



Data Visualization of Sales Transactional Data to reveal critical business insights

Business:

Data Visualization, ETL Process

Domain:

Automobile Parts Manufacturing

Tools:

R, Qlikview, MS Excel

Key Highlights

Key Success:

- » Data quality was improved by 40-50% in the process.
- » The dashboards became the client's core tool during performance evaluations and visualizing their metrics in great detail and across various parameters.
- » The dashboards provide a 4 dimensional view of dealer transactional summary with count of unique products, number of transactions, amount transacted and recency.

Engagement:

- 4 Months offshore engagement with:
- » 2 Data Analysts
 - » 1 Project Manager

Client

The client is a leading manufacturer and supplier of braking equipment for automotive and non-automotive applications.

Overview

The client possessed a raw secondary sales data repository of 6 distributors which described the volume and value of all transactions made by the dealer network across auto-part segments in different zones. The challenge was to identify trends in transactions, purchases, customers etc. against different variables and leverage them to increase revenue. The client required efficient data visualizations to interact with the data on a granular level through an intuitive interface that revealed new opportunities and actionable insights for management to take advantage of.

1 Status Quo

The client is a leading manufacturer and supplier of braking equipment for automotive and non- automotive applications. They offer a range of aftermarket products and service kits for vehicle brake maintenance with around 4000+ parts across vehicle models. Their sales are distributed across ~30+ states with central and regional warehouses managed by their 30000+ distributor-dealer network.

The client gathered raw secondary sales data repository of 6 distributors for the recent financial year (April 2017 – March 2018). The sales data described the volume and value of all transactions made by the dealer network across brake part segments in different zones. The pressure, as in any sales scenario, was to identify trends in the transactions, revenue etc. against different variables.

The client used dashboards to analyze the transactions on parts sold. The existing view of the dashboards lacked responsive features stalling the primary goal of interpreting trends with the available sales data. The client required efficient data visualizations focused on interactivity, be able to clearly observe points of view and provide actionable insights. The dashboards should suggest new opportunities and also provide information cross section of Sales.

2 Solution

Indium Software analyzed the client's dashboards alongside visibility and granularity metrics. Some of the charts were cluttered and trying to solve multiple objectives in a single tab; other observations included the absence of a querying tool, no year on year comparisons, inconsistent themes, metrics were not structured for business use.

Indium Software's Data Visualization solution set off to sort out better interactivity, ready to perceive insights and improved user experience. Our approach included:

- » Data Preparation for Analysis
- » Data Mining and Visualization
- » Actionable Insights
- » Automating the Data workflow (ETL)

Data Preparation for Analysis

A precursor to setting up the interactive dashboards is cleaning up data. We validated unclean data of 4000+ cities for redundancies and errors using:

- » Custom code that verifies the correct names of cities from Government sources
- » Custom Google search automation to find the correct data

The result was a 30% elimination in redundant data with 99.9% accuracy.

The resultant clean data is prepared to feed into the Data Visualization steps by:

- » Organizing data into groups by geography etc.
- » Validation of variables
- » Master data setup

Data Mining and Visualization

The following features were enabled within the dashboards:

- » Pareto – 80-20 analysis on the value of distributors, dealers. Individual contributions of value by any of the variables.
- » Deep dive – Multiple levels of deep diving within the graphs. An instance being sales in a region, then by states, then by cities. Another being sales in a year, then in a quarter, then in a month.



- » Reports – The data of all the charts can be exported as reports. This also helped the marketing department in conducting their own analysis.
- » Slice & Dice cube - The data has multiple categorical variables which provided a case for viewing the same data by many variables. To solve this a cube was created where slicing and dicing by any dimension are possible.
- » Multiple filters – All the categorical variables were provided as filters. For any graph, any filter can be applied.

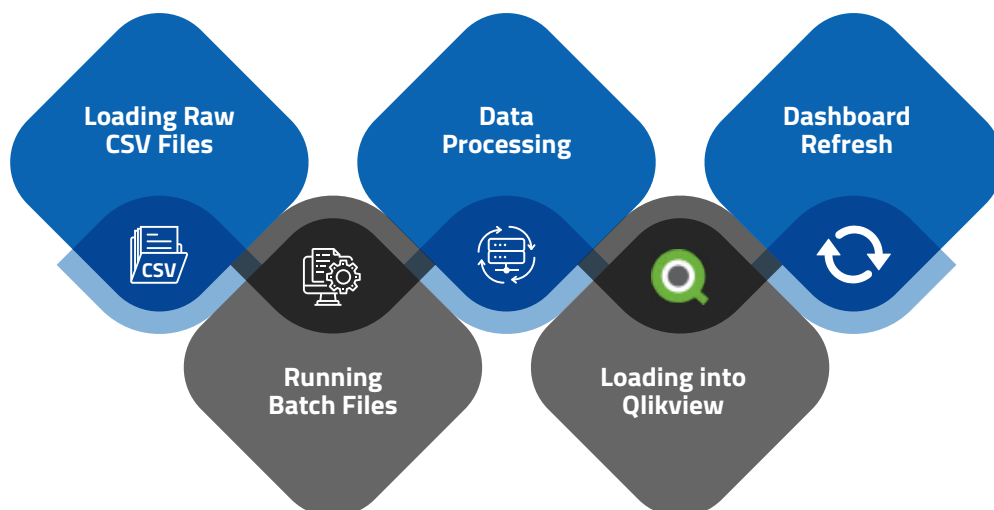
Actionable Insights

The solution provided the following insights for the client:

- » **Product penetration within the geographical states** were calculated, this gives the cities within the state which are not penetrated.
Action – Target those cities where the product hasn't penetrated.
- » Compare side by side the **associated products' penetration within a state**.
Action – Target those cities where one of the associated products is not selling.
- » **Product performance of retailers**
Action – Identify the products which have not been sold in the recent month compared to the previous months.
- » Toppers by value and volume
Action – Reward the existing month's "Hits and Duds" among the dealers
- » A nested report – **segment penetration within cities within states** was created to find the gaps where the segment hasn't penetrated.
Action – Push products in the segment where the penetration % is low.

Data Workflow Automation

To address the scalable needs of the dashboard, Indium Software implemented an ETL process that automates the data loading into the visualization set up and dashboards are refreshed in a timely manner.



- » Client's raw distributor data is loaded in the data server and batch ETL process is performed.
- » Data Preparation job is auto performed using R and a database is generated with new sales data.
- » A scheduled run of QlikView Management Console loads new data into QlikView.
- » The new data is translated into the Dashboards as visual insights.

3 Business Impact

- » Data Quality improved by a significant 40-50% which is a direct feed to quality Dashboards.
- » The dashboards provide a 3-dimensional view of dealer transactional summary with a count of unique products, number of transactions and amount transacted. Sales users have a ready utility on analysing sales performance in different regions, product penetrations and so on which helped them strategize and target potential sales regions.
- » The management team was able to self-service and visualize their targets being on track or overshoot. The yearly comparisons provided onus on them to propel their sales.
- » Incorporated a fourth dimension "recency" to filter the expired dealers who can be reactivated. This contributed to an increase in their customer lifetime value.



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