

## **ICT702 Data Visualization**

### **Assessment Task 2.3: Report on Visualization of Data through Dashboard**

**University of Sunshine Coast**

**Name: Shekhar Deuba**

**Course coordinator: Mufthi Thanzeel**

**Student Id: 1193787**

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## Purpose

This dashboard is meant to give strategic insights on sales and profitability by category and sub-category, customer segment, region and state of retail operations in the organization. Intended to be used by senior management and strategic decision makers, the dashboard brings together volumes of transactional data in an interactive and visual format that enables evidence-based decision making.

With the help of incorporating various lenses on the performance, the dashboard allows decision-makers to see the areas of strength, areas where products perform poorly and understand sales and profitability variability across regions. The sales and profit by category and sub-category views give a breakdown of products which enables the managers to prioritize on investment and promotion strategies. Geographical patterns are identified at regional and state level through maps, and this ensures that resources may be optimized across markets. The customer segmentation knowledge is used to target marketing and customized service plans, and the sales trends over a period give a longitudinal perspective of the performance and thus make it possible to foresee and plan.

In general, the dashboard is a strategic tool that is helpful to support organizational objectives, making sure that the decisions are made based on the correct, timely, and visualised data. It minimizes the use of manual reporting and leaves managers with the opportunity to turn data into actionable information fast, making a company more competitive in a data-driven market.

# Data Visualization Principles

In developing the dashboard, I wanted to ensure that the data is transparent, entertaining, and is fact useful decision-makers. To do so, I used famous concepts of another scholar such as Edward Tufte and Stephen Few. According to Tufte (2001), simplicity of visuals requires eliminating all the stuff that does not contribute to communication (like cluttered gridlines or ornamentation) so that the audience can concentrate on what the data is conveying in a story. On the same note, Few (2006) points out that dashboards need to be readable at a glance; this is achieved by having simple layouts, correct measures and visual indications such as colour and position that will focus on the most significant trends.

Using those principles, I designed 6 visualizations:

**Sales & Profit by Category (Bar Chart):** A simple bar chart was selected to make a comparison of sales and profit of Furniture, Technology, and Office Supplies. It is easy to look at this format and immediately identify where the categories are doing well and where the profits are lagging.

**Sales by Sub-Category (Column Chart):** In sub-categories (i.e. Phones, Chairs, and storage), decision-makers can see what is actually driving performance. In this case, a column chart was employed since it is easy to compare products with the use of vertical bars.

**Sales & Profit by region (Bar Chart):** This visualization presents the strengths and weakness of the regions next to each other. Direct comparison of sales and profit across regions will also allow managers to not only identify the highest sales areas, but also to identify where profitability can be enhanced.

**Sales Trends Over Time (Line Chart):** A line chart has been used to represent the change over the years. IT is useful because it displays patterns of growth and seasonal changes and is useful in identifying trends and helping to forecast.

Sales by Segment (Pie Chart): Sales by segment are most accurately represented using pie charts, which in this case are appropriate to indicate how the sales are divided in Consumer, Corporate, and Home Office segments. It provides a brief description of relative size that can be understood by the non-technical viewer (Kirk, 2016).

Sales by state (Map Chart): Lastly there was a map to show the performance at the state level in terms of sales. Geographical variations are easily identified with coloured shading, and managers are able to think regionally about markets.

I used Gestalt as well as applied it to the overall design of the dashboard (Ware, 2019). Related chart (such as category and sub-category) are clustered, identical colours are used throughout all the visuals to facilitate recognition, and the sections are distinctly divided to give the layout an organized look. This framework of design and analysis makes the dashboard present enough to be attractive to the eyes of the audience and, at the same time, truly informative.

## Insights, Usefulness & Recommendations

Viewing the sales and profit information on the dashboard consolidates the data in a manner that will reveal the strengths and areas of improvement. On a general basis, Technology is the best category that can offer the most sales and profitability. Office Supplies are consistent and predictable in terms of profits, as they are a good addition to the business. Furniture, in contrast makes high sales but margin, which indicates that it is inefficient in pricing, discounting or supplier expenses and needs to be considered.

Further examining the sub-categories, there are definite patterns. Phones and Chairs are some of the most profitable products since they generate a lot of revenue, but profitability levels differ according to their pricing and mode of sales. A significant observation is that Tables although popular, generate quite low profits. It is this imbalanced situation that brings out the necessity of looking at the pricing and management of these products so that they may play a bigger role in the bottom line.

There are also geographic trends. The West region is more ahead with sales and profit and next comes the East. Central region provides good sales but less profits whereas the south presents the least interest as a whole indicating potential areas to grow. California is a giant at the state level, however, the difference between other states indicates that a blanket approach will not be effective.

The sales experience a consistent growth of sales year-on-year with observable peaks at the end of each year indicating the seasonal demand. This observation justifies the need to plan in advance in terms of inventory and staffing during peak time. On the customer side, Consumer segment is the biggest segment of the sales, but the profitability is distributed more equally between Consumer, Corporate and Home Office. This balance indicates that it is equally important to preserve good business-to-business relationships as with consumer-oriented development.

A combination of these findings results in a number of recommendations. The company ought to invest more in Technology products, and act on to raise margins in Furniture, especially Tables. It must also intensify marketing campaigns in Central and Southern states, improve its discounting policy to secure profits, and diversify its activities in all lines of customers. With such insights, executives will be able to make more assured and informed decisions that will help them increase profitability and growth in the long run.

## Reference

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