

*An internship in*  
**Data Analytics with Tableau**  
by  
**SmartInternz**

**Project Name:** ToyCraft Tales: Tableau's Vision into Toy Manufacturer Data

**Project Id:** LTVIP2025TMID51568

**Project Mentor:** J Prasanth Kumar

***Team Members:***

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I wish to express my thanks to all Teaching and Non-teaching staff members who were helpful in many ways for the completion of the project.

## ABSTRACT

This project, titled “**ToyCraft Tales: Tableau’s Vision into Toy Manufacturer Data**,” focuses on transforming diverse toy industry datasets into clear, actionable insights through interactive visual analytics. By cleaning and organizing data on toy sales, production volumes, consumer demographics, and geographic performance, the project leverages Tableau’s visualization capabilities to uncover key patterns and trends. The project involved the creation of calculated fields (e.g., *SeasonalDemandScore*, *ToyCategoryIndex*), the application of filters (e.g., age group, region, product type), and the design of interactive dashboards and storyboards to present insights across time periods and demographic segments. These visualizations were designed to support strategic decisions in areas like product development, inventory planning, and targeted marketing. The final dashboards empower manufacturers, marketers, and stakeholders in the toy industry to make data-driven decisions by highlighting seasonal demand shifts, regional sales performance, and consumer preference variations. With its adaptable and scalable design, the project opens opportunities for future enhancements, including real-time sales data integration, predictive modeling, and broader industry benchmarking.

### Key Words:

- Tableau Dashboard
- Toy Industry Analytics
- Consumer Preference Visualization
- Seasonal Sales Trends
- Product Performance Insights
- Interactive Data Storytelling

# Project Report Format

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## 1. INTRODUCTION:

The toy manufacturing industry is shaped by factors such as seasonal demand, consumer preferences, product categories, and regional trends. This project aims to analyze toy market data and visualize key insights using Tableau to better understand how different factors impact sales, helping manufacturers make informed decisions.

### 1.1. Project overviews:

The dataset contains toy manufacturing and sales records, including product features such as toy category, sales volume, age group, season, price, and region. It includes various attributes related to consumer preferences, seasonal demand, and geographic performance. The variable “Sales” can be considered the dependent variable, while other columns represent product details, demographic factors, and time-based information.

This project, **"ToyCraft Tales: Tableau's Vision into Toy Manufacturer Data,"** aims to explore and analyze toy industry trends using a structured dataset. The objective is to identify key factors influencing toy sales, such as product type, age group, seasonality, and regional demand.

By leveraging Tableau, the project will create interactive dashboards, stories, bar charts, maps, and summary dashboards to visualize sales patterns, understand demographic preferences, and compare product performance across regions and time. This analysis will support manufacturers, marketers, and stakeholders in making informed, data-driven decisions.

### 1.2. OBJECTIVE

- Identify key factors influencing toy sales, such as category, season, and age group.
- Analyze consumer preferences based on demographics like age, gender, and region.
- Explore the impact of seasonal trends on product performance.
- Compare toy sales across different regions to understand geographic demand.
- Create interactive Tableau dashboards and stories to visualize insights clearly.
- Help manufacturers and marketers make informed, data-driven decisions.

## 2. Project Initialization and Planning Phase:

### 2.1. Define Problem Statement:

Problem Statement (PS)	I am (Customer)	I'm trying to	But	Because	Which makes me feel
PS-1	A toy manufacturer or business analyst	Understand what drives toy sales across seasons and regions	There is no centralized, visual tool	Sales data is unstructured and scattered across formats	Uncertain about production and marketing strategies
PS-2	A marketing strategist in the toy industry	Tailor campaigns based on consumer preferences and trends	Insights are not easily accessible	Consumer behavior is hidden within raw datasets	Ineffective in targeting the right audience
PS-3	A product manager	Compare product performance across different regions	Sales trends are unclear	Regional data lacks visualization for comparison	Risk of poor inventory planning
PS-4	A retail distributor or decision-maker	Make informed stocking and distribution decisions	I can't interpret product demand efficiently	There's no interactive way to analyze category-wise and regional performance	Disconnected from actual market needs

## 2.2 Empathy Map Canvas:

# Empathy Map



## 2.3 Brain Storming:

### Step 1: Team Gathering, Collaboration and Problem Statement:

Our team collaborated to identify key challenges in the toy manufacturing industry, particularly the difficulty of understanding sales trends, consumer preferences, and regional product performance. After discussing various themes such as seasonal demand, product popularity by demographics, inventory optimization, and strategic market expansion, we decided to focus on uncovering actionable insights from toy sales data.

The main objective was to use Tableau to explore and visualize patterns that can help toy manufacturers, marketers, and decision-makers understand what drives sales, optimize product planning, and make data-backed strategic decisions.

#### Problem Statement:

*How can toy sales data be visualized and analyzed using Tableau to identify seasonal trends, demographic preferences, and regional performance—ultimately supporting better production, marketing, and inventory strategies?*

#### Team Members:

- Team Leader: Prasanna Lakshmi Nandeti
- Team Member: Hari Chandana Madike
- Team Member: Johnson Korapati
- Team Member: Revanth M

### Step 2: Brainstorming, Idea Listing and Grouping:

S.No	Idea Description	Category
1	Visualize average toy sales by category	Product Insights
2	Analyze sales variation across age groups	Consumer Demographics
3	Explore relationship between season and sales volume	Seasonal Trends
4	Compare sales of indoor vs. outdoor toys	Product Type Comparison
5	Group regional insights by state or zone	Geographical Analysis
6	Use calculated field: TotalUnitsSold	Data Preparation
7	Create sales range bins (e.g., <1000, 1000–5000, etc.)	Binning / Categorization
8	Design dashboards with filters (e.g., region, category, age)	Dashboard Interactivity
9	Build Tableau Story to narrate insights	Storytelling & Reporting
10	Embed dashboards in a Flask web app	Deployment & Integration
11	Add trend lines to observe time-based changes	Time Series Analysis
12	Compare sales of new vs. classic toy lines	Product Lifecycle Insights

### Step 3: Idea Prioritization Table:

S.No	Idea Description	Impact	Feasibility	Priority
1	Visualize average toy sales by category	High	Easy	High
2	Analyze sales variation across age groups	High	Easy	High
3	Explore relationship between season and sales volume	High	Medium	High
4	Compare indoor vs. outdoor toy sales	Medium	Easy	Medium
5	Group insights by region	Medium	Medium	Medium
6	Use calculated field: TotalUnitsSold	Medium	Easy	High
7	Create sales bins for better visual clarity	Medium	Easy	High
8	Add dashboard filters (region, category, age)	High	Medium	High
9	Build a Tableau Story	High	Medium	High
10	Embed dashboard in Flask web app	High	Hard	Medium
11	Add trend lines for time-based analysis	Medium	Easy	Medium
12	Compare new vs. classic toy lines	Medium	Medium	Medium

### 3. Requirement Analysis:

#### 3.1 Customer Journey Map: Toy Market Trends Dashboard:

Stage	Actions & Touchpoints	Experience & Emotions	Pain Points	Opportunities	User Goals
Awareness	<ul style="list-style-type: none"> <li>- Sees dashboard via website, LinkedIn, industry blog, or Tableau Public</li> <li>- Reads summary and title</li> </ul>	Curious, Interested	Unsure if dashboard is toy-specific or relevant to their role	Use toy-focused titles and engaging thumbnails	Attract interest and clarify purpose
Consideration	<ul style="list-style-type: none"> <li>- Clicks the dashboard link</li> <li>- Skims intro and checks layout/features</li> <li>- Uses filters (e.g., category, region, age group)</li> <li>- Views charts and time trends</li> </ul>	Engaged, Cautious	Layout may feel complex or overwhelming	Add short onboarding steps or guided tour	Understand the dashboard and its purpose
Exploration	<ul style="list-style-type: none"> <li>- Views charts and time trends</li> <li>- Exports visuals</li> <li>- Shares with marketing or planning teams</li> <li>- Notes insights</li> <li>- Subscribes for updates</li> </ul>	Excited, Inquisitive	Filters may be confusing; charts may load slowly	Add tooltips/examples; improve performance	Discover patterns and insights from data
Decision	<ul style="list-style-type: none"> <li>- Subscribes for updates</li> <li>- Returns for new data</li> <li>- Leaves feedback</li> </ul>	Satisfied, Confident	Limited export options; unclear formats	Enable one-click exports and formatted reports	Share insights and support team planning
Retention		Loyal, Empowered	No notifications or follow-up on feedback	Enable email alerts; respond to feedback actively	Stay informed and continually engaged

## 3.2 Solution Requirements

### Functional Requirements (FRs):

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
<b>FR-1</b>	Data Import	<ul style="list-style-type: none"><li>- Import toy sales data from CSV files</li><li>- Enable live integration with a database (e.g., MySQL/PostgreSQL)</li></ul>
<b>FR-2</b>	Data Cleaning & Transformation	<ul style="list-style-type: none"><li>- Handle missing values and inconsistent formats</li><li>- Add calculated fields like <i>TotalUnitsSold</i>, <i>SalesBin</i>, <i>Season</i></li></ul>
<b>FR-3</b>	Data Visualization	<ul style="list-style-type: none"><li>- Create Tableau worksheets for category, region, and season</li><li>- Build multiple dashboards (sales trend, region-wise, demographic-wise)</li><li>- Enable filtering by toy category, age group, and region</li><li>- Enable tooltips, hover info, filters, and highlights</li><li>- Drill-down to monthly or product-level data</li></ul>
<b>FR-4</b>	User Interaction	<ul style="list-style-type: none"><li>- Role-based access for Manufacturer, Marketer, Analyst</li><li>- Allow dashboard exports (PDF/Image)</li><li>- View performance comparison charts and trend analysis</li><li>- Allow users to submit suggestions or feedback</li><li>- Enable version control and iteration of dashboard updates</li></ul>
<b>FR-5</b>	User Access	
<b>FR-6</b>	Feedback Loop	

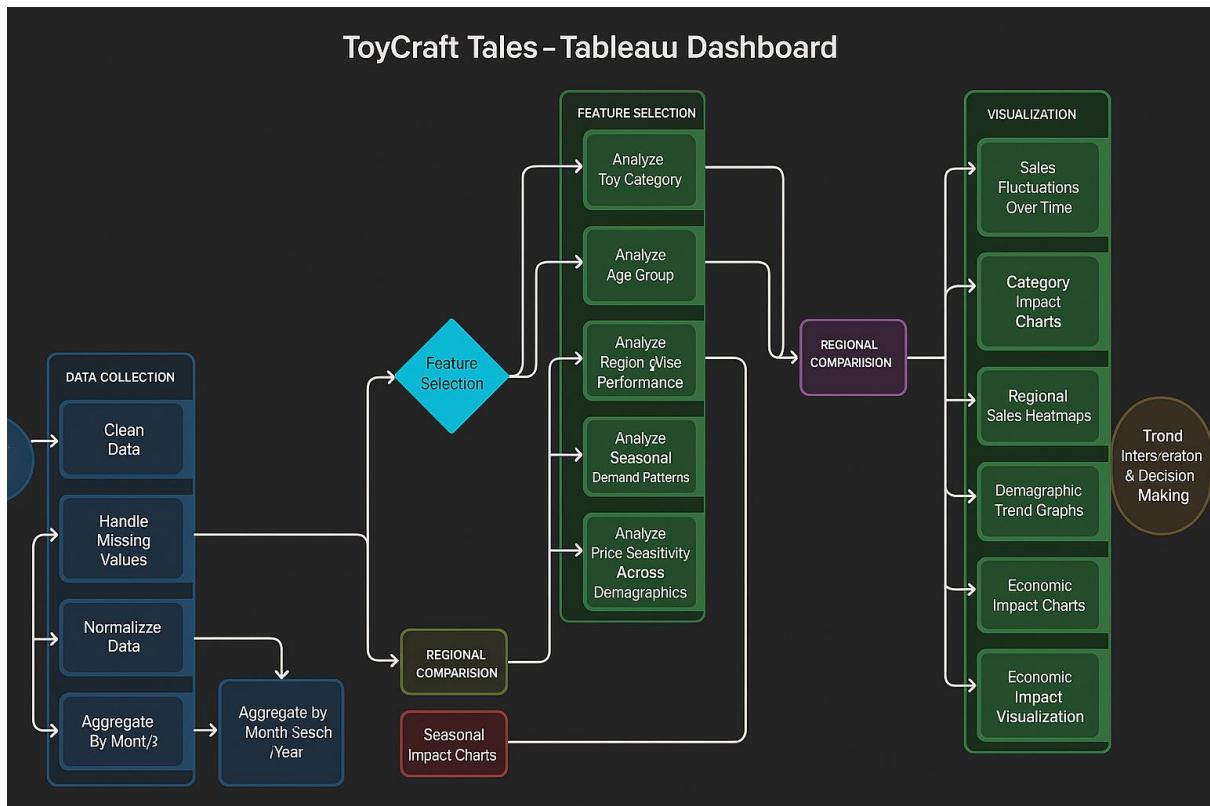
### Non-Functional Requirements (NFRs):

NFR No.	Non-Functional Requirement	Description
<b>NFR-1</b>	Usability	Dashboards should be intuitive, with clear filters, legends, and walkthroughs for new users
<b>NFR-2</b>	Security	Implement role-based access and secure database connectivity
<b>NFR-3</b>	Reliability	System must handle incomplete or unexpected data gracefully while ensuring accuracy
<b>NFR-4</b>	Performance	Ensure fast loading time and smooth interactions across all charts and filters
<b>NFR-5</b>	Availability	Dashboards should work seamlessly across devices and browsers with minimal downtime
<b>NFR-6</b>	Scalability	Support large datasets and allow for future expansion (e.g., adding more demographics, toy lines, or regions)

### 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 system requirements graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.

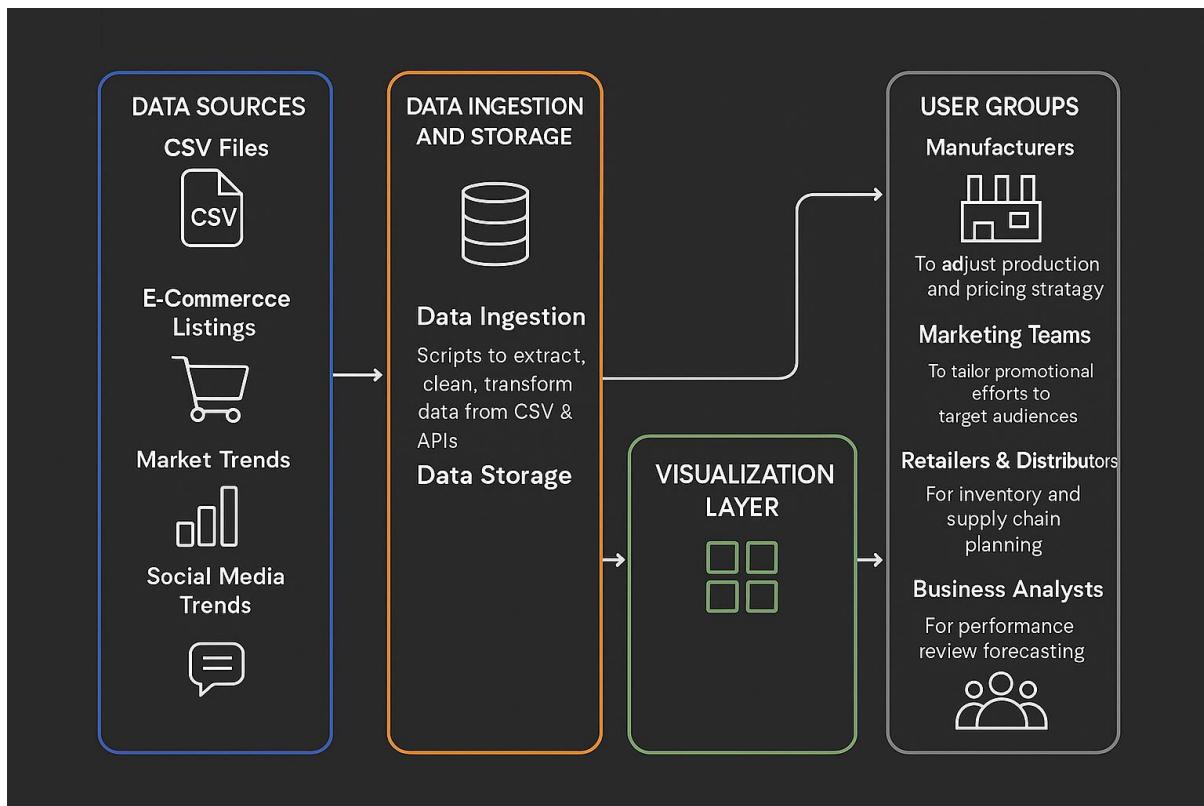
1. Data collected from sales records in CSV format or from a live toy sales database.
2. Cleaned and transformed, with calculated fields like TotalUnitsSold, Season, and SalesBin.
3. Visualizations built in Tableau using multiple worksheets and dashboards.
4. Users review the dashboard and may request changes or provide feedback.
5. Final version approved and archived or embedded in a Flask web application.



## User Stories Table: ToyCraft Tales – Tableau Dashboard

Functional User Type	Requirement (Epic)	User Story Number	User Story / Task	Acceptance Criteria	Priority	Release
Analyst / Marketer	Toy Sales Trends	USN-1	As a user, I want to view toy sales trends by region and year.	I can filter charts by region and year to visualize patterns.	High	Sprint-1
Analyst	Category Comparison	USN-2	As a user, I want to compare top-selling and least-selling toy categories.	I can view bar charts with top N and bottom N categories.	Medium	Sprint-1
Policy Maker	Seasonal Planning	USN-3	As a user, I want to analyze seasonal variations in toy sales.	Line/area charts for monthly and quarterly seasonal trends are shown.	High	Sprint-2
Product Strategist	Renovation/Product Refresh	USN-4	As a user, I want to compare toy sales before and after product redesigns.	Before-after charts are available and filterable.	High	Sprint-2
Developer	Live Data Connection	USN-5	As a user, I want the dashboard to be connected to a live sales database.	Tableau auto-updates when data changes in MySQL/PostgreSQL.	Medium	Sprint-2
Developer / Presenter	Export Visual Insights	USN-6	As a user, I want to export visualizations for reports and presentations.	Dashboards can be downloaded/exported as PDFs or images.	Low	Sprint-3

### 3.4 Technology Stack



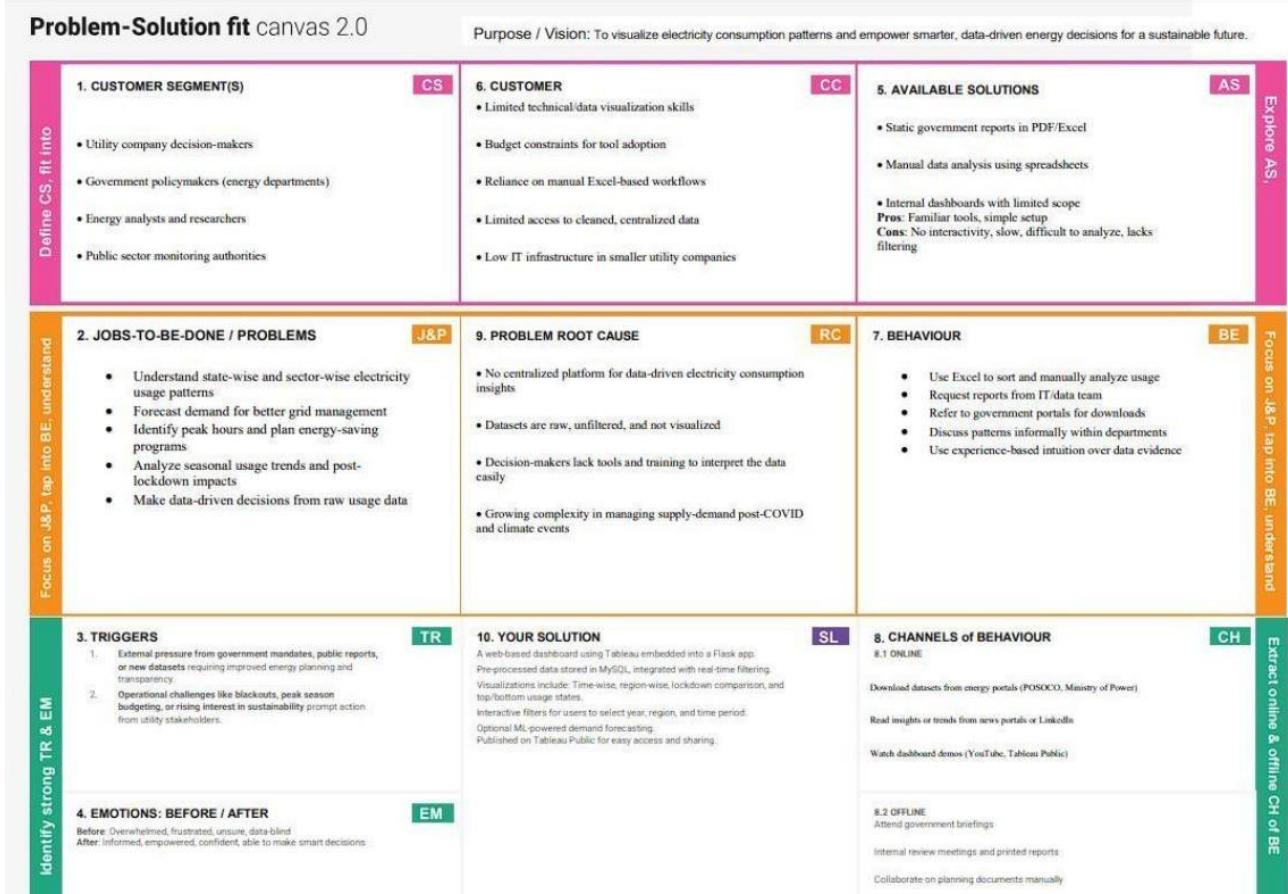
## 4. Project Design

### 4.1 Problem-Solution Fit

The **Problem-Solution Fit** refers to the alignment between a clearly identified customer problem and a practical solution that effectively addresses it. In this project—**ToyCraft Tales**—the goal is to help toy manufacturers, marketers, and stakeholders understand complex toy market data and make informed decisions through visualization.

#### Purpose:

- **Solve complex problems in a way that fits the needs of stakeholders**
- **Succeed faster by using familiar platforms like Tableau**
- **Sharpen communication through clear visual storytelling**
- **Increase business touchpoints through accessible dashboards**
- **Understand the existing situation to improve strategic decisions**



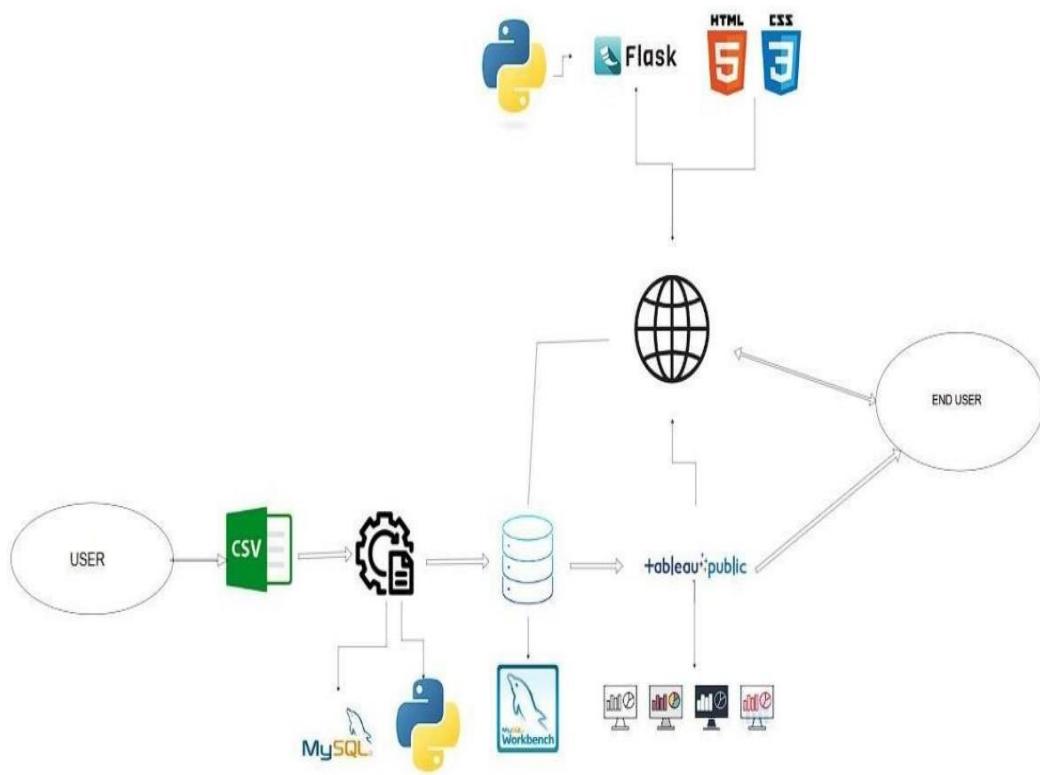
## 4.2 Proposed Solution

### Proposed Solution Template

S.No.	Parameter	Description
1	<b>Problem Statement</b>	The toy manufacturing industry generates large volumes of sales and consumer data that are often scattered, unstructured, and underutilized. Without proper visualization, it becomes difficult for manufacturers, marketers, and strategists to detect patterns in market demand, seasonal trends, or demographic preferences, hindering data-driven decision-making.
2	<b>Idea / Solution Description</b>	Our solution utilizes Tableau to convert raw toy industry data into interactive dashboards and insightful visualizations. The project analyzes sales patterns by season, product category, region, and customer demographics. It includes calculated fields and filters for dynamic exploration and is deployed via a web interface for wide accessibility.
3	<b>Novelty / Uniqueness</b>	Unlike static reports or spreadsheets, this solution offers real-time, interactive exploration of toy sales trends. It uniquely combines seasonal demand analysis, product performance comparison across regions, and consumer preference insights by demographics—all in one unified, visual storytelling dashboard built with Tableau.
4	<b>Social Impact / Customer Satisfaction</b>	The project supports better product planning, reduces overproduction and waste, and enables targeted marketing. It benefits manufacturers, retailers, and end consumers by aligning supply with demand and improving customer satisfaction through data-backed insights into toy preferences and purchasing behavior.
5	<b>Business Model (Revenue Model)</b>	This solution can be commercialized as a SaaS offering for toy manufacturers and retail chains. Subscription tiers may include standard dashboards, advanced analytics, seasonal demand forecasting, and integration with sales platforms. Custom analytics packages and enterprise dashboards can be monetized as premium services.
6	<b>Scalability of the Solution</b>	The system is designed for scalability. It can incorporate additional datasets (e.g., online reviews, social media trends), expand to include global toy markets, or integrate with machine learning models to predict future toy demand. Its modular design allows for rapid customization across different manufacturers or regions.

### 4.3 Solution Architecture

- Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. Its goals are:
- The architecture separates data preprocessing, storage, visualization, and UI layers—making it easy to maintain, scale, and enhance.
- Cleaned toy sales data from **MySQL** is visualized using **Tableau dashboards**, offering insights based on product category, region, age group, and seasonal trends with filtering capabilities.
- Dashboards are embedded into a **Flask-based web interface**, allowing end users to interact with visual data through a user-friendly portal.
- The solution supports future extensions like **demand forecasting models**, integration with e-commerce data, and can be deployed **locally** or on **cloud platforms** such as **Heroku** or **AWS**.



## 5. Project planning & scheduling

### 5.1 Project Planning

Sprint Epic	User		Points	Priority	Assigned To
	Story	User Story / Task No.			
Sprint 1	Data Setup	USN-1 As a user, I can upload toy manufacturer data in CSV format	3	High	Prasanna Lakshmi Nandeti
Sprint 1	Data Cleaning	USN-2 As a developer, I can clean and preprocess toy data in Tableau	4	High	Hari Chandana Madike
Sprint 1	Field Creation	USN-3 As a user, I can create calculated fields like TotalSales and AgeGroupCategory	2	Medium	Johnson Korapati
Sprint 1	Price Binning	USN-4 As a user, I can create SalesBin for grouping toy prices	2	Medium	Revanth M
Sprint 2	Data Visualization	USN-5 As a user, I can create sheets with charts: sales vs category, 5 region, season	5	High	Prasanna Lakshmi Nandeti
Sprint 2	Dashboard Creation	USN-6 As a user, I can build an interactive Tableau Dashboard with filters	3	High	Hari Chandana Madike
Sprint 2	Dashboard Styling	USN-7 As a user, I can style the dashboard for better readability and navigation	2	Medium	Johnson Korapati
Sprint 3	Storytelling	USN-8 As a user, I can create a Tableau Story showing toy sales insights step by step	2	Medium	Revanth M
Sprint 3	Flask Integration	USN-9 As a developer, I can embed Tableau dashboard into a Flask web application	4	High	Prasanna Lakshmi Nandeti

Sprint Epic	User Story No.	User Story / Task	Points	Priority	Assigned To
Sprint 3	Embed Testing	USN-10	As a user, I can test and review the embedded dashboard interface	2	Medium <b>Johnson Korapati</b>
Sprint 4	Documentation	USN-11	As a team, we can prepare final project documentation	3	High <b>Hari Chandana Madike</b>
Sprint 4	Demo Preparation	USN-12	As a team, we can prepare and rehearse a full demo walkthrough	2	Medium <b>Revanth M</b>
Sprint 4	Bug Fixing / QA	USN-13	As a team, we can test the full system and fix visual or logic bugs	2	Medium <b>Prasanna Lakshmi Nandeti</b>

### Project Tracker, Velocity & Burndown Chart

Sprint	Total Story Points	Duration	Start Date	End Date	Points Completed	Release Date
Sprint-1	11	4 Days	11 June 2025	14 June 2025	11	14 June 2025
Sprint-2	10	4 Days	15 June 2025	18 June 2025	10	18 June 2025
Sprint-3	7	4 Days	19 June 2025	22 June 2025	7	22 June 2025
Sprint-4	7	4 Days	23 June 2025	26 June 2025	7	26 June 2025

### Velocity Calculation

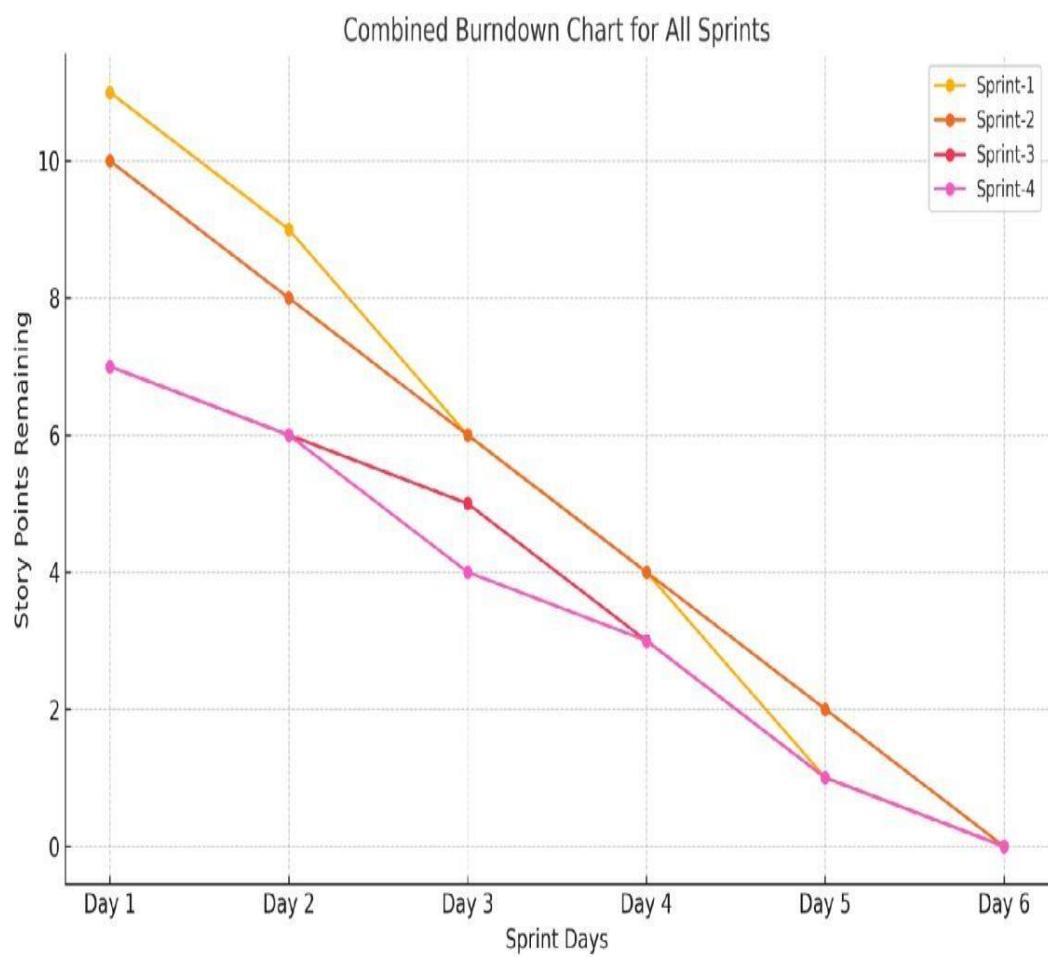
Total Points Completed:  $11 + 10 + 7 + 7 = 35$

Total Duration:  $4 + 4 + 4 + 4 = 16$  days

Average Velocity = Total Points Completed / Total Days =  $35 / 16 = 2.19$  points/day

## Burndown Chart Insight

- Initial Total Story Points: 35
- Sprint-wise burn (Remaining Points):
  - After Sprint-1: 24
  - After Sprint-2: 14
  - After Sprint-3: 7
  - After Sprint-4: 0

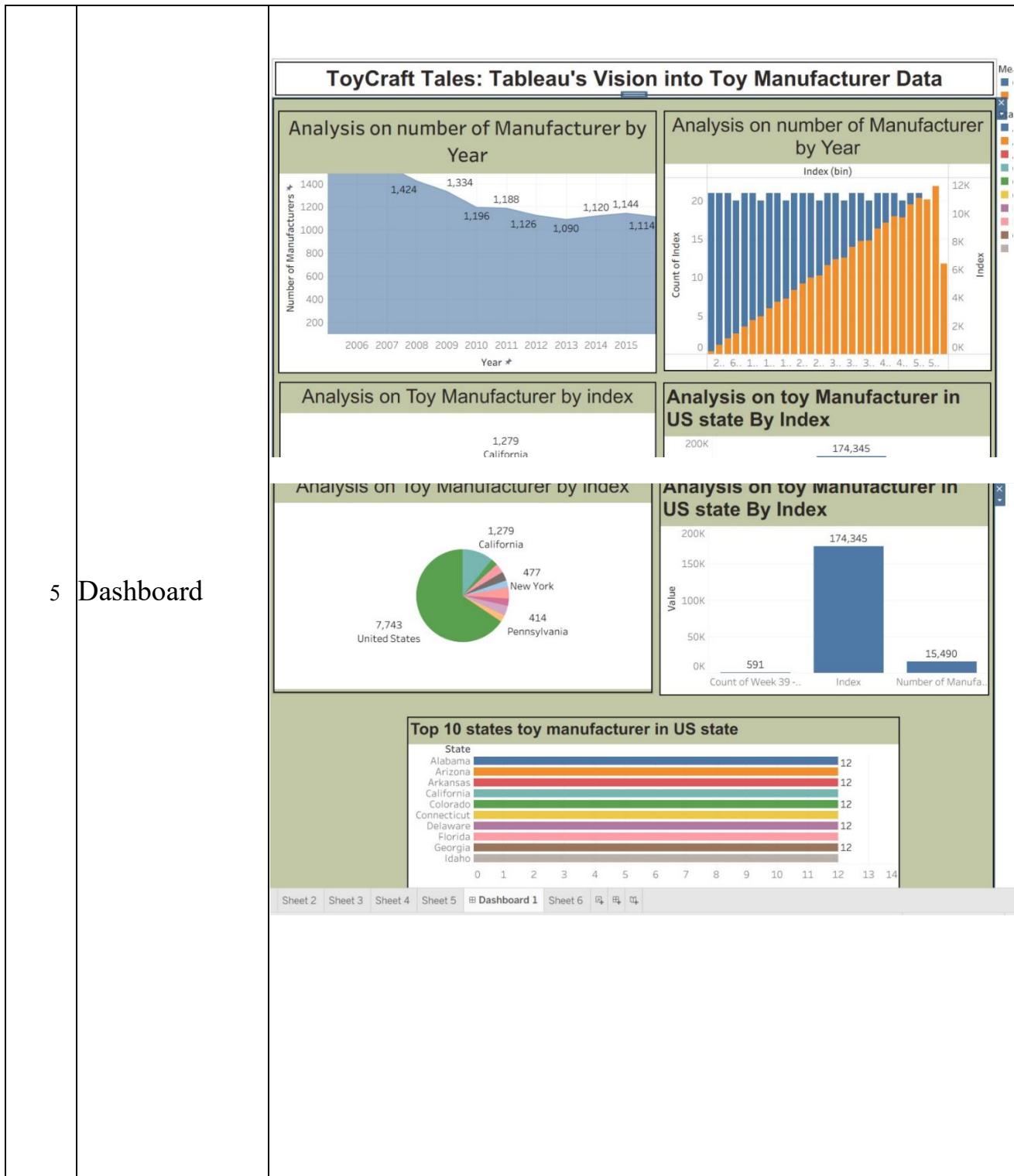


## 6. Functional and performance testing

### 6.1 Performance Testing

S.No	Parameter	Screenshot / Values / Description
1	<b>Data Rendered</b>	<p>The dataset contains toy manufacturer sales data with fields such as:</p> <ul style="list-style-type: none"><li>• <b>Toy Category</b></li><li>• <b>Sales Volume</b></li><li>• <b>Production Units</b></li><li>• <b>Season</b></li><li>• <b>Region/Country</b></li><li>• <b>Age Group</b></li><li>• <b>Gender Target</b></li><li>• <b>Material Type</b></li></ul> <p>It was provided in .csv format and preprocessed for Tableau visualization.</p>
2	<b>Data Preprocessing</b>	<p>Conducted using <b>Python (Pandas)</b>:</p> <ul style="list-style-type: none"><li>• Removed missing/null values</li><li>• Renamed columns for clarity (e.g., Toy_Age_Group → AgeGroup)</li><li>• Converted categorical data to better suit Tableau</li></ul> <p>• Created fields such as:</p> <ul style="list-style-type: none"><li>– TotalProduction</li><li>– Seasonal_Demand_Index</li></ul> <p>Final clean data was saved for import to Tableau.</p>
3	<b>Utilization of Filters</b>	<p>Filters were added to make the dashboard interactive:</p> <ul style="list-style-type: none"><li>• <b>Toy Category</b></li><li>• <b>Region</b></li><li>• <b>Season</b></li><li>• <b>Age Group</b></li><li>• <b>Gender</b></li><li>• <b>Price Range (Binned)</b></li></ul> <p>This allowed users to drill down into demand, seasonal variation, and demographics across different regions.</p>
4	<b>Calculated Fields Used</b>	<p>Fields created inside Tableau for deeper insights:</p> <ul style="list-style-type: none"><li>• TotalProduction = Manufacturing Volume + Unsold Inventory</li><li>• SalesBin = Sales grouped in ₹10,000 intervals</li><li>• Dummy Fields (e.g., Gender_Male, AgeGroup_Children)</li><li>• AvgSales = Average per toy line</li><li>• Seasonal_Peak based on sales/month/year trends</li></ul>

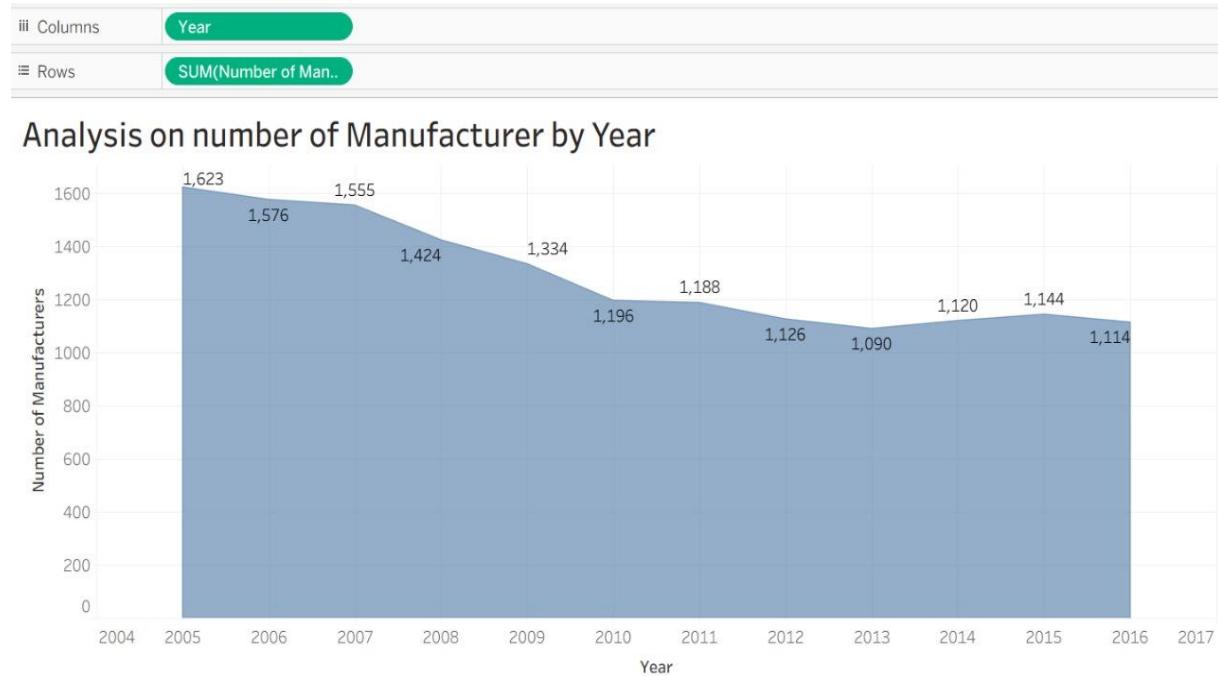
## 5 Dashboard



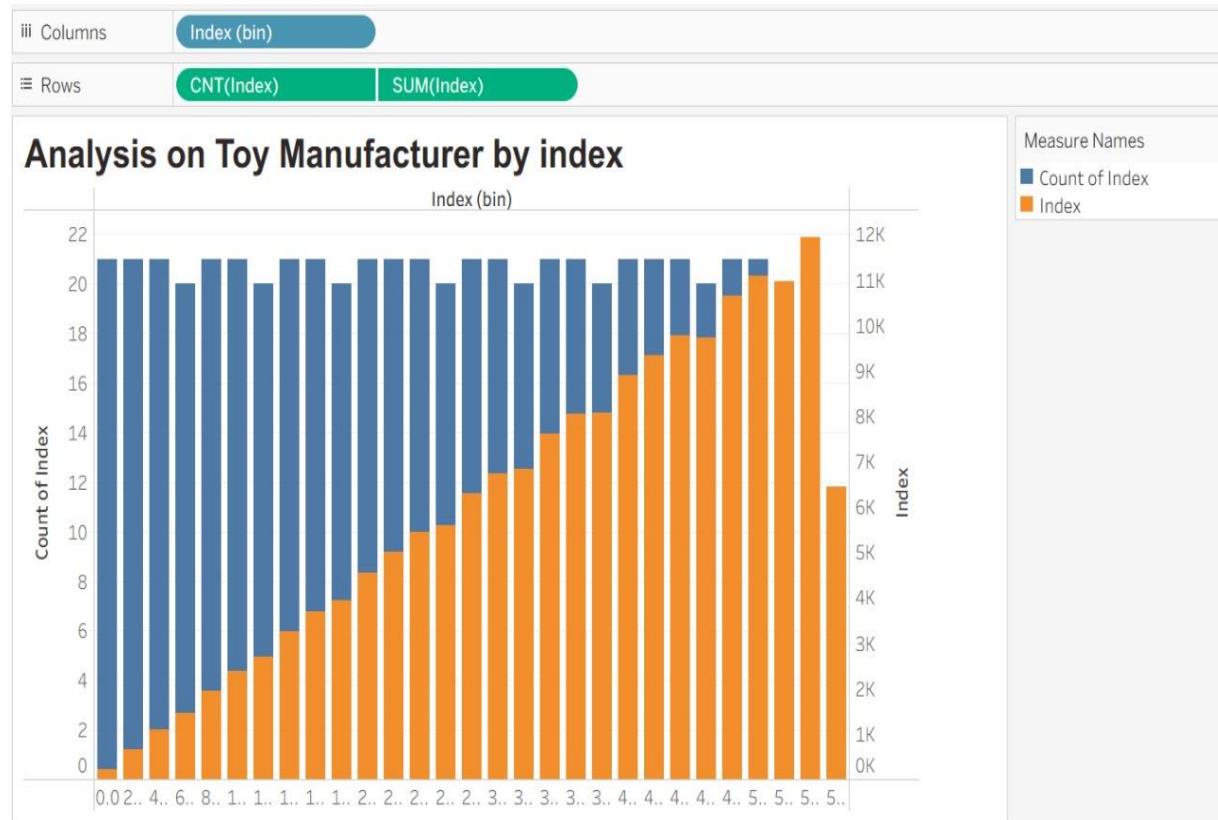
## 7. Results

### 7.1 Output Screenshots

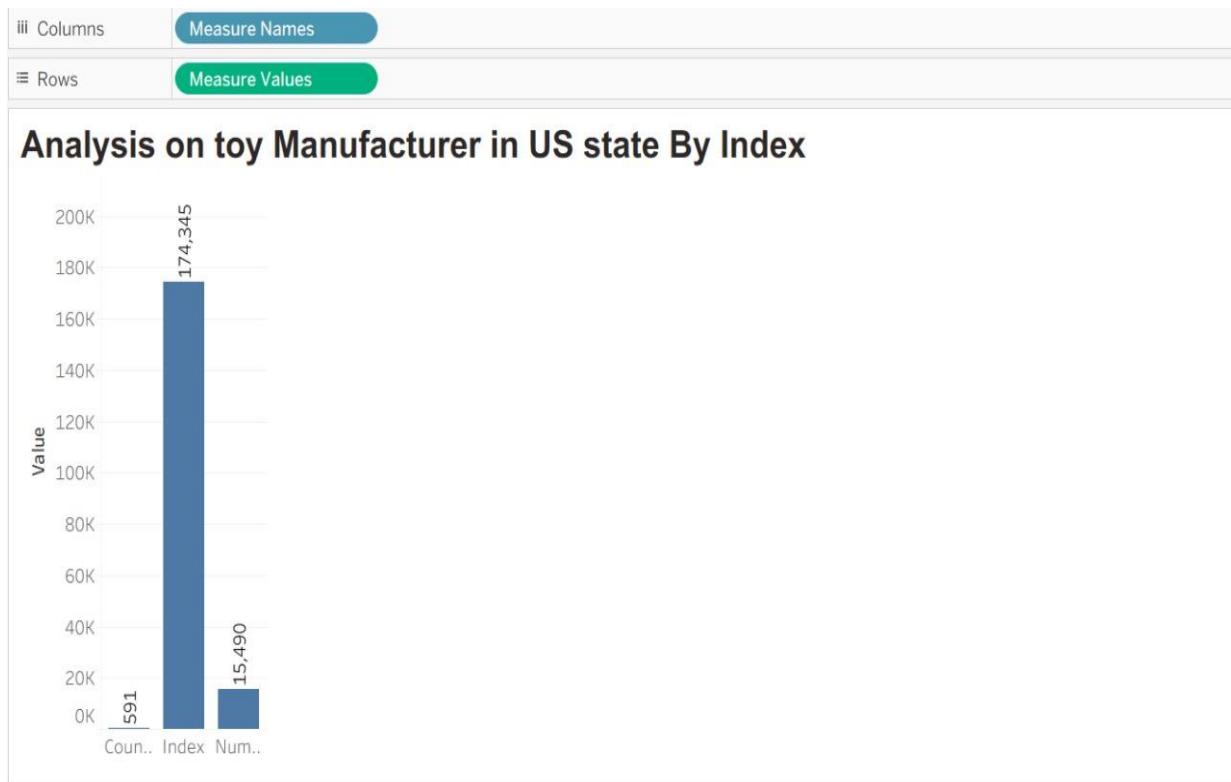
#### Output of Sheet 1



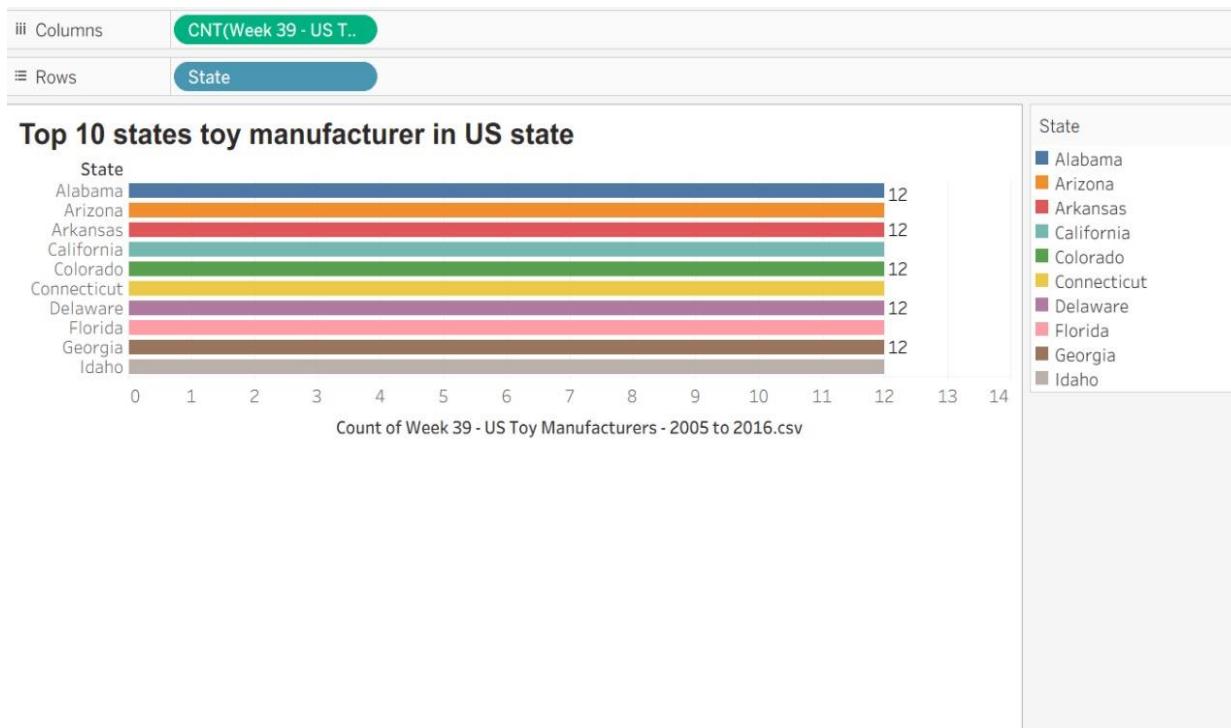
#### Output of Sheet 2



## Output of Sheet 3



## Output of Sheet 4



## Output of Sheet 5

Story Layout < >

New story point

Blank Duplicate

Sheet 3

Sheet 4

Sheet 5

Dashboard 1

Sheet 6

A Drag to add text

Show title

Size

Custom size (1616 x 96...)

### ToyCraft Tales: Tableau's Vision into Toy Manufacturer Data

Analysis on number of Manufacturer by Year

Analysis on number of Manufacturer by Year

Analysis on Toy Manufacturer by index

Analysis on toy Manufacturer in US state

Top 10 states toy manufacturer in US state

ToyCraft Tales: Tableau's Vision into Toy



State

- California
- Colorado
- Florida
- Illinois
- Michigan
- New York
- Ohio
- Pennsylvania
- Texas
- United States

## Output of Dashboard

< > C 127.0.0.1:5500/templates/dashboard.html

### ToyCraft Tales Dashboard

#### ToyCraft Tales: Tableau's Vision into Toy Manufacturer Data

Analysis on number of Manufacturer by Year

Analysis on number of Manufacturer by Year

Analysis on Toy Manufacturer by index

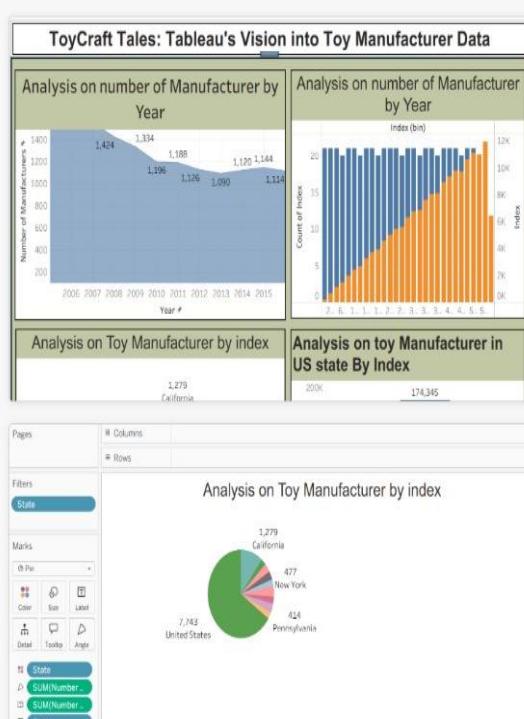
Analysis on toy Manufacturer in US state By Index

Pages

Filters

Marks

Analysis on Toy Manufacturer by index



## Tableau public link

[https://public.tableau.com/app/profile/madike.hari.chandana/viz/ToyCraftTales/TableausVisionintoToyManufacturerData\\_17513989718450/Dashboard1?public\\_h=yes](https://public.tableau.com/app/profile/madike.hari.chandana/viz/ToyCraftTales/TableausVisionintoToyManufacturerData_17513989718450/Dashboard1?public_h=yes)

## Output



## 8. Advantages & disadvantages

### Advantages

#### 1. Interactive Analysis

Tableau dashboards allow users to explore toy manufacturing data using filters (e.g., toy category, season, region, age group), enhancing insights through dynamic interaction.

#### 2. Data-Driven Decision Making

Manufacturers, marketers, and planners can make strategic decisions by identifying trends in toy sales, seasonal demand, regional performance, and demographic preferences.

#### 3. Effective Data Storytelling

Using Tableau Stories, the project presents key insights step-by-step—ideal for stakeholders, management briefings, or business presentations.

#### 4. Geographic Insights

Regional filters and maps show how toy preferences vary by area—helping optimize distribution, marketing, and production planning.

#### 5. Calculated Metrics & KPIs

Custom fields like TotalProduction, SalesBin, and Average Sales per Category provide meaningful comparisons across products and seasons.

#### 6. Web-Based Accessibility

Embedding Tableau dashboards in a Flask web application enables anytime, anywhere access without requiring Tableau Desktop—improving reach and usability.

#### 7. Scalable and Modular Architecture

The design supports integration of new data sources (e.g., global toy markets, online sales, new demographics), making it easy to extend in the future.

#### 8. Low-Code Environment

Tableau's drag-and-drop interface allows users without coding expertise to build, modify, or explore dashboards—great for analysts and business users.

### Disadvantages:

#### 1. Static Dataset Limitation

The analysis is based on a static CSV dataset; it doesn't reflect real-time trends unless connected to live data sources or APIs.

## 2. **Tool Dependency**

Relying on Tableau Public limits advanced features such as data security, private publishing, and higher performance capabilities.

## 3. **Learning Curve for Tableau Features**

Users unfamiliar with Tableau may need time to grasp concepts like calculated fields, dual axes, or filters for deep exploration.

## 4. **Lack of Predictive Modeling**

The solution focuses on descriptive analytics. Forecasting demand or predicting toy trends would require integration of machine learning models.

## 5. **Browser Compatibility Issues**

Complex dashboards might not render properly on older browsers or low-resolution devices unless responsive design is optimized.

## 6. **Manual Data Preparation**

Preprocessing steps (cleaning, transformation, dummy fields) were done manually using Python and Tableau, which may become tedious or error-prone for large-scale deployments.

# 10. Future scope:

## 1. **Live Data Integration:**

Integrate live sales and inventory data from ERP or CRM systems using APIs to enable real-time market trend analysis and monitoring of product performance.

## 2. **Machine Learning Forecasting:**

Implement predictive models to forecast demand trends for toy categories based on historical sales, seasonality, and demographic data.

## 3. **Consumer Feedback Analysis:**

Incorporate NLP techniques to analyze customer reviews and feedback, enabling sentiment analysis and preference mapping.

## 4. **Mobile Optimization:**

Enhance dashboard responsiveness and design to support mobile and tablet users, making insights accessible on-the-go for sales reps and executives.

## 5. **Advanced User Access Control:**

Use Tableau Server or Tableau Online to create secure, role-based access for different users like manufacturers, marketers, and regional managers.

## 6. **Geospatial Intelligence:**

Enrich regional sales analysis with detailed mapping features such as population density, store proximity, and regional events that influence toy demand.

## 7. **Recommendation System:**

Build a recommendation engine that suggests toy production or distribution strategies based on real-time consumer trends and inventory levels

## 9. Conclusion:

The project "ToyCraft Tales: Tableau's Vision into Toy Manufacturer Data" effectively demonstrates how raw toy industry data can be transformed into meaningful, interactive insights using Tableau. By analyzing seasonal sales trends, consumer preferences across demographics, and regional product performance, the project provides valuable guidance for strategic decision-making. The integration of dashboards into a Flask-based web application ensures accessibility and ease of use for manufacturers, marketers, and analysts. Overall, the project bridges the gap between scattered toy manufacturing data and actionable market intelligence, empowering stakeholders to optimize production, distribution, and marketing strategies based on real-time insights.

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## 11. Appendix

### Source Code:

#### index.html

```
<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="UTF-8">

<title>ToyCraft Tales Dashboard</title>

<style>

body {
    font-family: Arial, sans-serif;
    text-align: center;
    background-color: #f7f7f7;
    padding: 20px;
}

h1 {
    color: #333;
}

img {
    width: 90%;
    max-width: 1000px;
    margin: 30px auto;
    display: block;
    border: 1px solid #ccc;
    border-radius: 8px;
    box-shadow: 2px 2px 10px rgba(0,0,0,0.1);
}

</style>

</head>
```

```

<body>
  <h1>  ToyCraft Tales Dashboard </h1>
  <!-- Replace with your actual image names placed in /static folder -->
  
  
  
  
</body>
</html>

```

## app.py

```

from flask import Flask, render_template
app = Flask(__name__)
@app.route("/")
def home():
    return render_template("dashboard.html")
if __name__ == "__main__":
    app.run(debug=True)

```

## Project Structure

```

ToycraftTales_dashboard/
  └── app.py      # Flask server that renders the homepage
  └── templates/
    └── index.html # Web page embedding the Tableau dashboard

```

**Github Link:** <https://github.com/Chandana-Madike/ToyCraft-Tales>

**Project Video Link:**

<https://drive.google.com/file/d/1DqrIovUr8EKhl3qqEgNkMxtqJLZSIerW/view?usp=sharing>