Insights from the Dashboard

1. **Monthly Defect Quantity vs. Rejected Percentage**
    - The highest rejection rate was observed in **May 2013** at **40.3%**, while the lowest was in **August 2013** at **15.9%**. There was a steady increase in the rejection percentage from **December 2013 to May 2014**.
    - In terms of defect quantity, the peak occurred in **October 2014** with **5,087,009 defects**, while the lowest was in **August 2013**, with **721,815 defects**.
2. **Defect Quantity & Downtime Correlation**
    - The highest defect quantity recorded was **3,809,603**, which correlated with a downtime of **10,258 minutes**.
    - However, the highest downtime value (**25,960 minutes**) was associated with a lower defect quantity of **477,875**. This suggests that larger downtime may not always correspond to higher defect quantities.
3. **Vendor Defect Quantity Ranking**
    - In **2013**, the vendors with the highest defect quantities were **Plustax**, **Solholdings**, **Dentocity**, **Recode**, and **Instrip**.
    - In **2014**, the highest-ranking vendors were **Quotelane**, **Solholdings**, **Dentocity**, **Bemtechnology**, and **Recode**.
    - Over both years, the most consistent vendors contributing to high defect quantities were **Solholdings**, **Plustax**, **Quotelane**, **Dentocity**, and **Recode**.
4. **Vendor Downtime Ranking**
    - In **2013**, the vendors with the highest downtime were **Reddoit**, **Sanlab**, **Plustax**, **xx-way**, and **Recode**.
    - In **2014**, the top vendors contributing to downtime were **Reddoit**, **Plustax**, **Sanlab**, **xx-way**, and **Quotelane**.
    - Across both years, **Reddoit**, **Sanlab**, **Plustax**, **xx-way**, and **Quotelane** had the most significant downtime values.
5. **Defect Quantity by Sub-Category**
    - The sub-categories with the highest defect quantities are:
        1. **Mechanical**
        2. **Packaging**
        3. **Logistics**
        4. **Material & Components**
        5. **Electrical**
6. **Downtime Analysis**
    - The material types with the highest **average downtime per defect** are:
        1. **Motors** with **Impact** defect type (0.2313 minutes per defect).
        2. **Glass** with **Impact** defect type (0.1916 minutes per defect).
        3. **Corrugate** with multiple defect types, including Impact (0.0422), No Impact (0.0059), and Rejected (0.0078).
        4. **Hardware** with **Impact** defect type (0.0308 minutes per defect).
        5. **Mechanicals** with **Impact** defect type (0.1916 minutes per defect).

7. **Defect & Downtime Trend**
    - The highest defect quantity and downtime occurred in **October 2014**.
    - The lowest defect quantity was in **August 2013** and **February 2014**.
    - There was a noticeable growth in both defect quantity and downtime from **May 2014** to **October 2014**.
8. **Bar Chart – Total Defects by Vendor**
    - **Solholdings** had a high number of defects across various types, particularly **Impact, No Impact, and Rejected**.
    - **Plustax** had a significant number of **Impact** defects.
    - **Quotelane** and **Dentocity** also showed high defect quantities across **Impact, No Impact, and Rejected** types.
9. **Highlight Table – Total Defects by Vendor for Each Plant**
    - This chart allows for a quick comparison of defect counts across different plants for each vendor. The color gradient helps identify which vendor-plant combinations have the highest defect rates, enabling management to prioritize resources effectively.
10. **Pareto Chart (80/20 Rule)**

- A small number of vendors (around **20%**) are responsible for the majority (**80%**) of defects. The top vendors contributing to defects are:
    1. **Solholdings** (7.31%)
    2. **Plustax** (14.32%)
    3. **Quotelane** (19.99%)
    4. **Dentocity** (25.48%)
    5. **Recode** (30.18%)

Conclusion from Insights

The analysis reveals that a few vendors, primarily **Solholdings**, **Plustax**, **Quotelane**, **Dentocity**, and **Recode**, contribute the most to both defect quantities and downtime. There is a direct correlation between vendor performance and downtime, especially with materials like **motors** and **glass**, which consistently exhibit higher downtime per defect.

Additionally, the **Pareto Principle** applies strongly, as 20% of vendors account for 80% of defects. The seasonal variation and increasing trends in defect quantities and downtimes, especially from **May to October 2014**, suggest potential operational issues during this period.

Recommendations

1. **Focus on Top Defective Vendors:**
    - Prioritize **Solholdings**, **Plustax**, **Quotelane**, **Dentocity**, and **Recode** for quality improvement initiatives, as they consistently show high defect rates.
    - Conduct in-depth audits on these vendors' processes and implement stricter quality control measures.
2. **Address Specific Sub-Categories:**
    - Concentrate efforts on reducing defects in high-contributing sub-categories like **Mechanical**, **Packaging**, **Logistics**, **Material & Components**, and **Electrical**.
    - Evaluate material handling processes and training for sub-categories with higher defect rates.
3. **Downtime Optimization:**
    - Investigate downtime related to **motors**, **glass**, and **corrugate** materials, as these have the highest average downtime per defect. Streamline production processes and invest in preventive maintenance to minimize downtime.
4. **Seasonal Analysis:**
    - Since there is a noticeable increase in defects and downtime from **May to October 2014**, explore the root causes of this seasonal variation. Possible factors could be workforce issues, supply chain disruptions, or equipment failures.
5. **Pareto-based Focus:**
    - Apply the **Pareto Principle** and focus corrective actions on the top 20% of vendors that contribute the most to defects. This would yield the highest impact with the least resource expenditure.

By focusing on these key areas, management can reduce overall defect rates and associated downtime, improving vendor performance and operational efficiency.