## **1. Introduction**

### **Project Objective**

The primary objective of this project is to analyze product sales data to gain insights and make informed decisions that improve sales performance. This involves understanding customer behavior, identifying trends, optimizing product offerings, and ultimately increasing revenue.

### **Design Thinking Process**

The design thinking process is a human-centric approach that we have employed to tackle this problem. It comprises the following stages:

* **Empathize:** Understanding the demands and difficulties faced by sales teams and stakeholders through surveys, observations, and interviews. Determining the main obstacles to product sales data analysis.
* **Define:** Formulating a clear problem statement, user personas, and precise objectives such as boosting sales by a certain percentage or reducing inventory expenses.
* **Ideate:** Brainstorming creative solutions for dashboards, reporting, and data analysis tools, considering data visualization techniques.
* **Prototype:** Creating a working prototype for the sales analysis dashboard or tool, including key performance indicators (KPIs) and functionality.
* **Test:** Gathering feedback from prospective customers, analyzing the prototype's usability and efficiency, and identifying any usability problems or necessary changes.
* **Iterate:** Adapting the prototype based on feedback to ensure it satisfies user demands and resolves the identified issues.
* **Implement:** Building the final product based on the improved prototype, ensuring scalability and data security, and educating users on how to utilize it effectively.
* **Evaluate:** Monitoring and assessing the performance of the product, measuring critical indicators including sales growth, inventory turnover, and customer satisfaction, and continuously improving the business using data-driven insights.
* **Communicate:** Sharing the conclusions and insights from the sales analysis with stakeholders and developing strategies and action plans based on the data in cooperation with sales teams.
* **Scale:** Considering expansion to additional product lines or locations if the product sales analysis solution proves effective, and continuously improving the solution as needed.

### **Development Phases**

The project is divided into several key phases:

* **Phase 1: Problem Definition and Design Thinking (Current Phase)**
  + In this phase, we define the problem, conduct empathetic research, create user personas, and establish clear objectives for the sales analysis project.
* **Phase 2: Data Collection and Preparation**
  + In the next phase, we collect and prepare the necessary data for analysis. This includes gathering sales data, customer data, and other relevant information.
* **Phase 3: Data Analysis and Visualization**
  + Once the data is collected, we move on to the analysis phase, where we utilize tools like IBM Cognos to visualize the data and derive insights.
* **Phase 4: Actionable Insights and Strategy**
  + In this phase, we identify actionable insights from the analysis and develop strategies for inventory management and marketing.
* **Phase 5: Implementation and Monitoring**
  + The final phase involves implementing the strategies and monitoring their impact on sales performance. It also includes continuous improvement based on ongoing data analysis.

Now, let's delve into the details of the current phase, Phase 1.

## **2. Analysis Objectives**

### **Understanding the Problem**

The problem at hand is to analyze product sales data and make data-driven decisions that can enhance sales performance. To address this problem effectively, we must first understand the challenges and requirements of the sales teams and stakeholders. This involves empathizing with the users and identifying the obstacles they face when dealing with sales data.

### **Setting Clear Objectives**

To provide a clear direction for our project, we have defined specific objectives:

* **User Personas:** Create user personas for executives, analysts, and sales managers to understand their unique needs and pain points.
* **Boosting Sales:** Establish the goal of increasing sales by a specific percentage. This serves as a clear and measurable target for our project.
* **Decreasing Inventory Expenses:** Define another objective of reducing inventory expenses, which directly impacts profitability.

These objectives will guide our project through the subsequent phases, ensuring that the solutions we develop are aligned with the goals of improving sales performance and optimizing resources.

## 

## 

## 

## **3. Data Collection Process**

### **Data Sources**

The success of our analysis heavily relies on the quality and relevance of the data collected. Our data sources include:

* **Sales Data:** Information about individual sales transactions, including order details, sales quantity, profit, and product-related attributes.
* **Customer Data:** Details about the customers, such as their names, regions, and business size.
* **Product Data:** Information regarding the products, including categories, sub-categories, names, and containers.
* **Shipping Data:** Data related to the shipping of products, including the mode of shipment.

### **Data Collection Methods**

The data collection process involves several steps:

* **Data Retrieval:** Acquiring data from various sources, which may include databases, CRM systems, and external data providers.
* **Data Cleaning:** Cleaning the data to remove inconsistencies, errors, and duplicates, ensuring the data's quality and integrity.
* **Data Integration:** Combining data from multiple sources into a unified dataset for analysis.
* **Data Transformation:** Transforming the data to make it suitable for analysis. This may include creating calculated fields, aggregating data, and handling missing values.

The success of our project hinges on the accuracy and completeness of the collected data. With clean and integrated data, we can proceed to the analysis phase.

## 

## **4. Data Visualization using IBM Cognos**

### **Tool Selection**

To visualize and analyze the data effectively, we have chosen IBM Cognos as our primary tool. IBM Cognos is a powerful business intelligence and data visualization platform that provides a wide range of features to create interactive and insightful visualizations.

### **Visualization Techniques**

In this phase, we will leverage IBM Cognos to create data visualizations that help in the interpretation of the sales data. Some of the visualization techniques we will use include:

* **Bar Charts:** Visualizing sales quantities, profit, and other key metrics by product categories, sub-categories, and regions.
* **Line Charts:** Tracking sales trends over time and identifying seasonal variations.
* **Pie Charts:** Analyzing the distribution of sales by product categories or customer segments.
* **Heat Maps:** Visualizing correlations between various factors, such as product categories and customer segments.
* **Interactive Dashboards:** Creating user-friendly dashboards that provide an overview of key sales performance metrics and allow for deeper exploration of the data.

Effective data visualization is essential for deriving actionable insights and making informed decisions regarding sales performance, inventory management, and marketing strategies.

## 

## 

## 

## **5. Derived Actionable Insights**

### **Sales Performance Analysis**

Utilizing the data visualization capabilities of IBM Cognos, we will conduct a comprehensive sales performance analysis. This analysis aims to answer critical questions such as:

* Which product categories/sub-categories generate the highest sales and profit?
* Are there specific reg