Industrial Analytics Dashboard:
Factories, Production, and Energy Insights

1. INTRODUCTION:

The **Industrial Analytics Dashboard** dashboard provides a clear and interactive view of industrial performance using data from the **Annual Survey of Industries (ASI)**. It helps users understand key aspects across different sectors. The dashboard highlights important indicators to give a better understanding of industry trends. With easy-to-read charts and insights, it helps policymakers, researchers, and business leaders make informed decisions.

2. METHODOLOGY:

A. Data Collection

- The dataset for ASI was sourced from **https://esankhyiki.mospi.gov.in/ from 2008 to 2023.**
- Analysis focuses on **NIC – 2-digit level**, providing a broad yet detailed view of industrial performance without diving into granular subcategories.

B. Data Cleaning and Transformation

- After collecting the data, **Python (pandas)** library was used to clean, preprocess, and structure it for analysis.
- This included handling missing values, removing unwanted columns, creating new foreign keys columns for State and Indicators. All of this is documented in **"Coding File"**

C. Data Preparation

- Structured the cleaned data into four separate Excel files, mainly Data and Lookup table each tailored for different aspects of our analysis. **(Value_Data, State_Lookup, Indicator_Lookup, NIC_Lookup)**
- Files were segmented to create an efficient data model in Power BI, allowing for seamless integration of indicators, industry classifications, and time-series trends.

D. Data Model and Measure Creation

- Structured data using a **Star Schema** model in Power BI. The **Value table** contained key industrial indicators, while **Lookup tables** provided categorical details such as industry classifications, states and indicators.
- Created new measures using DAX, including

Factory Utilization Rate= (Factories in Operation / Total Factories) × 100

Production Efficiency = (Total Output / Total Input) × 100

Energy Efficiency = (Total Output / Total Value of Fuel Consumed) × 100

Electricity Dependency = (Value of Electricity Consumed / Total Value of Fuel Consumed) × 100

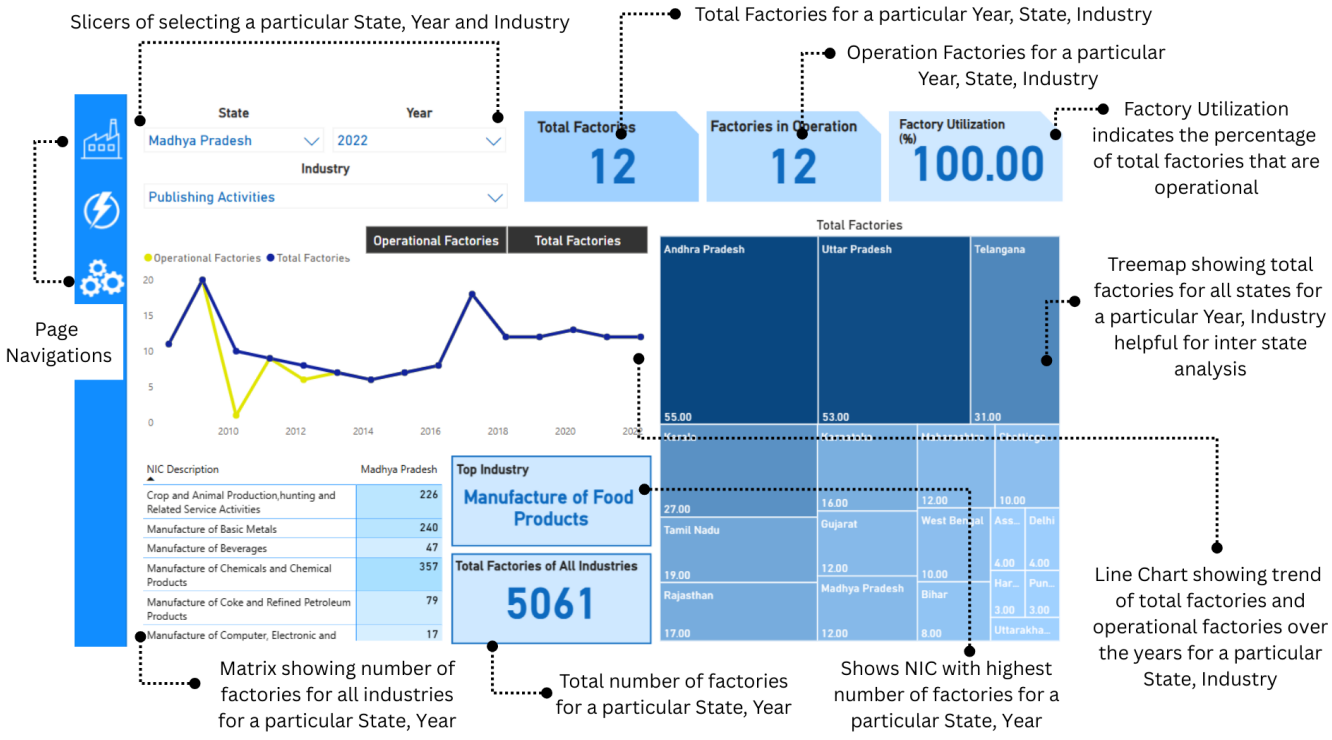
3. DASHBOARD DESIGN:

Dashboard consists of three report pages: **Factory Overview**, **Production**, and **Energy Consumption**, each providing key industrial insights.

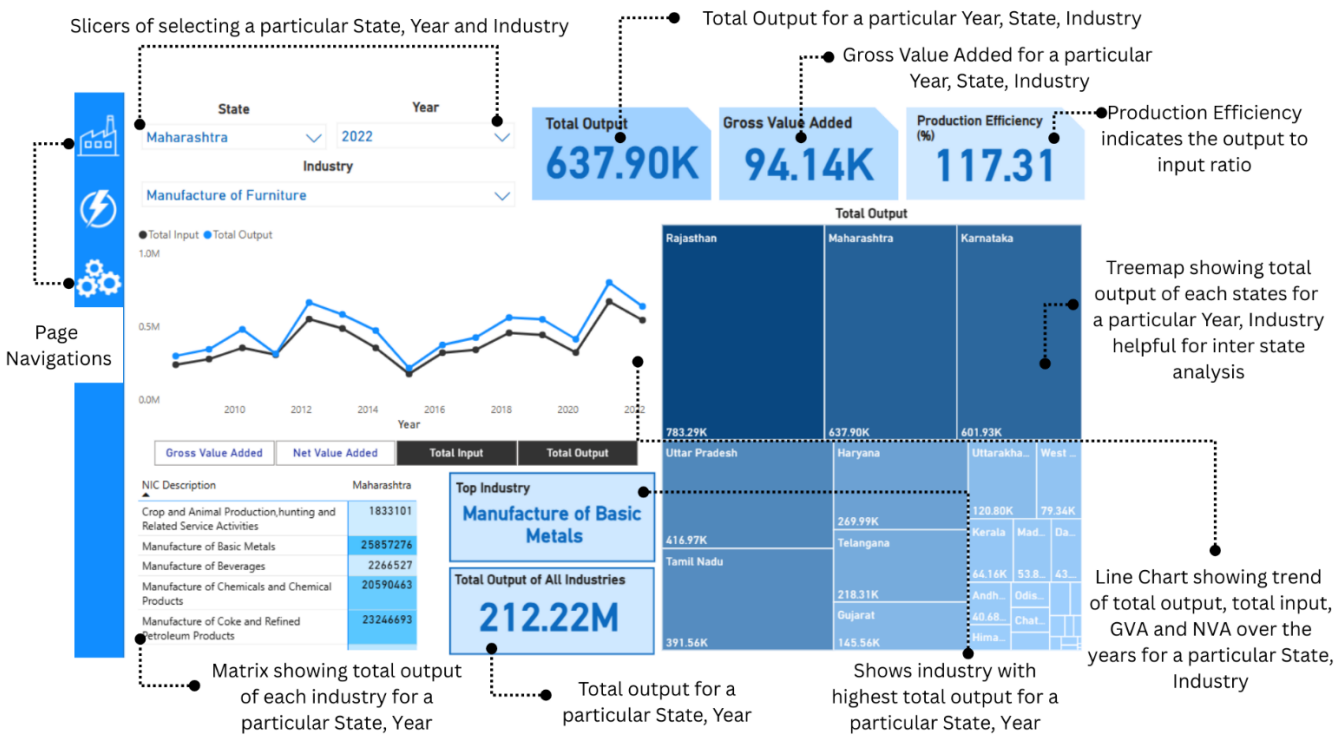
- Visuals Used: KPI cards for **key metrics**, line charts for **trends**, treemaps for **inter-state analysis**, matrix for **intra-state analysis** and stacked chart for energy composition.

- Interactivity: Filters for **state, industry, and year**, along with **field parameters** for dynamic metric selection.

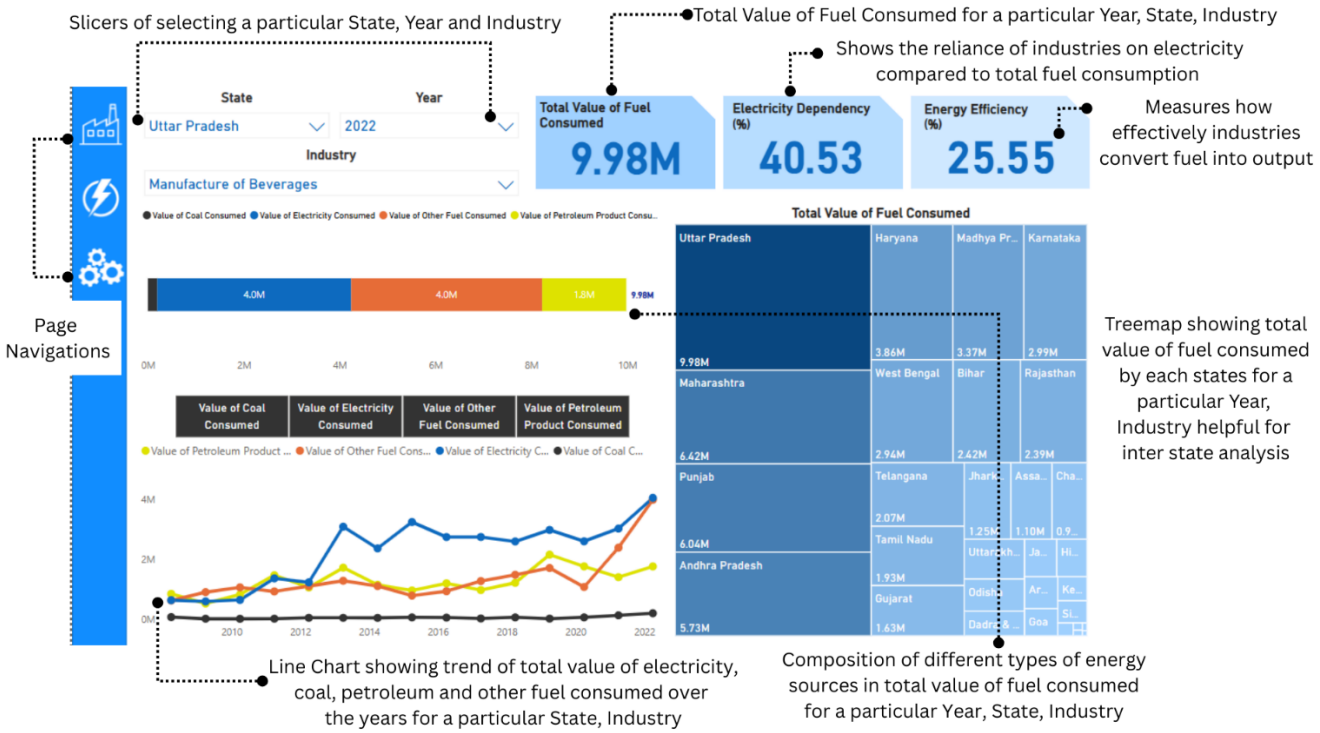
A. Factory Overview



B. Production



C. Energy Consumption



4. KEY INSIGHTS AND FINDINGS:

The dashboard offers valuable insights into India's industrial landscape. However, due to word limitations, not all findings can be included in this document. The dashboard provides a more comprehensive view, enabling deeper analysis of regional specialization, production trends, and emerging manufacturing hubs for better decision-making.

Sr. No.	State	Industry with Highest Number of Total Factories (2022-2023)
1	Dadra & N Haveli & Daman & Diu	Manufacture of Rubber and Plastics Products
2	Ladakh	Manufacture of Other Non-metallic Mineral Products
3	Telangana	Manufacture of Food Products
4	A & N. Island	Other
5	Puducherry	Manufacture of Rubber and Plastics Products
6	Tamil Nadu	Manufacture of Textiles
7	Kerala	Manufacture of Food Products
8	Goa	Manufacture of Other Non-metallic Mineral Products
9	Karnataka	Manufacture of Food Products
10	Andhra Pradesh	Manufacture of Food Products
11	Maharashtra	Manufacture of Fabricated Metal Products, Except Machinery and Equipment
12	Gujarat	Manufacture of Chemicals and Chemical Products
13	Madhya Pradesh	Manufacture of Food Products
14	Chhattisgarh	Manufacture of Food Products
15	Odisha	Manufacture of Food Products
16	Jharkhand	Manufacture of Other Non-metallic Mineral Products
17	West Bengal	Manufacture of Food Products
18	Assam	Manufacture of Other Non-metallic Mineral Products
19	Meghalaya	Manufacture of Other Non-metallic Mineral Products
20	Tripura	Manufacture of Other Non-metallic Mineral Products
21	Mizoram	Manufacture of Other Non-metallic Mineral Products
22	Manipur	Manufacture of Other Non-metallic Mineral Products
23	Nagaland	Manufacture of Other Non-metallic Mineral Products
24	Arunachal Pradesh	Manufacture of Wood and Products of Wood and Cork Except Furniture, manufacture of Articles of Straw and Plaiting Materials
25	Sikkim	Manufacture of Pharmaceuticals, Medicinal Chemical and Botanical Products
26	Bihar	Manufacture of Other Non-metallic Mineral Products
27	Uttar Pradesh	Manufacture of Food Products
28	Rajasthan	Manufacture of Other Non-metallic Mineral Products
29	Delhi	Other
30	Haryana	Manufacture of Other Non-metallic Mineral Products
31	Uttarakhand	Manufacture of Pharmaceuticals, Medicinal Chemical and Botanical Products
32	Chandigarh	Other
33	Punjab	Manufacture of Food Products

34	Himachal Pradesh	Manufacture of Pharmaceuticals, Medicinal Chemical and Botanical Products
35	Jammu & Kashmir	Manufacture of Food Products
36	Dadra & N Haveli	-
37	Daman & Diu	-

Sr. No.	State	Industry with the Highest Total Output (2022-2023)
1	Dadra & N Haveli & Daman & Diu	Manufacture of Chemicals and Chemical Products
2	Ladakh	Other
3	Telangana	Manufacture of Pharmaceuticals, Medicinal Chemical and Botanical Products
4	A & N. Island	Manufacture of Food Products
5	Puducherry	Manufacture of Computer, Electronic and Optical Products
6	Tamil Nadu	Manufacture of Motor Vehicles, trailers and Semi-Trailers.
7	Kerala	Manufacture of Coke and Refined Petroleum Products
8	Goa	Manufacture of Pharmaceuticals, Medicinal Chemical and Botanical Products
9	Karnataka	Manufacture of Basic Metals
10	Andhra Pradesh	Manufacture of Food Products
11	Maharashtra	Manufacture of Basic Metals
12	Gujarat	Manufacture of Coke and Refined Petroleum Products
13	Madhya Pradesh	Manufacture of Food Products
14	Chhattisgarh	Manufacture of Basic Metals
15	Odisha	Manufacture of Basic Metals
16	Jharkhand	Manufacture of Basic Metals
17	West Bengal	Manufacture of Basic Metals
18	Assam	Manufacture of Coke and Refined Petroleum Products
19	Meghalaya	Manufacture of Other Non-metallic Mineral Products
20	Tripura	Manufacture of Rubber and Plastics Products
21	Mizoram	Other
22	Manipur	Manufacture of Other Non-metallic Mineral Products
23	Nagaland	Manufacture of Wood and Products of Wood and Cork Except Furniture, manufacture of Articles of Straw and Plaiting Materials
24	Arunachal Pradesh	Manufacture of Beverages
25	Sikkim	Manufacture of Pharmaceuticals, Medicinal Chemical and Botanical Products
26	Bihar	Manufacture of Coke and Refined Petroleum Products
27	Uttar Pradesh	Manufacture of Food Products
28	Rajasthan	Manufacture of Basic Metals
29	Delhi	Manufacture of Food Products
30	Haryana	Manufacture of Motor Vehicles, trailers and Semi Trailers.
31	Uttarakhand	Manufacture of Motor Vehicles, trailers and Semi Trailers.
32	Chandigarh	Other
33	Punjab	Manufacture of Basic Metals

34	Himachal Pradesh	Manufacture of Pharmaceuticals, Medicinal Chemical and Botanical Products
35	Jammu & Kashmir	Manufacture of Chemicals and Chemical Products
36	Dadra & N Haveli	-
37	Daman & Diu	-

The findings provide a detailed overview of India's industrial landscape by analysing the industries with the highest number of factories and the highest total output (2022-2023) for each state. The **food processing sector** has the highest number of factories in many states, highlighting the widespread presence of agro-based industries. However, in terms of total output, **basic metals, pharmaceuticals, petroleum refining, and motor vehicles** emerge as the dominant sectors, indicating that industries with fewer factories can still contribute significantly to economic value. For instance, states like **Tamil Nadu and Haryana** lead in **motor vehicle manufacturing**, while **Gujarat and Kerala** excel in **petroleum refining**. The **pharmaceutical sector** stands out in states like **Telangana, Goa, and Himachal Pradesh**, reinforcing their role as major drug manufacturing hubs. Additionally, the variation between the number of factories and total output in different states reflects regional industrial strengths and specialization.

While document constraints limit the inclusion of all insights, the dashboard provides a deeper analysis, revealing **regional manufacturing trends, production efficiency contrasts, and emerging industrial hubs**

Note: All values related to total output, input, GVA, NVA Value of Fuel consumed in the dashboard are represented in Rs. Lakh.

Additionally, any reference to a specific year, such as 2022, corresponds to the 2022-23 period to maintain consistency across the analysis.