



# Asian Institute of Technology

School of Engineering and Technology

[AT72.19] Applied Data Analytics (ADA)

Project Report

by

Group - 4

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# Project Overview

Our goal in this project is to use Power BI's capabilities to analyze and visualize data, find insights, and give the sales manager useful business intelligence. We will examine important metrics, trends, and patterns in our dataset to guide decisions and enhance business performance by utilizing data visualization and analytics.

## Project Background

G2-BIKE Company is a leading provider of bicycles, bicycle parts, sport clothing, and accessories. G2-BIKE operates numerous branches across various countries and regions. Our team has conducted a comprehensive analysis focusing on various aspects of the company's operations, including sales amount, profit, customer infographic data, product trends, and seasonal sales patterns. By examining these factors in detail, we aim to assess the company's growth rate and identify opportunities for improvement.

## Objective

### Primary Objectives:

The primary objectives of this project are to thoroughly analyze the performance of G2-BIKE Company across multiple dimensions and provide actionable insights to the Sales Manager. Specifically, we aim to achieve the following objectives:

1. Create a Data Model:

- Develop a robust data model that establishes connections between various data files, enabling seamless data integration and exploration.
- The data model will serve as the foundation for our analysis, ensuring accurate and efficient data processing.

## 2. Construct Data Visualizations:

- Build a diverse range of data visualizations, including graphs, charts, and other visual aids, to explore sales performance, customer behavior, and market trends.
- These visualizations will highlight significant patterns and insights found in the data, facilitating a deeper understanding of key metrics.

## 3. Develop a Data Dashboard:

- Design and develop a comprehensive data dashboard that compiles our key findings and insights into a single, easily navigable interface.
- The dashboard will feature interactive graphs, tables, charts, and other visual components strategically placed to enhance data interpretation and communication.

## Additional Objectives:

In addition to the primary objectives, we aim to address organizational challenges, identify areas of potential growth, and provide answers to important business questions through interactive dashboards, reports, and visualizations. By leveraging the power of data analysis and visualization techniques, we seek to empower the Sales Manager with actionable insights that can inform strategic decisions and drive business growth.

Through this analysis, we aspire to facilitate data-driven decision-making processes, optimize business performance, and contribute to the overall success of G2-BIKE Company.

## Our Data Source

The data we analyzed is derived from the internet sales of an online webstore. It comprises seven primary tables:

1. Customer,
2. Date (Order),
3. Date (Shipped),
4. Internet Sales,
5. Product,
6. Sales Territory, and
7. Temperature

While each table provides unique insights, our analysis primarily focused on the Internet Sales table as the central component.

Our data modeling efforts were centered around the Internet Sales table, which served as the primary source for analyzing sales and profit achieved by the company over the years. By structuring our model around this key dataset, we aimed to highlight critical metrics related to sales performance and profitability. We decided to not load Date(Shipped) into our model due to the redundancy.

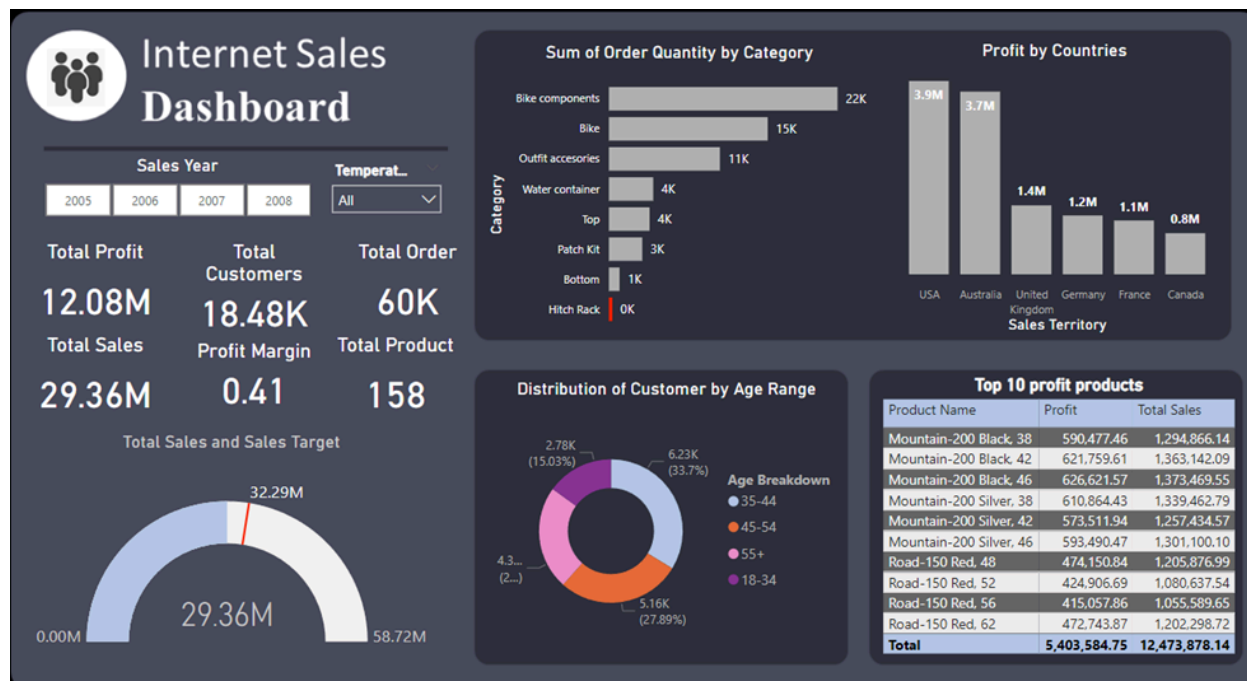
# Data Relationship Model

The table below shows a summary of the relationships created between each table and the Internet sales table.

| Table and Key                           | Relationship with sales table | Relationship type |
|---|-------------------------------|-------------------|
| Date(Order): DateKey                    | Sales: OrderDateKey           | Many to one       |
| Sales Territory:<br>Sales Territory Key | Sales: SalesTerritoryKey      | Many to one       |
| Product: Product Key                    | Sales: ProductKey             | Many to one       |
| Temperature: Key                        | Sales: Key                    | Many to one       |
| Customer: CustomerKey                   | Sales: CustomerKey            | Many to one       |

## Our Dashboard

Our dashboard design emphasizes the seamless interaction between graphs, slicers, and tables. Users have the flexibility to click on any component – whether it's a graph, slicer, or table – triggering dynamic interactions that enable exploration of data from various perspectives. This interactive functionality empowers users to gain insights and explore data from different angles, enhancing the overall user experience.



Our Sales Analytics Dashboard targeted mainly to the Sales Manager designed with user-centricity in mind, our dashboard empowers you to track progress, analyze trends, and make data-driven decisions effortlessly.

## Introduction:

Our dashboard design embodies a seamless interaction between graphs, slicers, and tables, facilitating dynamic exploration of data from various angles. As users navigate through the dashboard components, they unlock valuable insights that inform strategic decision-making and drive business growth.

## Setting the Scene:

Imagine stepping into a world of data-driven discovery, where every click leads to a new revelation. Our dashboard invites users to embark on a journey of exploration, where the boundaries between data and insights blur, and possibilities abound.

## Exploring Key Metrics:

As users begin their journey, they are greeted by two powerful slicers: one for selecting the year of analysis and another for choosing temperature ranges. These slicers serve as gateways to a wealth of information, allowing users to tailor their analysis to specific timeframes and weather conditions.

## Unveiling Performance Metrics:

The dashboard showcases six cards, each revealing a key performance metric: Total Profit, Total Customers, Total Orders, Total Sales, and more. These cards provide users with a snapshot of business performance, enabling them to gauge success and identify areas for improvement at a glance.

## Navigating Sales Performance:

A dynamic Gauge visualization tracks Total Sales against Sales Targets, offering a visual representation of progress toward goals. Users can easily assess performance and adjust strategies in real-time to stay on course for success.

## Diving into Product Insights:

A bar chart illustrates the sum of order quantity by category, empowering users to delve into product performance and identify lucrative market segments. With just a click, users can uncover trends, spot opportunities, and optimize product offerings for maximum profitability.

## Analyzing Global Markets:

A Clustered Column Chart provides a comprehensive view of profit by country, shedding light on geographical performance trends. Users can explore market dynamics, identify high-performing regions, and tailor strategies to capitalize on global opportunities.

## Understanding Customer Demographics:

A Customer Age Distribution Donut Chart offers insights into customer demographics, allowing users to understand buying behavior across different age ranges. This visualization enables targeted marketing efforts and product customization to meet diverse customer needs.

## Identifying Profitable Products:

Finally, a Top 10 Profit Products Table highlights the most lucrative product offerings, guiding users towards opportunities for growth and optimization. By analyzing product performance, users can make informed decisions that drive profitability and market success.

## Conclusion:

In conclusion, our dashboard is more than just a collection of visualizations – it's a gateway to a world of insights and opportunities. Through seamless interaction and dynamic exploration, users can uncover hidden patterns, make data-driven decisions, and chart a course towards success in an ever-evolving marketplace.

## Our Findings

Here are the key findings from our dashboard analysis:

1. Top 10 Products: The top 10 products are bikes, indicating their significant contribution to overall sales and profitability.
2. Product Performance: The worst performing product by quantity is Hitch Rack, but by profit, it is Patch Kit. Bikes and their components emerge as the most profitable product categories.
3. Product Ranking: Six out of the top 10 products are mountain bikes, while the remaining four are regular bikes, indicating a strong preference for these categories.
4. Best Performing Year: 2007 stands out as the best year in terms of sales, profit, and profit margin, suggesting robust performance during this period.
5. Growth in 2008: 2008 witnessed a substantial increase in the number of customers and orders, indicating growth potential despite not meeting target expectations.
6. Profitable Countries: Australia was the most profitable country until 2007, but in 2008, the USA appeared to overtake it. Overall, the USA emerges as the highest profit-generating country.



7. Climate Impact: Sales and profitability seem to be higher during periods of warm climate, highlighting the influence of weather conditions on consumer behavior.
8. Age Range Analysis: The age range of 35-44 exhibits the highest buying capacity, while the 18-34 age range shows the lowest buying capacity, indicating varying purchasing behavior across different age groups.

These findings provide valuable insights into market trends, customer preferences, and overall business performance, allowing for informed decision-making and strategic planning moving forward.

## Conclusion

In conclusion, the G2-BIKE Company data analysis project offers a comprehensive assessment of the company's performance and growth potential. Through our analysis of sales amount, profit, customer infographic data, product trends, and seasonal sales patterns, we aim to provide valuable insights that can support informed decision-making and drive business success. We are confident that the findings from this analysis will help G2-BIKE Company optimize its operations, enhance customer satisfaction, and achieve its growth objectives.

## Project Team

This project is led by Rakshya, with the support from the team members: Panuchit Chucherd, Austin Kruah, Kyi Thin Nu and Simon Sharma. Collaboration and teamwork was observed as an integral to the success of this project.