



Data Analytics with Tableau

Project Development report

- Project Title:

ToyCraft Tales: Tableau's Vision into Toy Manufacturer Data

- Team Members:

1. Boddu Venkateswara Rao	Team Leader
2. Koppula Lavanya	Team Member
3. Pasupuleti Rohit Kumar	Team Member
4. Katireddy Sridhar Reddy	Team Member

1. INTRODUCTION

1.1 Project Overview :

- This project explores the US toy manufacturing industry using Tableau. It focuses on analyzing patterns, trends, and state-wise performance from the years 2005 to 2016.
- The dashboard and storyboards help stakeholders derive insights for strategic decisions.

1.2 Purpose:

1. Visualize Market Trends

Gain insights into historical toy manufacturing data by analyzing patterns across time and geography. This helps identify growth areas, declines, and key shifts in production trends.

2. Support Strategic Decision-Making

Use data to inform decisions about where and when to produce. Identify

top-performing states, high-index manufacturers, and seasonal demand to optimize operations and investments.

3. Understand Consumer Behavior

Explore toy category popularity, purchasing patterns, and demographic influences. This enables manufacturers to align products with customer preferences and improve market fit.

4. Enable Interactive Exploration

Develop dynamic Tableau dashboards that allow users to filter, compare, and interact with the data. This makes analysis more user-friendly and decision-focused.

2. IDEATION PHASE

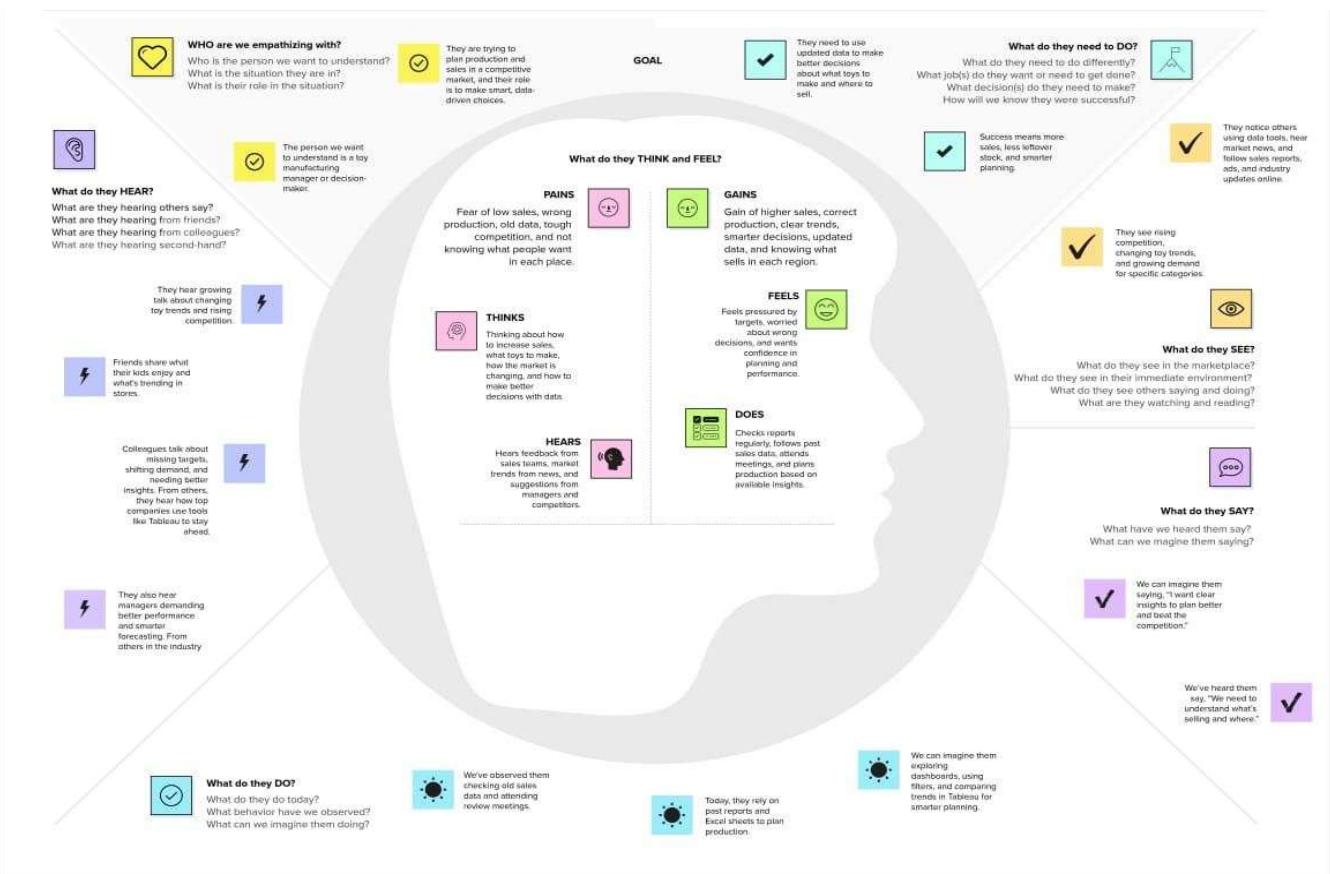
2.1 Problem Statement :

The toy manufacturing industry faces challenges in adapting to dynamic market trends, evolving consumer preferences, and regional demand variations. Despite having access to extensive data, many manufacturers lack actionable insights to make informed strategic decisions. There is a pressing need for a data-driven approach that can reveal production patterns, seasonal sales fluctuations, and demographic-based consumer behavior.

Customer Problem Statement				
I am	I'm trying to	But	Because	Which makes me feel
 Toy manufacturing manager	 Analyze past sales and predict which toys will be in demand during different seasons.	 The data is scattered, hard to visualize, and doesn't reveal clear trends.	 It lacks visualization and trend clarity.	 Uncertain and frustrated about production planning.
 Product designer	 Understand toy preferences across demographics like age and location.	 I don't have easy access to consumer preference data in a clear format.	 I don't have structured consumer preference data.	 Disconnected from customer needs.
 Business analyst	 Create dashboards that show toy sales trends over time.	 The data is buried in spreadsheets and not visually accessible.	 It's not in a digestible or visual format.	 I feel delayed in making decisions and reporting to leadership.

This project addresses the problem by leveraging Tableau to analyze and visualize multi-dimensional toy industry data. It aims to uncover hidden trends, highlight regional and seasonal sales performance, and provide manufacturers with interactive tools to explore consumer preferences. Through insightful visual storytelling, the project empowers stakeholders to optimize production planning, tailor marketing strategies, and enhance competitiveness in a highly seasonal and consumer-driven market.

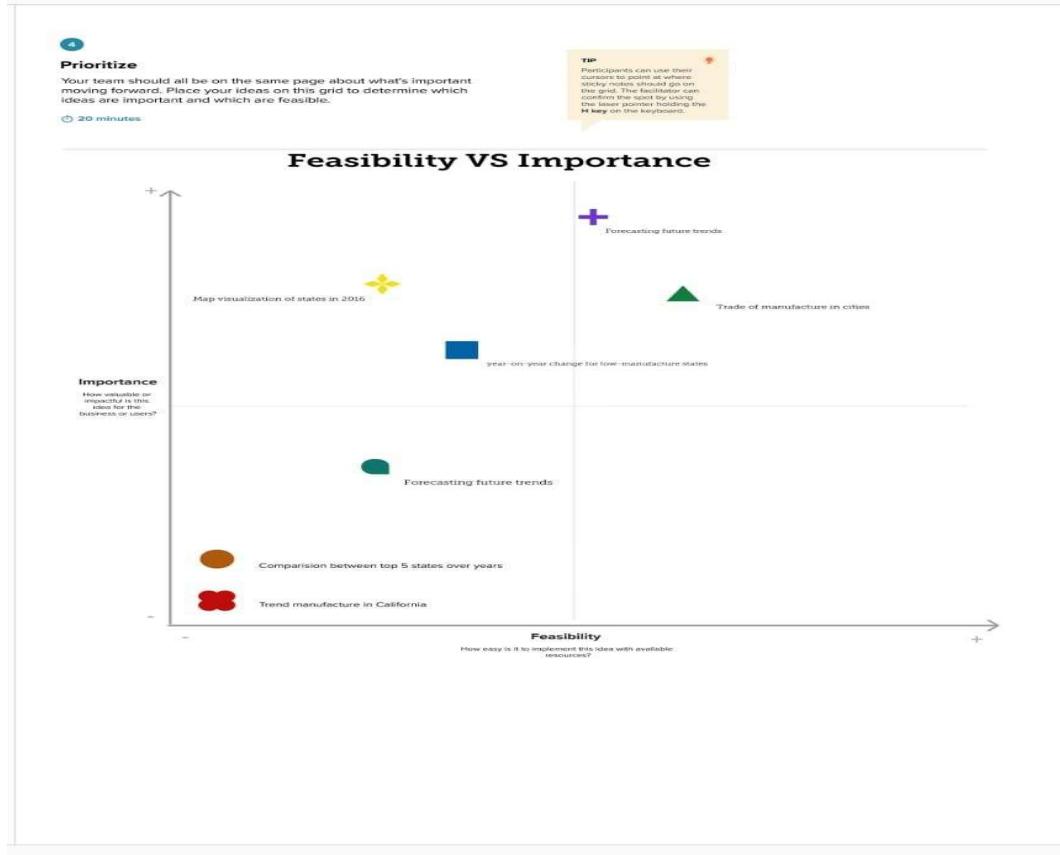
2.2 Empathy Map Canvas:



2.3 Brainstorming:

This template provides a structured approach to brainstorming, divided into four main phases:

- Brainstorm & idea prioritization:** Includes a section for team details and a checklist for preparation.
- Before you collaborate:** Provides tips for effective team collaboration, such as communication skills, problem-solving, adaptability, creativity, time management, and conflict resolution.
- Define your problem statement:** A step-by-step guide to creating a clear problem statement, including a sample statement for "How might we solve ToyCraft Tales' Vision into Toy Manufacturer Data?" and a section on "Key rules of brainstorming" like staying on topic, deferring judgment, and encouraging wild ideas.
- Group Ideas:** A section for clustering key ideas into power smarter decisions, with examples for Sales & Market Insights, Customer Feedback & Analytics, and Supply Chain & Inventory.

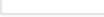


3. REQUIREMENT ANALYSIS

The primary objective of this project is to help a toy manufacturing company gain valuable insights into its sales, product performance, and regional distribution through data visualization using Tableau. The stakeholders include business analysts, sales and marketing teams, manufacturing managers, and decision-makers who require clear, interactive, and insightful dashboards to support strategic decisions. The project must handle clean and structured sales data, provide filtering options (e.g., by product, region, or time), and present key metrics in a visually compelling format. Tableau dashboards and stories should load quickly, be responsive, and ensure data security. Data sources include Excel or CSV files containing detailed records of transactions, products, and customer segments. The solution aims to simplify complex data into actionable insights, making data exploration intuitive for all user levels.

3.1 Customer Journey map:

1. **Entice** – People discover the dashboard through social media, websites, or word of mouth.
2. **Enter** – They visit the link and check out the visuals for the first time.
3. **Engage** – Users explore filters, charts, and stories to understand toy sales.
4. **Exit** – After finding insights, they leave or save/download what they need.
5. **Extend** – They return later, share it with others, or use it in team decisions.

Scenario: A toy company uses Tableau to understand and improve its sales.	Entice	Enter	Engage	Exit	Extend
	How does someone become aware of this service?	What is the person's experience as they begin the process?	What is the person's experience as they engage with the process?	What do people typically experience after the process finishes?	What happens after the experience is over?
 Experience steps What does the person (or people) at each step along the way?	 Discover a smarter way to explore toy sales with better visualizations  Compare features and feel the value this brings to your strategy.	 They become curious about how data can inform decision-making.  They chose interest in visual tools to gain an overall view of key sales data.	 Users begin by browsing Tableau dashboards and drill down into specific regions, products, and time periods.  Charts, maps, sales patterns and customer behavior are visualized through Tableau.	 As they gain clarity, users start creating their own dashboard for accurate results.  They feel confident making data-driven decisions using Tableau.	 Feedback helps refine dashboards.  Users return to check updated data.  Smiles, data-driven choice!
 Interactions What interactions do they have at each step along the way? + Places: Who do they see or talk to? + Places: Where are they? + Places: What are they?	 They come across the dashboard on social media, website, or email and click on a link to learn more about the dashboard or contact someone about it.  They interact with others about the dashboard, share results with peers, and communicate findings during a meeting or training.	 Discover user interests and dashboard on a dashboard sharing page.  First interaction: They explore visualizations and interact with them.	 People interact with peers or seniors who are discussing Tableau or dashboards.  Places: Visit Tableau community websites or forums to discuss dashboards and use in analytics.	 People: Community website or forum discussions are discussed.  Places: Explore Tableau community website or forum discussions about understanding how visual dashboards are used and implemented.	 People feel confident after understanding what they learned through Tableau training.  Places: Apply the insights gained from the Tableau training to their work, such as product lines, pricing, or regular dashboards.
 Goals & motivations At each step, what is a person's primary goal or motivation? ("Help me..." or "Help me avoid...")	 "Help me discover better tools to analyze my sales data." "Help me understand my market trends."  "Help me avoid using outdated or manual methods to analyze my sales data."	 "Help me explore how Tableau dashboards make for my sales analysis and understanding."  "Help me avoid spending time on tools that aren't user-friendly or intuitive."	 "Help me clearly understand sales trends across different regions."  "Help me understand product categories to see which ones are driving revenue."	 "Help me compare product categories to see which ones are driving revenue."  "Help me identify opportunities for growth and improvement."	 "Help me summarize key insights before I present them to my stakeholders."  "Help me understand what I've learned in Tableau training and apply it to new dashboards."
 Positive moments What steps does a typical person feel inspired, productive, fun, motivating, delightful, or exciting?	 "Helping others understand market trends is inspiring."  "Helping others understand how Tableau makes data analysis easier."	 "Watching how easily data can be analyzed using Tableau's拖放功能."  "Watching the data respond in real-time to changes in the dashboard."	 "Shaking off the sales blues by using visualizations to comprehend analyzing products."  "Exploring interactive storyboards - The dashboard is so easy to use and navigate, it feels more engaging and encouraging."	 "Using filters and parameters to personalize dashboards is a game-changer."  "Sharing insights with team members is both fun and fulfilling."	 "Feeling confident about what I've learned in Tableau training."  "Sharing my dashboard with others is both fun and fulfilling."
 Negative moments What steps does a typical person feel frustrating, confusing, angry, costly, or time-consuming?	 "The many parts of Tableau are confusing and hard to learn."  "Lack of motivation about dashboard building."	 "Overwhelmed by dashboard complexity."  "Overwhelmed by the complexity of the dashboard."	 "Difficulty finding relevant data sources to build my sales analysis."  "Showing how to use Tableau Public - it's confusing."	 "Missing guidance or examples on how to use filters or parameters effectively."  "Filters are dropdown menus, which is annoying."	 "Lack of confidence in my dashboard-making skills."  "Unsure what to do with designs after saving a dashboard, plan or suggestion seems broken."
 Areas of opportunity How might we make each step better? What ideas do we have? What have been suggested?	 "Promote dashboards with my resume, LinkedIn profile, or portfolio."  "Add a landing screen with a brief introduction."	 "Add clear titles like 'Explore the Sales Trend'."  "Highlight where to click or interact, emphasizing interactivity."	 "Interact with filters to explore sales by region, product, and time period."  "Navigate story steps that guide users by highlighting key insights."	 "Highlight through color coding and bold text for data points."  "Highlight through color coding and bold text for data points."	 "Take away insights that guide users for future decisions."  "Feel informed and engaged with clear, call-to-action components."
	 "Add a short product video or GIF that guides them."  "Let users sign up for future development updates."	 "Use clear titles like 'Explore the Sales Trend'."  "Highlight where to click or interact, emphasizing interactivity."	 "Interact with filters to explore sales by region, product, and time period."  "Navigate story steps that guide users by highlighting key insights."	 "Highlight through color coding and bold text for data points."  "Highlight through color coding and bold text for data points."	 "Share success stories of others who used the site effectively."  "Add a feedback or comment section."

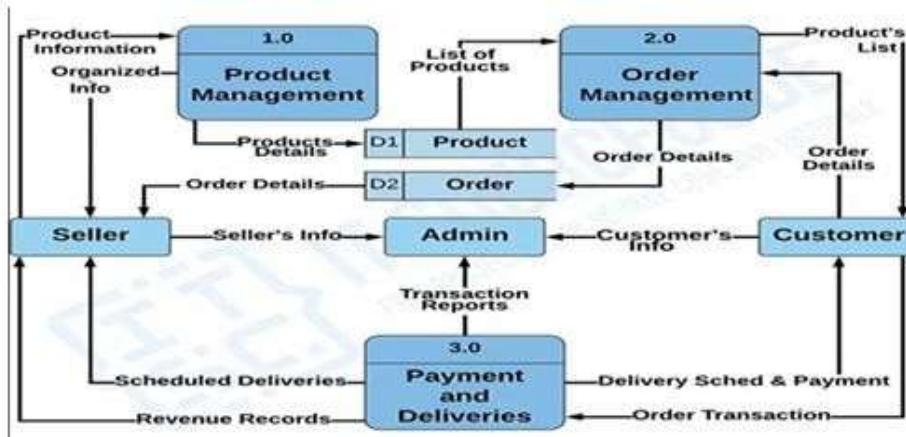
3.2 Solution Requirement:

1. User-Friendly Dashboard
 - o Clear visuals and filters to analyze toy sales data.
2. Interactive Storytelling
 - o Story feature to guide users through key insights.
3. Responsive Design

- Accessible on desktops, tablets, and mobile devices.
1. Live Data Connectivity (Optional)
 - Option to link real-time or regularly updated datasets.
 2. Data Security & Privacy
 - Ensure shared dashboards protect sensitive info.
 3. Performance & Speed
 - Fast loading and smooth filtering experience.

3.3 Data Flow Diagram:

- Users interact with the ToyCraft Dashboard through a web browser.
- The Dashboard pulls data from a Sales Database that includes product, region, and time-based sales.
- Admin/Analysts upload or update data to the Cloud Data Storage using ETL tools.
- External APIs (e.g., weather or location) may be used to enrich the data before analysis.
- The data flows through Tableau, which processes and presents it visually in dashboards and stories.
- Processed data can also be exported to other tools for reports or shared with management.



3.4 Technology Stack:

1. Frontend

- **HTML/CSS/JavaScript** – For building the interactive landing page and embedding Tableau visualizations.
- **Tableau Public Embed** – To visually present the dashboard and story within the website.

2. Data Visualization

- **Tableau Public** – Main tool used to create dashboards and storyboards for toy sales analysis across products, regions, and time.

3. Backend / Data Handling

- **CSV/Excel Files** – Used for importing cleaned toy sales data into Tableau.
- **ETL (Extract-Transform-Load)** – Performed manually or through Tableau Prep for preprocessing data.

4. Cloud / Hosting

- **Tableau Public Cloud** – Hosts the dashboard and story online for public access.
- **GitHub or Netlify (optional)** – For hosting the static website where Tableau is embedded.

5. External Tools (Optional)

- **Miro/Mural** – For customer journey mapping and planning architecture.
- **Canva** – For banner or UI design.

4. PROJECT DESIGN

4.1 Problem Solution Fit:

Problem:

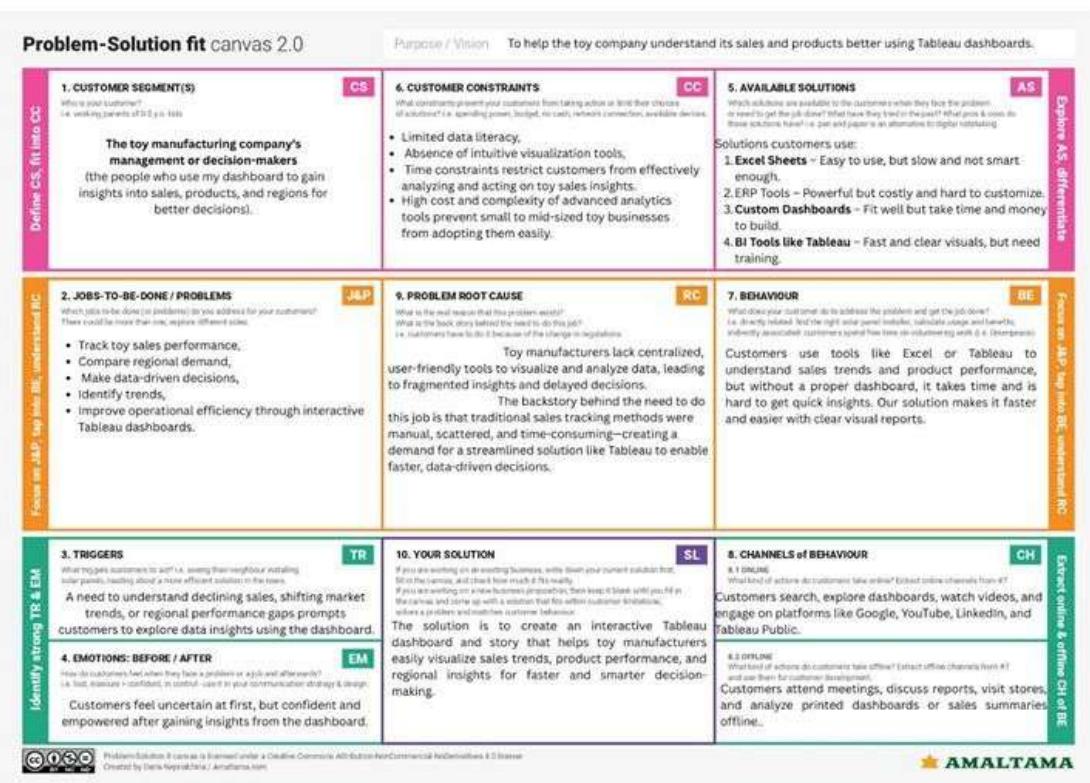
Toy manufacturing companies often struggle to understand complex sales patterns, regional demand, and product performance due to scattered or unvisualized data.

Solution:

The Tableau dashboard and story provide a centralized, interactive, and visual way to explore toy sales data—helping decision-makers quickly identify trends, compare regions, and make informed business decisions.

Fit:

The solution directly addresses the need for clarity, speed, and accuracy in analyzing sales data. It transforms raw numbers into meaningful insights, enabling better planning and strategy.



4.2 Proposed Solution:

We propose implementing an interactive **Tableau Dashboard and Story** that visually represents toy sales data across various regions and products. This solution enables:

- **Real-time insights** into sales performance, top-selling products, and low-performing regions.
- **User-friendly visualizations** for stakeholders to explore trends without deep technical knowledge.
- **Data-driven decisions** through filters, graphs, and KPIs that highlight key metrics.
- **Scalability** to add more data like customer demographics or seasonal trends in future updates.

By using Tableau, the company can convert raw sales data into actionable insights for better planning, marketing, and product decisions.

4.3 Solution Architecture:

The solution architecture for *ToyCraft Tales* integrates data processing, visualization, and user interaction in a streamlined flow:

1. Data Source Layer

- Sales data is collected from spreadsheets, databases, or ERP systems used by the toy manufacturer.

2. Data Preparation Layer

- Data is cleaned, transformed, and formatted using tools like Microsoft Excel or Tableau Prep.

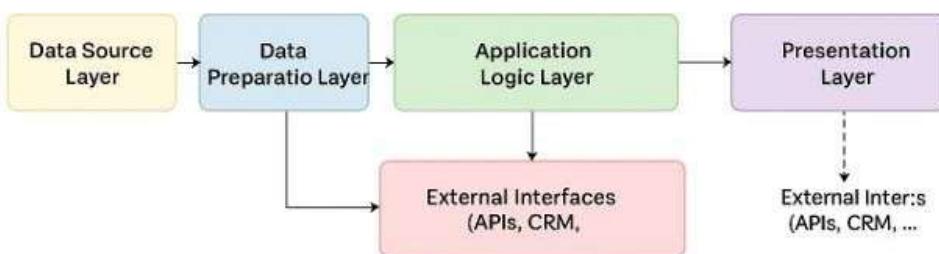
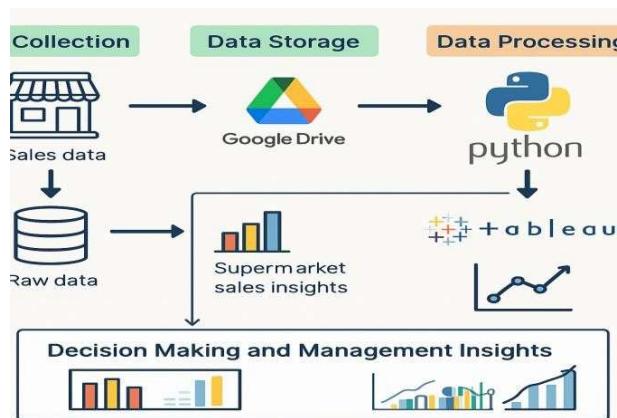
3. Visualization Layer

- Tableau Public is used to build interactive dashboards and stories that visualize sales trends, product performance, and regional analysis.

4. User Interface Layer

- Users access the visualizations via embedded Tableau dashboards in a responsive web page (HTML/CSS/JS).

5. Hosting Layer



5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

1. Objective:

To build an interactive Tableau dashboard and story that helps toy manufacturers analyze sales data across products, regions, and time.

2. Phases & Timeline:

Phase	Description	Duration
1. Requirement Analysis	Understand data needs, audience, and business goals	2 days
2. Data Collection	Gather and clean sales data	2–3 days
3. Data Visualization	Build dashboard and story using Tableau	4–5 days
4. Web Integration	Embed visualizations into a responsive webpage	2 days
5. Testing & Feedback	Test functionality and gather user feedback	1–2 days
6. Final Presentation	Document, present, and deploy final solution	1 day

3. Tools & Technologies:

- Tableau Public
- Excel or CSV data files
- HTML, CSS, JavaScript
- Canva/Miro for diagrams (optional)

6. FUNCTIONAL AND PERFORMANCE TESTING

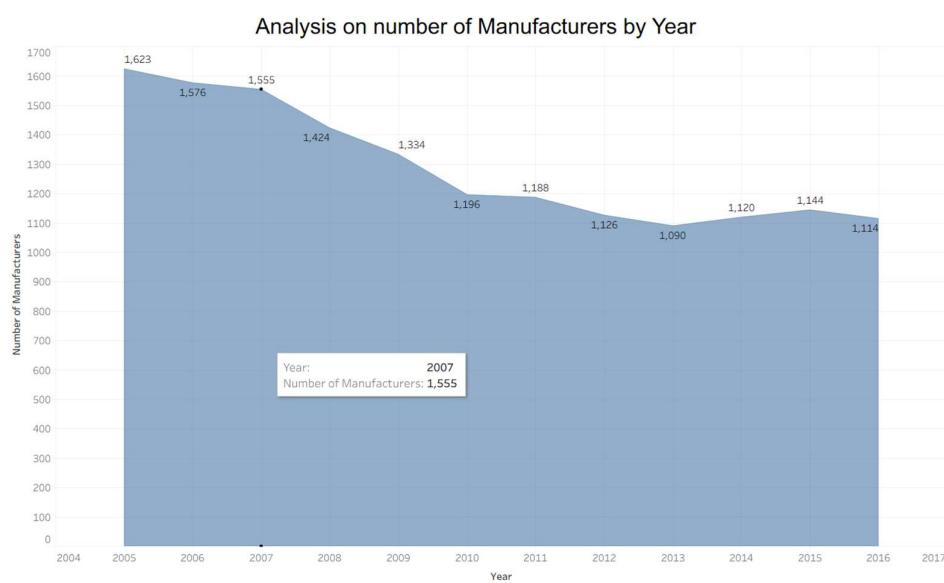
6.1 Performance Testing:

1. Data Rendered Annual number of toy manufacturers from 2005 to 2016, categorized by U.S. states, including a national total for “United States.”
2. Data Preprocessing Removed ”index” column, ensured correct data types (“Year” as “int”, “Number of Manufactures” as “int”), checked for and handled missing values.
3. Utilization of Filters Filters for “State”, “Year” (range: 2005 2016), and “Number of Manufactures”, used for interactive selection in visualizations.
4. Calculation fields Used Year-over-Year change, % contribution of each state to the national total, cumulative state trends, and national aggregates.
5. Dashboard design No of Visualizations / Graphs – 6
- 6 Story Design No of Visualizations / Graphs – 7

7. RESULTS

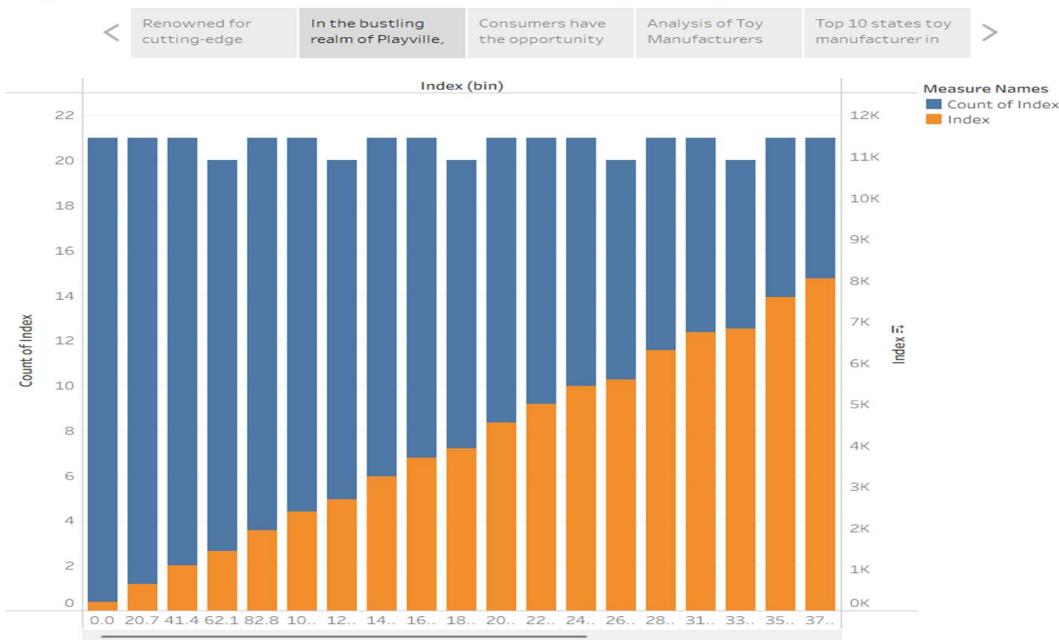
7.1 Output Screenshots

1. AREA CHART showing number of manufacturers by year:



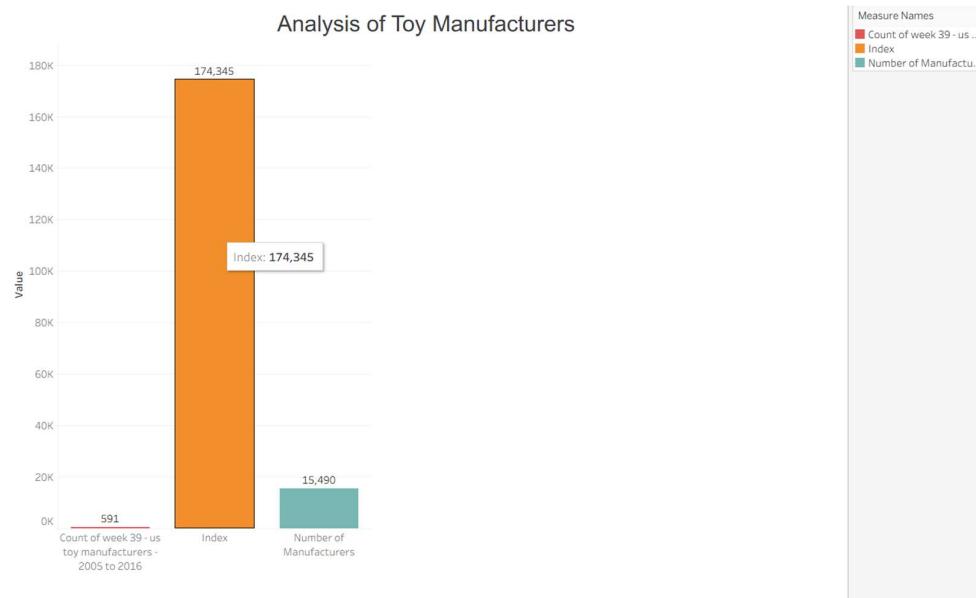
2.BAR CHART showing analysis on Toy manufacturers by

ToyCraft Tales: Tableau's Vision into Toy Manufacturer Data

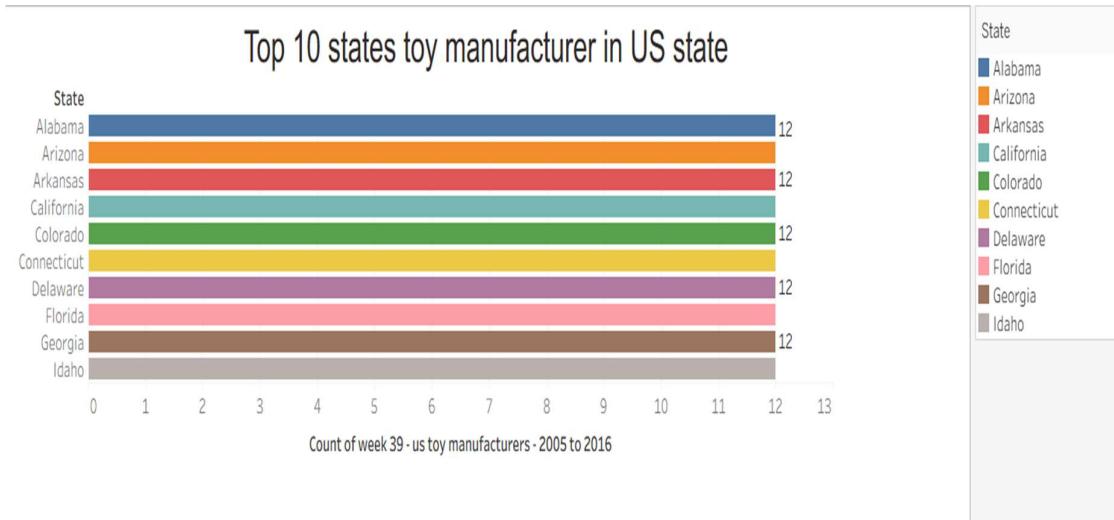


3.BAR CHART showing no.of indexes:

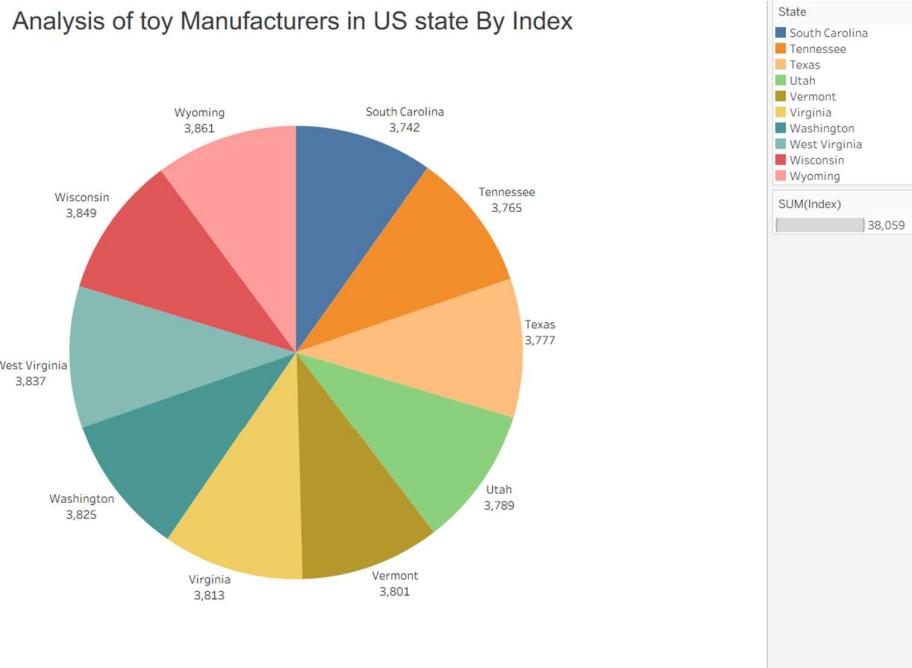
Analysis of Toy Manufacturers



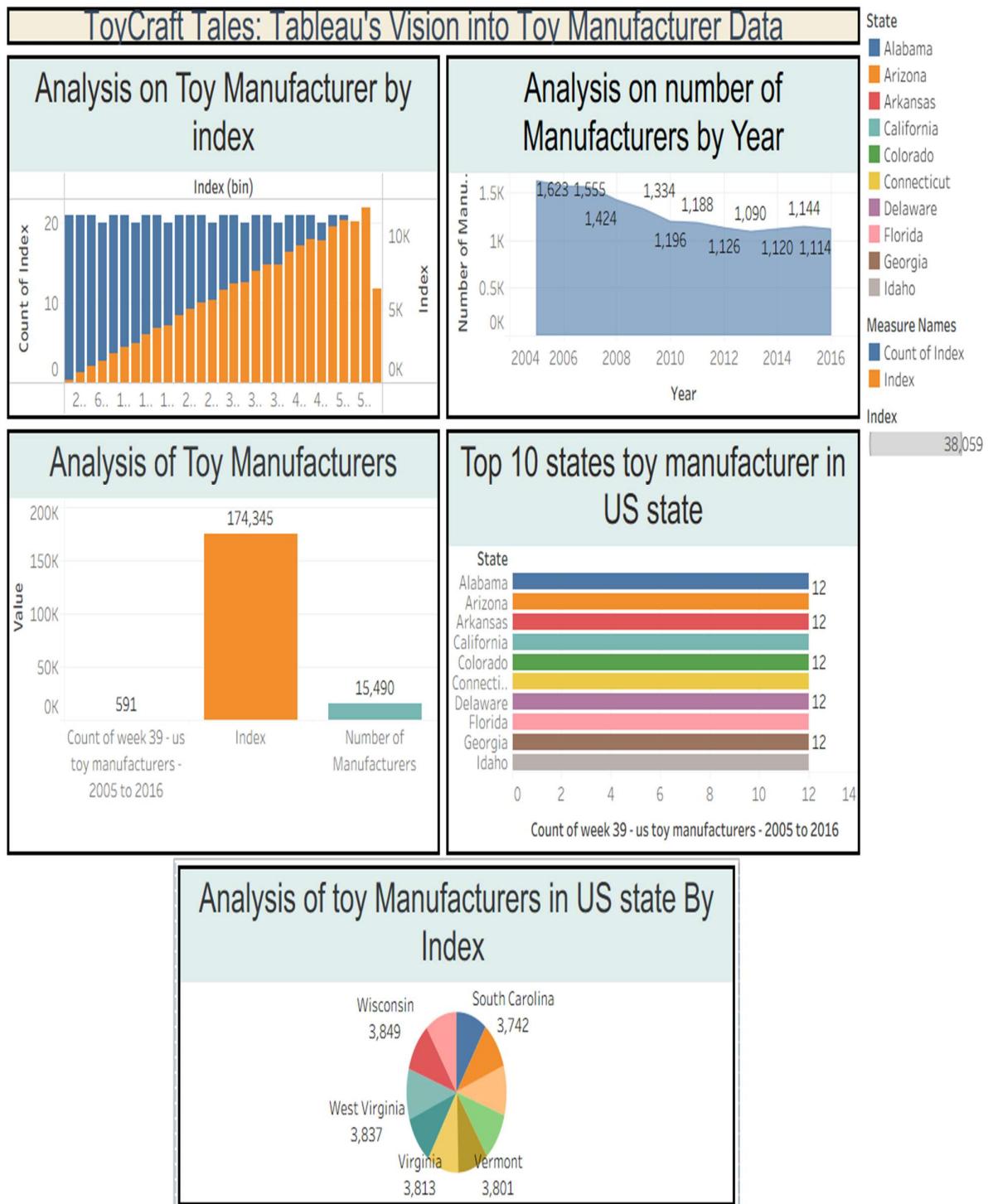
4.Chart showing top 10 toy manufacturers in US



5.PIE CHART showing analysis on toy manufacturers by index:



DASHBOARD

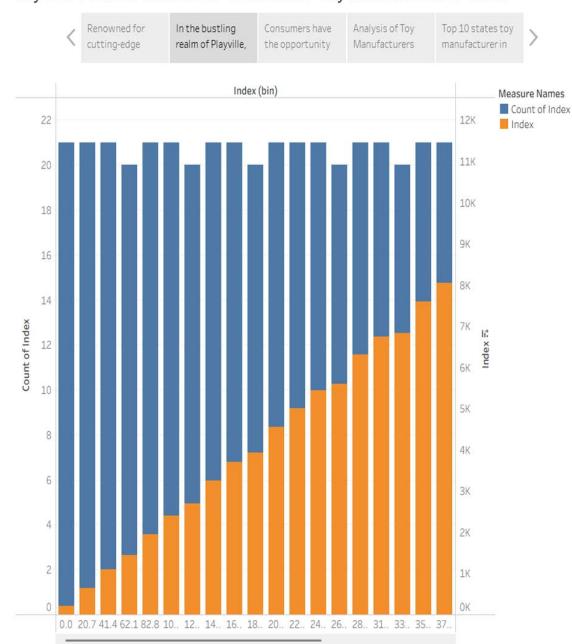


STORY

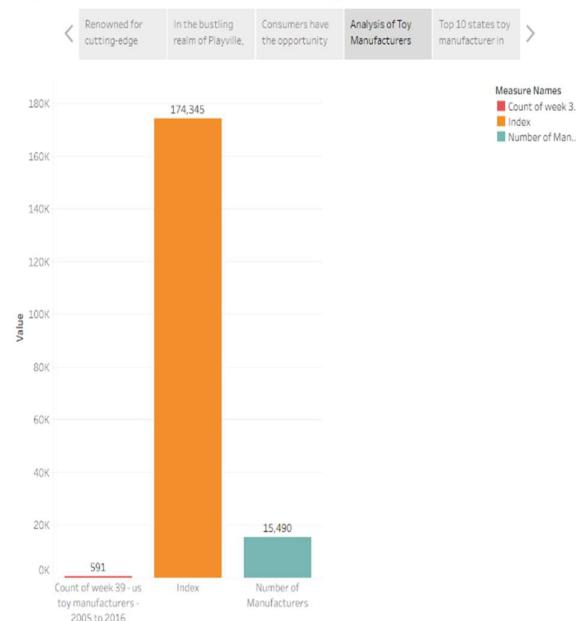
ToyCraft Tales: Tableau's Vision into Toy Manufacturer Data



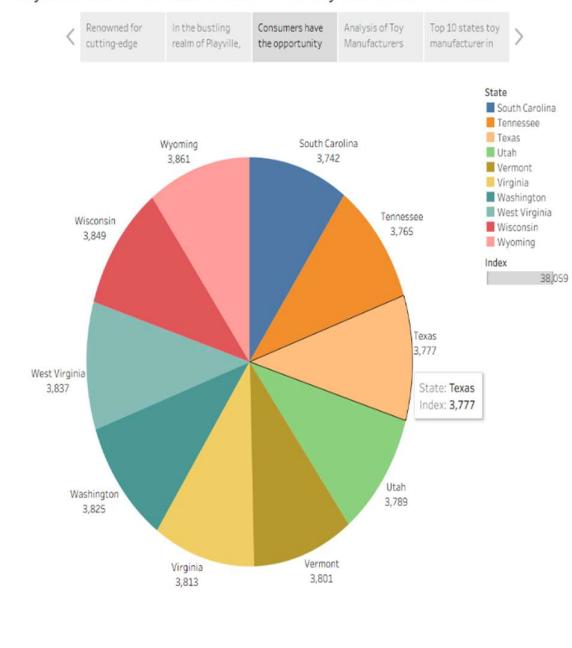
ToyCraft Tales: Tableau's Vision into Toy Manufacturer Data

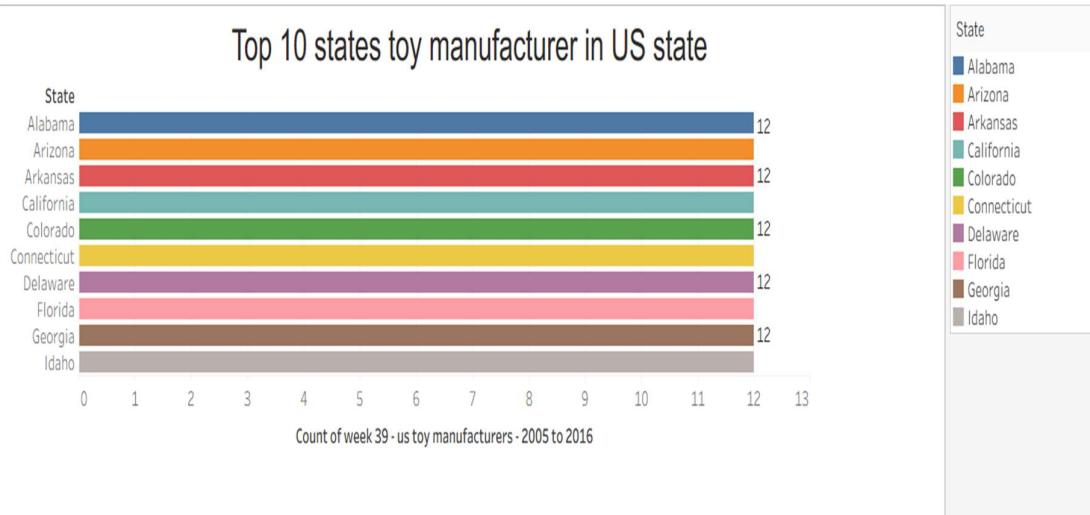


ToyCraft Tales: Tableau's Vision into Toy Manufacturer Data



ToyCraft Tales: Tableau's Vision into Toy Manufacturer Data





8. ADVANTAGES & DISADVANTAGES

Advantages:

1. Improved Decision-Making

Helps toy manufacturers make data-driven decisions using interactive visuals.

2. Visual Insights

Tableau dashboards and stories make complex data easy to understand.

3. User-Friendly Interface

Clean, responsive web integration makes the dashboard accessible on any device.

4. Time-Saving

Reduces manual reporting efforts with real-time visual updates.

5. Scalable Solution

Can be extended with more datasets like inventory, feedback, or seasonal trends.

Disadvantages:

1. Limited to Public Tableau

Free Tableau Public has restrictions (e.g., no data privacy, limited customization).

2. Static Data (if not automated)

If data isn't updated regularly, the dashboard becomes outdated.

3. Internet Dependency

Requires stable internet to view online dashboards.

4. Learning Curve

Some users may need time to understand and interact with Tableau visuals effectively.

5. Not a Full BI Tool

This project provides insights but doesn't support advanced forecasting or real-time alerts without additional tools.

9. CONCLUSION

The **ToyCraft Tales** project successfully demonstrates how data visualization tools like **Tableau** can transform raw sales data into meaningful insights for better decision-making in the toy manufacturing industry. By integrating interactive dashboards and stories, this project enhances data accessibility, uncovers key trends across products and regions, and empowers stakeholders with a clear view of performance. It provides a solid foundation for building data-driven strategies and highlights the importance of visual analytics in modern business environments.

10. FUTURE SCOPE:

Future Scope

- 1. Real-time Data Integration:** Incorporate live data feeds for dynamic dashboards and up-to-the-minute insights.
- 2. Advanced Analytics:** Apply predictive analytics and forecasting models using machine learning for demand prediction.
- 3. Mobile Accessibility:** Optimize dashboards for mobile and tablet viewing to enhance usability for on-the-go decision-makers.
- 4. User Customization:** Enable role-based dashboards tailored to departments like sales, marketing, or inventory.

5. **Scalability:** Extend the solution to include more regions, product lines, and multi-source data integration for broader insights.

11. APPENDIX

Source Code(if any):

ToyCraft Tales project is based on **Tableau**, there usually isn't "source code" for this project in the traditional sense (like Python, Java, etc.)

Dataset Link:

ToyCraft _Tales : Tableau's Vision into Toy Manufacturer Data

<https://www.kaggle.com/datasets/thedevastator/toy-manufacturers-in-us-states>

GitHub & Project Demo Link

Github repository:

<https://github.com/Venkatesh9143/ToyCraft-Tales-Tableau-s-Vision-into-Toy-Manufacturer-Data>

project demo link:

<https://drive.google.com/file/d/1epBvtg2rjXZlit-ytVlGNwi5socludF/view?usp=sharing>