follows a linear pattern  R^2 Value measures how much of the variation in sales is explained by Radio ads. |
| **Analysis and Visualisation:**   * **Q1**   **A screenshot of a calculator  Description automatically generated**    **A screen shot of a computer  Description automatically generated**  There is no moderate positive correlation between Radio ads and Sales. About 33% of the variation in Sales can be explained by Radio ads budget.   * **Q2**   **A graph with blue dots  Description automatically generated**  The Scatter plot allows for a person to visually examine the relationship between Radio ads expenditure and Sales. The trendline determines the linear relationship while the R^2 value indicates how well the data fits the trendline.   * **Q3**   **A white grid with black text  Description automatically generated**  **A number on a white background  Description automatically generated**  The variation in Sakes can be explained by the Radio advertising budget of 33.2%. Radio ads have a moderate relationship with sales but 66.8% of the variation in Sales is due to other factors. R² = 33.2% suggests the model is moderately effective at explaining the relationship between Radio ads and Sales, but other factors likely play a larger role in determining Sales.   * **Q4**   **A close up of a graph  Description automatically generated**  **A screenshot of a computer  Description automatically generated**  **A black numbers on a white background  Description automatically generated**  For every €3527 increase in the radio advertising budget, sales are expected to increase by approximately 715 units. |
| **Considerations:**  **Q5:** The data in the Scatter Plot is grouped together making it hard to read. Using a Bar chart or Histogram would make it easier to read. |