

Project Report

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1. INTRODUCTION

1.1 Project Overview

This document provides a comprehensive overview of the Toy Manufacturer Data Exploration and Visualization Project. The core of this initiative is to leverage the advanced analytical capabilities of Tableau to conduct an in-depth analysis of the dynamic toy manufacturing industry. The toy market is in a constant state of flux, heavily influenced by rapidly changing consumer preferences, distinct seasonal trends, and complex market dynamics. To maintain a competitive edge, it is imperative for manufacturers to analyze consumer data, sales trends, and market insights in real time. This project addresses this need by transforming a multifaceted dataset, covering various aspects of the industry, into a coherent and interactive dashboard. The ultimate goal is to empower toy manufacturers with actionable intelligence, fostering an environment of data-driven decision-making to enhance market responsiveness and strategic planning.

1.2 Purpose

The primary purpose of this project is to develop a robust analytical tool that translates raw, tabular sales data into strategic insights. The project aims to provide a deep and nuanced understanding of the industry's evolution by visualizing complex market dynamics over time. This involves dissecting historical sales data to identify emerging market demands and highlighting pivotal patterns that can inform and guide strategic decisions. The created Power BI dashboard is designed to be an intuitive, user-friendly interface for stakeholders, enabling them to explore data dynamically. By doing so, the project helps manufacturers tailor their product development strategies, refine marketing campaigns to specific consumer segments, and ultimately align their overarching business objectives with the real-world demands of the market to boost both sales and brand loyalty.

2. IDEATION PHASE

2.1 Problem Statement

The central challenge addressed by this project is the difficulty toy manufacturers face in effectively synthesizing data from multiple sources to gain a clear, strategic view of the market. The toy industry's inherent dynamism means that historical performance is not always a reliable indicator of future success. Key issues include the struggle to accurately understand consumer preferences across different demographics, predict seasonal sales peaks and troughs, and measure product performance consistently across diverse markets. Without a robust analytical solution, decision-making can be reactive and based on intuition rather than evidence. This project aims to solve this by providing a centralized tool that offers real-time insights, thereby reducing ambiguity and enabling proactive, informed business strategies.

Problem Statement (PS)	I am (Customer)	I'm trying to	But	Because	Which makes me feel
PS-1	a product manager trying to launch the right toys and align product offerings with market demands.	I'm trying to understand consumer behavior and preferences across different demographic groups to tailor products and marketing campaigns more effectively.	It's challenging to see how preferences vary among different demographic segments.	The current data (or lack of specific visualizations) makes it difficult to dissect consumer preferences by demographics like age, gender, or location, preventing me from developing interactive visualizations that would highlight these variations and enable targeted product development and marketing strategies.	Unsure and frustrated.
PS-2	a product manager at a toy company responsible for seasonal planning and product launches.	accurately predict seasonal consumer preferences and adjust production/ marketing to maximize sales and meet	I struggle to get clear, visual insights from historical sales data for seasonal trends.	The raw sales data is overwhelming and lacks straightforward visualizations that highlight seasonal patterns and consumer	Anxious and inefficient.

		demands effectively.		preferences, making it hard to identify emerging market demands and inform strategic decisions for production schedules and marketing.	
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Ps:1

Customer Problem Statement Template

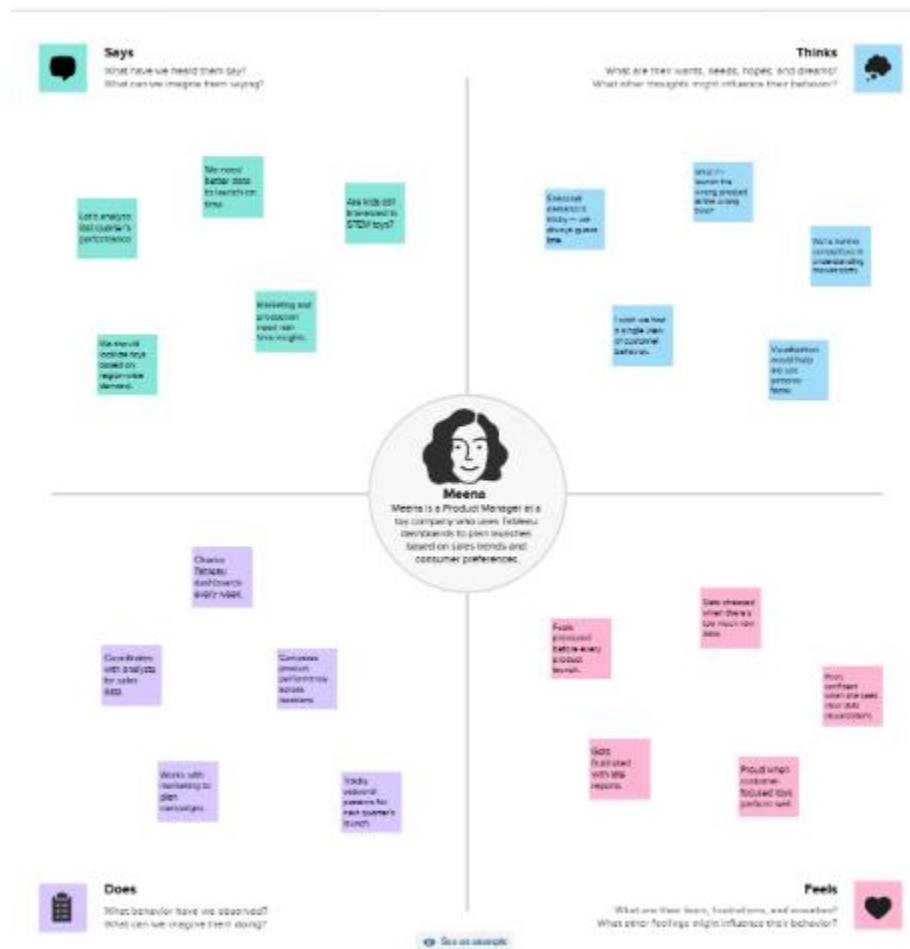
I am	I'm trying to	But	Because	Which makes me feel
a product manager trying to launch the right toys and align product offerings with market demands.	understand consumer behavior and preferences across different demographic groups to tailor products and marketing campaigns more effectively.	It's challenging to see how preferences vary among different demographic segments.	The current data (or lack of specific visualizations) makes it difficult to dissect consumer preferences by demographics like age, gender, or location, preventing me from developing interactive visualizations that would highlight these variations and enable targeted product development and marketing strategies.	Unsure and frustrated.

Ps:2

Customer Problem Statement Template

I am	I'm trying to	But	Because	Which makes me feel
a product manager at a toy company responsible for seasonal planning and product launches	accurately predict seasonal consumer preferences and adjust production/marketing to maximize sales and meet demands effectively.	I struggle to get clear, visual insights from historical sales data for seasonal trends.	The raw sales data is overwhelming and lacks straightforward visualizations that highlight seasonal patterns and consumer preferences, making it hard to identify emerging market demands and inform strategic decisions for production schedules and marketing.	Anxious and inefficient.

2.2 Empathy Map Canvas




2.3 Brainstorming

The ideation phase involved extensive brainstorming to determine the most impactful analytical views to incorporate into the dashboard. The team focused on the core business questions a sales or marketing manager would have. This led to prioritizing three main analytical themes:

1. **Product Performance Analysis:** To identify which toy categories generate the most revenue.
2. **Temporal Analysis:** To understand how sales fluctuate over months and years, identifying seasonality.
3. **Geospatial Analysis:** To pinpoint which store locations or regions are the strongest markets. These themes were selected because they directly address the foundational pillars of sales strategy: what is selling, when is it selling, and where is it selling.

Step-1: Team Gathering, Collaboration and Select the Problem Statement:



Brainstorm & idea prioritization

Before you collaborate

This session focuses on generating ideas for a visual solution that supports EV buyers in India. We've gathered relevant datasets and understood the needs of first-time EV users. Team members are familiar with basic Tableau and data handling.

Team gathering

Participants in this session have a good understanding of EV adoption trends. They were invited to the Meet board and provided with an overview of the datasets related to EV models, specifications, and charging station locations.

Set the goal

We aim to generate meaningful ideas that help EV buyers compare vehicle models, analyze performance, and find charging stations. Our goal is to turn raw EV data into a user-friendly visual dashboard that supports smart decision-making.

1 Define your problem statement

To guide our brainstorming, we rephrased our main problem as a "How Might We?" question that encourages solution-focused thinking.

PROBLEM

How might we help EV buyers in India compare electric vehicle models and locate charging stations using an interactive dashboard?

Key rules of brainstorming

To run an smooth and productive session

- Stay in topic.
- Defers judgment.
- Go for volume.
- Encourage wild ideas.
- Linken to others.
- If possible, be visual.

Step-2: Brainstorm, Idea Listing and Grouping:

2

Brainstorm

Write down any ideas that come to mind that address your problem statement.

🕒 10 minutes

Person 1: Satya



Person 2: Karthik



Person 3: Veera devi



Person 4: Manikanta



3

Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you can break it up into smaller sub-groups.

🕒 20 minutes

Dashboards and Reports



Prediction and Forecasting



AI Powered Insights



Consumer Insights



Visualizations and Analysis



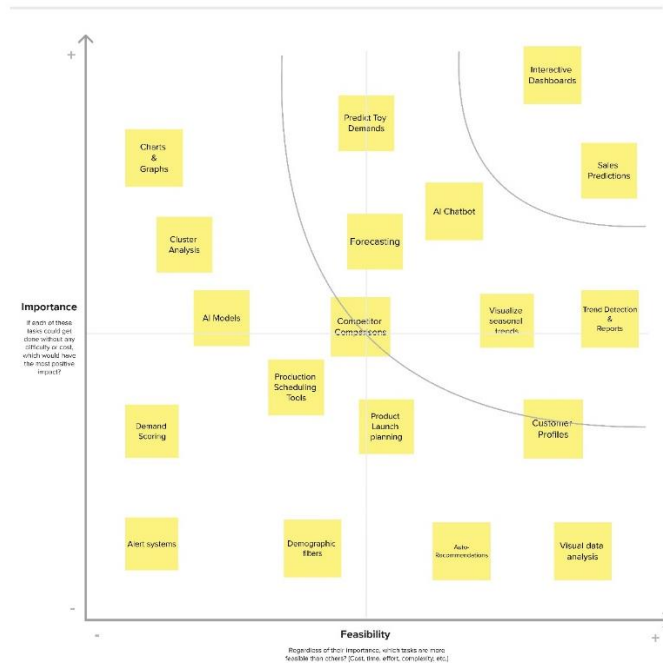
Step-3: Idea Prioritization:

4

Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

20 minutes



3. REQUIREMENT ANALYSIS

3.1 Customer Journey map

The customer journey map details a typical interaction between a user (e.g., a Marketing Manager) and the final dashboard, illustrating its practical value.

1. **Objective:** The manager needs to plan the Q3 marketing budget and wants to identify underperforming product categories in key markets.
2. **Discovery:** They open the Power BI "Toy Sales Report." The initial view provides a high-level summary of KPIs.
3. **Exploration:** The manager uses the "Year" slicer to select the previous year for a baseline. They observe the "Sales by Product Category" chart and notice that "Art & Crafts" have lower sales compared to "Electronics" and "Dolls."
4. **Deeper Insight:** They click on the "Art & Crafts" category in the bar chart. All other visuals on the dashboard instantly filter to show data for only that category. The "Sales by Store Location" map updates, revealing that sales for this category are particularly low in the major metropolitan areas.

5. Actionable Outcome: The manager now has a specific, data-backed insight. They decide to allocate a portion of the Q3 budget to a targeted digital marketing campaign for "Art & Crafts" toys in those specific urban locations. They export a PDF of this filtered view directly from Power BI to include in their budget proposal.

Scenario: (Existing experience through a product or service)	Entice How does someone become aware of this service?	Enter What do people experience as they begin the process?	Engage In the core moments in the process, what happens?	Exit What do people typically experience at the process finished?	Extend What happens after the experience is over?
Experience steps What does the person go through in the order of this service from start to finish?	How can they learn about this service? Where can they find it? How can they find it?	How can they learn about this service? Where can they find it? How can they find it?	How can they learn about this service? Where can they find it? How can they find it?	How can they learn about this service? Where can they find it? How can they find it?	How can they learn about this service? Where can they find it? How can they find it?
Interactions What interactions do they have in each step of the way? People: Who do they see or talk to? Places: Where are they? Things: What digital content is or physical objects do they use?	How can they learn about this service? Where can they find it? How can they find it?	How can they learn about this service? Where can they find it? How can they find it?	How can they learn about this service? Where can they find it? How can they find it?	How can they learn about this service? Where can they find it? How can they find it?	How can they learn about this service? Where can they find it? How can they find it?
Goals & motivations At each step, what are people's primary goals or motivations? (What do they want to achieve?)	How can they learn about this service? Where can they find it? How can they find it?	How can they learn about this service? Where can they find it? How can they find it?	How can they learn about this service? Where can they find it? How can they find it?	How can they learn about this service? Where can they find it? How can they find it?	How can they learn about this service? Where can they find it? How can they find it?
Positive moments What steps does a typical person find enjoyable, pleasant, or fun? (What do they love?)	How can they learn about this service? Where can they find it? How can they find it?	How can they learn about this service? Where can they find it? How can they find it?	How can they learn about this service? Where can they find it? How can they find it?	How can they learn about this service? Where can they find it? How can they find it?	How can they learn about this service? Where can they find it? How can they find it?
Negative moments What steps does a typical person find frustrating, confusing, or annoying? (What do they hate?)	How can they learn about this service? Where can they find it? How can they find it?	How can they learn about this service? Where can they find it? How can they find it?	How can they learn about this service? Where can they find it? How can they find it?	How can they learn about this service? Where can they find it? How can they find it?	How can they learn about this service? Where can they find it? How can they find it?
Areas of opportunity How could we make each step better? What ideas do we have? When have others suggested?	How can they learn about this service? Where can they find it? How can they find it?	How can they learn about this service? Where can they find it? How can they find it?	How can they learn about this service? Where can they find it? How can they find it?	How can they learn about this service? Where can they find it? How can they find it?	How can they learn about this service? Where can they find it? How can they find it?

3.2 Solution Requirement

The project requirements were broken down into two categories:

- Functional Requirements:

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Data Integration and Preparation	The system shall connect to various toy manufacturer data sources (e.g., sales, production, consumer demographics). The system shall allow for data cleaning and transformation to ensure data quality.

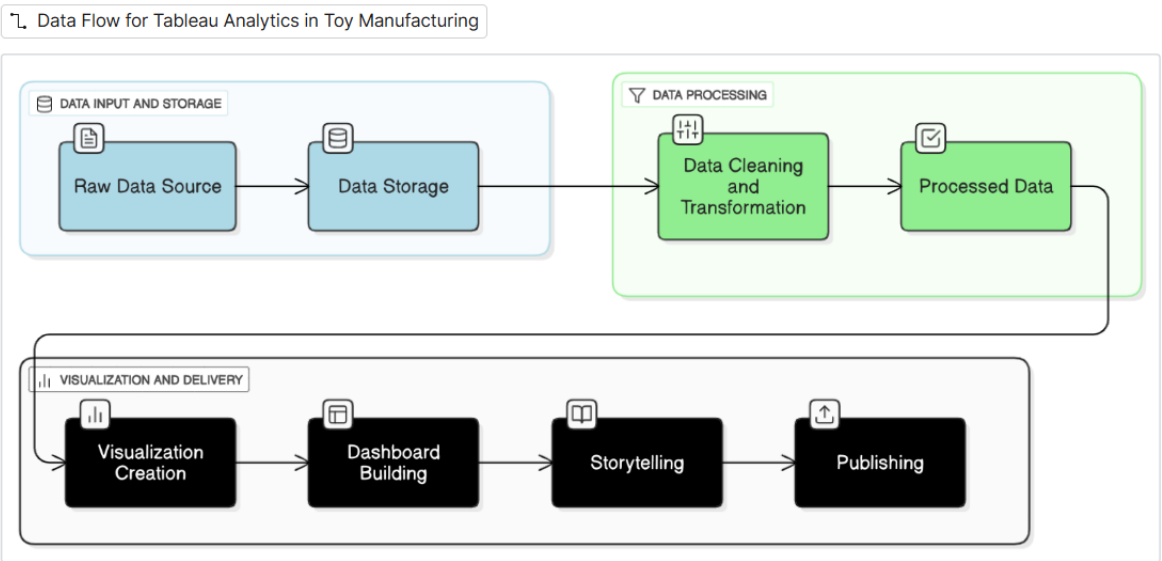
FR-2	Market Trend Analysis Dashboards	The system shall provide interactive dashboards for visualizing historical sales data over time. The system shall enable identification of emerging market demands and sales patterns across different seasons and holidays (e.g., holiday season, summer).The system shall allow users to filter and drill down into sales data by product category, region, and time period.
FR-3	Consumer Preference Analysis Dashboards	The system shall provide interactive dashboards for analyzing consumer behavior and preferences based on demographic data (e.g., age, gender, location).The system shall visualize how toy preferences vary among different demographic groups (e.g., electronic toys for teenagers in urban areas, traditional toys for younger children in rural areas).The system shall enable filtering by popular toy categories and purchasing patterns.
FR-4	Product Performance Comparison Dashboards	The system shall provide interactive dashboards to compare toy category performance across different regions or countries.The system shall visualize regional differences in demand for specific toy categories (e.g., educational toys in education-focused regions, outdoor toys in favorable weather regions).
FR-5	Interactive Visualization and User Experience	The system shall allow users to interact with visualizations through filters, parameters, and drill-down capabilities. The system shall display key performance indicators (KPIs) relevant to market trends, production, and consumer preferences.
FR-6	Export and Reporting Capabilities	The system shall allow users to export dashboards or data to various formats (e.g., PDF, image, CSV). The system shall support printing of dashboards for reporting purposes.

- Non-Functional Requirements:

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	The Tableau dashboards shall be intuitive and easy for product managers and other stakeholders to navigate and understand, even without extensive technical knowledge. The visualizations shall be clear, concise, and effectively convey insights.
NFR-2	Security	Access to the Tableau dashboards and underlying data shall be secured to prevent unauthorized access. User roles and permissions shall be implemented to ensure data confidentiality and integrity.
NFR-3	Reliability	The Tableau dashboards shall consistently display accurate data and perform as expected without frequent errors or crashes. Data connections shall be stable and maintain integrity during data refresh cycles.
NFR-4	Performance	The dashboards shall load and refresh quickly, typically within 5-10 seconds for standard views, even with large datasets, to ensure a smooth user experience and efficient decision-making. Complex calculations and visualizations should not significantly impede performance.
NFR-5	Availability	The Tableau dashboards shall be accessible to authorized users whenever needed, with minimal downtime. The underlying Tableau Server (if applicable) and data sources should be highly available.
NFR-6	Scalability	The Tableau solution shall be able to handle increasing volumes of data and a growing number of users without significant degradation in performance. The design should allow for the addition of new data sources or reports as business needs evolve.

3.3 Data Flow Diagram

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.

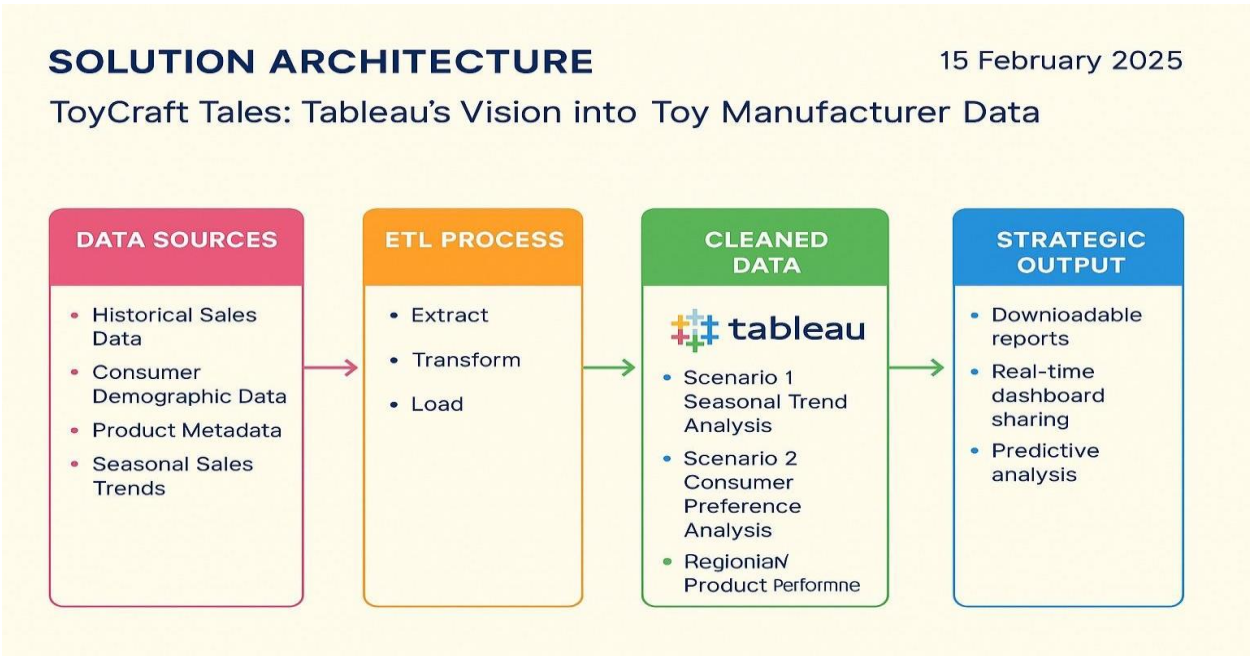


User Stories

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Product manager	Market Trend Analysis	USN-1	As a Product Manager, I want to see seasonal sales trends, so I can plan product launches effectively.	I can filter sales by season and view top-selling items.	High	Sprint-1
Marketing Specialist	Consumer Preference Analysis	USN-2	As a Marketing Specialist, I want to understand toy preferences by demographics, so I can target campaigns.	I can see toy preferences broken down by age, gender, and location.	High	Sprint-1
Sales Manager	Product Performance Comparison	USN-3	As a Sales Manager, I want to compare product sales across regions, so I can optimize distribution.	I can view regional sales performance for different toy categories.	Medium	Sprint-2

Data Analyst	Data Quality & Accessibility	USN-4	As a Data Analyst, I want clean and accessible data, so I can build reliable dashboards.	The data is free from duplicates and missing values. I can connect Tableau to the data easily.	High	Sprint-1
Executive	Strategic Overview	USN-5	As an Executive, I want a summary of key market insights, so I can make high-level strategic decisions	I can see a dashboard summarizing overall market trends and top product performance.	High	Sprint-2

3.4 Technology Stack



5.	Application Logic	Logic within Tableau for data analysis and interactivity.	Tableau (Calculations, Filters, Dashboard Actions)
6.	Visualization Engine	Software used to create and design interactive reports.	Tableau Desktop
7.	Deployment Platform	Where dashboards are published and accessed by users.	Tableau Server / Tableau Cloud
8.	Security	Mechanisms to control access and protect sensitive data	Tableau Server/Cloud Permissions, User Authentication Export to Sheets

4. PROJECT DESIGN

4.1 Problem Solution Fit

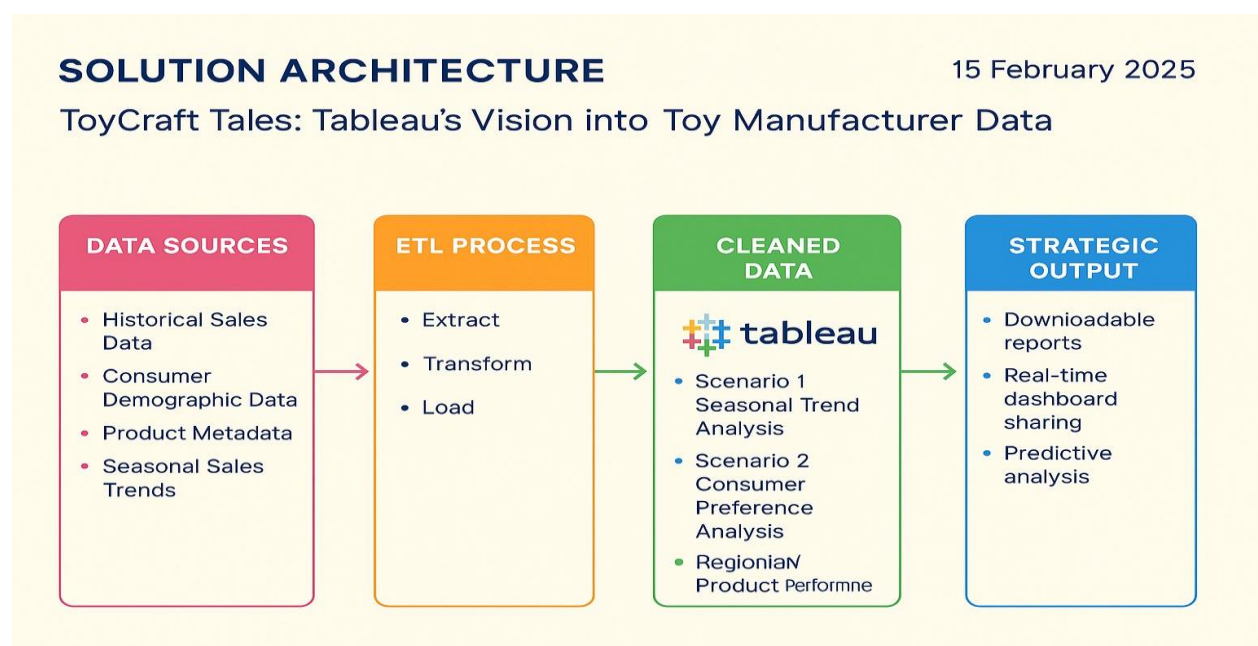
Define CS, fit into CC	1. CUSTOMER SEGMENT(S) Who is your customer? I.e. working parents of 0-5 y.o. kids Parents of 5-10 years old, craft enthusiasts, educators, Grand Parents seeking creative gifts for Grand Children.	6. CUSTOMER CONSTRAINTS What constraints prevent your customers from taking action or limit their choices of solutions? I.e. spending power, budget, no cash, network connection, available devices. <ul style="list-style-type: none"> Parents having limit time to setup craft Children have limited motor skills for intricate tasks Desire for projects that are overly messy Budget Space 	5. AVAILABLE SOLUTIONS Which solutions are available to the customers when they face the problem or need to get the job done? What have they tried in the past? What pros & cons do these solutions have? I.e. pen and paper is an alternative to digital notetaking <ul style="list-style-type: none"> Digital games/apps: Pros: immediate entertainment. Cons: increased screen time, passive engagement, less creative development. Other craft kits: Pros: provide materials. Cons: can be too complex, messy, require additional supplies, or not age-appropriate. 	Explore AS, differentiate
	2. JOBS-TO-BE-DONE / PROBLEMS Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one, explore different sides. Keeping Kids entertained, fostering creativity, finding unique gifts, learning new skill, fostering fine motor skills, limiting screen time for children, finding a gift that is both fun and provides a sense of accomplishment.	9. PROBLEM ROOT CAUSE What is the real reason that this problem exists? What is the back story behind the need to do this job? I.e. customers have to do it because of the change in regulations. The root cause is a societal shift towards increased screen time for children, combined with parents' desire to provide enriching, hands-on, and developmentally beneficial activities that also offer convenience and a sense of accomplishment without excessive mess or complexity. The challenge lies in bridging the gap between desiring creative play and the time/skill constraints of modern parenting.	7. BEHAVIOUR What does your customer do to address the problem and get the job done? I.e. directly related: find the right solar panel installer, calculate usage and benefits; Indirectly associated: customers spend free time on volunteering work (i.e. Greenpeace) <ul style="list-style-type: none"> Browse craft stores or toys aisles for activity kits. Searching online for "kid craft ideas." Asking other parents for recommendations. Attempting to use household items for impromptu crafts. Downloading free craft printables or watching DIY craft tutorials. 	Focus on J&P, tap into BE, understand RC
Identify strong TR & EM	3. TRIGGERS What triggers customers to act? I.e. seeing their neighbour installing solar panels, reading about a more efficient solution in the news. child's birthday, seeing a friend craft project, Rainy days or periods when outdoor play is not possible, seeing other parents share successfully craft project online, holidays	10. YOUR SOLUTION If you are working on an existing business, write down your current solution first, fill in the canvas, and check how much it fits reality. If you are working on a new business proposition, then keep it blank until you fill in the canvas and come up with a solution that fits within customer limitations, solves a problem and matches customer behaviour. <ul style="list-style-type: none"> A pre-cut, pre-punched felt animal puppet kit with self-adhesive parts (no sewing required for younger kids, but option for older). Includes all necessary materials (felt shapes, googly eyes, embellishments, glue dots/adhesive). Comes with simple, visual, step-by-step instructions. Focuses on creating appealing animal characters that can be used for imaginative play post-crafting. Packaged neatly to minimize mess during the activity. Sources 	8. CHANNELS of BEHAVIOUR 8.1 ONLINE What kind of actions do customers take online? Extract online channels from #7 Pinterest, YouTube (craft tutorials), Etsy (handmade kits), Amazon (toy supplies), parenting blogs, social media groups. 8.2 OFFLINE What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development. Local craft stores, toy stores, school supply stores, community workshops, children's playdates, parents meetups(for recommendations)	Extract online & offline CH of BE
	4. EMOTIONS: BEFORE / AFTER Before: parents might feel overwhelmed, frustrated by screen time battle, or stressed by finding new activities. After: Parents feel relieved, proud of their child's creativity, satisfied with product and happy.			

4.2 Proposed Solution

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Toy manufactures often face challenges in understanding complex sales data, identifying market trends, and optimizing production. This leads to inefficient inventory management, missed sales opportunities, and reduced profitability. Extracting meaningful insights from raw data can be time-consuming and require specialized analytical skills.
2.	Idea / Solution description	Toy craft Tales is a comprehensive data visualization solution built using Tableau, designed specially for toy manufactures. It integrates various data sources (sales, inventory, production, customer feedback) to provide interactive dashboards and reports. The solution will offer real-time insights into product performance, regional sales, customer demographics, and inventory levels, enabling data-driven decision-making.
3.	Novelty / Uniqueness	While data visualization tools are common, ToyCraft Tales offers a unique focus on the toy manufacturing industry, with pre-built dashboards tailored to specific industry KPIs (e.g., seasonal sales trends, toy safety recall analysis, licensing impact). Its intuitive interface allows non-technical users to easily explore data and gain actionable insights without extensive training. The emphasis on storytelling through data within the context of toy manufacturing sets it apart.
4.	Social Impact / Customer Satisfaction	<p>Social Impact: By optimizing production and reducing waste through better forecasting, ToyCraft Tales contributes to more sustainable manufacturing practices. It can also help manufacturers identify trends for educational or inclusive toys, positively impacting child development.</p> <p>Customer Satisfaction: For toy manufacturers, it leads to improved operational efficiency, higher profitability, and better product development aligned with market demand, ultimately resulting in greater business satisfaction. Indirectly, consumers benefit from better availability of desired toys and more innovative products.</p>

5.	Business Model (Revenue Model)	<p>The primary revenue model will be a Software-as-a-Service (SaaS) subscription model, with tiered pricing based on the size of the manufacturing operation and the level of data integration/features required. Additional revenue streams could include:</p> <p>Consultation Services: Offering tailored dashboard development and data integration services.</p> <p>Premium Features: Advanced analytics, predictive modelling, or integration with ERP/CRM systems as add-on modules.</p> <p>Training & Support: Paid training programs for effective utilization of the platform</p>
6.	Scalability of the Solution	<p>ToyCraft Tales is designed for high scalability. It can handle increasing volumes of data from various sources as manufacturers grow. Tableau's robust architecture allows for easy expansion to accommodate more users and more complex analytical requirements. The modular design enables the addition of new data connectors, dashboards, and analytical features without re-engineering the core solution. Cloud-based deployment options will further enhance its scalability and accessibility for manufacturers of all sizes.</p>

4.3 Solution Architecture



5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

Product Backlog, Sprint Schedule, and Estimation

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Data Collection	USN-1.1	Collection of Data	2	High	Satya
		USN-1.2	Loading Data	1	High	karthik
Sprint-1	Data Preprocessing	USN-1.3	Handling Missing Values	3	High	Veeradevi
		USN-1.4	Handling Categorical values	2	High	Manikanta
Sprint-2	Model Building	USN-2.1	Model Building	5	High	Satya
		USN-2.2	Testing Model	3	High	Karthik
Sprint-2	Deployment	USN-2.3	Working HTML Pages.	3	High	Manikanta
		USN-2.4	Flask deployment	5	High	veeradevi

Project Tracker, Velocity & Burndown Chart

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	8	5 Days	19 May 2025	23 May 2025	8	23 May 2025
Sprint-2	16	5 Days	26 May 2025	30 May 2025	16	30 May 2025

Velocity

Imagine we have a 10-day sprint duration, and the velocity of the team is 20 (points per sprint). Let's calculate the team's average velocity (AV) per iteration unit (story points per day)

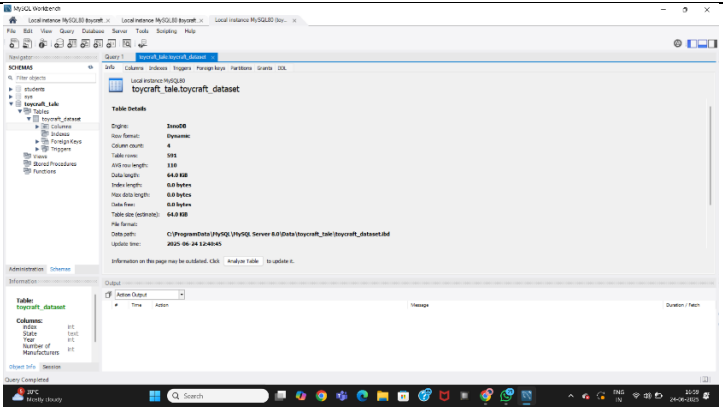
$$AV = \frac{\text{sprint duration}}{\text{velocity}} = \frac{20}{10} = 2$$

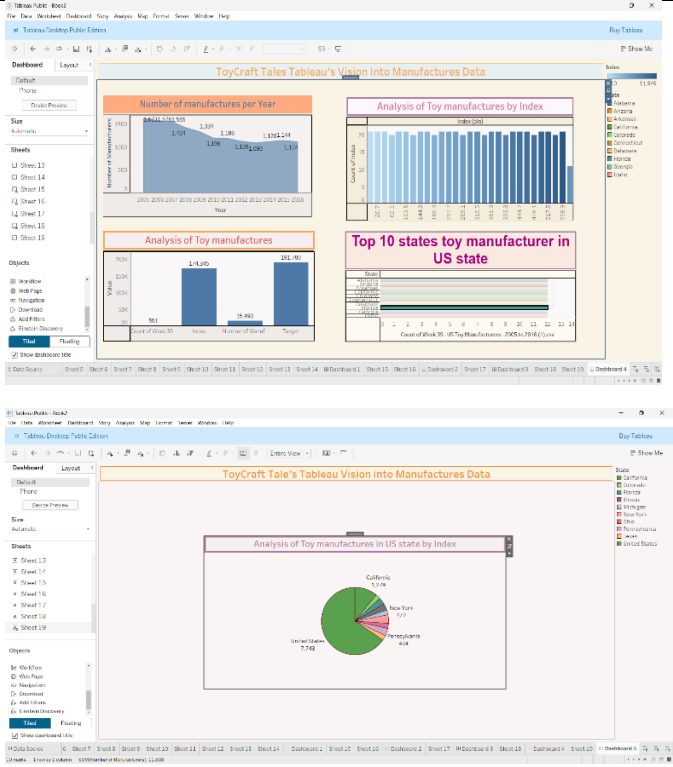
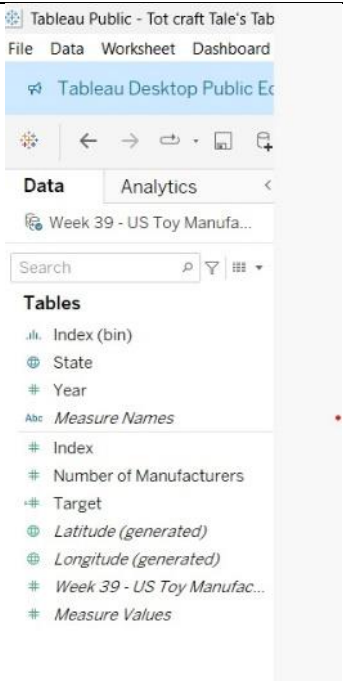
Burndown Chart

A burn down chart is a graphical representation of work left to do versus time. It is often used in agile software development methodologies such as Scrum. However, burn down charts can be applied to any project containing measurable progress over time.

6. FUNCTIONAL AND PERFORMANCE TESTING

6.1 Performance Testing

S.No.	Parameter	Screenshot / Values
1.	Data Rendered	
2.	Data Preprocessing	<ol style="list-style-type: none"> Removed the index column → It was just a row ID. Renamed fields → Example: Number of Manufacturers was renamed to Manufacturers for cleaner axis labels. Converted Year to date → Created a calculated field: DATE(DATESTR([Year])) to enable timeline charts. Created hierarchy → Dragged State into Year to enable drill-down by time per state. Added filters → Used filters for State or Year for better dashboard interactivity. Grouped smaller states into “Others” → This helped produce clearer visuals. Sorted by value → Sorted bar charts by manufacturer count to quickly highlight high-value states.

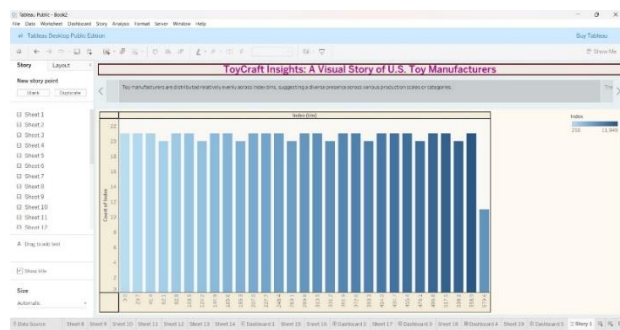
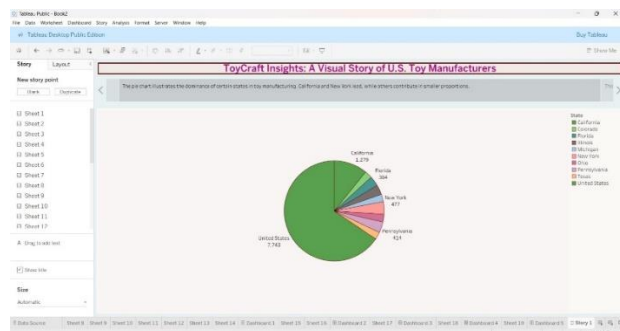
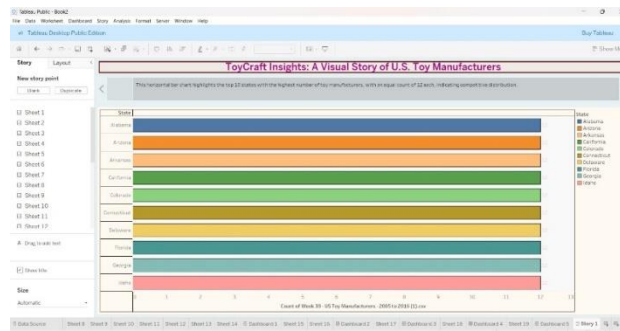
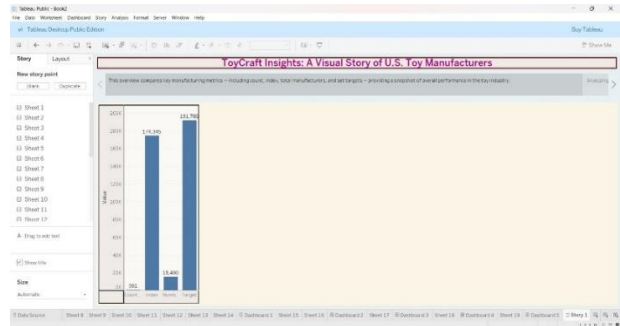
<p>3.</p>	<p>Utilization of Filters</p>	
<p>4.</p>	<p>Calculation fields Used</p>	
<p>5.</p>	<p>Dashboard design</p>	<p>No of Visualizations / Graphs –</p> <ol style="list-style-type: none"> 1. Analysis of the number of Manufacturers by Year 2. Analysis of Toy Manufacturer by Index 3. Analysis of toy Manufacturers in US state By Index

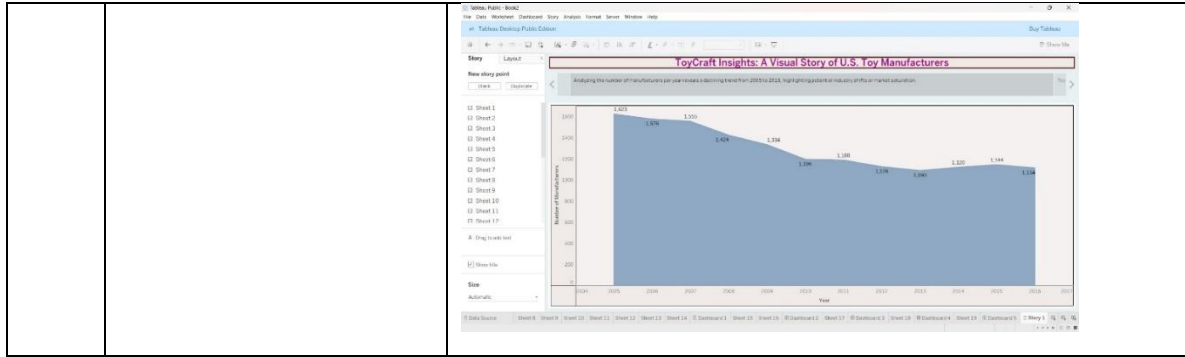
4. Analysis of Toy Manufacturers

5. Top 10 states toy manufacturer in US state

6 Story Design

No of Visualizations / Graphs –





7. RESULTS

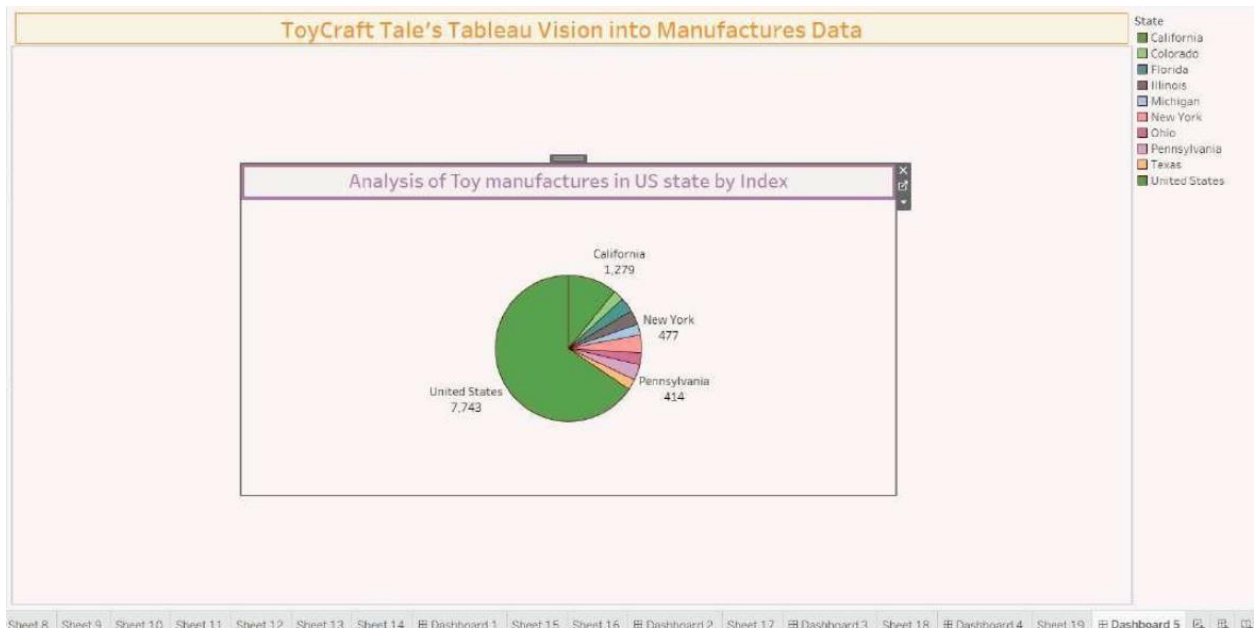
7.1 Output Screenshots

The final deliverable of the project is the interactive tableau dashboard. The screenshot below represents the main view of the report, summarizing the key performance indicators and visualizations developed.

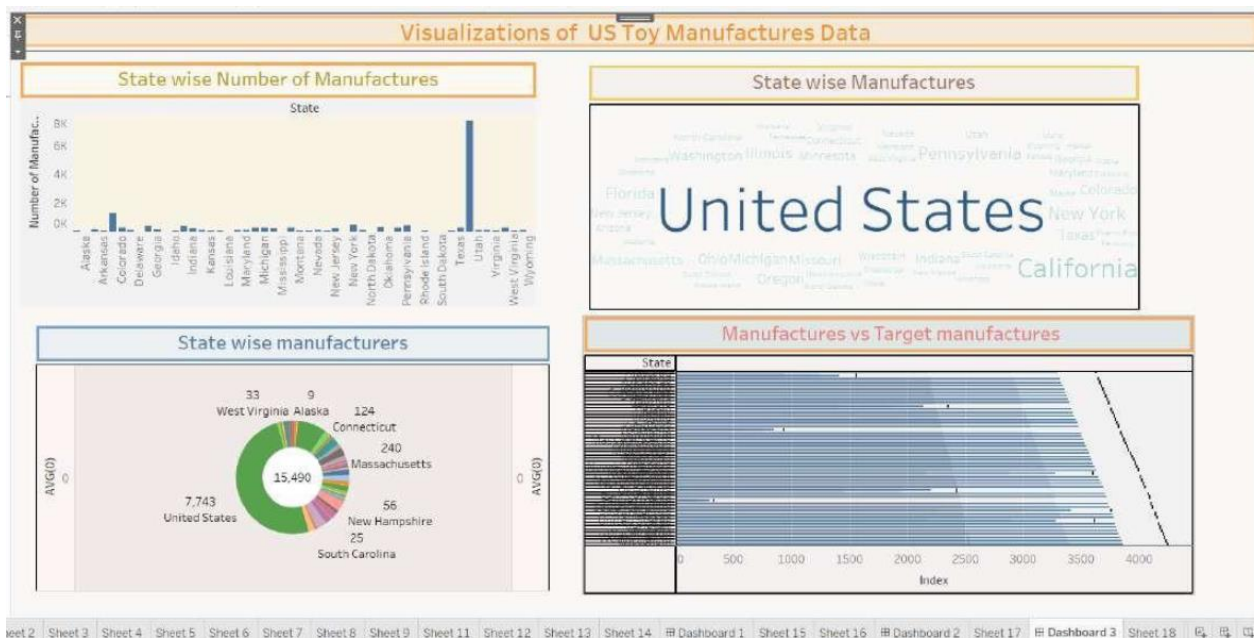
Dashboard-1



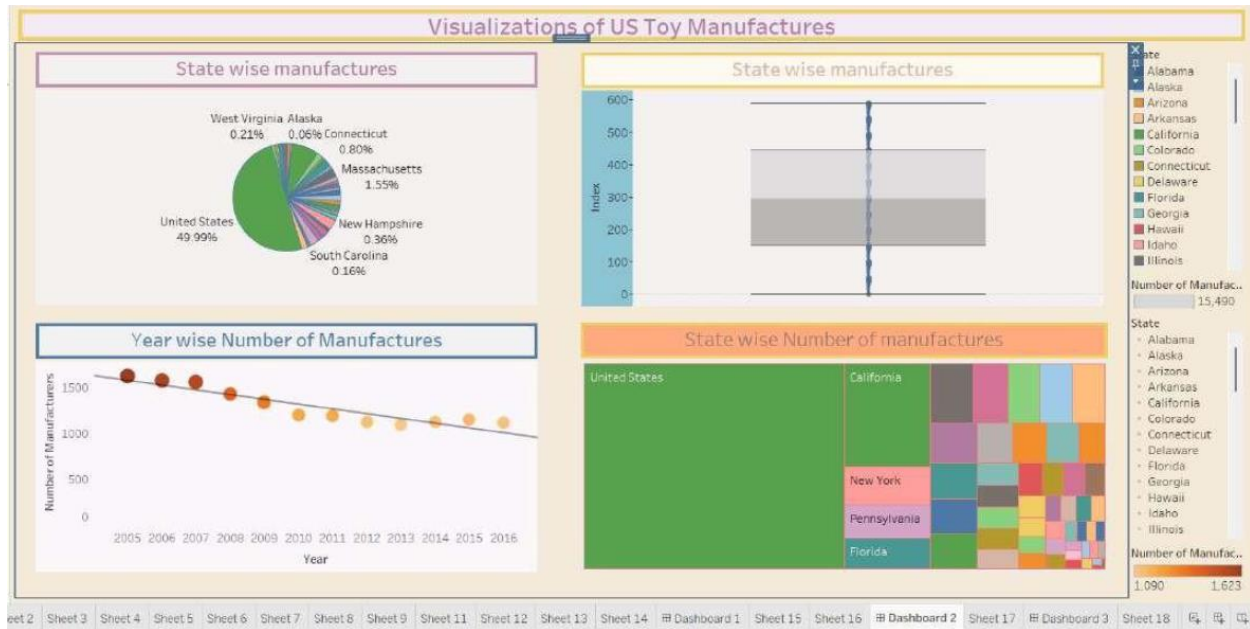
Dashboard-2



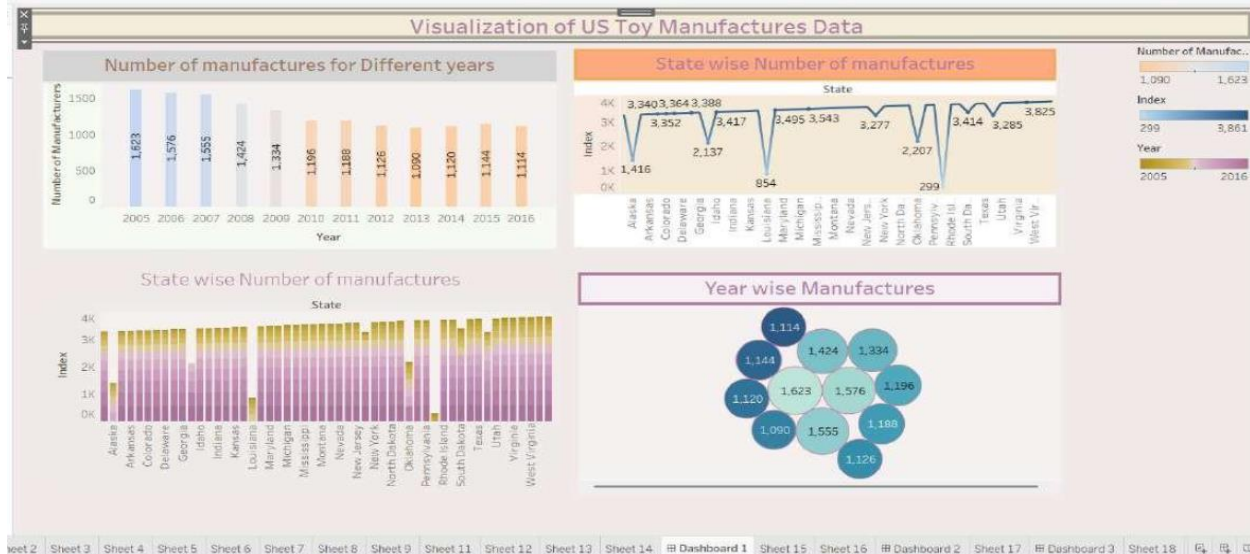
Dashboard-3



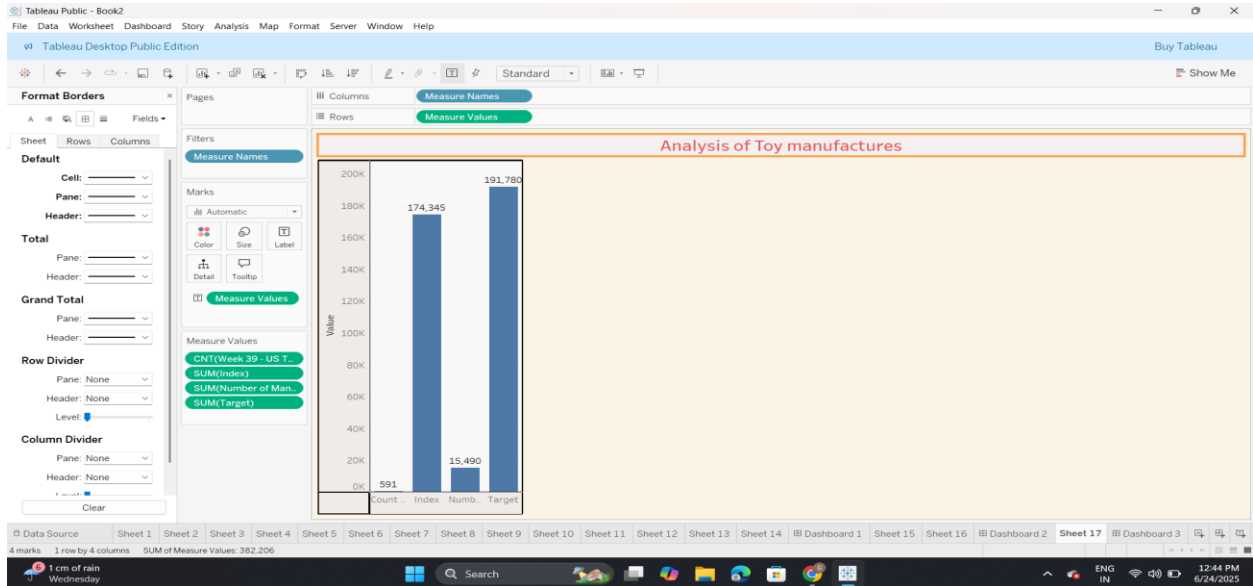
Dashboard-4



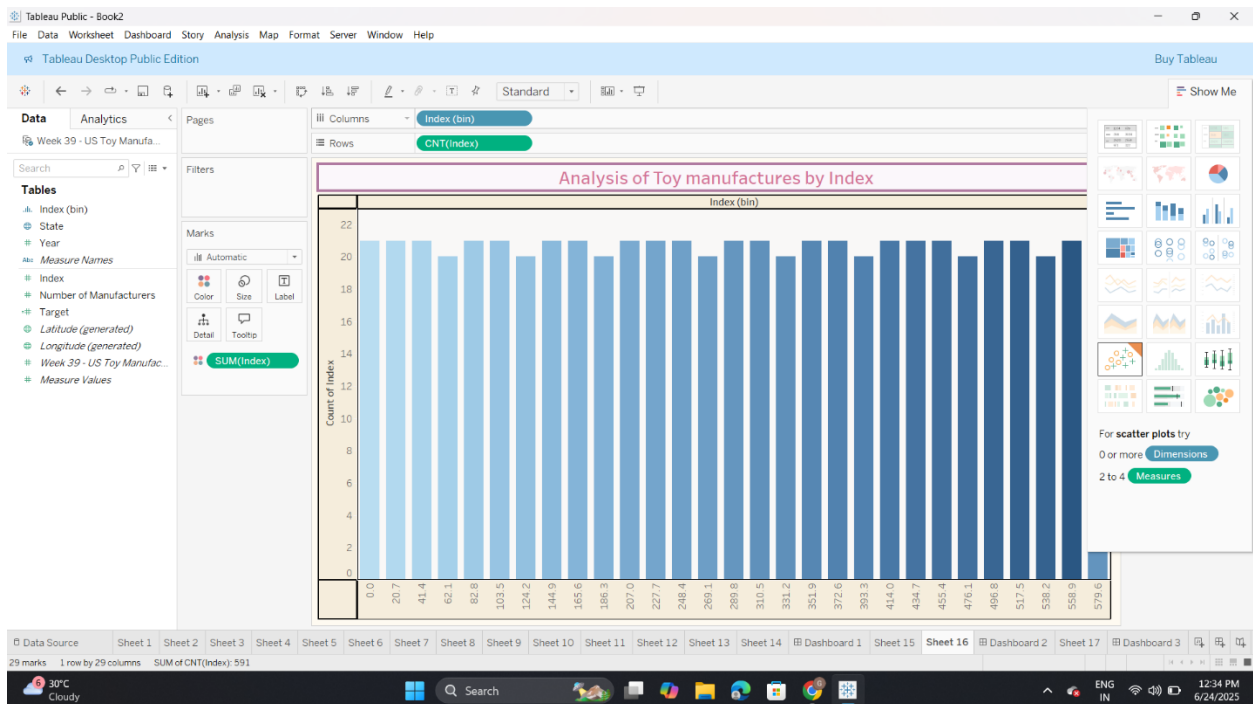
Dashboard-5



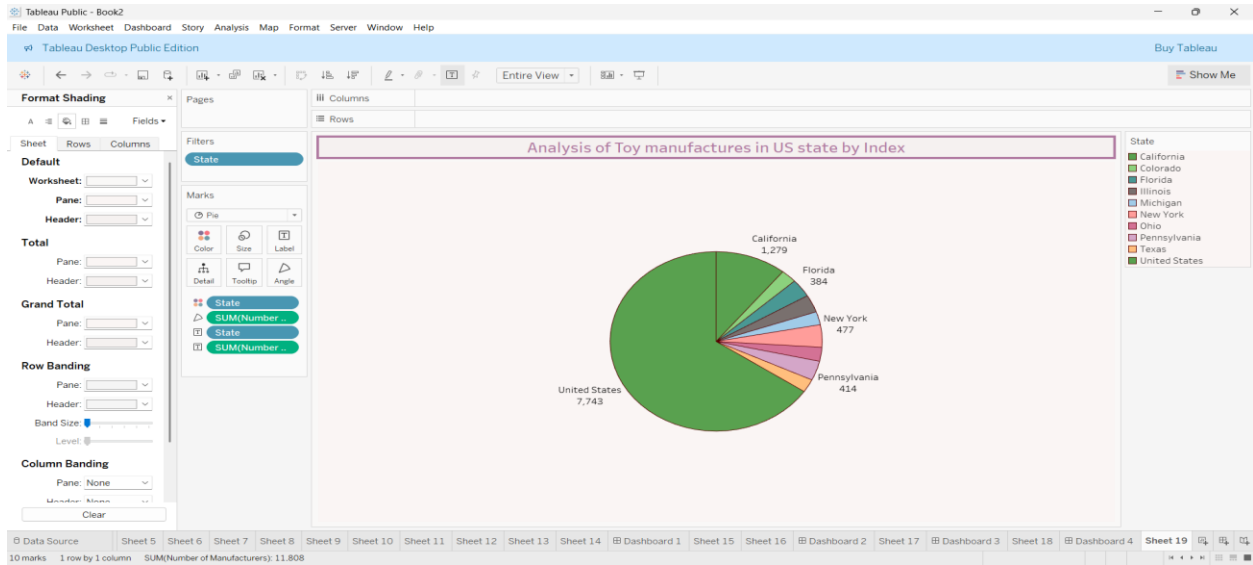
Analysis of Toy manufactures



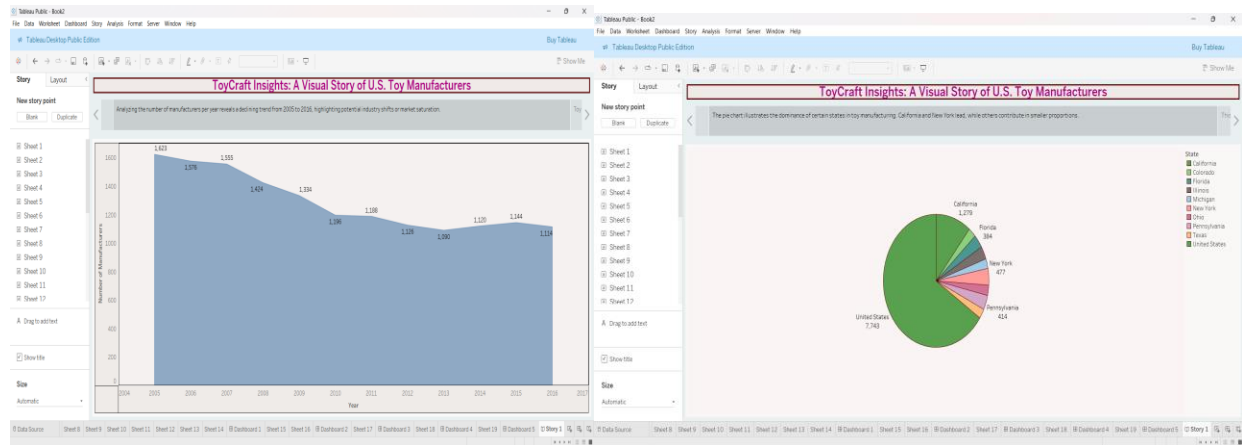
Analysis of manufacturers by Index

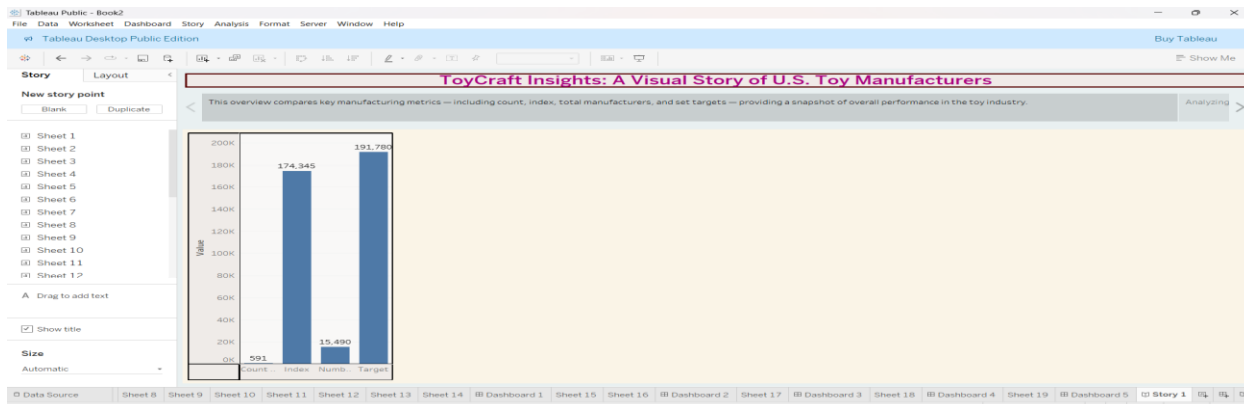
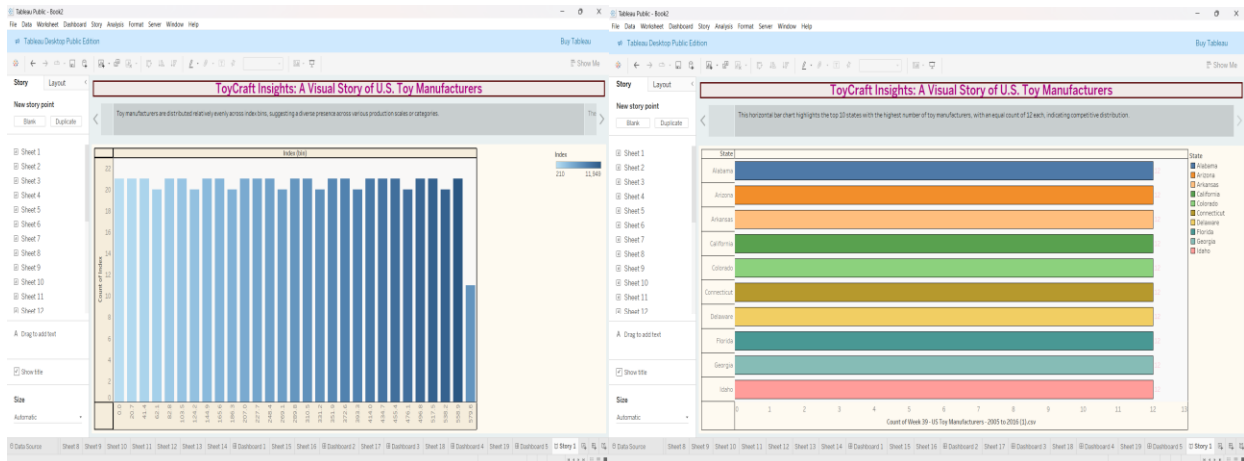


Analysis of manufacturers in US State by Index



Screenshots of our Project Story





8. ADVANTAGES & DISADVANTAGES

Advantages:

- **Single Source of Truth:** The dashboard centralizes sales data, eliminating discrepancies that arise from multiple disparate reports and ensuring all stakeholders are looking at the same information.
- **Speed to Insight:** It dramatically reduces the time required to move from raw data to actionable insight. What might have taken hours of spreadsheet work can now be discovered in seconds through interactive filtering.
- **Increased Data Literacy:** By presenting data in an intuitive, visual format, the dashboard makes complex information accessible to a broader, non-technical audience, fostering a more data-aware culture.

- **Enhanced Strategic Alignment:** It provides a clear, objective view of business performance, enabling teams to align their strategies and resources with what the data shows is working most effectively.

Disadvantages:

- **Dependence on Historical Data:** The insights are retrospective as they are based on a static, historical dataset. The dashboard does not provide real-time or predictive capabilities in its current form.
- **Data Granularity Limitations:** The analysis is constrained by the columns present in the source dataset. Without additional data on customer demographics, marketing spend, or supply chain logistics, the "why" behind certain trends cannot be fully explored.
- **Risk of Misinterpretation:** While designed for clarity, any data visualization can be misinterpreted if the user lacks context. The dashboard is a tool to aid human analysis, not replace it.

9. CONCLUSION

In conclusion, this project successfully met its objective of developing a powerful and intuitive Power BI dashboard for the analysis of toy manufacturer data. By effectively processing, modeling, and visualizing a complex dataset, the project provides a clear solution to the challenge of tracking market trends and product performance. The resulting report empowers stakeholders to move beyond manual data analysis and embrace a more dynamic, interactive approach to business intelligence. This tool serves as a critical asset for strategic planning, enabling the company to better understand its market landscape and make faster, more informed decisions to enhance its competitive standing in the toy industry.

10. FUTURE SCOPE

Future Enhancements:

To further enhance the analytical capabilities of this solution, the following future enhancements are recommended:

- **Real-time Data Integration:** Modify the architecture to connect the Power BI dashboard to a live sales database (e.g., a SQL server). This would provide up-to-the-minute performance tracking.
- **Predictive Analytics and Forecasting:** Integrate Python or R scripts within Power BI to build time-series forecasting models, allowing the business to predict future sales based on historical patterns.
- **Customer Sentiment Analysis:** Incorporate unstructured data from sources like customer reviews and social media mentions. Perform sentiment analysis to link customer opinions directly to product sales performance.
- **Holistic Business View:** Expand the data model to include data from other business functions, such as marketing (campaign costs and ROI), supply chain (inventory levels), and finance (detailed profit margins), to create a comprehensive, 360-degree view of the business.

11. APPENDIX

- **Dataset link:**

<https://www.kaggle.com/datasets/thedevastator/toy-manufacturers-in-us-states?select=Week+39+-+US+Toy+Manufacturers+-+2005+to+2016>.hyper

- **GitHub Link:**

<https://github.com/veeradevi08/Toy-Manufacturer-Data-Analysis>

- **Project Demo Link:**

<https://drive.google.com/file/d/1fnHC6ELJpdGfzfMdyn08OVPrsjTkVkjk/view?usp=sharing>

- **Tableau Public Link:**

<https://public.tableau.com/app/profile/venkata.satya.lakshmi.devi.gabu/vizzes>