

ToyCraft Tales - Project Report

1.. INTRODUCTION

1.1 Project Overview

This project analyzes the number and distribution of toy manufacturers across US states from 2005 to 2016.

The goal is to provide insights into manufacturing trends using MySQL and Tableau.

1.2 Purpose

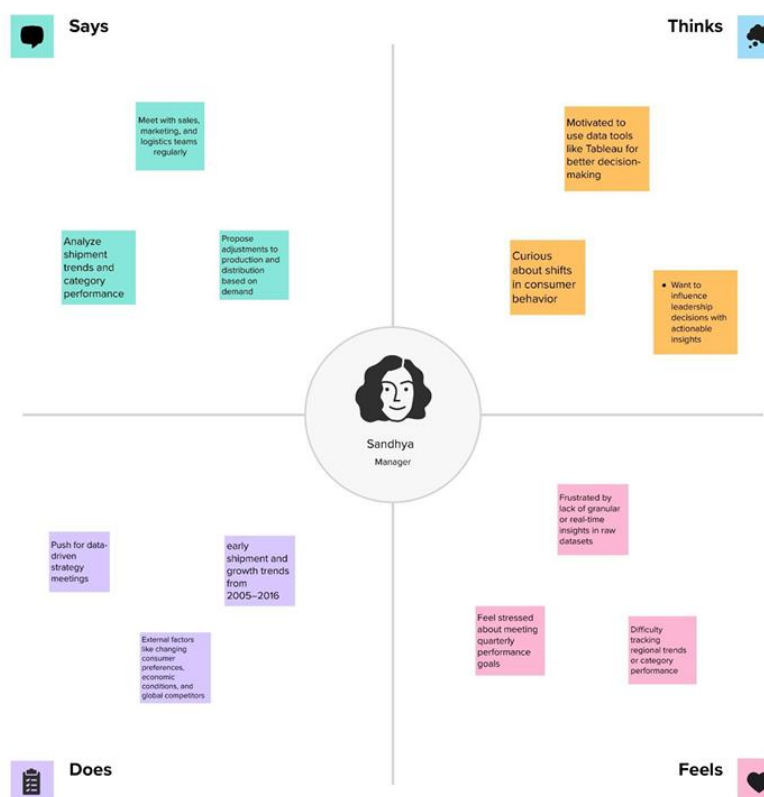
The purpose is to identify state-wise and year-wise manufacturing trends and visualize the insights using interactive dashboards.

2.. IDEATION PHASE

2.1 Problem Statement

Toy manufacturers collect a lot of data, but understanding it can be difficult. This project uses Tableau to turn complex toy data into easy, clear visuals to help improve sales, production, and decision-making.

2.2 Empathy Map Canvas




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2.3 Brainstorming

Step-1: Team Gathering, collaboration and select the problem statement

Template



Brainstorm & idea prioritization

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

- 10 minutes to prepare
- 1 hour to collaborate
- 2-8 people recommended

Before you collaborate

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

10 minutes

- Team gathering**
Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.
- Set the goal**
Think about the problem you'll be focusing on solving in the brainstorming session.
- Learn how to use the facilitation tools**
Use the Facilitation Superpowers to run a happy and productive session.
[Open articles](#)

Define your problem statement

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

5 minutes

Problem

Toy manufacturers face difficulty in predicting market demand, understanding consumer preferences, and optimizing production due to lack of clear, visual insights from historical data

Key rules of brainstorming

To run a smooth and productive session

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

Step-2: Brainstorm, Idea Listing and Grouping

Brainstorm

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

10 minutes

Tanmayee

- By using the tableau prepare unique visualizations
- give some analysis on top 10 and make visuals for that

B.Manasa

- Create interactive dashboards with filters for year, region, and category.
- Add KPI titles

U.Manasa

- analysis on which toys are preferred by different age groups
- add some dashboards

G.Kavya

- Match production volume with regional purchasing trends
- add some stories
- add some kpi's to understand it easily

S.Bhuvaneswari

- create the different visualizations to understand the data
- Track toy performance vs. competitors
- use some tool tips

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

By using the tableau prepare unique visualizations

add some dashboards

Add some KPI titles

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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

Tip

Participants can use their markers to point at where they want to place their idea. The facilitator can confirm the idea by using the mouse pointer holding the H key on the keyboard.

After you collaborate

You can export the mural as an image or pdf to share with members of your company who might find it helpful.

Quick add-ons

Share the mural

Share a view link to the mural with stakeholders to keep them in the loop about the outcomes of the session.

Export the mural

Export a copy of the mural as a photo or PDF to attach to emails, include in articles, or save to your drive.

Keep moving forward

Strategy blueprint

Define the components of a new idea or strategy.

[Open the template](#)

Customer experience journey map

Understand customer needs, motivations, and obstacles for an experience.

[Open the template](#)

Strengths, weaknesses, opportunities & threats

Identify strengths, weaknesses, opportunities, and threats (SWOT) to develop a plan.

[Open the template](#)

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3.. REQUIREMENT ANALYSIS

3.1 Customer Journey map

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 as the process finishes?	Extend What happens after the experience is over?
Experience steps What does the person (or people) at the center of this scenario typically experience in each step?	Sees toy ads online and in store Hears kids talking about trending toys at school	comparing toys checking prices and reviews	Adding to cart checking out	Receiving giving to the child	Getting relaxed thinks about the customer
Interactions What interactions do they have at each step along the way? • People: Who do they see or talk to? • Places: Where are they? • Things: What digital touchpoints or physical objects do they use?	ADS Social media Youtube	product pages youtube reviews	checkout system credit cards mobile apps delivery options physical checkout counters	instruction manuals Customer support	behaviour how they carry things does any damage
Goals & motivations At each step, what is a person's primary goal or motivation? ("Help me..." or "Help me avoid...")	helps to find that is more suitable for their child	helping customer to buy a needed product	helps to buy quickly secure and confident	feeling relief thinks about their choice	understanding how to handle the people
Positive moments What steps does a typical person find enjoyable, productive, fun, motivating, delightful, or exciting?	discover a trending toy customer satisfaction good reviews	seeing toys with high ratings	Finding a deal getting fast delivery	Child loves the toy works as expected	customer support profits regarding purchase
Negative moments What steps does a typical person find frustrating, confusing, angering, costly, or time-consuming?	feeling overwhelmed by options confused and stressed	confusion about quality safety	Item out of stock unclear shipping info	Toy is broken Does not match the description	Bargain
Areas of opportunity How might we make each step better? What ideas do we have? What have others suggested?	Use data to highlight top-selling selling trending toys on websites	category wise performance data age wise products	Use forecasting data to improve stock accuracy by season	Encourage reviews collecting feedback to improve future decisions	Tried to satisfy the customer

3.2 Solution Requirement

Functional Requirements:

The following are the functional requirements of the proposed solution.

FR N0.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Data Upload & Integration	Import toy industry CSV data into Tableau
		Clean and format data for consistency and structure
FR-2	Market Trend Analysis	Analyze annual shipment growth and total market size
		Highlight seasonal spikes
FR-3	Category Performance Dashboard	Visualize toy categories across years
		Identify top-selling categories over time
FR-4	Regional & Demographic Filtering	Add filters by region, age group, and consumer type
		Enable dynamic charts that respond to selections
FR-5	Unified Dashboard	Combine all insights into a single dashboard
		Allow stakeholders to export reports or snapshots

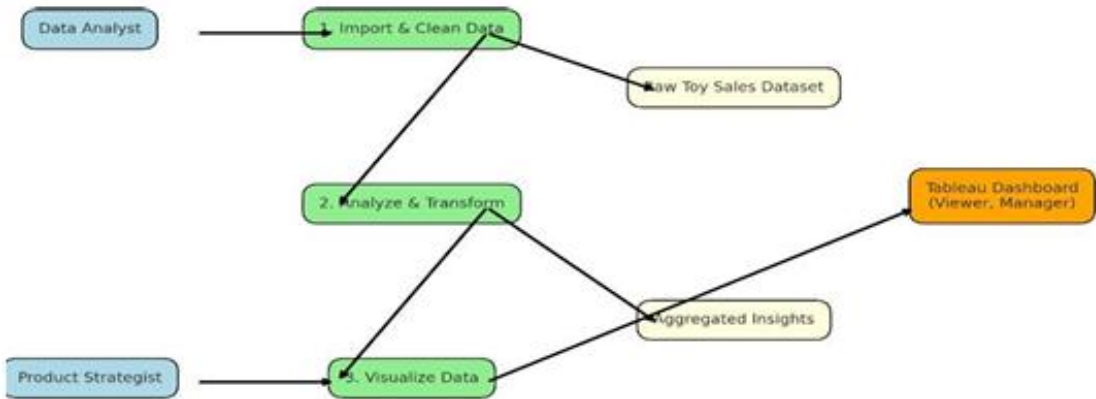
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Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

NFR NO.	Non-Functional Requirements	Description
NFR-1	Usability	Dashboard should be intuitive, with tooltips and clear legends
NFR-2	Security	Only authorized users can upload/edit data in Tableau
NFR-2	Reliability	Dashboard should load consistently across devices and users
NFR-4	Performance	Visuals must load in under 2 seconds even with full dataset
NFR-5	Availability	Dashboard should be accessible 24/7 via Tableau Public or Server
NFR-6	Scalability	Should handle additional years/categories without redesign

3.3 Data Flow Diagram



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3.4 Technology Stack

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Dashboard interface for users to interact with data	Tableau Public
2.	Application Logic-1	Data cleaning and transformation	Excel(pre-Tableau)
3.	Application Logic-2	Data aggregation by year, category, region	Tableau calculated fields
4.	Application Logic-3	Forecasting based on historical trends	Tableau Forecasting
5.	Database	CSV dataset with shipment and category info	Excel sheet
6.	Cloud Database	Not applicable	Tableau cloud
7.	File Storage	Upload and store toy dataset	Local drives or google drive
8.	External API-1	Weather data to correlate seasonality	Open Weather API
9.	External API-2	Social media trend integration	Google Trends
10.	Machine Learning Model	Predictive modeling	Tableau's built-in forecast model
11.	Infrastructure (Server / Cloud)	Cloud-hosted dashboard viewable by users	Tableau Server/Tableau public

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Python (data cleaning)	Python
2.	Security Implementations	Restricted access via Tableau login	IAM (Tableau server)
3.	Scalable Architecture	Tableau scales to multiple dashboards/users without code changes	Tableau cloud Architecture
4.	Availability	Dashboard hosted on Tableau Public with 24/7 access	Tableau server/Tableau public
5.	Performance	Optimized visual queries, aggregated filters, and trendline calculations	Tableau filtering

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4.. PROJECT DESIGN

4.1 Problem Solution Fit

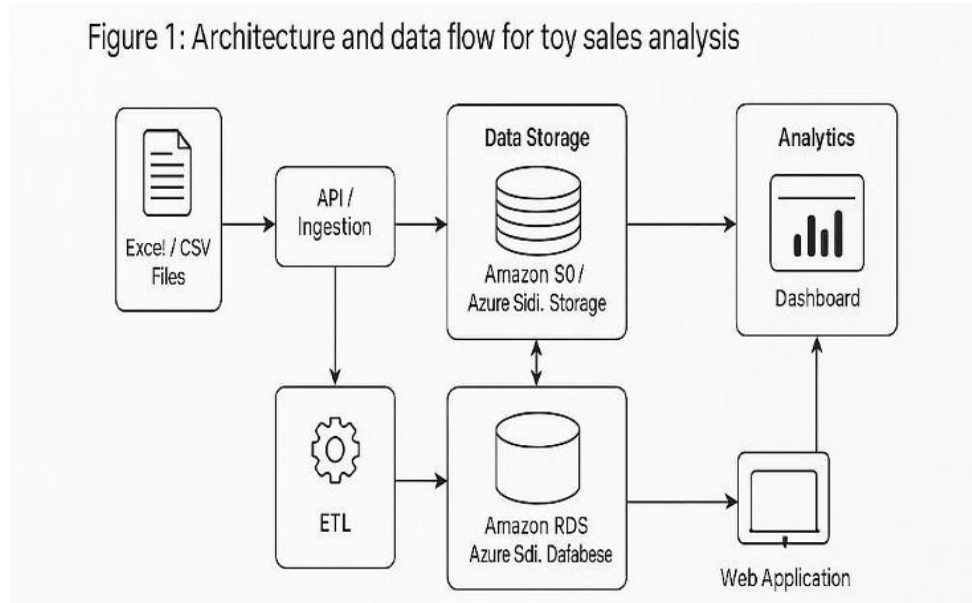
Define CS, fit into CL	1. CUSTOMER SEGMENT(S) CS Small-to-medium U.S. toy manufacturing companies operating from 2005 to 2016	6. CUSTOMER LIMITATIONS CL <ul style="list-style-type: none"> Budget constraints for sophisticated tools. Lack of in-house technical expertise. Dependency on legacy systems. 	5. AVAILABLE SOLUTIONS PLUSSES & MINUSES AS <ul style="list-style-type: none"> Manual Excel analysis (time-consuming, error-prone). General-purpose BI tools (complex setup, non-domain-specific). Consultant-driven reports (expensive, not scalable)
	2. PROBLEMS / PAINS ITS FREQUENCY PR <ul style="list-style-type: none"> Lack of tools to analyze historical manufacturing and sales data. Difficulty identifying trends and seasonal shifts. Inability to make data-backed decisions. Fragmented or inaccessible archival data. 	9. PROBLEM ROOT / CAUSE RC <i>Root Cause:</i> Lack of easy-to-use, tailored analytics solutions for the toy manufacturing domain. <i>Frequency:</i> Occurs every fiscal quarter and peak business periods	7. BEHAVIOR ITS INTENSITY BE <ul style="list-style-type: none"> Maintain Excel-based records. Intermittently review past data during key decisions. Attend trade shows and research online for tools. Outsource occasional analytics.
Focus on PR, tag into BE, understand RC	3. TRIGGERS TO ACT TR Annual business reviews and planning cycles. Increase in market competition. Demand for modern, analytics-driven reporting from management.	10. YOUR SOLUTION SL A cloud-based, domain-specific analytics platform allowing toy manufacturers to upload historical data (e.g., spreadsheets), process and visualize trends, and receive actionable business insights. Features include dashboard generation, trend reports, and integration options for legacy system	8. CHANNELS of BEHAVIOR CH <ul style="list-style-type: none"> Online: Manufacturer forums, LinkedIn groups, trade websites. Offline: Industry expos, consultant meetings, internal planning workshops.
	4. EMOTIONS EM <ul style="list-style-type: none"> <i>Before:</i> Frustration, confusion, indecision, fear of missed opportunities. <i>After:</i> Confidence, clarity, empowerment, improved decision-making. 		
Identify strong TR & EA			

4.2 Proposed Solution

S.No	Parameter	Description
1.	Problem Statement (Problem to be solved)	Toy manufacturers and decision-makers lack a clear understanding of historical market trends, seasonal demand, and category-wise performance due to raw, unstructured spreadsheet data
2.	Idea / Solution description	The proposed solution is a Tableau-based interactive dashboard that transforms 12 years of toy sales data into meaningful visual insights
3.	Novelty / Uniqueness	The solution bridges the gap between raw data and strategic decision-making using a no-code, real-time analytics platform
4.	Social Impact / Customer Satisfaction	helps deliver toys customers actually want—leading to higher customer satisfaction and reduced waste
5.	Business Model (Revenue Model)	The dashboard can be offered as a SaaS solution or internal tool for toy manufacturers to optimize marketing, inventory, and sales operations
6.	Scalability of the Solution	The solution is scalable—more data (new years, product lines, or regions) can be integrated without modifying the core dashboard. Tableau supports enterprise-level deployment via Tableau Server or Tableau Cloud.

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4.3 Solution Architecture



5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

Product Backlog, Sprint Schedule, and Estimation (4 Marks)

Sprint	Functional Requirement (Epic)	User story Number	User Story /Task	Story Points	Priority	Team Members
Sprint-1	Data Preparation & Import	USN-1	As a data analyst, I want to clean and import the toy sales dataset into Tableau	3	High	M. S.V.SURESH N. SATISH
Sprint-1	Initial Market Trends View	USN-2	As a strategist, I want to create a basic trends dashboard showing shipment and growth over time	2	High	M. S.V.SURESH M. SAI PRIYA
Sprint-2	Category & Seasonal Insights	USN-3	As a product manager, I want to compare toy category	3	Medium	M.DEEPAK NAIDU N.S.V.SATISH

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Sprint	Functional Requirement (Epic)	User story Number	User Story /Task	Story Points	Priority	Team Members
			performance and seasonal spike			
Sprint-2	Consumer Demographics Filter	USN-4	As a marketer, I want to filter data by region and age group to identify preferences	3	Medium	N. S.V.SATISH M. S.V.SURESH M. SAI PRIYA
Sprint-3	Dashboard and story	USN-5	As a stakeholder, I want an integrated dashboard with trendlines and filters for strategic use	4	High	M. S.V.SURESH N. S.V SATISH M.SAI PRIYA M. DEEPAK NAIDU

6.. FUNCTIONAL AND PERFORMANCE TESTING

6.1 Performance Testing

Data Rendered

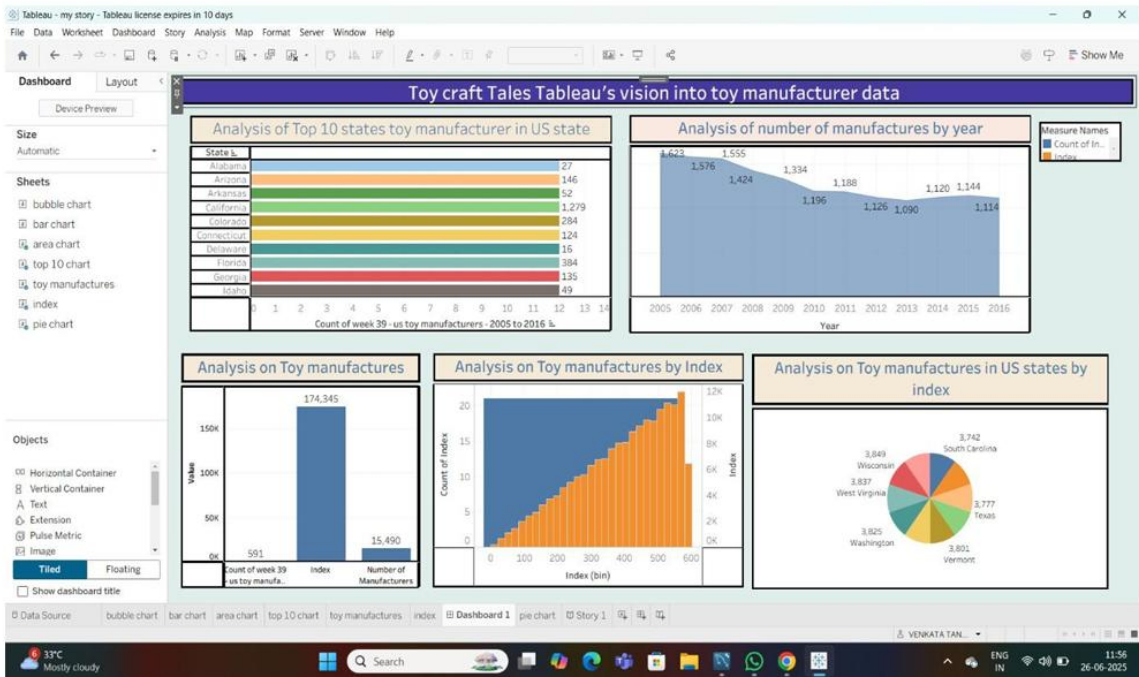
The screenshot displays the MySQL Workbench interface. On the left, the 'SCHEMAS' pane shows a tree view with 'week 39 - us toy manufa' expanded, revealing 'Columns', 'Indexes', 'Foreign Keys', and 'Triggers'. The main window shows the 'Table Details' for 'toyrcraft_tales.week 39 - us toy manufacturers - 2005 to 2016'. The details include:

- Engine: InnoDB
- Row format: Dynamic
- Column count: 4
- Table rows: 591
- AVG row length: 110
- Data length: 64.0 KiB
- Index length: 0.0 bytes
- Max data length: 0.0 bytes
- Data free: 0.0 bytes
- Table size (estimate): 64.0 KiB
- File format:
- Data path:
- Update time:

At the bottom left, a summary for 'Table: week 39 - us toy manufacturers - 2005 to 2016' lists columns: 'index' (int), 'State' (text), 'Year' (int), and 'Number of Manufacturers' (int). The bottom status bar indicates 'Added new script editor'.

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Utilization of filters



Calculation fields Used

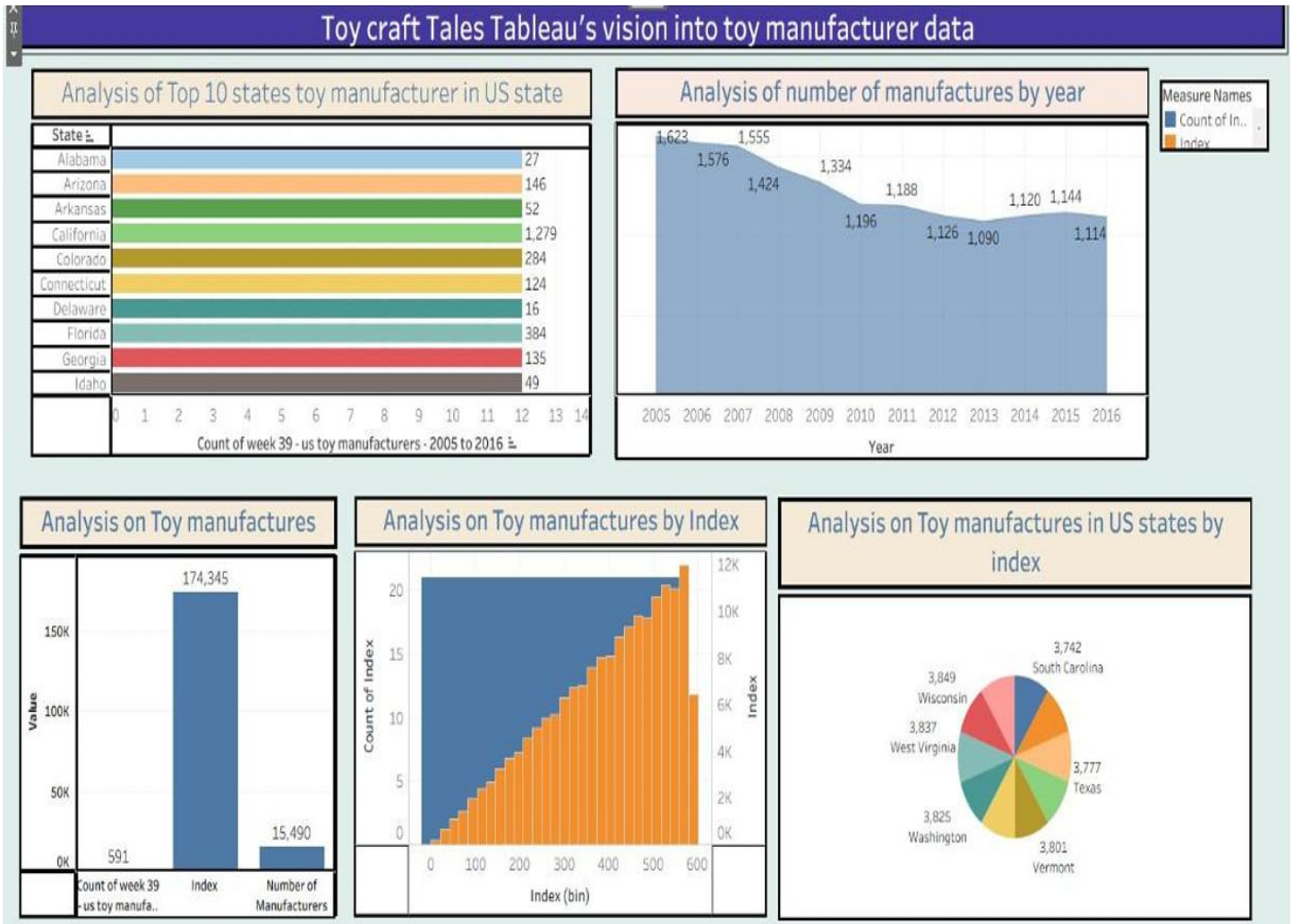


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7.. RESULTS

7.1 Output Screenshots

Below are the Tableau visualization results based on the dataset:



8.. ADVANTAGES & DISADVANTAGES

Advantages:

- Easy Integration: Tableau can integrate with databases like MySQL, Google Sheets, or Cloud Storage where user data is stored, allowing seamless reporting.
- User-Friendly Interface: Non-technical stakeholders can easily interpret the reports and

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KPIs related to registration, confirmation success rates, etc.

Real-Time Data Monitoring: Tableau enables real-time monitoring of user activities such as registrations through different channels (Form, Gmail, LinkedIn).

Disadvantages:

Cost Factor : Tableau licenses (especially Tableau Server or Tableau Online) can be expensive for small teams or projects with a limited budget.

Limited Interactivity with Core System : Tableau cannot trigger real-time actions like sending confirmation emails or OTPs—it can only report these processes.

Dependency on Data Source : Real-time accuracy depends on how well your databases or APIs integrate with Tableau; poor setup can delay reporting.

9.. CONCLUSION

This project uses Tableau to convert complex toy sales and inventory data into simple, interactive dashboards. It helps the company track sales trends, manage stock, and make better decisions quickly. Though Tableau is not a system development tool, it is ideal for data visualization and business insights, making operations more efficient.

10.. FUTURE SCOPE

Advanced Predictive Analytics: Integrate machine learning models with Tableau to predict toy sales trends, seasonal demand, and customer preferences.

Real-Time Data Integration: Connect Tableau directly to live data sources (e.g., sales platforms, inventory systems) for real-time dashboards and alerts.

Mobile Dashboard Access: Expand Tableau reports for mobile devices, enabling managers to track sales and stock anytime, anywhere.

Submitted By:

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