Project Report Format

1. INTRODUCTION

ToyCraft Tales: Tableau's Vision into Toy Manufacturer Data is a data analytics project developed using Tableau to analyze and visualize toy manufacturer data. The project focuses on transforming raw and unstructured data into meaningful visual insights through interactive dashboards. It examines manufacturer distribution across US states, year-wise growth trends, index-based performance, and overall manufacturer statistics.

1.1 Project Overview

ToyCraft Tales is a data analytics project developed using Tableau to analyze toy manufacturer **data. The project focuses on identifying trends, state-wise distribution, index performance, and** year-wise growth of toy manufacturers using interactive visual dashboards.

1.2 Purpose

The purpose of this project is to transform raw toy manufacturer data into meaningful insights using data visualization techniques. It helps in understanding market trends, regional performance, and manufacturer growth patterns.

2. IDEATION PHASE

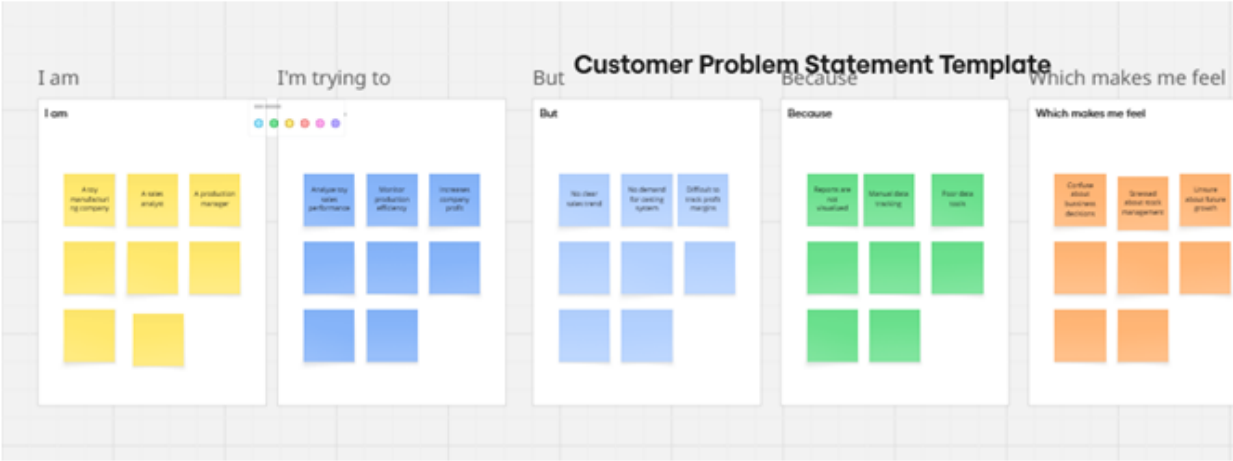
2.1 Problem Statement

Customer Problem Statement Template:

Create a problem statement to understand your customer's point of view. The Customer Problem Statement template helps you focus on what matters to create experiences people will love.

A well-articulated customer problem statement allows you and your team to find the ideal solution for the challenges your customers face. Throughout the process, you'll also be able to empathize with your customers, which helps you better understand how they perceive your product or service.

Example:



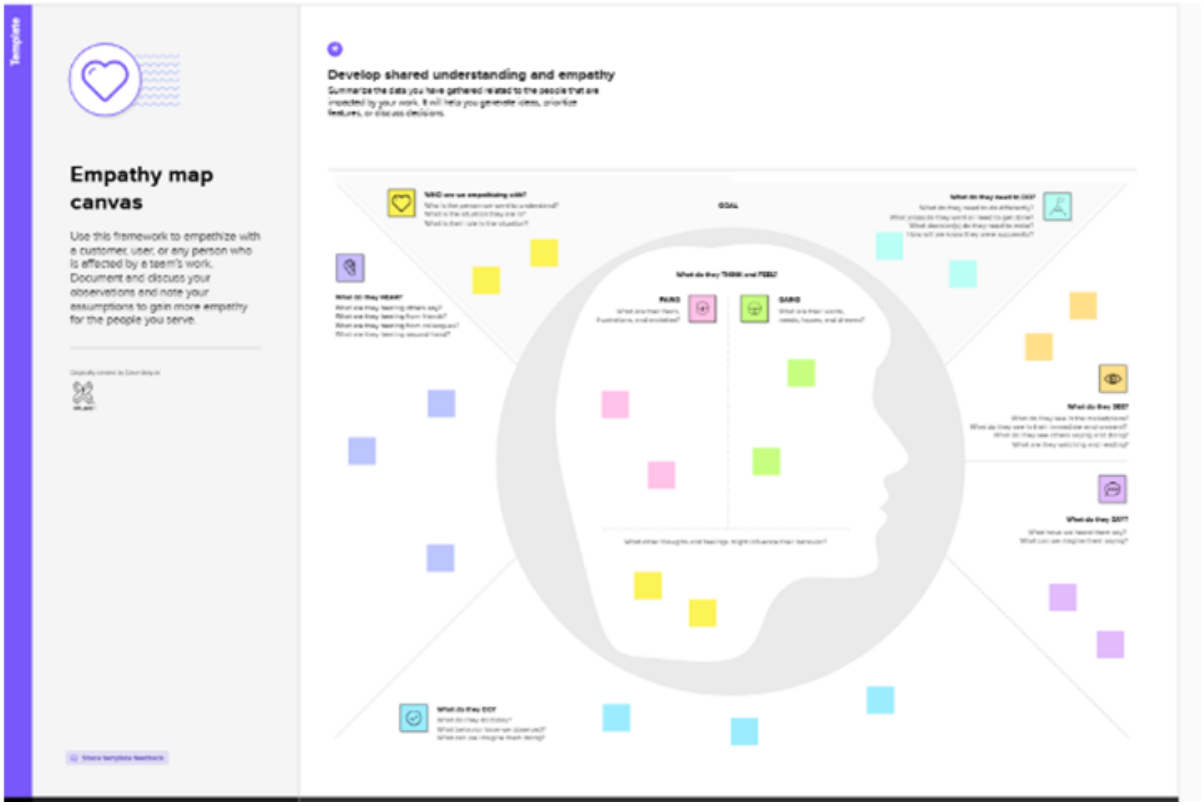
2.2 Empathy Map Canvas

Empathy Map Canvas:

An empathy map is a simple, easy-to-digest visual that captures knowledge about a user's behaviours and attitudes.

It is a useful tool to helps teams better understand their users.
Creating an effective solution requires understanding the true problem and the person who is experiencing it. The exercise of creating the map helps participants consider things from the user's perspective along with his or her goals and challenges.

Example:



2.3 Brainstorming

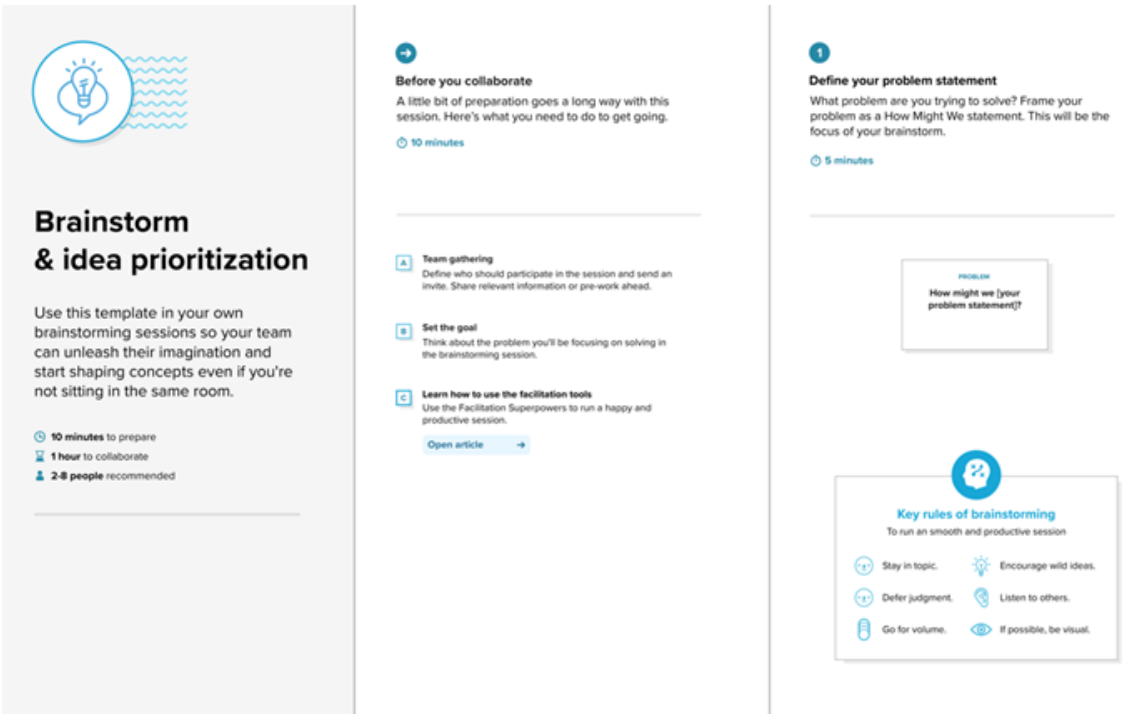
Brainstorm & Idea Prioritization Template:

Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem solving. Prioritizing volume over value, out-of-the-box ideas are welcome and built upon, and all participants are encouraged to collaborate, helping each other develop a rich amount of creative solutions.

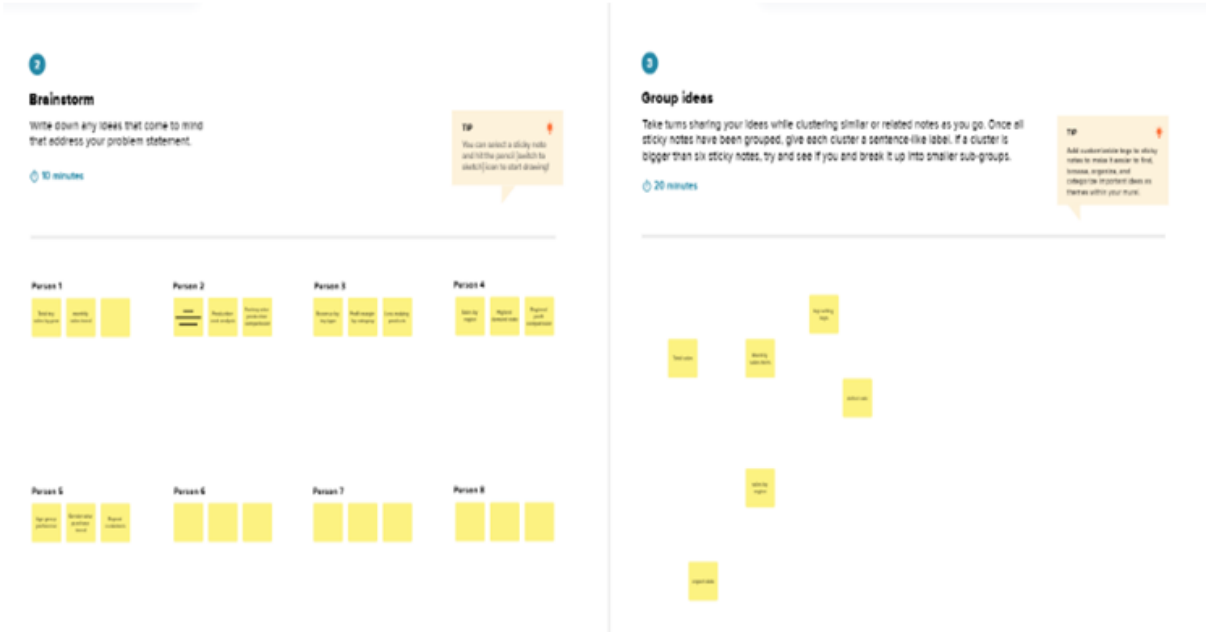
Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

Reference: https://www.mural.co/templates/brainstorm-and-idea-prioritization

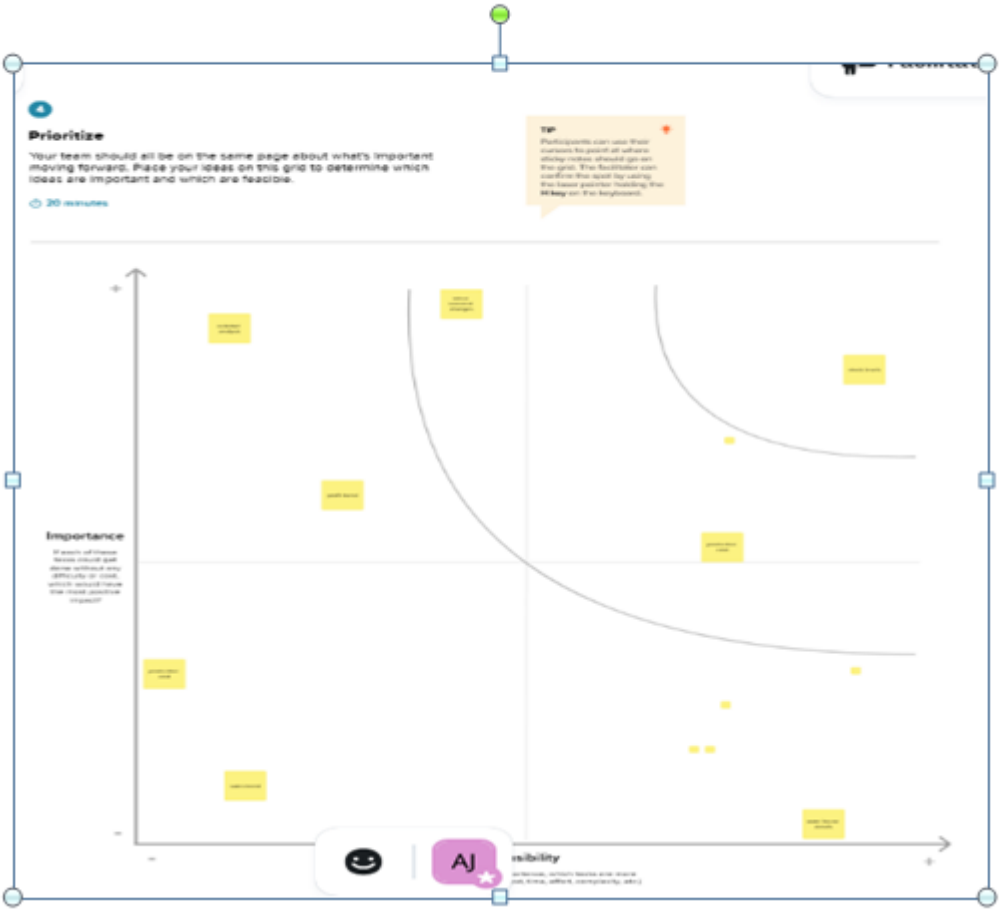
Step-1: Team Gathering, Collaboration and Select the Problem Statement



Step-2: Brainstorm, Idea Listing and Grouping



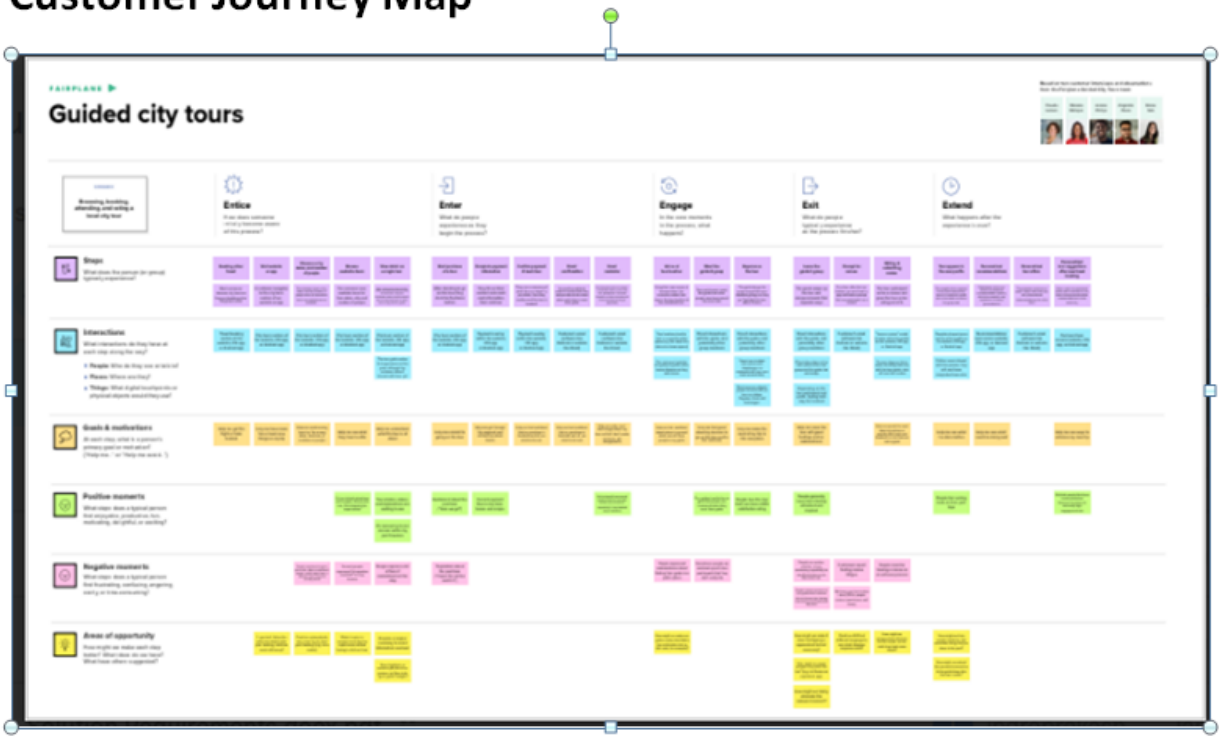
Step-3: Idea Prioritization



3. REQUIREMENT ANALYSIS

3.1 Customer Journey map

Customer Journey Map



3.2 Solution Requirement

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail Registration through LinkedIN
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	Sales Analysis	Category-wise sales analysis Region-wise sales comparison Monthly & Quarterly trend analysis
FR-4	Profit Analysis	Identify top profitable products Detect loss-making products Region-wise profit distribution

FR-5	Customer Insights	Identify best-selling toys Analyze customer buying patterns Segment analysis (age group / region if available)
FR-6	Reporting & Export	Generate summary reports Export dashboard as PDF/Image Share dashboard with stakeholders

Non-functional Requirements:

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

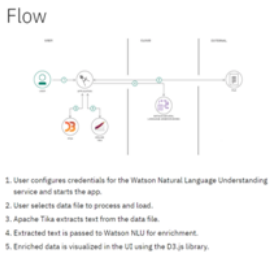
FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	The Tableau dashboard should be user-friendly, with clear navigation, simple layout, and easy-to-understand visualizations for business users.
NFR-2	**Security**	Data should be securely stored and accessed only by authorized users. Role-based access control must be implemented to protect sensitive sales and profit data.
NFR-3	**Reliability**	The system should provide accurate and consistent analytical results without data loss or calculation errors.
NFR-4	**Performance**	Dashboard should load within 3–5 seconds even with large datasets and support smooth filtering and drill-down operations.
NFR-5	**Availability**	The dashboard should be available 24/7 for business monitoring with minimal downtime.
NFR-6	**Scalability**	The system should handle increasing data volume (future sales data) without affecting performance.

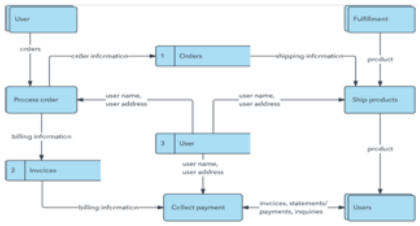
3.2 Data Flow Diagram

Data Flow Diagrams:

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.

Example: (Simplified)





User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account / dashboard	High	Sprint-1
Business Manager	Dashboard Access	USN-2	As a user, I will receive confirmation email once I have registered for the application	I can receive confirmation email & click confirm	High	Sprint-1
Sales Analyst	Category Analysis	USN-3	As a user, I can register for the application through Facebook	I can register & access the dashboard with Facebook Login	Low	Sprint-2
Sales Analyst	Category Analysis	USN-4	As a user, I can register for the application through Gmail	I can view time-series charts showing growth patterns	Medium	Sprint-1
Inventory Manager	Login	USN-5	As a user, I can log into the application by entering email & password	I can identify low-stock and high-demand products	High	Sprint-1
Marketing Team	Dashboard	USN-6	As a marketing executive, I can analyze customer preferences and best-selling products	I can view top-selling products and customer segments	Medium	Sprint-2
Customer (Web user)	Profit Analysis	USN-7	As top management, I can analyze profit margins by product and region	I can view profit ratio and loss-making products	High	Sprint-1

3.3 Technology Stack

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

Example: Order processing during pandemics for offline mode

Reference: https://developer.ibm.com/patterns/ai-powered-backend-system-for-order-processing-during-pandemics/

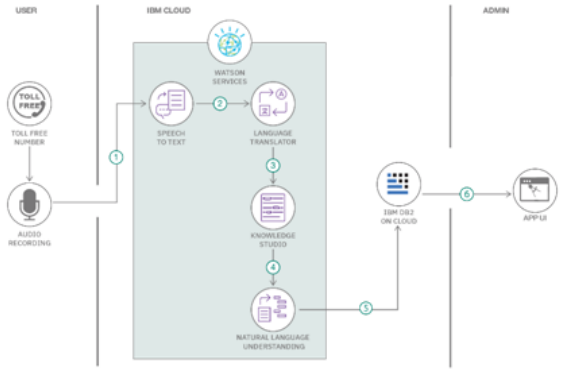


Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	How user interacts with application e.g. Web UI, Mobile App, Chatbot etc.	HTML, CSS, JavaScript / Angular Js / React Js etc.
2.	Application Logic-1	Logic for a process in the application	Java / Python
3.	Application Logic-2	Logic for a process in the application	IBM Watson STT service
4.	Application Logic-3	Logic for a process in the application	IBM Watson Assistant
5.	Database	Data Type, Configurations etc.	MySQL, NoSQL, etc.
6.	Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloudant etc.
7.	File Storage	File storage requirements	IBM Block Storage or Other Storage Service or Local Filesystem
8.	External API-1	Purpose of External API used in the application	IBM Weather API, etc.
9.	External API-2	Purpose of External API used in the application	API, etc.
10.	Machine Learning Model	Purpose of Machine Learning Model	Object Recognition Model, etc.
11.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: Cloud Server Configuration :	Local,

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used	Opensource framework
2.	Security Implementations	List all the security / access controls implemented, use of firewalls etc.	e.g. SHA-256, Encryptions, IAM Controls, OWASP etc.
3.	Scalable Architecture	Justify the scalability of architecture (3 – tier, Micro-services)	-
4.	Availability	Justify the availability of application (e.g. use of load balancers, distributed servers etc.)	-
5.	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's) etc.	-

4. PROJECT DESIGN

4.1 Problem Solution Fit

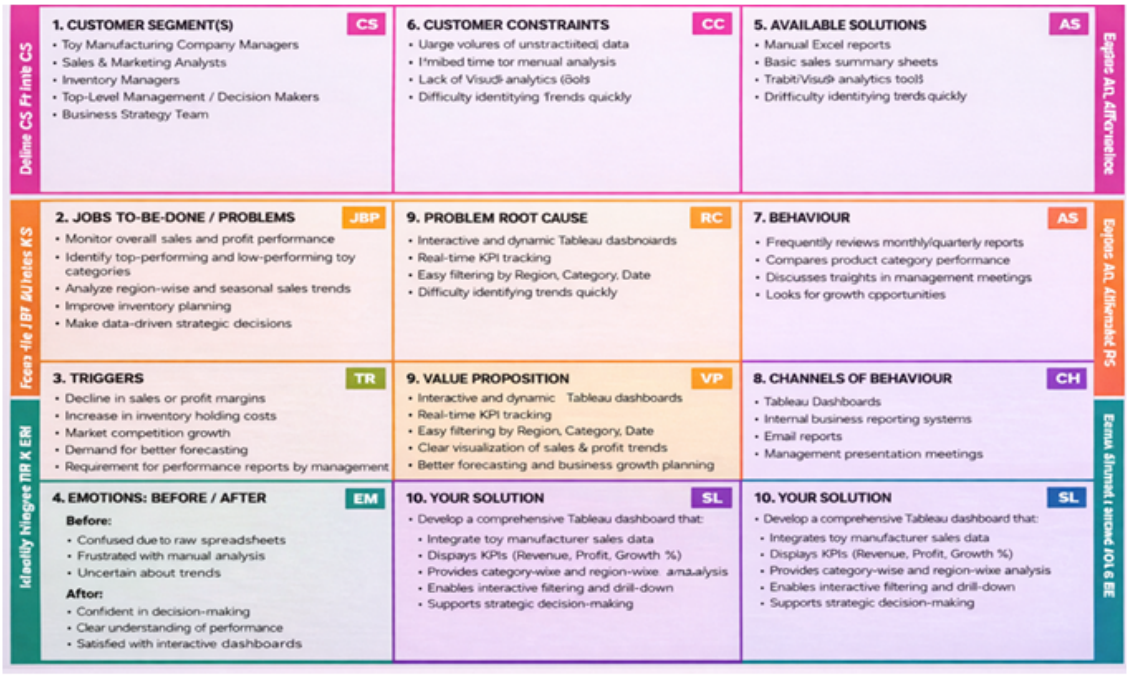
Problem – Solution Fit Template:

The Problem-Solution Fit simply means that you have found a problem with your customer and that the solution you have realized for it actually solves the customer's problem. It helps entrepreneurs, marketers and corporate innovators identify behavioral patterns and recognize what would work and why

Purpose:

- ❑ Solve complex problems in a way that fits the state of your customers.
- ❑ Succeed faster and increase your solution adoption by tapping into existing mediums and channels of behavior.
- ❑ Sharpen your communication and marketing strategy with the right triggers and messaging.
- ❑ Increase touch-points with your company by finding the right problem-behavior fit and building trust by solving frequent annoyances, or urgent or costly problems.
- ❑ **Understand the existing situation in order to improve it for your target group.**

Template:



4.2 Proposed Solution

Proposed Solution Template:

Project team shall fill the following information in proposed solution template.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Toy manufacturing companies struggle to analyze large volumes of sales and profit data effectively. Manual spreadsheets make it difficult to identify trends, top-performing products, regional performance, and seasonal demand, leading to delayed and less accurate business decisions.
2.	Idea / Solution description	Develop an interactive Tableau dashboard that integrates toy manufacturer sales data and provides KPI tracking (Revenue, Profit, Growth %), category-wise and region-wise analysis, trend visualization, and dynamic filtering to support real-time decision-making.
3.	Novelty / Uniqueness	The solution combines interactive visual analytics, drill-down capabilities, and real-time KPI monitoring in a single dashboard. It transforms complex raw data into easy-to-understand visual insights specifically tailored for toy manufacturing business analysis.
4.	Social Impact / Customer Satisfaction	Helps businesses optimize inventory, reduce losses, and improve product planning. Enhances customer satisfaction by ensuring better availability of popular toys and improved strategic decisions based on data insights.
5.	Business Model (Revenue Model)	Subscription-based dashboard access for businesses, consulting services for customized analytics solutions, and enterprise-level Tableau deployment for large toy manufacturing firms.
6.	Scalability of the Solution	The dashboard can handle increasing sales data over time and can be expanded to include new KPIs, additional regions, advanced forecasting models, and integration with ERP systems without affecting performance.

4.3 Solution Architecture

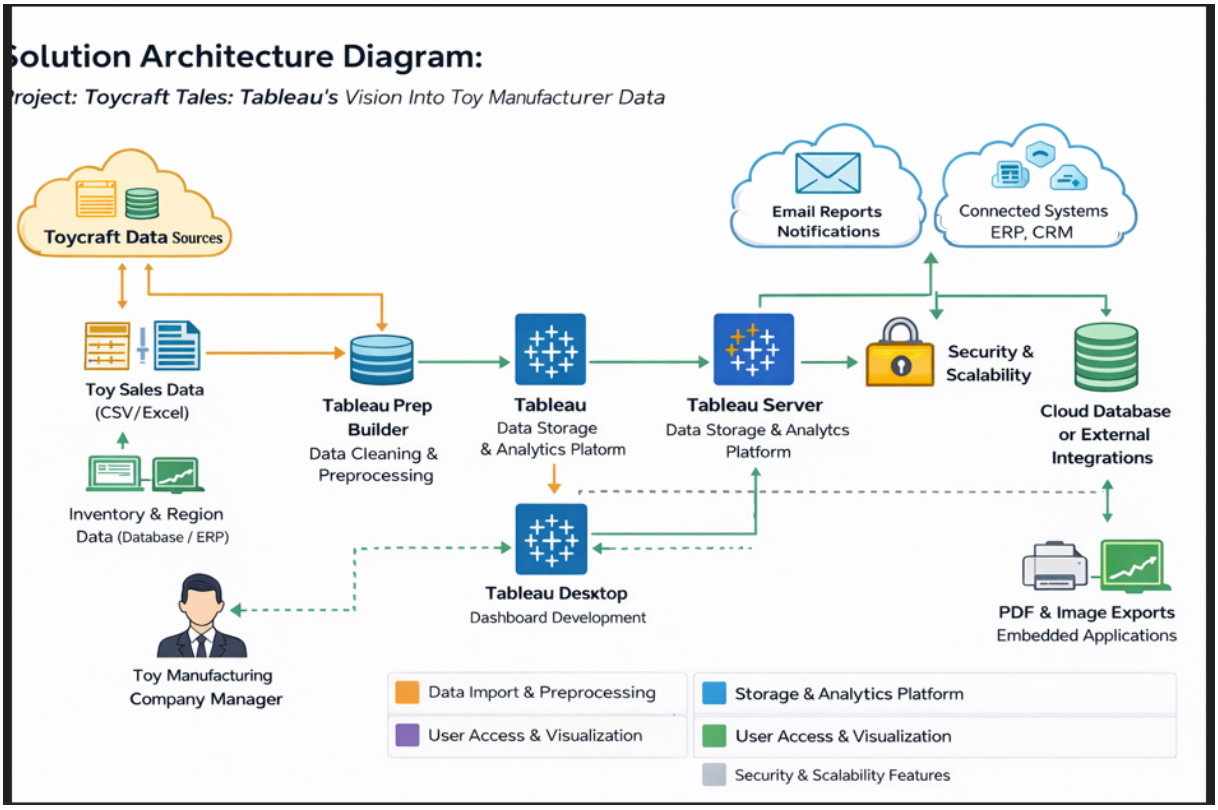
Solution Architecture:

Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. Its goals are to:

- Find the best tech solution to solve existing business problems.
- Describe the structure, characteristics, behavior, and other aspects of the software to project stakeholders.

- Define features, development phases, and solution requirements.
- Provide specifications according to which the solution is defined, managed, and delivered.

Example - Solution Architecture Diagram:



5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

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

Use the below template to create product backlog and sprint schedule

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority
Sprint-1	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	2	High
Sprint-1	KPI Dashboard	USN-2	As a user, I will receive confirmation email once I have registered for the application	1	High
Sprint-2	Category Analysis	USN-3	As a user, I can register for the application through Facebook	2	Low
Sprint-1	Regional Analysis	USN-4	As a user, I can register for the application through Gmail	2	Medium
Sprint-1	Login	USN-5	As a user, I can log into the application by entering email & password	1	High
Sprint-2	Dashboard	USN-6	As management, I can identify top profitable and loss-making products	3	High
Sprint-3	Interactive Filters	USN-7	As a user, I can apply filters (Region, Category, Date) to customize reports	2	Medium
Sprint-3	Report Export & Deployment	USN-8	As an organization, we can export and deploy dashboard on Tableau Server/Public	3	High

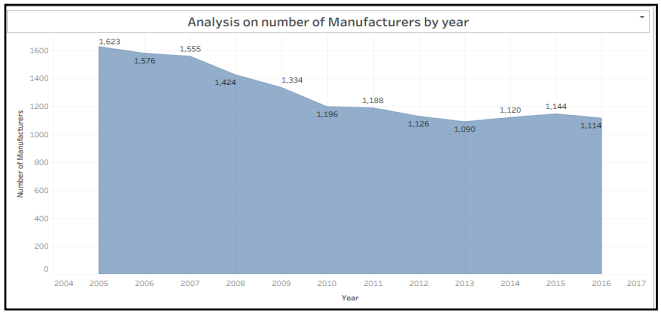
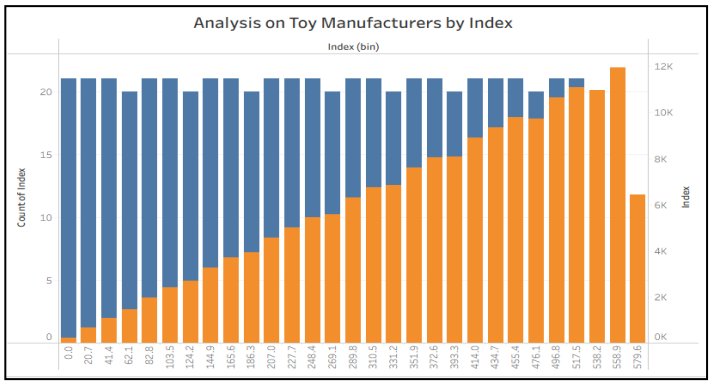
Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint R (Actual)
Sprint-1	20	8 days	16 Dec 2025	24 Dec 2025	20	23 Dec 2
Sprint-2	20	8 days	24 Dec 2025	31 Dec 2025	18	01 Jan 2
Sprint-3	20	8 days	02 Jan 2026	09 Jan 2026	20	09 Jan 2
Sprint-4	20	8 Days	10 Jan 2026	17 Jan 2026	19	18 Jan 2
Sprint-5	20	8 Days	19 Jan 2026	26 Jan 2026	20	26 Jan 2
Sprint-6	20	8 Days	27 Jan 2026	09 Jan 2026	17	04 Feb 2
Sprint-7	20	8 days	02 Feb 2026	12 Feb 2026	20	12 Feb 2
Sprint-8	20	8 days	13 Feb 2026	20 Feb 2026	19	20 Feb 2

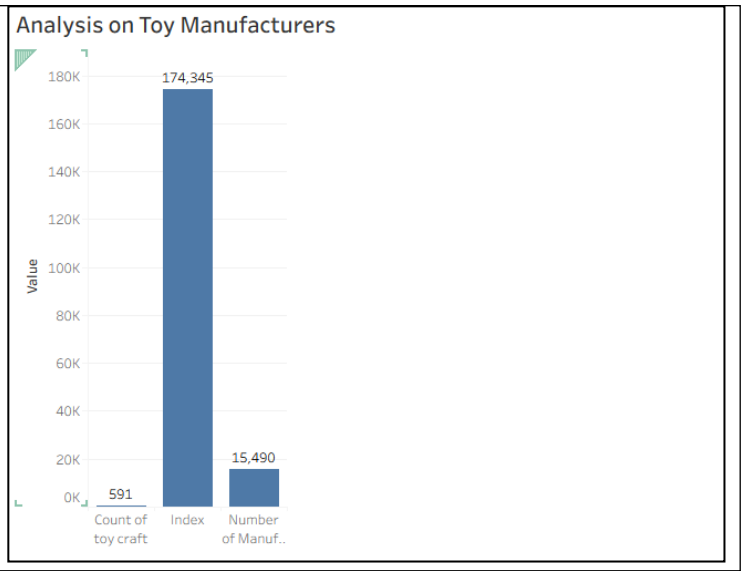
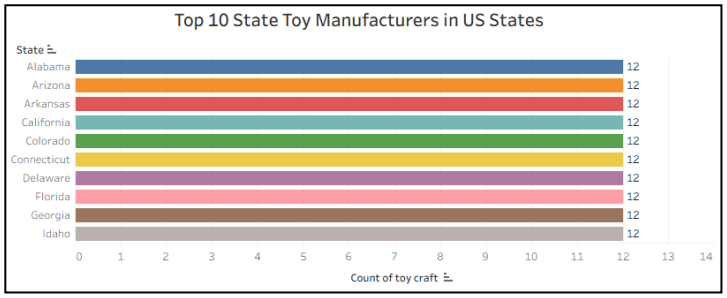
6. FUNCTIONAL AND PERFORMANCE TESTING

6.1 Performance Testing

Model Performance Testing:

Project team shall fill the following information in model performance testing template.

S.No.	Parameter	Screenshot / Values
1.	Data Rendered	The data rendered shows the year-wise number of toy manufacturers from 2005 to 2015 using an Area Chart. The chart displays the trend and total manufacturer count for each year. 
2.	Data Preprocessing	• Cleaned dataset by removing duplicates • Converted Year column into proper date format • Aggregated manufacturer count using COUNT() • Verified numerical values before visualization 
3.	Utilization of Filters	• Year filter applied for trend analysis • Interactive tooltip enabled to show exact manufacturer count • Automatic aggregation used for yearly comparison

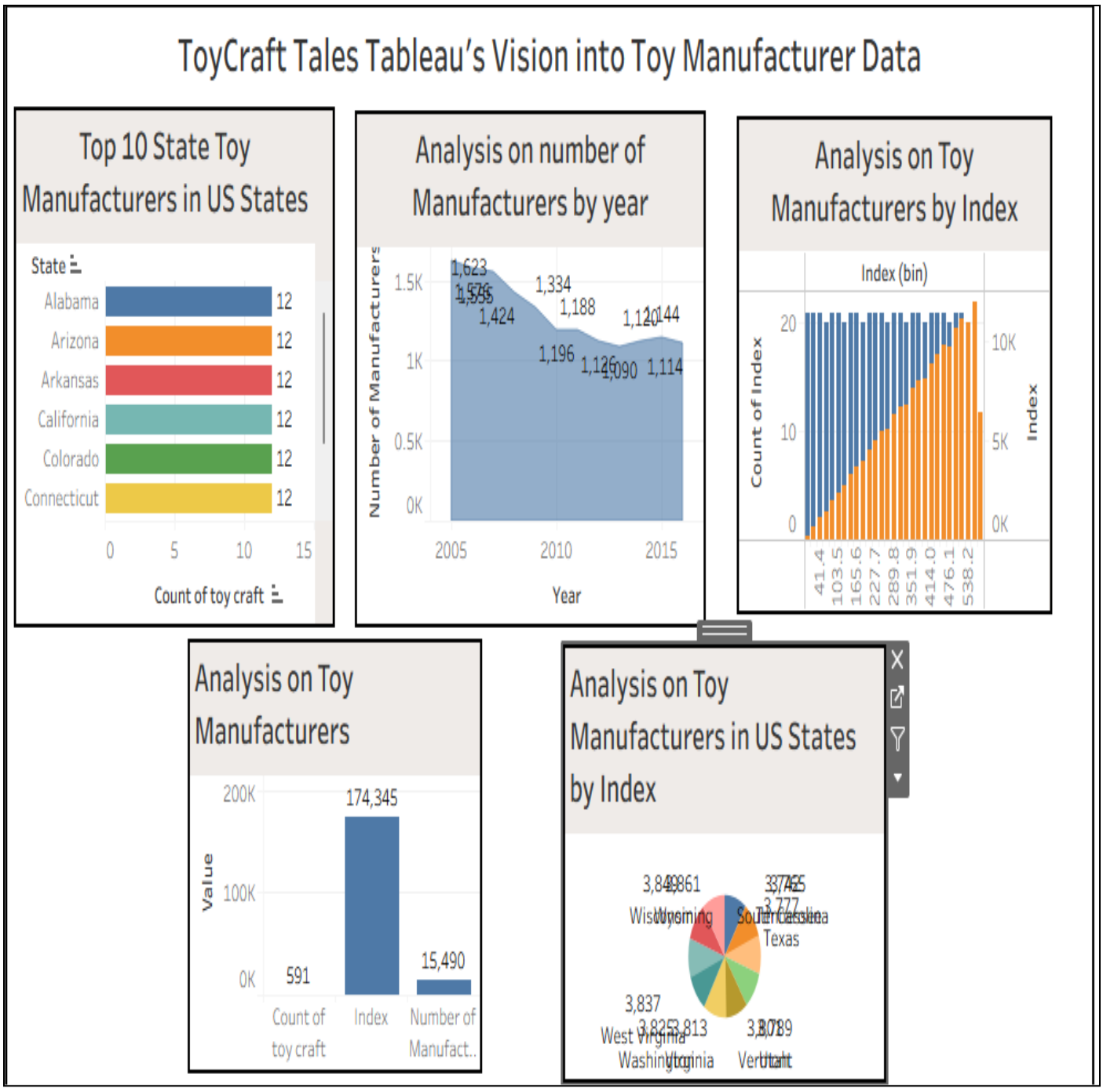
		
4.	Calculation fields Used	• COUNT([Toy Craft]) • Year aggregation • Automatic SUM/COUNT calculation 
5.	Dashboard design	No of Visualizations / Graphs - • Bar Chart – Top 10 State Toy Manufacturers • Area Chart – Manufacturers by Year • Bar Chart – Manufacturers by Index • Bar Chart – Toy Manufacturer Summary • Pie Chart – US State Distribution by Index
6	Story Design	No of Visualizations / Graphs - • State-wise Analysis

		• Year-wise Trend Analysis • Index Distribution Analysis • Overall Manufacturer Summary • Geographic Distribution by Index

7. RESULTS

7.1 Output Screenshots

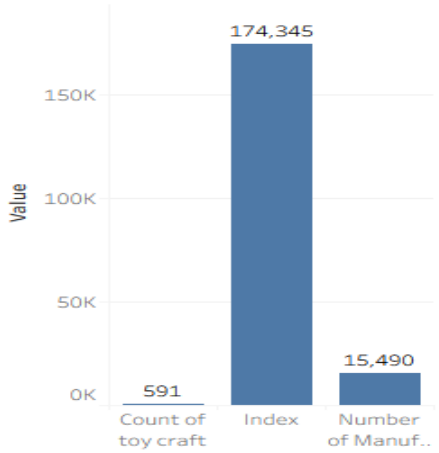
DASHBOARD


ToyCraft Tales Tableau's Vision into Toy Manufacturer Data
Top 10 State Toy Manufacturers in US States
State
Alabama
Arizona
Arkansas
California
Colorado
Connecticut
12
0
5
10
15
Count of toy craft
Analysis on number of Manufacturers by year
Number of Manufacturers
1.5K
1K
0.5K
0K
1,623
1,424
1,334
1,188
1,196
1,090
1,114
2005
2010
2015
Year
Analysis on Toy Manufacturers by Index
Index (bin)
Count of Index
20
10
0
10K
5K
0K
Index
41.4
103.5
165.6
227.7
289.8
351.9
414.0
476.1
538.2
Analysis on Toy Manufacturers
Value
200K
100K
0K
174,345
591
15,490
Count of toy craft
Index
Number of Manufact..
Analysis on Toy Manufacturers in US States by Index
Texas
3,837
West Virginia

STORY

ToyCraft Tales Tableau's Vision into Toy Manufacturer Data Story

Summarizes the total contribution of toy manufacturers. | Displays the yearly trend in the number of manufacturers. | Represents the distribution of index values across different | Shows the leading US states with the highest number of tov | Sho of ir by e



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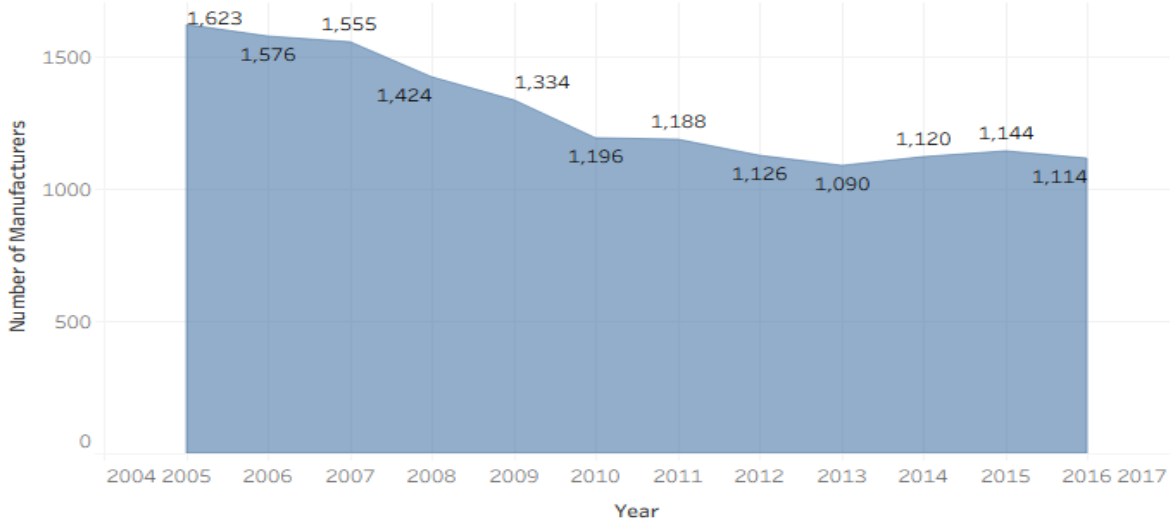

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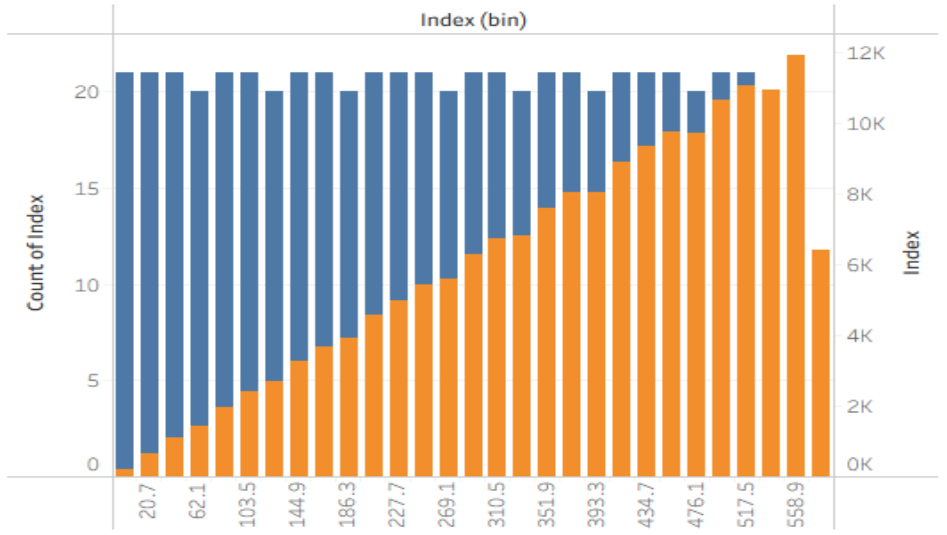

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Displays the yearly trend in the number of manufacturers.

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Shows the leading US states with the highest number of tov

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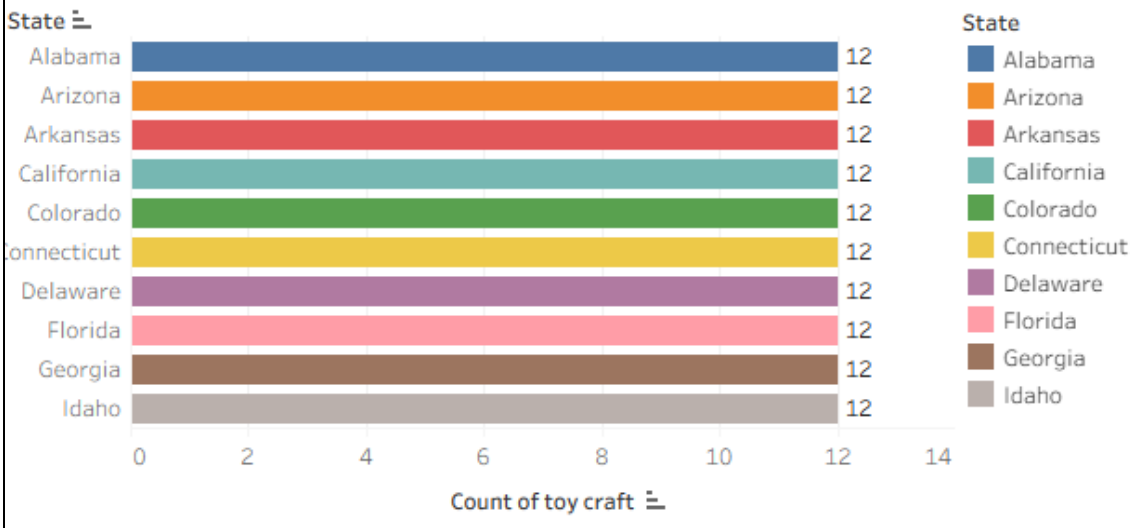

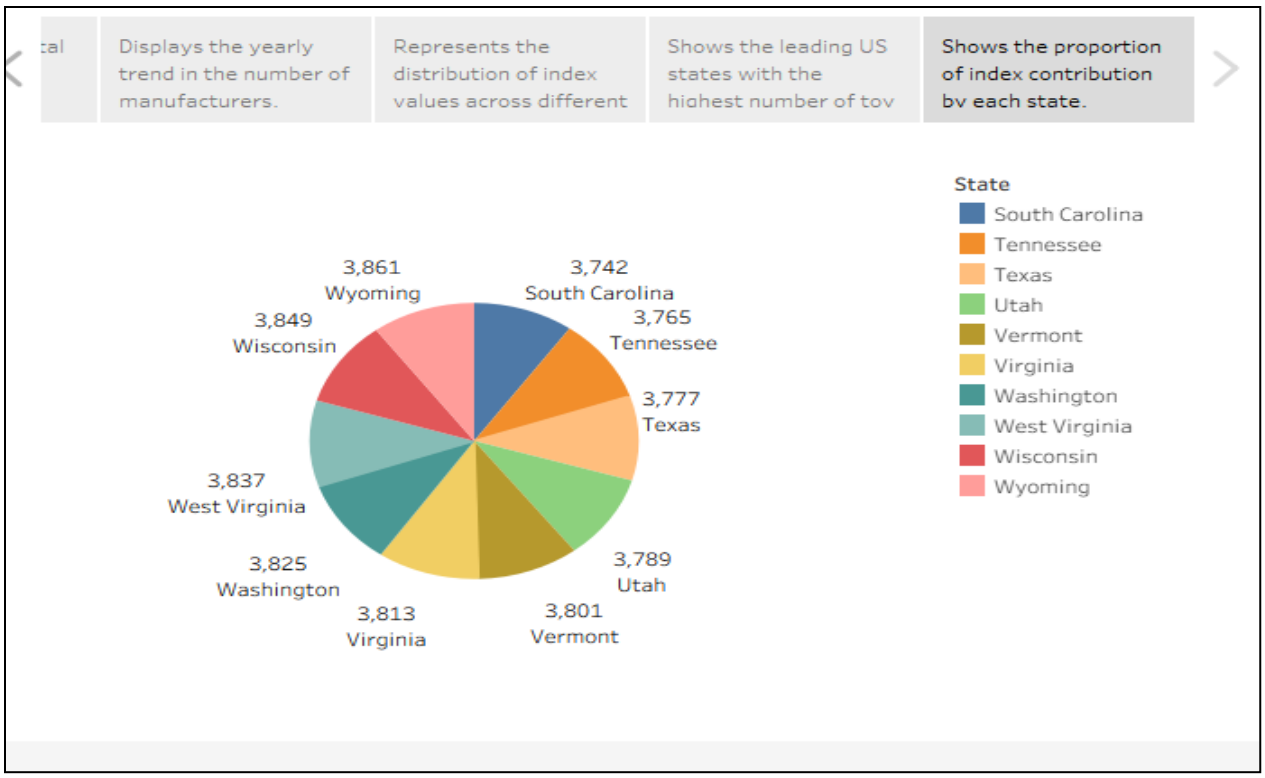

8. ADVANTAGES & DISADVANTAGES

Advantages

- Easy data interpretation
- Interactive filtering
- Visual comparison of trends
- Time-saving analysis

Disadvantages

- Depends on dataset accuracy
- Limited predictive capability
- Requires Tableau software

9. CONCLUSION

The ToyCraft Tales project successfully demonstrates how Tableau transforms raw manufacturer data into interactive visual insights. The dashboard enables effective decision-making through structured and clear data visualization.

10. FUTURE SCOPE

- Add predictive analysis
- Integrate real-time data
- Include profit and revenue forecasting
- Expand to global toy manufacturer data

11. APPENDIX

Source Code(if any)

app.py.code

```
from flask import Flask, render_template

app = Flask(__name__)

@app.route('/')
def home():
    return render_template('index.html')

if __name__ == '__main__':
    app.run(debug=True)
```

HTML CODE:

file:///D:/Jessica/Style/templates/index.html

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/J-E-S-S-I-C-A774/ToyCraft-Tales-Tableau-s-Vision-Into-Toy-Manufacturer-Data

Project Demo Link:

http://127.0.0.1:5000/