

Sales and Inventory Analysis for B2B Company Using Power BI: Insights and Visualization

Lal Tlan Sang

Department of IT, Toda Pvc Leather Co., Ltd, Samut Sakhon, 74000, Thailand.

Ravikumar R N

Department of Computer Engineering, Marwadi University, Rajkot, 630003, India.

Thian Lian Ben

AI Development Team, Coosy Pvt., Ltd, Tokyo, 1500011, Japan.

Corresponding Author: rnravikumar.cse@gmail.com

Contributing Authors: mai.laltlansang@gmail.com , misterlianben@gmail.com

Abstract

Data visualization plays a crucial role in transforming large and complex datasets into intuitive insights, enabling faster and more informed business decisions. This research proposes the development of theoretical framework that will help B2B company improve their inventory management. Using historical sales data, inventory data and Power BI, an operational and engaging dashboard is created that can give real-time information daily inventory position, sale trends and lead times. Action Design Method are used for getting the business need to bridge the gap of between theoretical and practical based. ABC analysis and forecasting sales are also created on the dashboard. In the quantitative phase within an actual Thai B2B firm, the use of the dashboard is shown which led to the efficiency in the controls of inventories, effectiveness in stock management and made it easier for the different departments to make informed decisions. The structure of our solution is easily adaptable throughout industries, allowing it to be a beneficial resource for firms interested in supply chain management.

Keywords: Sales analysis, Inventory analysis, Power BI report, Dashboard

1. Introduction

There are many software tools and dashboards for the sales and inventory performance measurement, however, cost, flexibility and usability should be taken into consideration while choosing and using those software tools. (Anardani et al., 2023) and (Obaid, 2023) describes, Power BI is a low cost tool compared to other such tools and therefore is cost efficient. It is easy to use because users, groups, and companies can create and exchange data, reports, and dashboards with little to no exertion of effort. Furthermore, Power BI is portable as it will acquire data from not only stable internet sources, formats and types but also transform and visualize data from numerous sources of data, particularly cloud data or APIs.

Building on the studies of (Nabil et al., 2023), an increasing number of warehouse managers and decision-makers turn to the adoption of BI tools such as Power BI for better control over operations. Another benefit of using Power BI is that this tool is well complemented with such

sources of information as ERP systems, information on inventory and transportation management systems, etc. With such a detailed set of data it is possible to track key performance indicators or in other words KPIs including order delivery rates, inventory, lead time, as well as the performance of suppliers. Through such visualizations, key metrics should be clearly depicted so that the warehouse managers can see these areas that require corrective action and make timely decisions.

The study on sales reporting conducted by (Chen et al., 2012) also showed that the analysis of sales data is one of highly significant components in business evaluation, trends, and management strategies development. Consequently, while assessing revenue, average order value, and product data businesses get important insights. Business intelligence tools such as Power BI enable organizations to derive insight-ful sales figures from raw data, present it in a business intelligence application form and even in fashionably vivid tools such as dashboards and interactive reports. Such insights help to define successful product offers, understand the customers' behavior, and estimate the outcomes of the marketing campaigns. In conclusion, sales analysis generates practical solution to be put into use in sales promotion and enhancement of customer experience with a general thrust of sustainable business performance hence the importance of data in business decision making.

Power BI is important in B2B organizations especially in sales and inventory and Microsoft Power BI is among the best. Power BI also offers features like real-time data processing and data visualization makes the business operations efficient and enriches the customers' satisfaction through analyzing value-added information (Padmaja & Shivaswamy, 2025). It is used to evaluate result on sales, customers and supply chain on which make the business to run efficiently with higher profits. Data analysts must first clean and prepare the data before they use it for decision making. Having considered the main tasks related to data preparation, it should be mentioned that Power Query, which is the part of the Microsoft Power BI environment, provides users with a number of effective tools for accomplishing them. With Power Query, users can simplify a complex data model, change data types, rename objects, and, more importantly, pivot data. In addition, with the profiling feature of column in Power Query, users can determine which columns contains many and good data for further analysis (Muralidhar et al., 2024).

Most Power BI users have traditionally viewed Microsoft Excel as a tool for data preparation, which in turn means their data can only support a limited set of analysis capabilities. Previous researchers (Anardani et al., 2023) have pointed out that effort in business intelligence has mainly concerned the process of acquiring and aggregating data from multiple sources and placing it in data warehouses. This data form is subjected to statistical analysis as well as the use of graphical and data analysis tools from Microsoft Power BI.

B2B enterprises depend highly on the performance of the sales and supply chain for success. Sales analysis and its counterpart, inventory management are effective strategies for managers and other decision makers. Responding to the B2B needs for solutions to the above issues, this research employs Action Design Research (ADR), which was studied by (Nabil et al., 2023). There are numerous examples for implementing ADR for issues that are difficult to solve, and

that are related to sales analysis and supply chain such as inventory management, demand planning and service delivery. This cyclic approach makes it easy to locate areas of research, define research questions, and even frame theories for arriving at the best solutions. Cyclical nature of ADR problem formulation, development, implementation, assessment, review, and knowledge enhancement is pertinent to enhance supply chain management (SCM) and sales analysis.

Utilizing ADR methodology, this research seeks to identify and implement the best practices of inventory management and sales analysis. Through these approaches, there will be realization of cost efficiencies among B2B companies since it leads to precise provision of lead time information hence improving customer services and at the same time there will be realization of increased competitiveness and sales among the B2B companies. The specific intervention proposed for the research is developing a sales analysis and inventory management dashboard in Microsoft Power BI. This dashboard was created to assist B2B owners by providing an easy to access, real-time, group work environment that can be utilized to effortlessly and inexpensively monitor and control their supply chain. Sales information on the dashboard will include variability, factors for increased or decreased variability, sales forecast from sales history, and visibility into customer commitments, supplier lead times, and out of stock products.

1.1 Objectives

The major objectives of this research work follow:

- To develop an engaging report that displays the daily, weekly and monthly sales and inventory information so that decisions are made within a short time.
- To integrate cost effective Power BI dashboard targeting B2B firms to get visibility about their inventory position, demand forecast, lead times etc.
- To overcome the identified gap of linking theory with practice of inventory and sales management with the help of quantitative methods, including ABC analysis and forecasting.
- To feature data visualization as a powerful tool to highlight the supply chain efficiency increase, inventories optimization, and tactical and strategic decisions support across the departments.

1.2 Problem Statements

There are major business issues of achieving accurate level of sales and inventory affecting B2B companies because of inherent constraints in current processes and information systems. Key issues include:

Repetitive Data Cleaning and Processing: Many management level staff spend large amount of time in data cleansing and data formatting as the data coming from various sources is either inconsistent or incomplete.

Lack of Real-Time Stock Updates: That is why the lack of stock status updates in different departments leads to the disruption of definitive decision-making processes and therefore delays.

Restricted System Access: Few staff members use accounts to operate in the system; therefore, few get to work with the system to retrieve the information.

Product Prioritization Issues: There are challenges in defining the top-performing products while others are question marks when it comes to addressing slow moving products, which leads to poor inventory and sales.

Delayed Sales Updates: Monthly sales updates are not presented in indexed and immediate form, which makes it challenging to counter new trends in the market.

This chapter is organized as follows: Section 2 is devoted to the Literature Review, exploring Power BI for sales and inventory, case studies, data visualization and its advantages in B2B environment, and demand forecasting, customer segmentation, and inventory research. Section 3 presents the methodology including Action Design Research (ADR) and ETL process to build the Power BI model. Section 4 of the paper presents the case study, including the main aspects of the selected dashboard, including its layout and readings of the key indicators. Section 5 elaborates the results explaining, why dashboard analysis of sales and inventory can indicate inefficiency of operations. Future recommendations to extend the dashboard with artificial intelligence for predictive analytics and other data sources for better decision making. Lastly, section 6 with conclusion.

2. Literature Review

Power BI is effectively used in different areas of the enterprise, such as financial and sales and inventory evaluation. This component makes it possible for users to generate reports for business intelligent purposes, data mashup for the creation of the business's dashboard and knowing more about the data. As stated by (Shoaid & Nandi, 2022) documents like "Monthly Budget and Usage View" and "Cross Charges Information" are generated to analyze the budget usage and consumption status of an organization so that budget performance could be well monitored. (Shoaid & Nandi, 2022) present a case about the application of Power BI for sales reporting in AtliQ Hardware, an Indian company selling computer hardware and peripherals. The envision sales manager struggled with navigating the field for sales reporting in areas that was growing at a very fast rate and instead, the manager relied on oral information received from the regional managers, they gave inconclusive information. In response to this, the company sought to build a sales dashboard in Power BI, actual data being portrayed in simple graphical interfaces. This would allow the management to make appropriate action based on the information to look for the poor performers in the organization to enhance the sales performance.

The research done by (Nabil et al., 2023) on Ly Foods Ltd., where in real-time Power BI dashboard was implemented to improve the supply chain productivity. This dashboard offered the company methodical, conspicuous, identifiable and sharable quantitative measure of its operational indices which helped it sit the data and take facts into consideration. As a result, the field study focused on an evaluation of enhanced working practices, effective inventory control, and effective problem-solving, thereby providing insights into the strengths of utilizing information technologies in the SCM practices. The results showed that such dashboards had a great potential to improve supply chain productivity and financial return in companies regardless of their sizes.

2.1 B2B Sale and Inventory Analysis

In the B2B sales and inventory context, (Mittal, 2024) has pointed out that many issues and tactical levers exist and are distinctive in fields such as customer classification, demand estimation, and inventory management.

Customer Segmentation: Customer Relationship Management (CRM) systems help companies to process information about customers; the information may be about their purchases, preferences and behavior. This enhances customer targeting for differentiated sales approaches and the overall opportunities to offer more related products in B2B settings. Demand Forecasting: The effectiveness of resulting production planning and inventory management mainly depend on demand forecasting (Parejo et al., 2025). Using data analytics and predictive modeling organizations can forecast demand by using past data and trends within the market. This, in turn, enables the right inventory to be ordered to prevent having too much or too little quantity (Rabbani, 2024).

Inventory Optimization: (Muralidhar et al., 2024) also stressed the need for developing a strategic flexibility to replenished inventories. It is really possible for businesses to make dynamic reorder decisions based on the regular evaluation of items in stock, suppliers, and consumers demand. This hence optimizes the turnover of stocks and the overall costs. In addition, the use of other technologies like machine learning, the IoT can also improve inventory management (Fan & Shen, 2025).

2.2 Technology Adoption

Another research, from (Smith, 2024), focused on the ability of empirical insights to explain the effect of technology on B2B sales performance. While digital transformation and advanced technologies offer numerous benefits, (Licong & Ghosh, 2023) highlight a potential challenge: Responding to the research questions, area two of the study focused on analyzing the impact of employee resistance and data privacy and security in implementing predictive analytics. Employees and particularly the salespeople may resist new technology adoption because of fear that their jobs might be at risk or change (Yamoah et al., 2025). Dealing with this resistance is eminent for effective espousing of technology and enhanced sales results (Sipayung et al., 2024). Technology implementation also raises issues relating to collection, storage, and utilization of customer data which have become sensitive issues that demand attention on matters regarding data privacy and protection.

2.3 Data Visualization

In Power BI, (Bekele et al., 2025) pointed out that charts, graphs, maps, and tables are common methods of data presentation. These tools are capable of being configured, interconnected and even refined to allow for dynamic analysis of data and rich exhibits, which will help in data discovery.

2.4 Existing Work: A Comparative Overview

While reviewing the opportunities of Power BI dashboard as the instrument for data analysis, (Turner, 2022) note that the application has a web-based graphical user interface (GUI) and all its functions do not require IT background; however, such features like DAX might be challenging

for people with no experience in data analysis. However, (C. Wilson & Martinez, 2023) also point out that Power BI can also allow for the development of the business-specific visuals and reports. This customization helps to direct attention to the major forms of KPIs most worthwhile for the organization with more flexibility on the third-party tools for unique features on representing the data which is important for the organization (Wang & Zhao, 2024).

Action research was used in this research to study the particulars of a B2B firm in Thailand. As (M. Wilson et al., 2022) describe ADR to be, namely that ADR; is a form of design research and action research. In completing the theory generation with the researcher action, the ADR approach was useful in handling the company's problems as explained below. Primary research was conducted by using questionnaires on business owners, managers, and executives, to identify their perceived challenges, activities, and data needs (Zhou & Charoensukmongkol, 2024).

After analyzing the collected data, the study identified key datasets: such records as sales data, inventory data, committed quantity records (Ladva et al., 2024). These datasets were then combined and cleaned so that format was consistent before the selection of appropriate columns for analysis. ABC analysis and other forecasting were used on the combined data during the modeling phase. The gleaned findings were then reviewed in light of users' responses, which prompted the creation of a report useful for organizing the firm's operational procedures on a daily basis. The below table 1 highlights the researcher's visualization, report type and outcomes.

Table 1. Comparative Study

Researchers	Data Visualization	Report Type	Outcomes
(Singh & Jadhav, 2022)	Revenue Trend: line chart; Top 5 (Customer, Products): clustered bar chart; Revenue Contribution (%): table	Sales	Understanding and improves sales management decisions using Power BI
(Nabil et al., 2023)	Quantity ordered by product & year: column chart; Count of orders by status: a pie chart; Quantity ordered by country: a stacked bar chart	Supply Chain Analysis	Improved decision making with a real-time Power BI dashboard
(Lei et al., 2024)	Line charts for turnover over time, clustered column charts for turnover rate by region, gauge charts for KPIs, and pie charts for local and export sales	Sales	The development of an interactive dashboard using Microsoft Power BI
(Tirupati et al., 2024)	Sales by sub category: column chart; Top N product, city, country: column & pie charts; Ship mode: waterfall chart; Sales over year: stacked area chart; Table	Sales	Transform raw sales data into interactive dashboards and reports using Power BI
(Padmaja & Shivaswamy,	Revenue by emp: tree map; Revenue by product name: bar chart; Sale	Sales & Prediction	Dashboards and predictive analytics can improve

2025)	prediction: linear regression in Python		business decision-making
(Kodumuru et al., 2025)	Container freight cost: line chart; Cost compares by month: ribbon chart; Cost growth compares by year: table	Inventory Analysis	Interactive dashboards by data acquisition, cleaning, transformation

3. Methodology

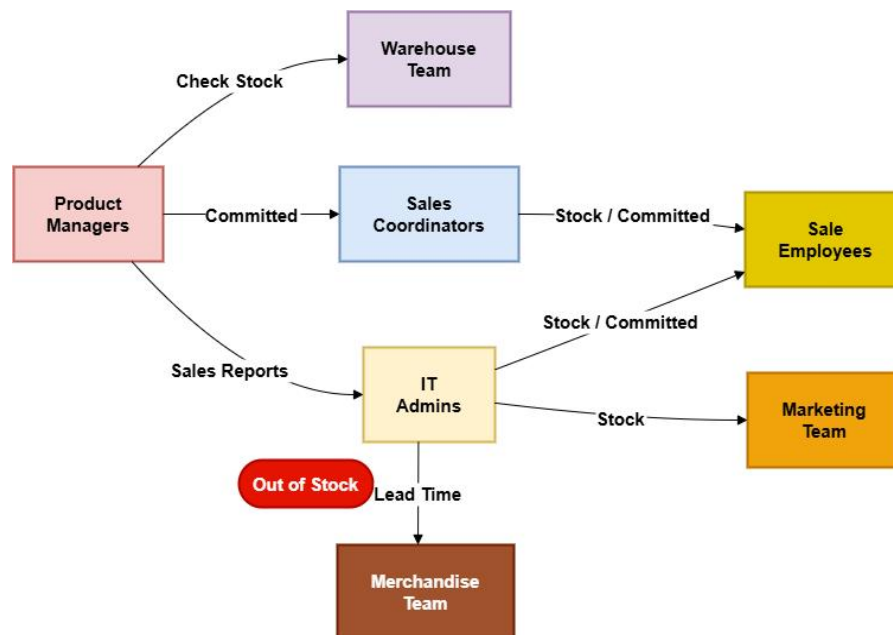
The following methodology section briefs about the Power BI work flow, ETL conceptual process, data preparatory and visualization process.

3.1 Workflow Before Power BI Report

The current process is somewhat rigid and duplicative for product managers, sales employees and marketing teams to gather the information they need. Product managers have to communicate with the warehouse people to know the current stock and with the sale coordinators on the confirmed orders. Such information is provided by the assigned sales coordinators to sales employees, while marketing teams have to ask for the data from IT admins as shown in figure 1.

Fig. 1 Pre-Power BI Sales and Inventory Workflow

The admins obtain exported Excel data from SAP as they are the only team that works with it as



they have full access due to the cost and involving the whole organization's users. This usually involves cleaning and preparing the data, which ultimately slows people's work down or even requires additional resources. They reveal that the lack of lead time data in SAP system poses a major weakness. Anyone asking for lead times or product arrival dates has to turn to the merchandise team who keeps this information in a status quo manner. This is normally tiresome, and it may prolong several operations all across departments (Smith, 2024).

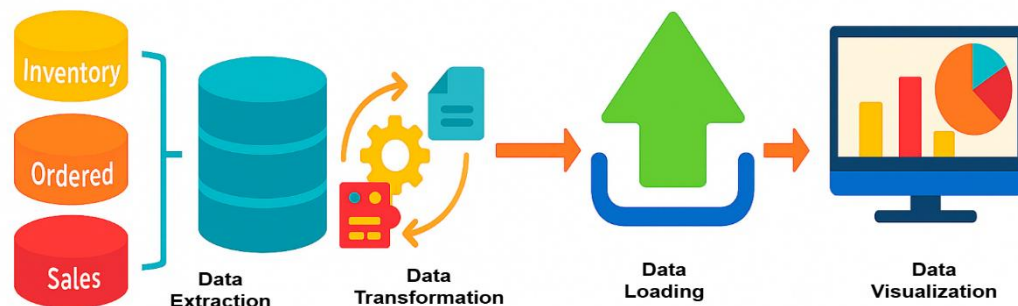
3.2 ETL Conceptual Process (Extraction Transform Load)

ETL stands for Extract, Transform, Load - the move of data from different sources to a data warehouse along with their conversion into a unified structure as shown in figure 2. According to (Seenivasan, 2023), the transformation tools of Power Query improve this process by solving data problems such as ambiguity in data formats, merging of different data types, and changing of data formats which leads to clean and easily analyzable datasets. Furthermore, automating works with Power BI does not only enhance data quality and increase update frequencies but also decrease many influences of manual work in the sales and inventory systems' practices (Lei et al., 2023).

Fig. 2 Extract Transform Load

The ETL process typically consists of three key steps:

1. Extraction: It is available from source systems such as databases, flat files or an API. This



step may use database queries or file system reads (for a deeper analysis of this step, please consult infosec governance literature).

2. Transformation: The information extracted is then preprocessed through cleansing and normalization and not simply restructured to fit the schema of the specified target data warehouse or data mart. Data understanding might involve activities such as data cleansing and validation, data aggregation and normalization.

4. Loading: The transformed set of data is then moved to the target application data warehouse or data mart making it readily usable for reporting purposes. There are several techniques they include; bulk load, incremental load and change data capture.

3.3 Data Collection and Extraction

Data collection for this study embraced the mixed research method approach due to the use of both closed and open-ended questions. Data was opted in quantitative way by capturing data from the company's SAP system. Key data points included inventory data (stock availability, unit of measure, customer commitments, procurement costs, purchase orders, total stock quantity, warehouse location, lead time was collected from merchandise team), and sales data (product category, sub category, suppliers, quantity, sale amount, profit, and branch location. Both the data set Sales and inventory provided historical and real-time records. This comprehensive dataset was designed to address the specific needs of the target users. Qualitative data was gathered through semi-structured interviews with warehouse managers, product managers, procurement managers, and sales team members. Interview topics included reporting practices, challenges faced, perceptions of Power BI user-friendliness, and future expectations. A purposive

sampling approach ensured that all relevant departments and users were represented in the interviews.

The current data collection and cleaning processes present significant challenges in achieving efficient sales and inventory management. Data inconsistencies, incomplete fields, and the need for manual extraction from disparate sources, including SAP and Excel, impede timely analysis and real-time decision-making. Sales data preparation relies heavily on Excel, where VLOOKUP functions are used to add missing product categories, subcategories, and supplier information from a master data file. However, since the master data often reflects only past sales, analysts must manually identify categories and suppliers based on SKU information for recent sales, which introduces the potential for errors. Inventory data extraction is similarly complex, requiring in-depth queries across multiple tables to verify committed product quantities and validate customer-specific order details. In light of these limitations, this study recommends the following solutions: Adopting a structured Extract, Transform and Load (ETL) process of Power BI where Power Query is used for both basic and complicated data maintenance.

To address these limitations, this study proposes implementing a structured Extract, Transform, Load (ETL) process within Microsoft Power BI, utilizing Power Query for both simple and advanced data cleaning.

3.4 Data Preparatory Steps and Data Visualization

In this phase one is able to gather raw data and then organize it in such a way that will facilitate easy analysis. As pointed by (Tusell-Rey et al., 2022), data preparation encompasses the cleaning again and structuring it by characteristic of columns. This generates data tables which can be deciphered and analyzed properly by the application. The other important step is data type classification. Attributing the specific data type, for all the attributes present, such as text, integers, decimal, date, etc. will help in correct interpretation and further use of all those attributes which are applied and will also protect the data in some way. Before linking tables, it is important to differentiate between key and foreign attributes. Main characteristics of table relations: These connections establish relatedness of relationships between different data sources. It is common to use calculations to derive some key value or figure reported in an executive information presentation such as data visualization reports. Power BI offers three tools for this purpose: which includes, measure, column and calculated table. That being said, all of the tools can analyze data and use the DAX language to perform calculations on the datasets. While the concept of precluded measures is especially useful when information precluded in a calculated measure needs to be reported to the report users, calculated measures are valuable when calculated values have to be presented to the report user. **Power BI Model Creation:** In this stage, the Power BI model is built by establishing bonds with the previously prepared data sources. Therefore, measures and calculated columns are used to make meaningful analysis on the data. **Dashboard Design:** Sales metrics and inventory dashboards were created to be interesting and engaging. Some of the forms of the visualizations used were line chart, bar chart and among others to represent the various facets of the data. **Analysis and Insights:** The graphic data was further examined to outline trends, correlations and outliers. Specific insights were made to help with the decision-making process of the business.

5. Case Study

Data for this study is collected from the case of a B2B small-medium enterprise company named TODA PVC Co., Ltd., established in Thailand (www.todapvc.com). This TODA company deal with a vast number of datasets, while working at the same level as big companies. The primary data source of the research is the integrated system SAP Business One.

4.1 Procedures of Creating Power BI Dashboard

Here's a concise process for creating a Power BI dashboard to monitor inventory levels and identify parts below critical thresholds:

Extract Data: Solve It! Always avoid copying all fields from SAP Business One into Excel; instead, just pick the ones that need to be exported.

Import Data: Open the sources in Excel (for example, the sales and inventory files) and then import it into Power BI, by selecting Get Data Excel.

Data Cleaning: Format and normalize the numeric fields in the Power Query, eliminate errors, blank entries and duplicates and assign correct type of data.

Data Modeling: The Model View may be used to go back and revise the relative positioning of tables by fields such as Part ID or SKU.

Dashboard Creation: Tabular forms, incorporate the use of conditional formatting like, red to indicate when some components are below a critical level in the designs.

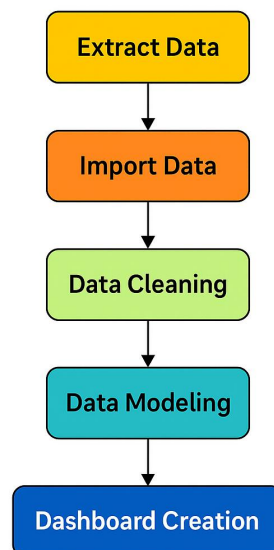


Fig. 3 Steps to Create Power BI Dashboard

4.1.1 Extract and Import Data

As a result, data had to be manually extracted from SAP in an Excel format so that time periods could be chosen. Any categorical variable data in excel, the master data file by using the LOOKUP function namely; product category, subcategory, and supplier section was included. After this primary step the loaded data was cleaned in Power Query where records were removed, data types were transformed to fit the required dataset for visualization.

4.1.2 Data Cleaning in Power Queries

In this figure 4, data cleaning is done using power query. As in other editors (Akash Abaji Kadam & Kadam, 2024), size formats are normalized and all extra data are eliminated from the definition. Used to set up each dimension within the dataset at the appropriate formatting. In this section, two major data preprocessing steps that are often critical in data preprocessing and have practical importance for data analysts and data scientists were addressed; data duplicity and null values. Moreover, changes to data type were conducted which involved the conversion of string formatted dates to proper date.

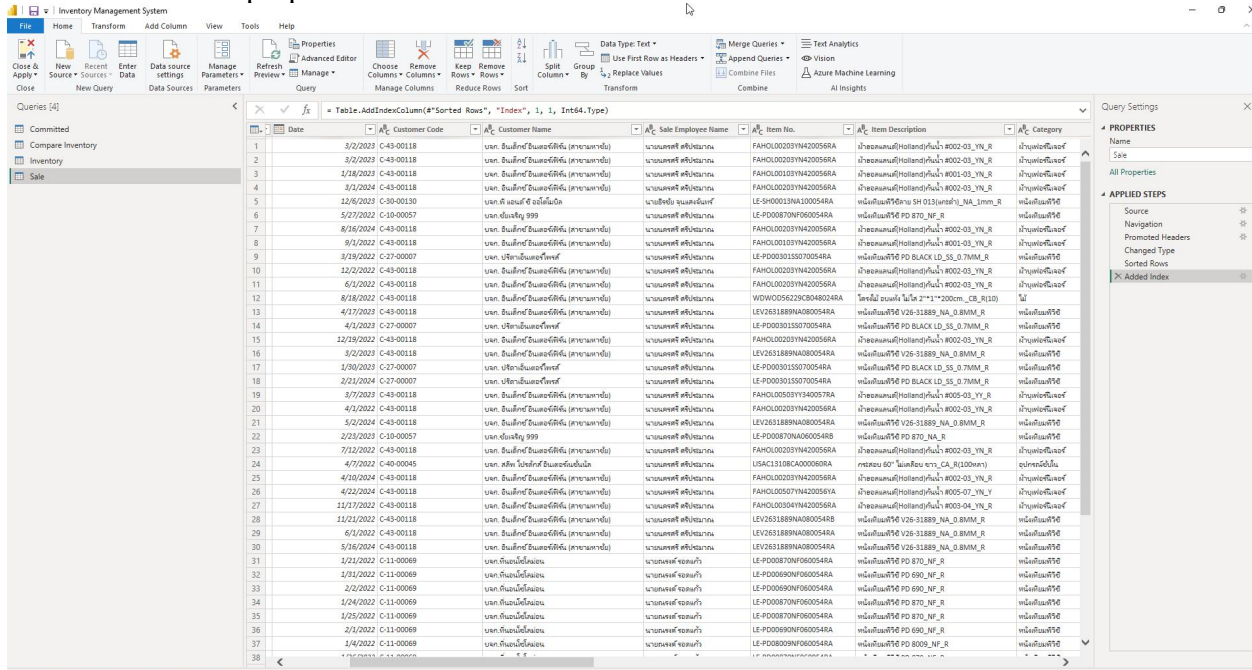


Fig. 4 Power Queries Section

4.1.3 Table View

In Power BI, the Table View in figure 5 allows users to visualize and interact with their data in a tabular format, making it easy to inspect individual records and values. It helps with quick data analysis and ensures data integrity before creating more complex visualizations or models.

Series	Document Number	Date	Customer Code	Customer Name	Sale Employee Name	Item No.	Item Description	Category	Sub Category 1	Sub Category 2	Product Type	Supplier	R-Qty
9308	220911342	Monday, September 12, 2022	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00315NA060054XA	หลอดไฟแบบที่ PD 315_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 315	Null	NA	
9308	220911342	Monday, September 12, 2022	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00322NA060054XA	หลอดไฟแบบที่ PD 222_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 222	Null	NA	
10891	230911027	Friday, September 8, 2023	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00322NA060054XA	หลอดไฟแบบที่ PD 222_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 222	Null	NA	
11560	240210197	Friday, February 16, 2024	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00315NA060054XA	หลอดไฟแบบที่ PD 315_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 315	Null	NA	
10089	230310294	Saturday, March 25, 2023	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00799NA060054XA	หลอดไฟแบบที่ PD 799_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 799	Null	NA	
10805	230811311	Saturday, August 26, 2023	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00322NA060054XA	หลอดไฟแบบที่ PD 222_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 222	Null	NA	
11666	240310969	Thursday, March 7, 2024	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00329NA060054XA	หลอดไฟแบบที่ PD 329_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 329	Null	NA	
10089	230312350	Saturday, March 18, 2023	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00322NA060054XA	หลอดไฟแบบที่ PD 222_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 222	Null	NA	
10089	230312350	Saturday, March 18, 2023	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00329NA060054XA	หลอดไฟแบบที่ PD 329_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 329	Null	NA	
9754	221212899	Thursday, December 22, 2022	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00714NA060054XA	หลอดไฟแบบที่ PD 714_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 714	Null	NA	
9754	221212899	Thursday, December 22, 2022	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00322NA060054XA	หลอดไฟแบบที่ PD 222_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 222	Null	NA	
10089	230312350	Saturday, March 18, 2023	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00315NA060054XA	หลอดไฟแบบที่ PD 315_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 315	Null	NA	
10089	230312350	Saturday, March 18, 2023	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00714NA060054XA	หลอดไฟแบบที่ PD 714_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 714	Null	NA	
9754	221210537	Tuesday, December 6, 2022	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00824NA060054XA	หลอดไฟแบบที่ PD 824_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 824	Null	NA	
10616	230712546	Thursday, July 20, 2023	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00690NA060054XA	หลอดไฟแบบที่ PD 690_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 690	Null	NA	
10616	230712546	Thursday, July 20, 2023	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00322NA060054XA	หลอดไฟแบบที่ PD 222_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 222	Null	NA	
10891	230911027	Friday, September 8, 2023	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00809NA060054XA	หลอดไฟแบบที่ PD 809_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 809	Null	NA	
9754	221210537	Tuesday, December 6, 2022	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00329NA060054XA	หลอดไฟแบบที่ PD 329_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 329	Null	NA	
9308	220911342	Monday, September 12, 2022	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00329NA060054XA	หลอดไฟแบบที่ PD 329_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 329	Null	NA	
12161	240612703	Wednesday, June 19, 2024	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00329NA060054XA	หลอดไฟแบบที่ PD 329_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 329	Null	NA	
10215	230511133	Tuesday, May 9, 2023	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00690NA060054XA	หลอดไฟแบบที่ PD 690_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 690	Null	NA	
10215	230511133	Tuesday, May 9, 2023	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00824NA060054XA	หลอดไฟแบบที่ PD 824_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 824	Null	NA	
10477	230611030	Friday, June 9, 2023	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00329NA060054XA	หลอดไฟแบบที่ PD 329_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 329	Null	NA	
10477	230611030	Friday, June 9, 2023	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00315NA060054XA	หลอดไฟแบบที่ PD 315_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 315	Null	NA	
9805	230113633	Tuesday, January 31, 2023	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00322NA060054XA	หลอดไฟแบบที่ PD 222_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 222	Null	NA	
11319	231212523	Wednesday, December 20, 2023	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00322NA060054XA	หลอดไฟแบบที่ PD 222_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 222	Null	NA	
11319	231212523	Wednesday, December 20, 2023	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00329NA060054XA	หลอดไฟแบบที่ PD 329_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 329	Null	NA	
9805	230113633	Tuesday, January 31, 2023	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00329NA060054XA	หลอดไฟแบบที่ PD 329_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 329	Null	NA	
12161	240611406	Tuesday, June 11, 2024	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD01067NA060054XA	หลอดไฟแบบที่ PD 1067_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 1067	Null	NA	
11205	231010076	Monday, October 2, 2023	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00690NA060054XA	หลอดไฟแบบที่ PD 690_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 690	Null	NA	
11205	231011595	Saturday, October 14, 2023	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00315NA060054XA	หลอดไฟแบบที่ PD 315_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 315	Null	NA	
10885	230811788	Wednesday, August 16, 2023	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00329NA060054XA	หลอดไฟแบบที่ PD 329_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 329	Null	NA	
9308	220911342	Monday, September 12, 2022	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00809NA060054XA	หลอดไฟแบบที่ PD 809_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 809	Null	NA	
9308	220911342	Monday, September 12, 2022	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00799NA060054XA	หลอดไฟแบบที่ PD 799_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 799	Null	NA	
10089	230311568	Monday, March 13, 2023	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00315NA060054XA	หลอดไฟแบบที่ PD 315_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 315	Null	NA	
10616	230711763	Friday, July 14, 2023	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00690NA060054XA	หลอดไฟแบบที่ PD 690_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 690	Null	NA	
10616	230711763	Friday, July 14, 2023	C-24-00016	ชัชชาติ ช่อมะนาว	นางธนพรศรี ศรีวิเศษมงคล	LE-PD00315NA060054XA	หลอดไฟแบบที่ PD 315_NA_X	หลอดไฟแบบที่ PD		หลอดไฟแบบที่ PD 315	Null	NA	

Fig. 5 Table View

4.1.4 Data Model

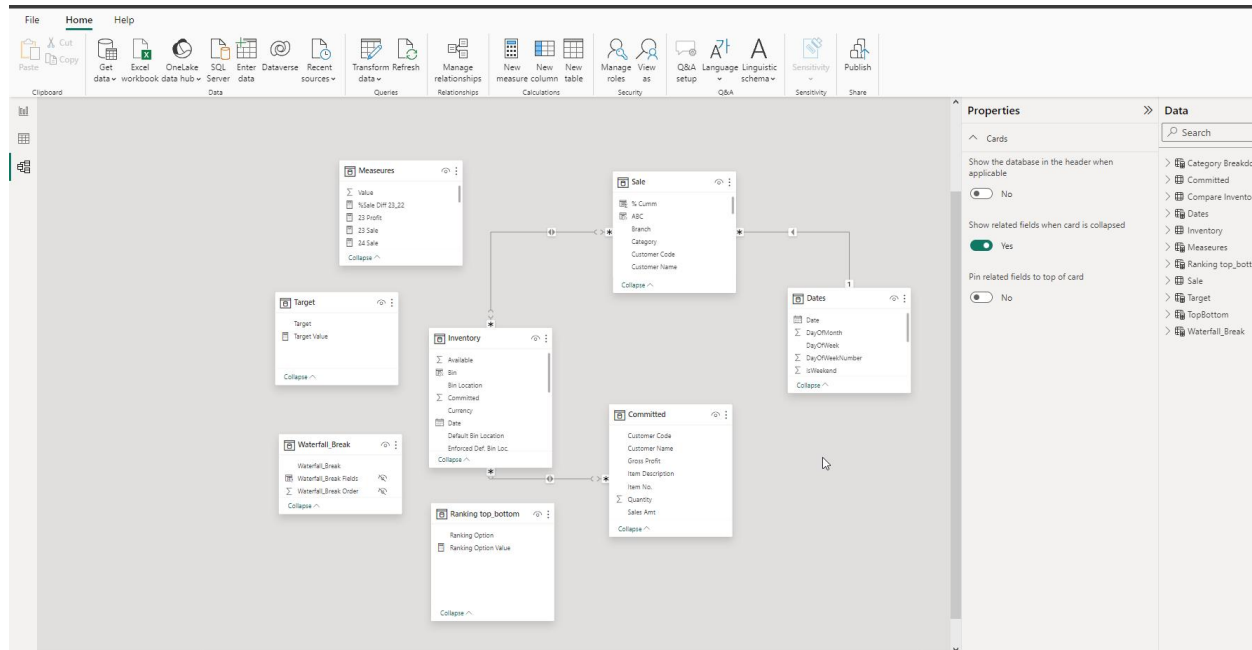


Fig. 6 Data Modelling

Meanwhile, Model View in Power BI shown in figure 6 reflect the connections between the tables of the datasets to be used for managing and changing the connections. It assists in defining how data is related across tables eliminates wrong computation and reporting via dates primary and foreign key relationships.

4.2 Dashboard View

The figure 7 demonstrates an example of a dashboard when no graphs and charts have been rendered. There can be customized visibility for more graphics on field to accommodate more visions per page to graphical interface users, useful in the choice making process.

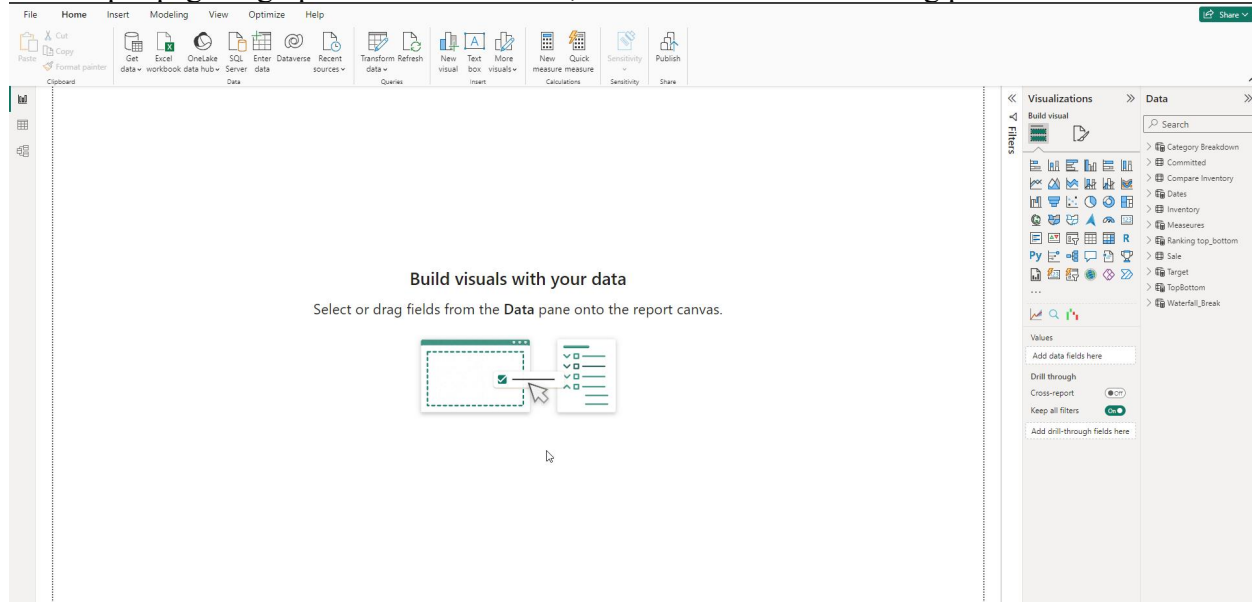


Fig. 7 Dashboard View

4.2.1 Interpretation of Dashboard

The dashboard presented a comprehensive analysis of three years of data from 2022 to 2024, organized into three primary pages: The detailed reports needed include: Organization Overview Report, Sales Analysis Report and Inventory Analysis Report. The figure gives an impression of the total sales, showing KPIs for the overall performance and the total sales for each month, the overall targets, and branch-wise targets. It involves reporting the current month percentage with the previous month sales percentage. Also kept in the figure is a sales analysis by category by subcategory by product, by customer, by sales employee and by supplier, to which are indicated the causes of variation between the two months' sales figures. Such a presentation allows decision-makers to see all factors driving the fluctuations in sales directly shown in figure 8.

Sales Analysis Interpretation: The most valuable metrics of organizational performance are called Key Performance Indicators (KPIs).

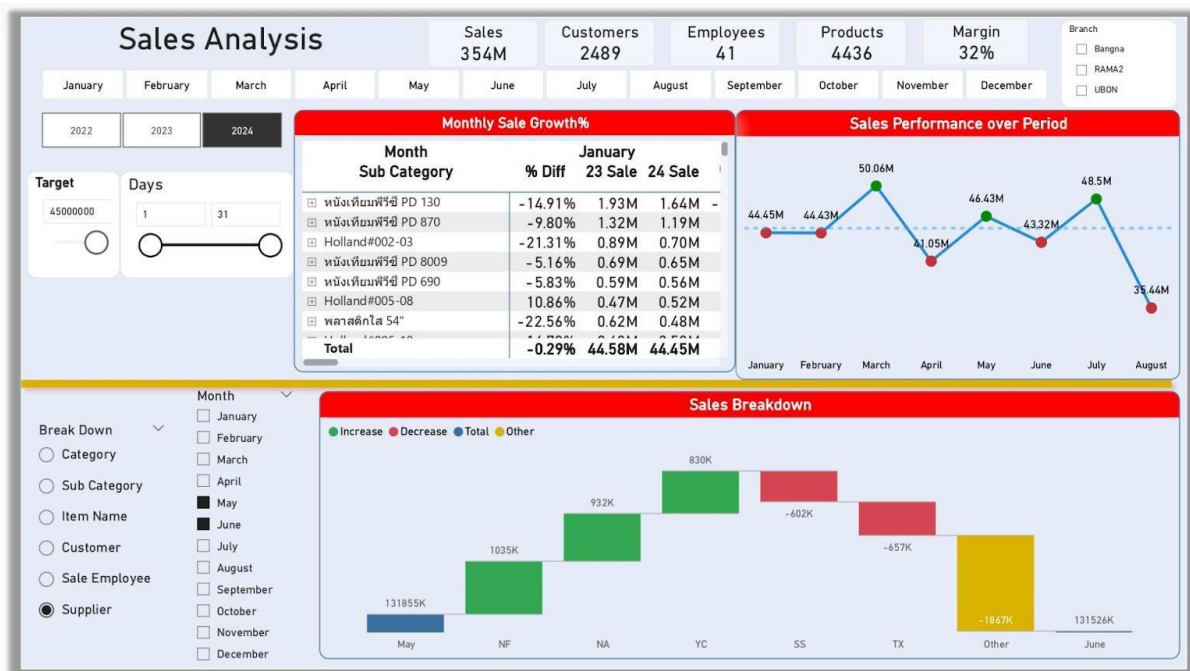


Fig. 8 Sales Analysis Overview

The Sales Analysis page could give an evaluation of the performance on some special indicators which could have been mentioned above. These included:

- **Total Sales:** A sum of all the revenues, which may be generated throughout the determined time period.
- **Unique Customers:** The count of different customers who bought the products.
- **Unique Employees:** The number of employees who are involved in the sales process.
- **Unique Products:** The variety of products sold.
- **Profit Margin:** Profit management is the means by which is defined the percentage of the total revenue kept as profit after the deduction of expenditure figures.

Sales Performance Over Time

The value sales achieved 45-million-baht target and depicted on the dashboard. Monthly sales data were color-coded to indicate performance relative to the target: Red: Sales were below the target. Green: Sales exceeded the target. This chart made it easy to see months that needed attention in terms of sales because they were at or above the trend line.

Monthly Sales Growth Analysis

The dashboard contained the chart showing the monthly increase in the products sales within their categories. This allowed for the recognition of categories which are either growing or shrinking. This information could help many sales managers and business owners to report and monitor the performance of certain products.

Day-Level Sales Analysis

A day slicer was implemented to achieve the capability of analyzing sales performance on daily basis. This particularly made it possible for business owners to compare amounts sold in certain days of one month with that of another after excluding the influences of other factors.

Sales Waterfall Chart

For the specifics regarding increments or decrements in sales, the sales waterfall chart was very helpful. Users could choose a number of dimensions for query, including but not limited to category, the secondary level, item name, customer, salesperson, and provider. With this tool, it becomes easier to establish the causes or motivate towards sales performance.

4.2.2 ABC Classification and Sales Forecasting for Inventory Management

The figure 9 shows ABC classification of products and gives sales expectation. ABC analysis assists in analysis of criticality of items to avoid stock out and also for items that are selling slow to avoid them taking up much of the storage space. However, while this kind of analysis provides relatively sound sales forecast and is valuable in that it helps to identify key activities affecting sales and potential bottlenecks, it does not take into account the current market conditions, seasonality and supplier capacities which are critical for decision making on pre-order and management of inventory (Padmaja & Shivaswamy, 2025).

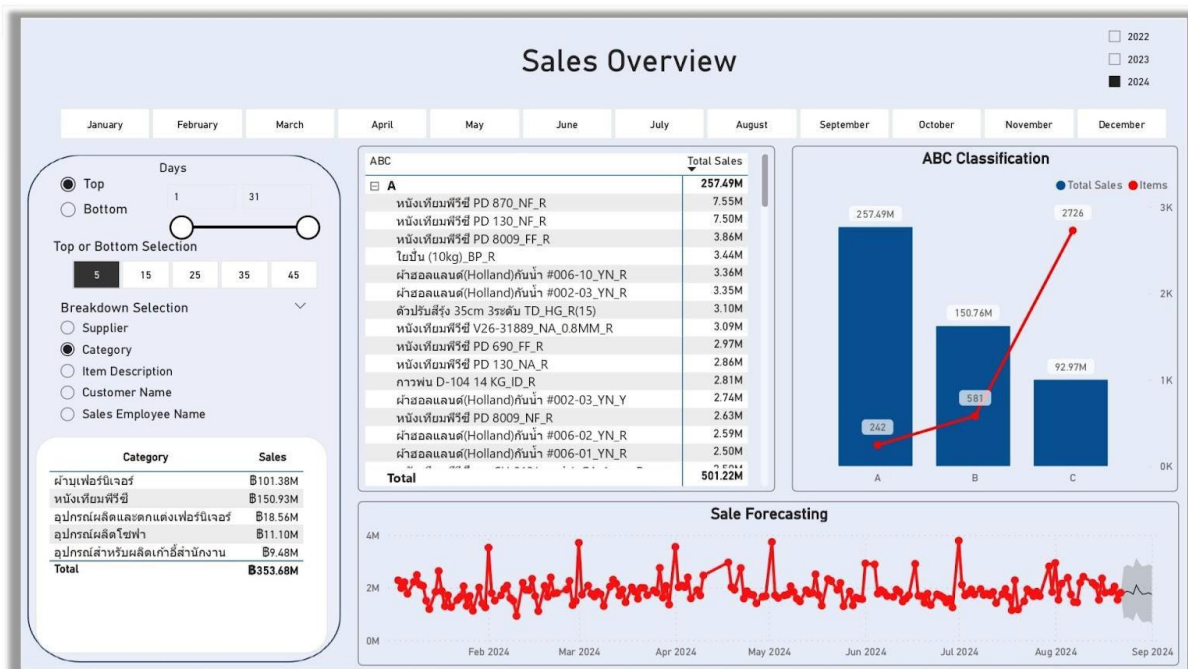


Fig. 9 ABC Classification and Sale Forecasting

Top and Bottom Slicers

The Sales Overview Report incorporated interactive top and bottom slicers, allowing users to analyze sales performance based on various dimensions:

- **Suppliers:** In line with the above, it was possible to distinguish between the suppliers that provided higher service and those suppliers that offered fewer services.

- Categories: Examine the sales patterns within different group of products.
 - Item Description: Identify those products that are flying off the shelves and, vice versa, those that are not.
 - Customers: Segment customers into high value group and low value group.
 - Sales Employee Names: Assess the level of productivity of each of the sales employees.
- With regard to flexibility provided by the “Top N”, it allowed the freedom of defining the number of such items which should be included in the report. This was more insightful with the slicers enabling different analyses to be made within a single report thus eliminating the need for numerous breakdowns.

ABC Classification Analysis

Class A components are those components described as priority or critical, and they are the key to the success of the project or process. Despite their relative scarcity, all these carbohydrates have spectacular effects. Class B parts or moderate risk components are slightly less important than Class A, but more important than Class C. These elements are valuable in achieving this goal and is not of the same significance as Class A items. According to (Akash Abaji Kadam & Kadam, 2024) Class C items, otherwise referred to as subordinate or marginal applications, are of a lower importance or consequence. The inventory management may prefer Class A and B items over Class C items due to either high profit margins or sales turnover on the items. The ABC classification analysis categorized products into three groups based on their consumption and value:

- Class A: These products produce around 257 million in sales and needed only 242 units or less. This suggests a high-value, low incidence product category.
- Class B: Products of this category recorded a total sale of about 151 million but this was gotten with a greater number of units compared to the previous category. As for the difference between Class A and Class B products, the marketer will find while they may sell in smaller quantities, they will require more quantities than Class A products.
- Class C: Though these products only created 92 million revenues, their product volume was very high at 2726. This implies that they are inventory outlets of low unit value but perhaps high intake in the larger organization.

Through use of this analysis, the purchasing and warehouse teams were able to well manage inventory and avoid situations where vital sold products were out of stock. They knew this would keep stock level high especially of the high revenue contributing products known as Class A products thus reducing cases of lost sales.

Sales Forecasting Chart

The Sales Forecasting chart showed the expected future sales data in the graphical form. If the forecast horizon is 12 months and set up a 95% confidence level, the chart above showed the future sales volume from Jan 2024 to Sep 2024. I found this tool very helpful for the organization when it comes to planning for various events and decision making to do with possible sales rates and variation.

4.2.3 Inventory Analysis Dashboard

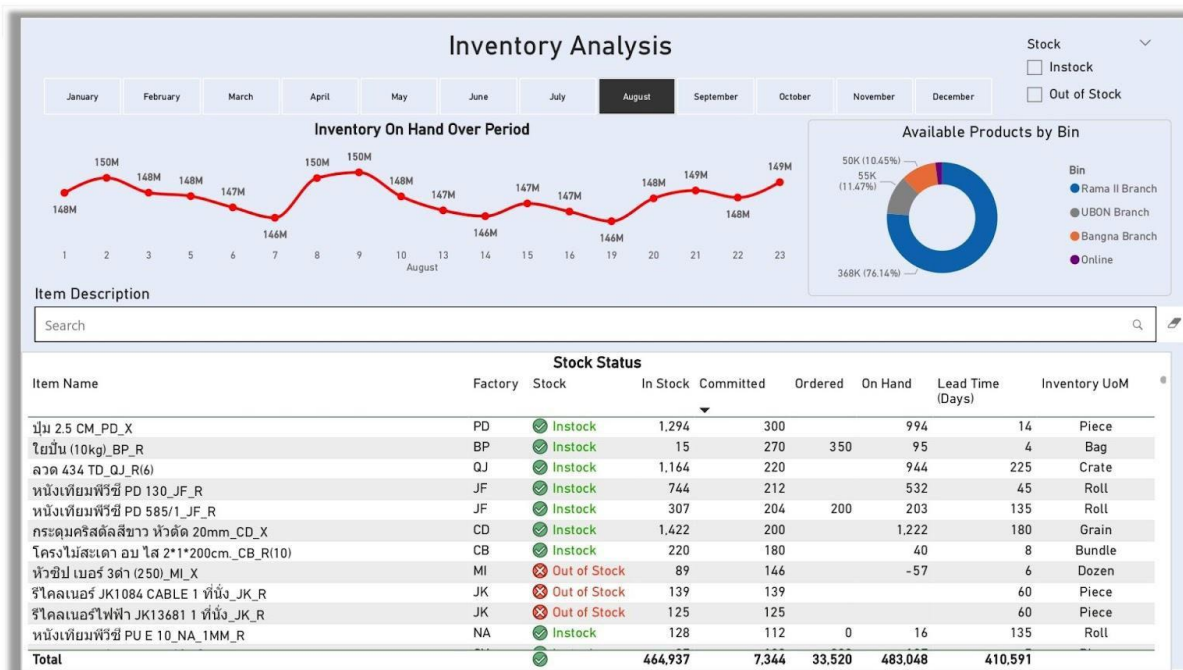


Fig. 10 Inventory Analysis

The figure 10 helps a decision maker compare the inventory values before and after a given period of time and draw their attention to very high or low values. Some other features include display of available products by bins, useful in improving logistic of transporting products to their corresponding bins since the status of every bin is shown. Sales employees also use this report, for example, to view stock status and search for the lead time of out-of-stock items by scrolling through a list of inventory information, product by product.

4.2.4 Inventory Analysis Interpretation

Stock Status Analysis the Inventory Analysis page provided a detailed overview of inventory stock status, including:

- In-Stock: There was available stock of 483,981 items in total.
- Out-of-Stock: Currently, there were 933 products with products demand that was out of stock.

Inventory on Hand Over Time

Inventory management was depicted on the dashboard to give business owners and purchasing teams a time series view of inventory on hand.

Available on Hand Product by Bin Location

Shelves shifted the display of their products based on predetermined bins, responsible for product storage and picking.

Stock Status by Factory

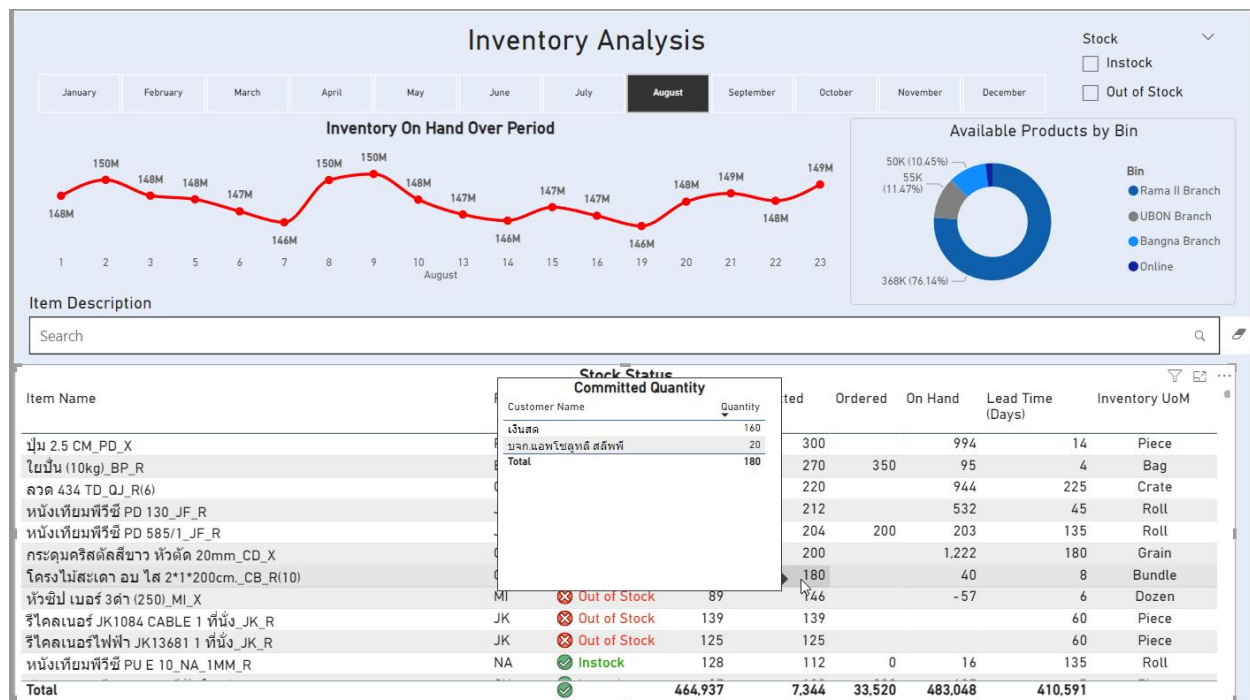


Fig. 11 Committed Customer Information

The Stock Status chart in figure 11 offers a functional analysis in terms of stock status with reference to the factory. Key information included:

- In-Stock or Out-of-Stock: The amount of stocked production per each product.
- Total In-Stock Products: The number of products that are to be out on the shelves.
- Committed Product Quantity: The numbers of products that are delivered to consumers.
- Ordered by Purchasing Team: Number of products that is purchased by the purchasing team.
- On Hand: The current or current period stock balance that is available for distribution to customers once the quantities committed to other distributors have been first met.
- Lead Time: The time taken to reorder the out-of-stock product.

This analysis made it possible for sales employees to monitor product availability while the purchasing teams could monitor stock replenishment. The figure 11 highlights the ability to view customer details and committed quantities by hovering over the committed quantity number.

Committed Product Quantity Tooltip

There was a tooltip incorporated to the committed product quantity column within the dashboard. In other words, by hovering the mouse toward the tooltip, the users could know the particular customer who has agreed to buy a certain product. This information was very helpful to all sales, purchasing, and warehouse personnel because it clearly identified the real customers behind committed quantities. Additionally, it was possible to filter customers who made a commitment but never intend to follow it because of the tooltip. About these customers, the teams could make some decisions on whether to reorder thus increasing their stock or reduce the stock as per their demand in the market.

6. Results and Discussions

Sales Analysis: It showed statistics of the sales for the past three calendar years on the dashboard. Metrics such as total sales, number of customers, number of employees, number of products, and the margin of profit were used and presented. It also offered an overview of the monthly sales against a needful benchmark where one could tell at a glance where sales had met, exceeded or even under performed a predetermined target. Also, there was a chart that showed the overall sales growth per category on a monthly basis and, therefore, comparing between the categories would help determine the best and the worst categories in the business. This dashboard was useful for comparing sales data from the years 2022-2024 as well as inspecting valuable KPIs such as total new and repeat sales, customers, employees, products, and the new/total profit margin. Green color was used to symbolize months that recorded sales above the planned amount, while red depict months of below planned sales. Growth charts provided monthly updates on those products experiencing increase or decrease in sales so that sales managers could efficiently show product performance and make alterations as necessary to their inventory.

Inventory Analysis: The dashboard included in-stock and out-of-stock stock information of products on its status at a certain time. It also helped in inventory control by displaying inventory on hand over a period of time. The information included in the dashboard was the bin location, product status in-stock or out-of-stock, number of in-stock products, committed product, ordered product, on-hand quantity and lead time by factory. This analysis helped the sales employees to monitor the products and purchase teams using it for replenishing the inventory.

ABC Classification: Products were divided into three categories based on their contribution to sales revenue:

- Class A: Providing the company about 257 million in sales from only 242 units of cars sold this makes this segment to be of value, but low on volume.
- Class B: It sells for 151 million baht in value but demands more units than Class A, which means that it is moderately valuable and popular.
- Class C: Contribution with 92 million baht derived from 2726 units these types of products are categorized under low value high volume.

This classification empowered the warehouse teams to manage stock categorically, more specifically, the Class A were of greater importance so as to avoid cases where by customer's were could not access the products they wanted due to stock out.

Sales Forecasting and Inventory Analysis: A monthly sales forecast chart with 95% confidence level for 12 months from January to September 2024 has been utilized. This forecast helped teams to fine-tune their inventory forecast based on demand change on products and services. Inventory analysis included stock status, In-stock: 483,981 items and Out-of-stock: 933 products with demand. Through the bin location, the dashboard also enhanced product availability by cutting transportation expenses and streamlining tracking. Also, a tooltip with links to the URL containing the related customer commitments helped the sales employees to prioritize their reorder decisions.

Future Recommendations

Sales forecasting in this research was done using Power BI alone. Perhaps the use of machine learning, or artificial intelligence would improve the accuracy of the predictions. Moreover, the dataset for this research was also marked by a large number of blank fields, as the company changed from SAP Business One to Microsoft Dynamics 365. Thus, the role of the company for the performance of the current system has become less important.

The future researches should incorporate the data from the reliable database where all the fields of variables are filled properly for better result analysis. The integration of the system with power BI shall allow raw data accesses in real-time. In this study, data was first extracted from SAP and saved as excel format therefore the tool was not capable of presenting real-time data for use in decision making. Using reports in the business environment requires actual-time data, especially with inventory, which changes regularly from the status on stock.

7. Conclusion

In this work, the execution of a Power BI-based dashboard was proven as a remedy to the desperate issues of the B2B companies with the problem of managing the sales and inventory data. The research connected the theoretical knowledge with the practical solution applicable to the real business needs by using the Action Design Research methodology. The created dashboard was a scalable and cost-effective solution, which combined real-time sales and inventory KPIs, helped to make quicker and more precise decisions across the departments. The key performance indicators (KPIs) including total sales, profit margin, customer and product segmentation, sales employee performance were clearly visualized and enabled the stakeholders to monitor monthly and daily changes, see which products are not sold well and adjust the product mix. Strategic inventory management was also facilitated by the ABC classification and forecasting tools which ensured that organizations did not run out of materials with a high value and at the same time, minimize the amount of low priority goods that are in stock. The dashboard also helped increase the level of operational transparency providing extensive information about the inventory levels, lead times and committed quantities of customers. Its visual clues and interactive slicers made analysis in many dimensions easy, and allowed users to have the freedom and richness of exploration. Overall, this study confirms the effectiveness of the Power BI dashboards use in converting the raw business data into usable insights and thereby enabling the B2B companies to manage their sales and inventory functions with greater levels of agility, accuracy, and efficiency.

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