CUSTOMER ANALYSIS SYSTEM
A PROJECT REPORT
Submitted by

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BACHELOR OF TECHNOLOGY
in
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NWC DEPARTMENT

SUBJECT: Seminar

Under the Guidance of
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COLLEGE OF ENGINEERING AND TECHNOLOGY
SRM INSTITUTE OF SCIENCE AND TECHNOLOGY
KATTANKULATHUR – 603 203

BONAFIED CERTIFICATE

Register No. **RA2111028010203** Certified to be the bonafide work done by **V.V.Anjan Sai Kamal** of III Year/V Sem B.Tech Degree Course in the Seminar in SRM INSTITUTE OF SCIENCE AND TECHNOLOGY, Kattankulathur during the academic year 2023 – 2024.

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AIM:-

The aim of the project "Customer Analysis System " is to develop an efficient and intuitive platform that leverages Tableau's robust analytics tools to provide comprehensive insights into customer behavior, preferences, and trends. This system aims to enable businesses to make data-driven decisions, enhance customer satisfaction, and optimize overall operational strategies based on in-depth analysis and visualization of customer data.

ABSTRACT:-

Creating an effective Customer Analysis System is essential for businesses aiming to understand and cater to their customer base more efficiently. This project focuses on developing a comprehensive Customer Analysis System, a powerful data visualization tool. The system collects and analyzes diverse customer data, including demographics, purchasing behavior, and interaction patterns, to provide actionable insights for marketing and product development strategies.

Through a combination of data integration, segmentation, and visualization techniques, this system enables businesses to gain a deeper understanding of their customers' preferences and needs. Leveraging Tableau's interactive dashboards and intuitive visualizations, the system offers a user-friendly interface for exploring complex customer data, identifying trends, and making data-driven decisions.

The project incorporates advanced analytics to predict customer behavior, enabling businesses to anticipate future trends and proactively address customer requirements. Furthermore, the system facilitates the identification of high-value customer segments, allowing businesses to tailor marketing campaigns and loyalty programs to specific customer groups, thus maximizing customer retention and satisfaction.

Ultimately, this Customer Analysis System empowers businesses to enhance customer experiences, optimize marketing strategies, and drive sustainable growth by leveraging the power of data-driven insights provided by Tableau's robust visualization capabilities.

DATASET DESCRIPTION:

              The "Customer Analysis System" dataset offers a comprehensive collection of customer-related information, including demographic details, purchasing history, product preferences, and interaction patterns. The dataset encompasses structured data obtained from various sources, such as customer profiles, transaction records, and feedback surveys, with a focus on providing insights into customer behavior and preferences.

Structured into several key fields, the dataset includes but is not limited to: customer ID, age, gender, geographic location, transaction dates, product categories, purchase amounts, customer feedback, and any additional relevant attributes. The dataset has been compiled with the purpose of facilitating comprehensive customer analysis and aiding businesses in making informed decisions regarding marketing strategies, product development, and customer relationship management.

Data sources have been meticulously vetted for accuracy, and the dataset provides a detailed record of customer interactions over a defined period. The dataset description aims to assist users in understanding the nature of the data, its relevance to the customer analysis system, and its potential applications for business intelligence and strategic decision-making.

TOOLS:-

For the project "Customer Analysis System" , several tools are employed to ensure efficient data management, analysis, and visualization. These tools include:

1. Tableau: A powerful data visualization tool that allows for the creation of interactive and shareable dashboards, enabling comprehensive analysis of customer data.

2. SQL (Structured Query Language): Utilized for data management, extraction, and manipulation, enabling efficient querying and integration of various data sources.

3. Python: Used for data preprocessing, statistical analysis, and advanced data manipulation, enhancing the capabilities of the customer analysis system.

4. Data Integration Tools (e.g., Talend, Informatica): Employed to streamline the integration of multiple data sources and ensure data consistency and accuracy throughout the analysis process.

5. Customer Relationship Management (CRM) Software: Integrated with Tableau for seamless data extraction and analysis, facilitating a comprehensive understanding of customer interactions and preferences.

These tools collectively contribute to the development of a robust customer analysis system, enabling businesses to derive actionable insights and make data-driven decisions to enhance customer satisfaction and drive overall business growth.

PROJECT OVERVIEW:-

Creating a dataset description for a customer analysis system involves providing a comprehensive overview of the data that will be utilized for analysis. Here is a template you can use as a starting point:

1. Dataset Overview:

The customer analysis system dataset aims to provide valuable insights into customer behavior, preferences, and interactions with the company's products or services. The dataset incorporates various key metrics and attributes related to customer demographics, purchasing patterns, and engagement history.

2. Data Source:

The data is sourced from the company's internal customer relationship management (CRM) system, which includes transactional data, customer profiles, and interaction logs. Additionally, external data sources, such as marketing campaigns, social media engagement, and survey responses, are also integrated to enrich the analysis.

3. Data Structure:

The dataset consists of structured data in the form of relational tables, encompassing the following primary components:

- Customer profiles: including demographic information, contact details, and segmentation data.
- Transaction history: encompassing details of purchases, order values, and transaction dates.
- Engagement logs: recording customer interactions, website visits, and customer service inquiries.
- Marketing campaign data: comprising information on past marketing campaigns, channels utilized, and associated customer responses.

4. Key Attributes:

The dataset includes the following key attributes, among others:

- Customer ID
- Name
- Age
- Gender
- Location
- Purchase history
- Order values

- Product categories
- Website engagement metrics
- Marketing campaign responses

5. Data Preprocessing:
Prior to analysis, the dataset has undergone preprocessing steps, such as data cleaning, normalization, and consolidation of disparate data sources to ensure data consistency and accuracy. Any missing or inconsistent values have been addressed through appropriate data cleaning techniques.

6. Data Security:
The dataset adheres to strict data security protocols, ensuring the protection of sensitive customer information. Anonymization and encryption techniques have been implemented to safeguard customer privacy and comply with data protection regulations.

7. Data Update Frequency:
The dataset is updated periodically to reflect the latest customer interactions and transactions, ensuring that the analysis is based on the most recent and relevant data available.

8. Data Usage:
The dataset is intended for in-depth customer analysis to support strategic business decisions, improve customer engagement, and enhance overall customer satisfaction and retention.

9. Data Access:
Access to the dataset is restricted to authorized personnel only, with strict access controls and permissions in place to maintain data integrity and prevent unauthorized usage or modifications.

This dataset description serves as a comprehensive guide for understanding the data used in the customer analysis system within Tableau, providing clarity on the data's origin, structure, key attributes, and security measures.
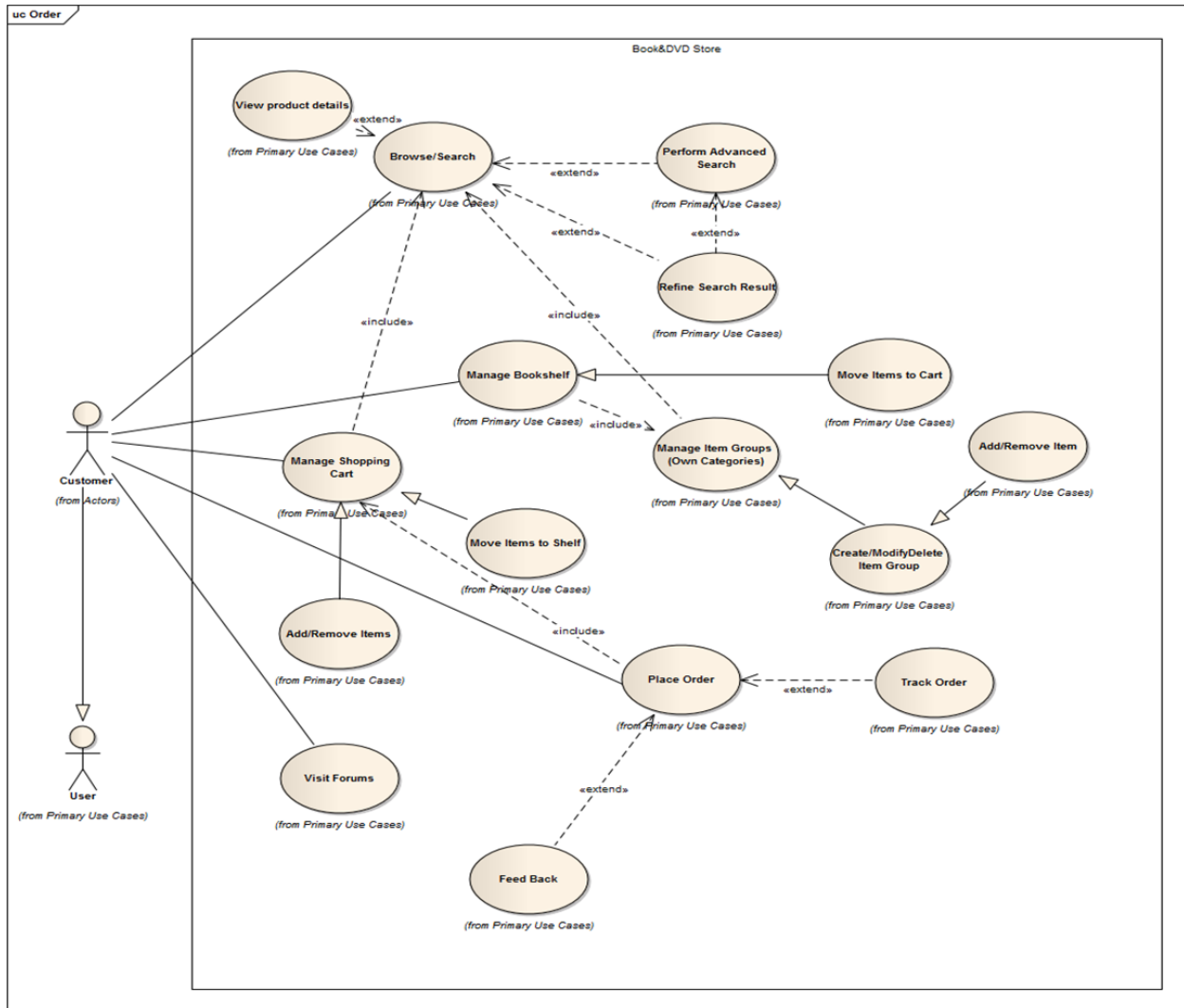
USECASE DIAGRAM

FIG 1 USECASE DIAGRAM

CLASS DIAGRAM
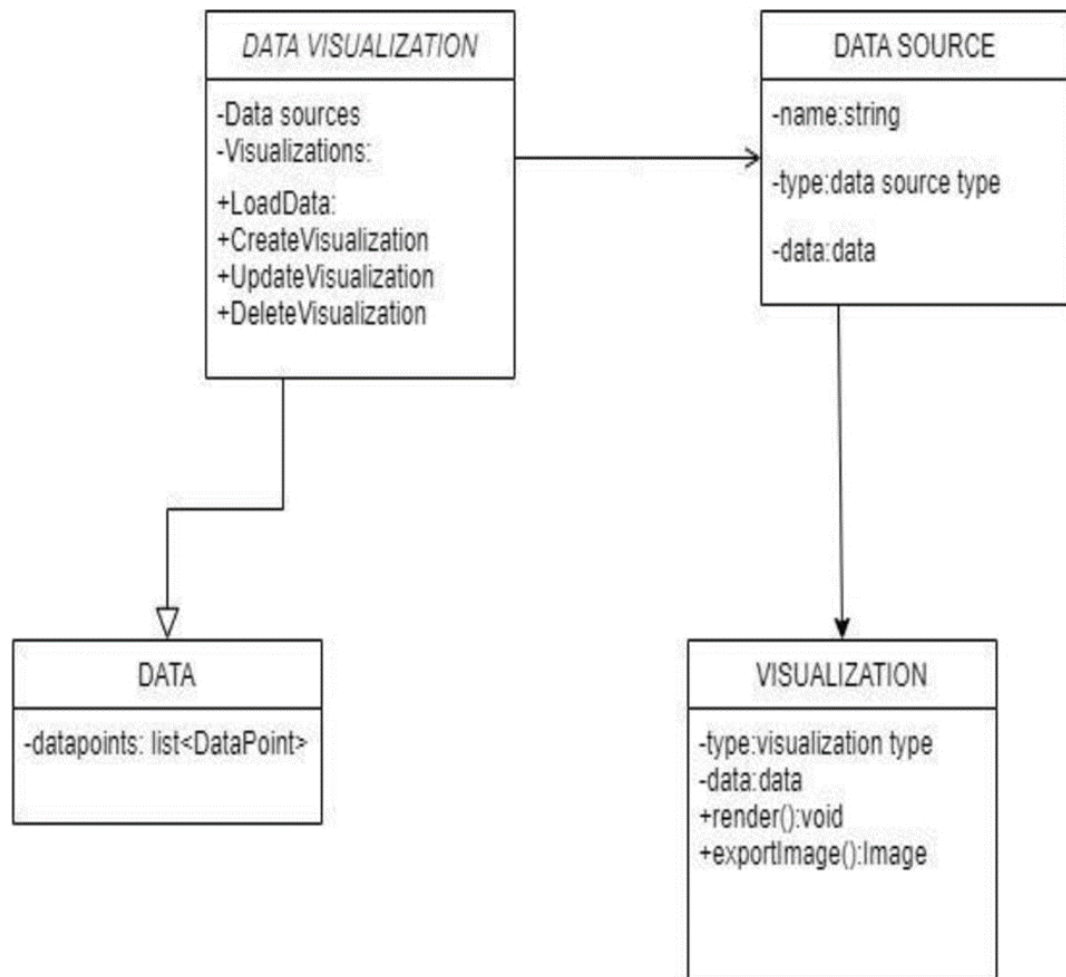
FIG 2 CLASS DIAGRAM

SEQUENCE DIAGRAM
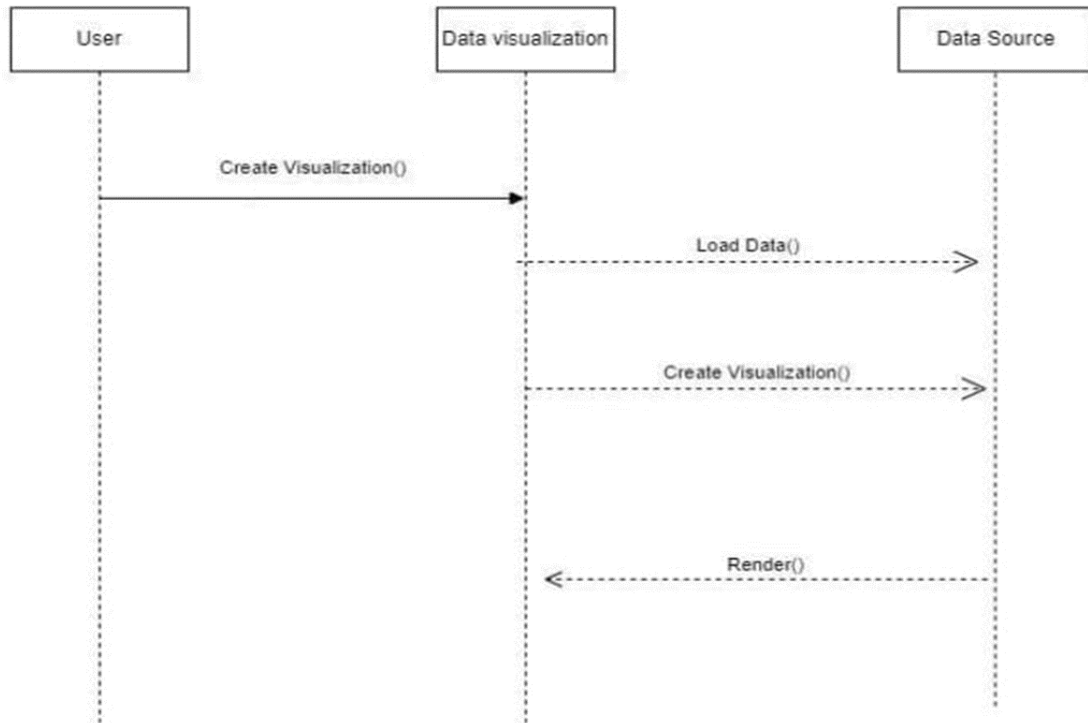
FIG 3 SEQUENCE DIAGRAM

ACTIVITY DIAGRAM
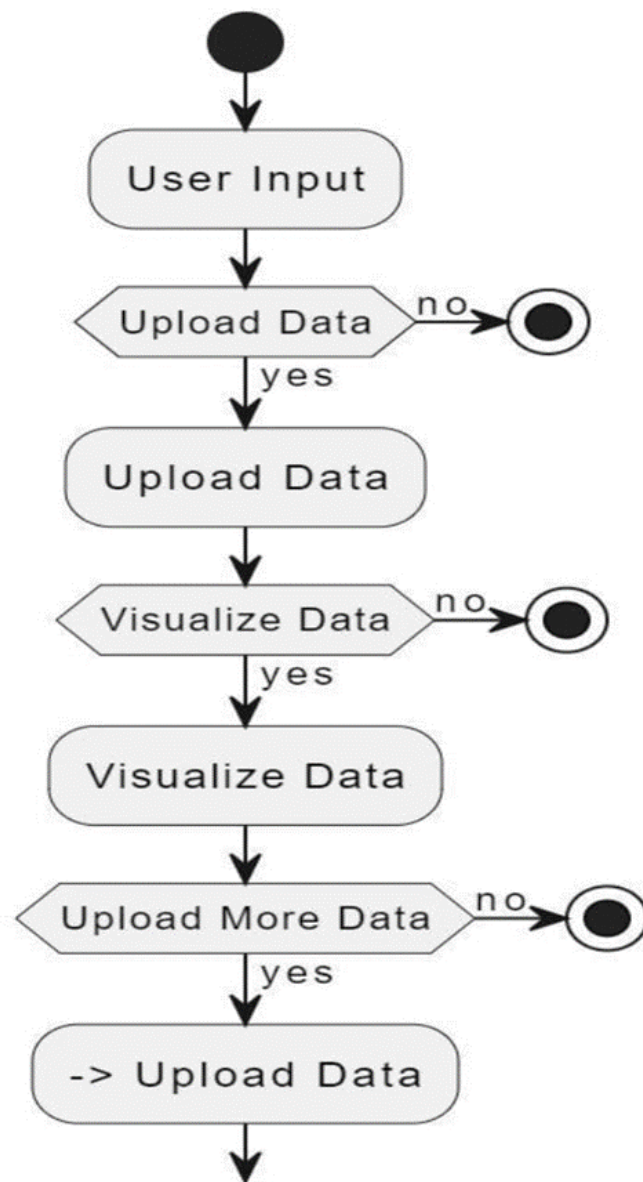
FIG 4 ACTIVITY DIAGRAM

STATE DIAGRAM
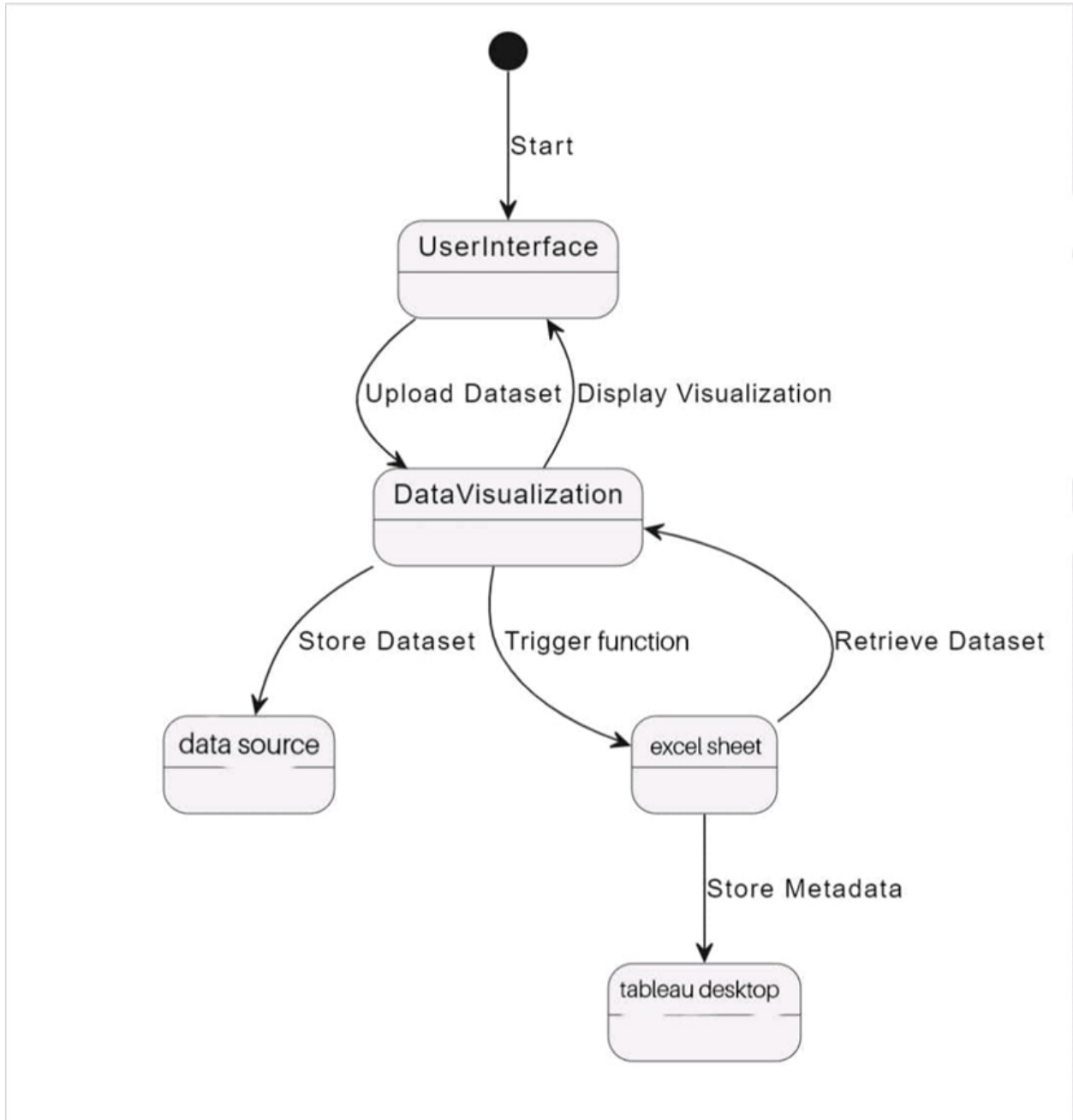
FIG 5 STATE DIAGRAM

COLLEBORATION DAIGRAM
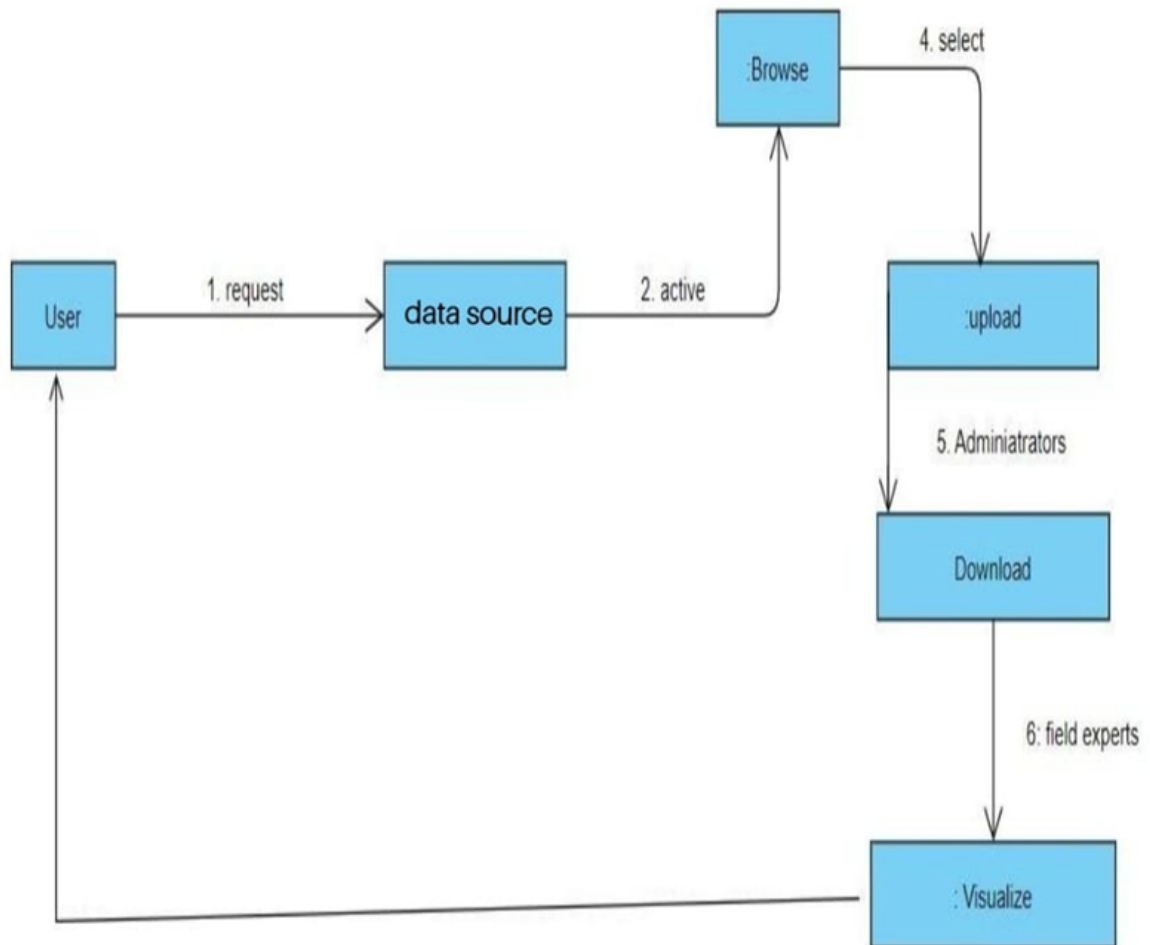
FIG 6 COLLEBORATION DAIGRAM

COMPONENT DIAGRAM
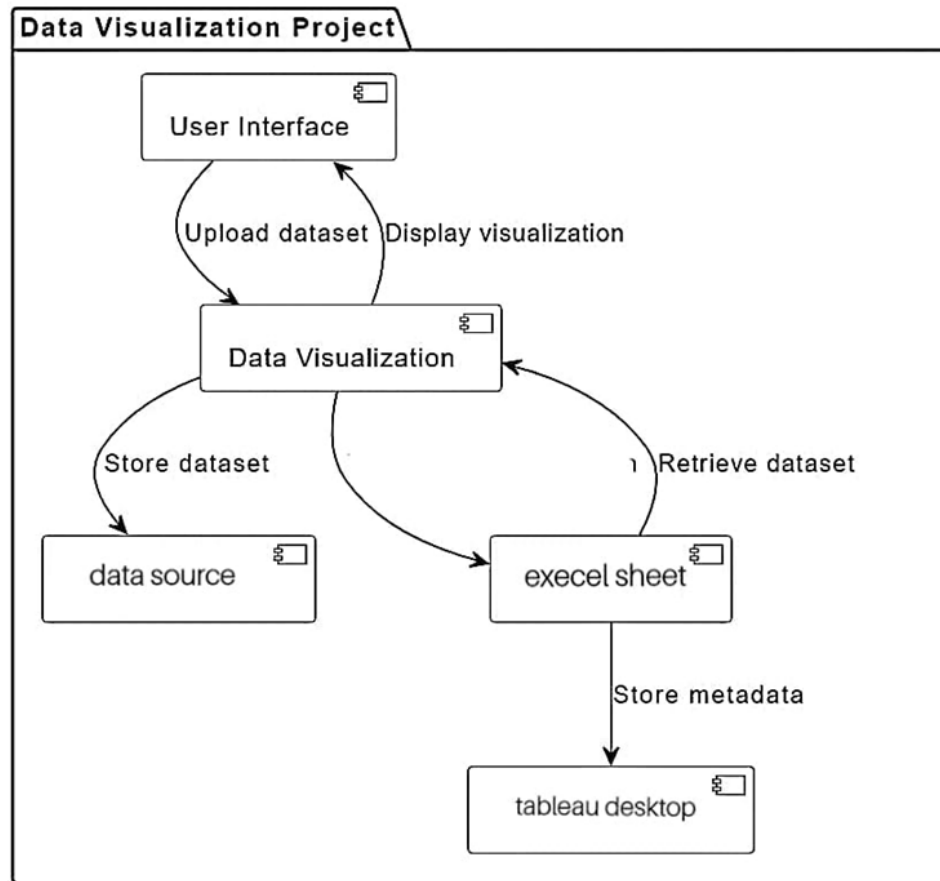
FIG 7 COMPONENT DIAGRAM

Revenue per state

TX 15,467,456	IL 9,106,895	KY MS NC IN IA MN	
CA 13,876,177	FL 8,459,037	WV OK LA AR MT KS	
	VA 8,193,937	MI MA AZ	
NY 11,365,097	OH 8,147,443	GA WI AL OR CT ID	
		NJ CO ND	
PA 10,159,042	MO 8,000,870	TN WA SC	
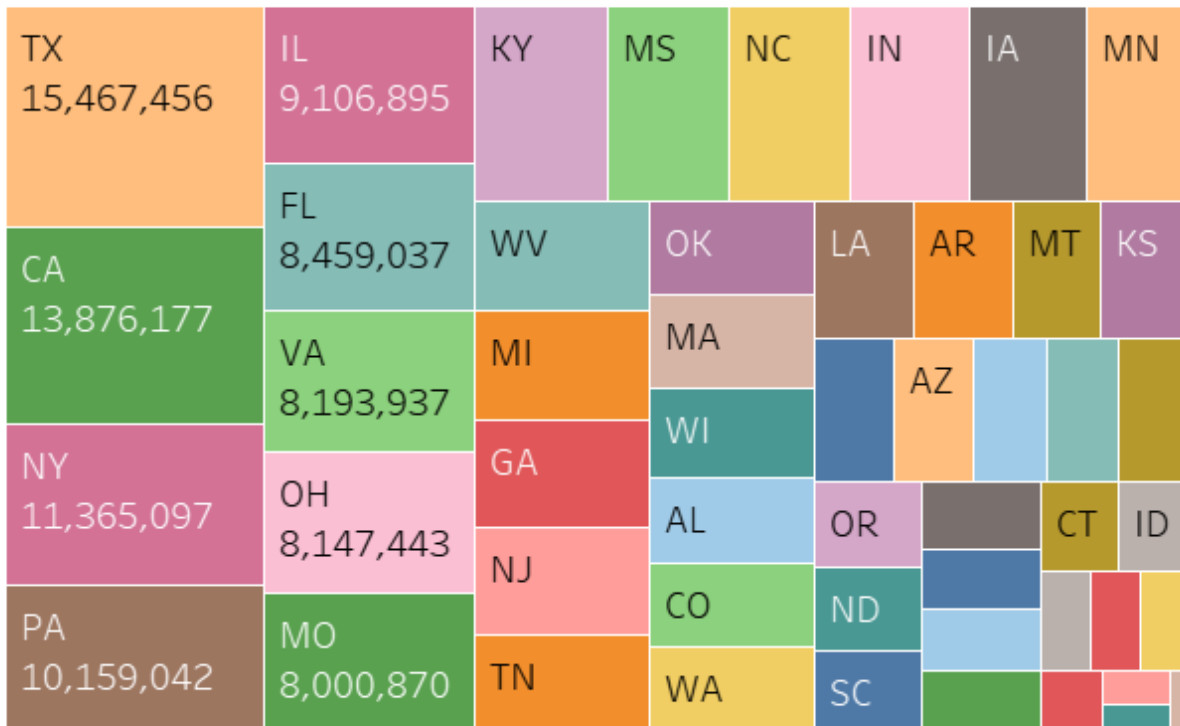
FIG 8
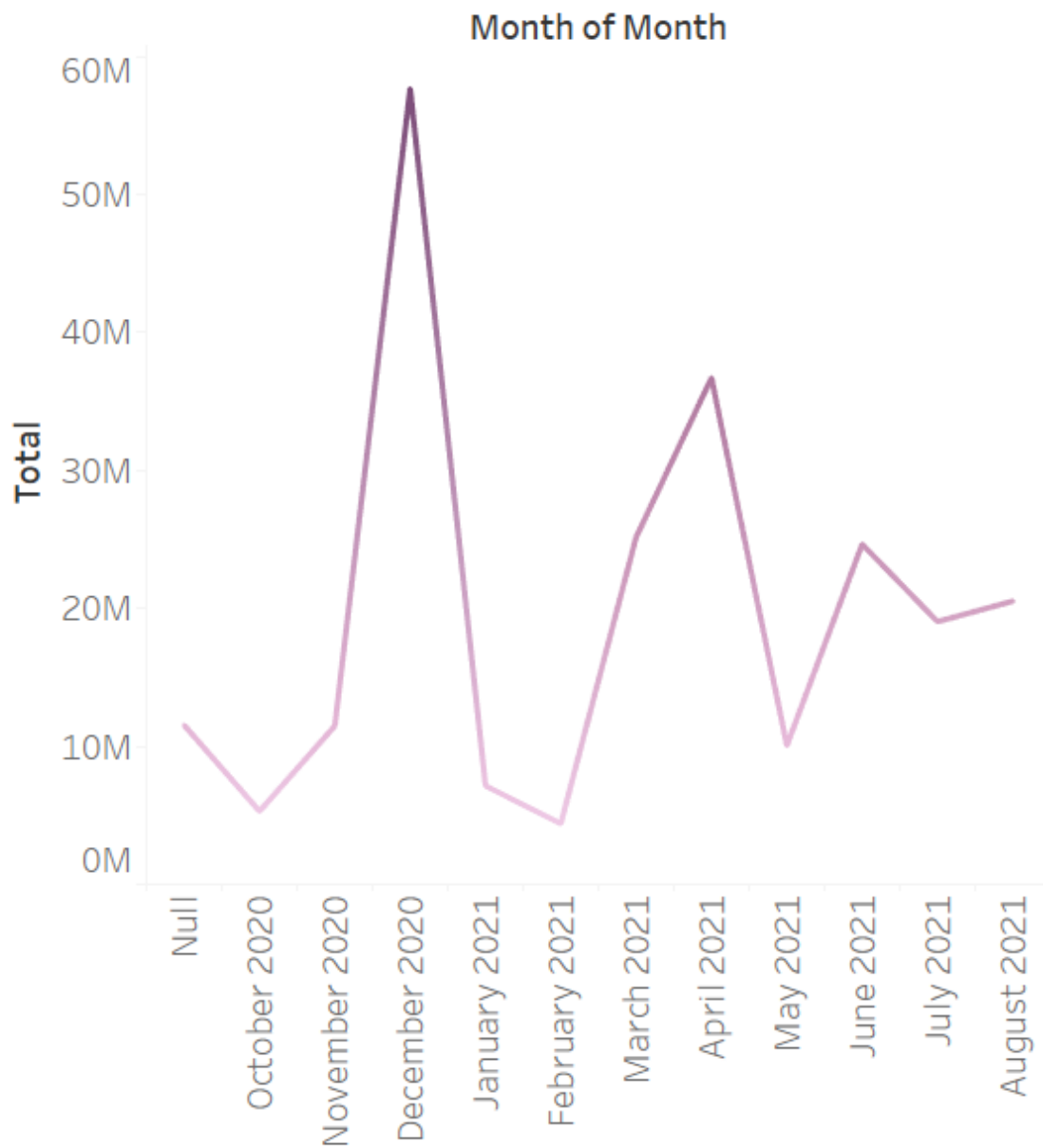
FIG 9
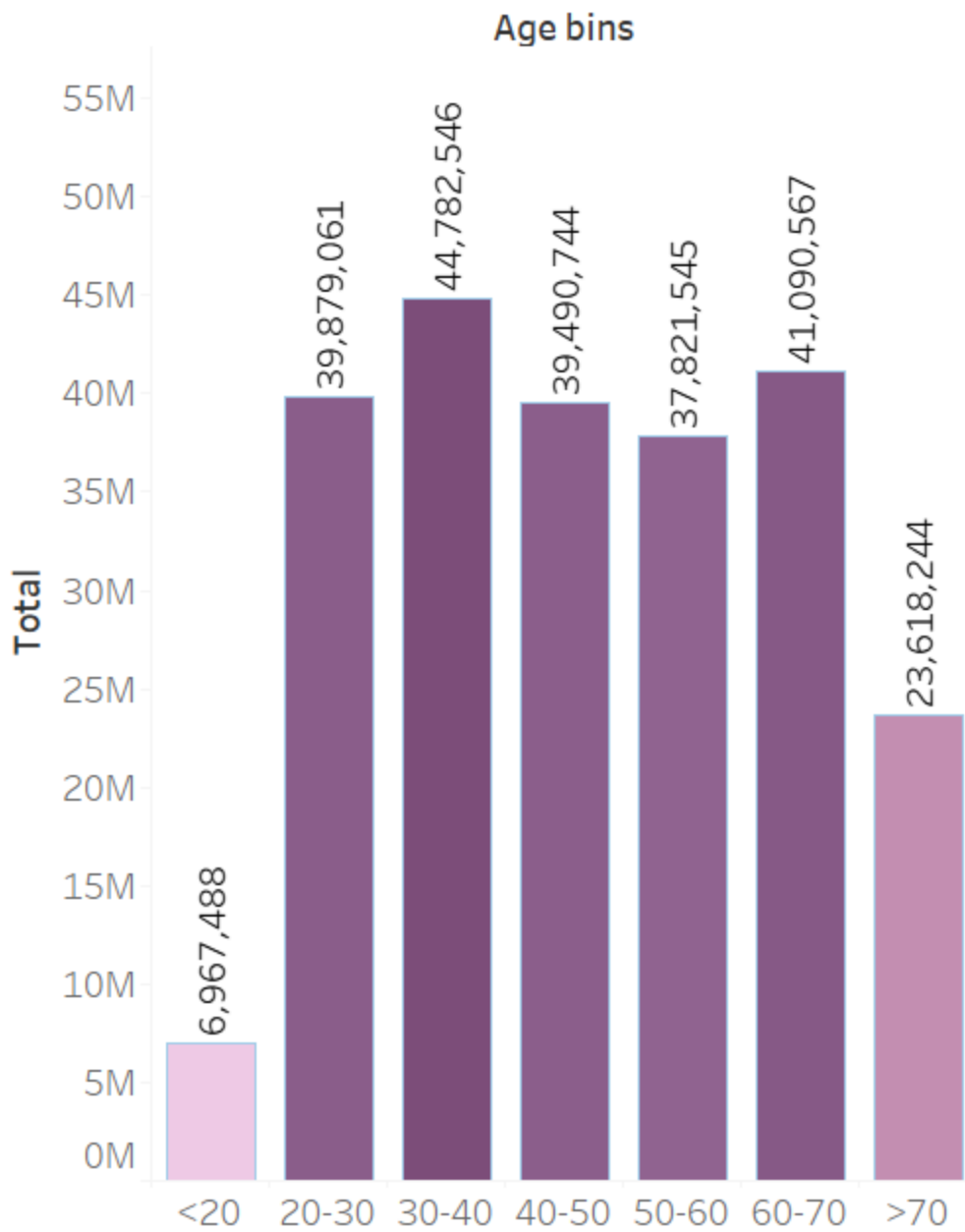
FIG 10

Quality discount correlation
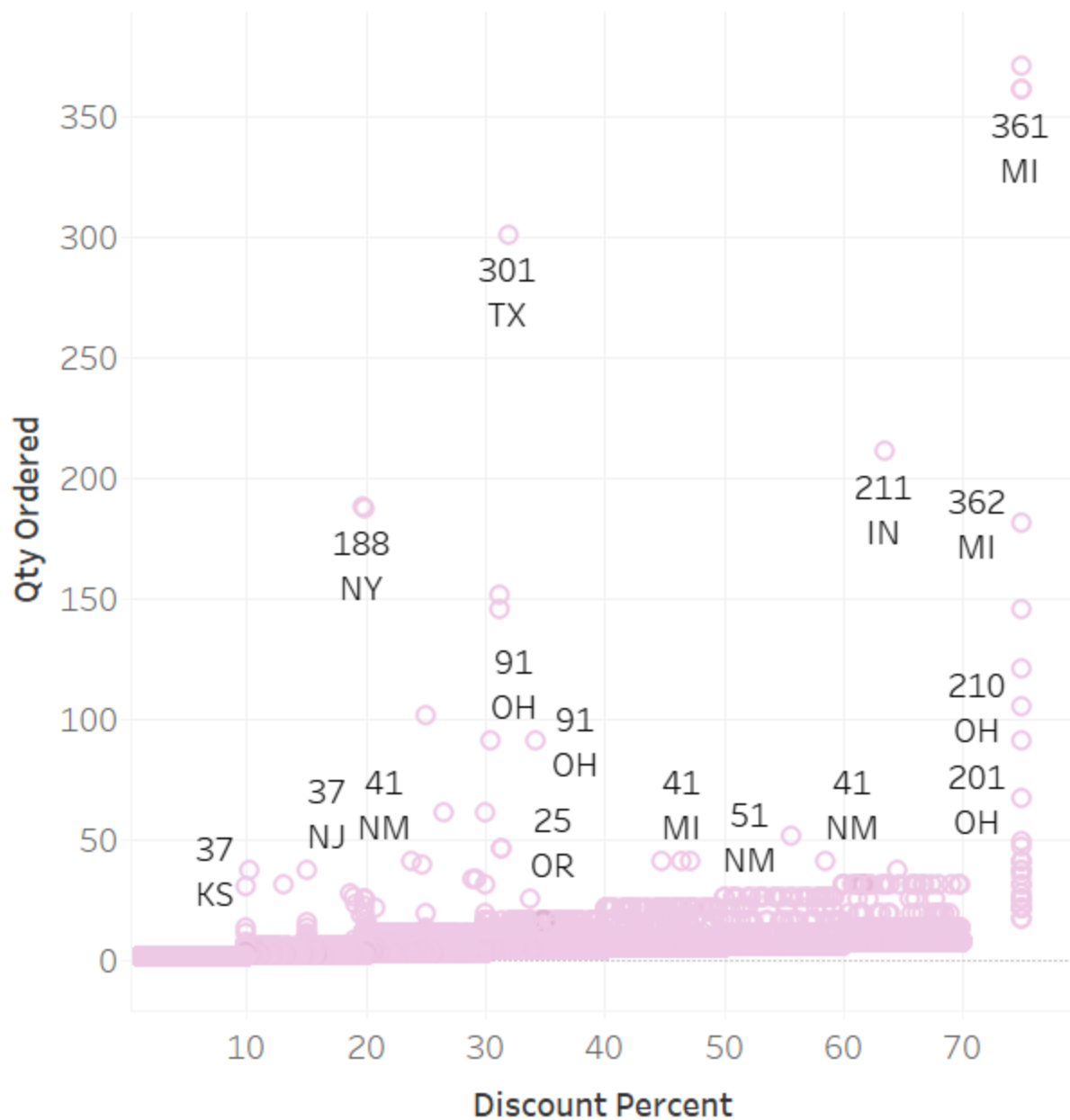
FIG 11

Revenue per category

Female revenue	Categories	Male revenue
66,266,859	Mobiles & Tablets	63,845,135
	Entertainment	
7,374,591	Others	8,189,744
	Women's Fashion	
2,277,410	Men's Fashion	2,542,736
	Superstore	
1,272,931	Beauty & Grooming	1,371,817
	Home & Living	
424,267	Kids & Baby	431,946
	Health & Sports	
282,647	Soghaat	294,053
	School & Education	
13,035	Books	19,382

| 100M | 50M | 0M | | 0M | 50M | 100M |

Female revenue ⇻   **Categories**   **Male revenue**

FIG 12

TABLEAU DASHBOARD:-
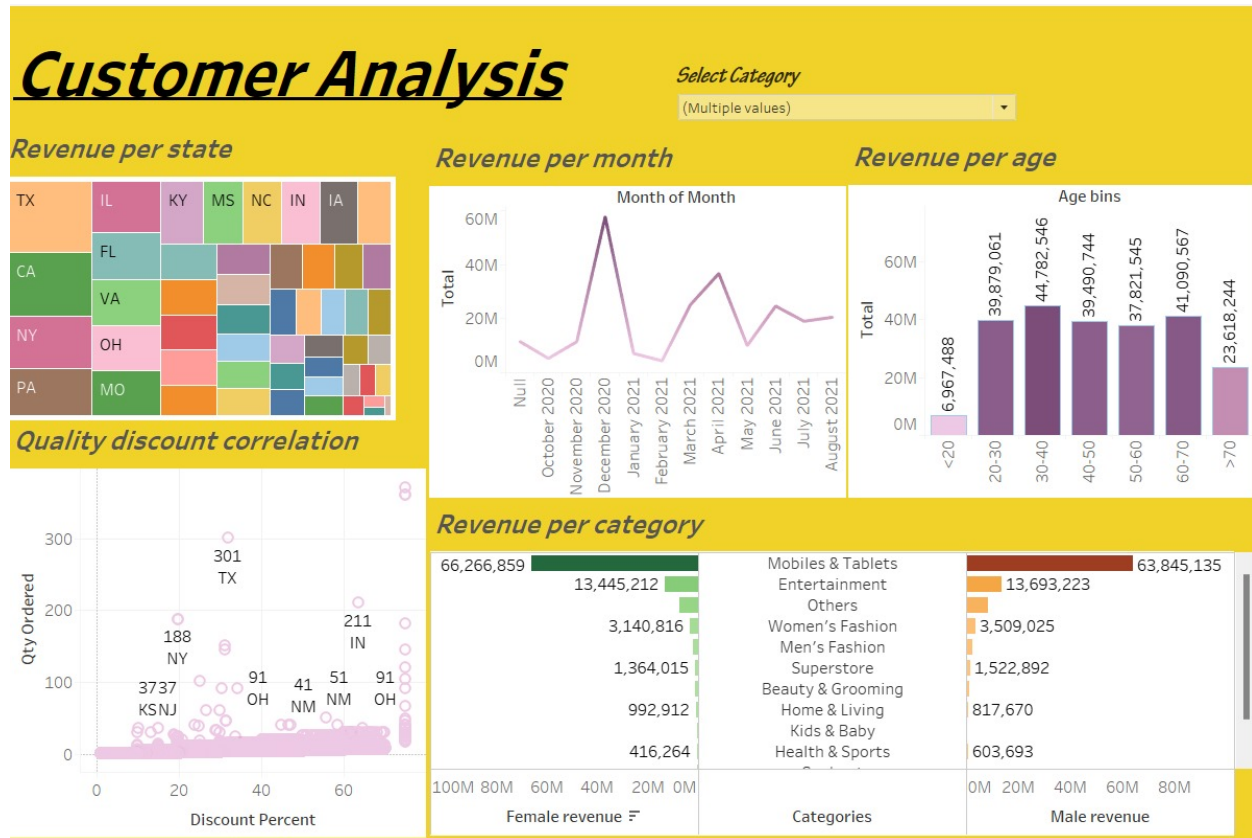
FIG 13

DATASET SCREENSHOTS:-

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	
1	order_id	order_dat	status	item_id	sku	qty_order	price	value	discount_	total	category	payment_	bi_st	cust_id	year	month	ref_num	Name Pref	First Name	M
2	1E+08	########	received	574772	oasis_Oas	21	89.9	1798	0	1798	Men's Fas	cod	Valid	60124	2020	Oct-20	987867	Drs.	Jani	V
3	1E+08	########	received	574774	Fantastic_	11	19	190	0	190	Men's Fas	cod	Valid	60124	2020	Oct-20	987867	Drs.	Jani	V
4	1E+08	########	complete	574777	mdeal_DN	9	149.9	1199.2	0	1199.2	Men's Fas	cod	Net	60124	2020	Oct-20	987867	Drs.	Jani	V
5	1E+08	########	complete	574779	oasis_Oas	9	79.9	639.2	0	639.2	Men's Fas	cod	Net	60124	2020	Oct-20	987867	Drs.	Jani	V
6	1E+08	########	received	595185	MEFNAR5	2	99.9	99.9	0	99.9	Men's Fas	cod	Valid	60124	2020	Nov-20	987867	Drs.	Jani	V
7	1E+08	########	received	595186	MEFBUY5	2	39.9	39.9	0	39.9	Men's Fas	cod	Valid	60124	2020	Nov-20	987867	Drs.	Jani	V
8	1E+08	########	order_ref	595192	MATDAN5	2	47.6	47.6	0	47.6	Mobiles &	cod	Valid	60124	2020	Nov-20	987867	Drs.	Jani	V
9	1E+08	########	canceled	574769	GFE_19_U	2	49	49	0	49	Mobiles &	Payaxis	Gross	42485	2020	Oct-20	171143	Prof.	Lee	S
10	1E+08	########	canceled	574770	oasis_King	2	135	135	0	135	Computin	Payaxis	Gross	42485	2020	Oct-20	171143	Prof.	Lee	S
11	1E+08	########	canceled	574771	Geepas_G	2	549.9	549.9	0	549.9	Appliance	Payaxis	Gross	42485	2020	Oct-20	171143	Prof.	Lee	S
12	1E+08	########	order_ref	577467	Geepas_G	1	549.9	0	0	0	Appliance	Payaxis	Valid	42485	2020	Oct-20	171143	Prof.	Lee	S
13	1E+08	########	order_ref	581862	APPGEE59	1	549.9	0	0	0	Appliance	cod	Valid	42485	2020	Oct-20	171143	Prof.	Lee	S
14	1E+08	########	canceled	656937	APPWES5	2	254.8	254.8	39.80628	214.9937	Appliance	Easypay	Gross	42485	2020	Dec-20	171143	Prof.	Lee	S
15	1E+08	########	canceled	656938	APPPHI5A	2	315.5	315.5	49.28917	266.2108	Appliance	Easypay	Gross	42485	2020	Dec-20	171143	Prof.	Lee	S
16	1E+08	########	canceled	656939	HALSHO5	2	69.8	69.8	10.90455	58.89545	Home & Li	Easypay	Gross	42485	2020	Dec-20	171143	Prof.	Lee	S
17	1E+08	########	canceled	657023	APPWES5	2	254.8	254.8	39.80628	214.9937	Appliance	Easypay	Gross	42485	2020	Dec-20	171143	Prof.	Lee	S
18	1E+08	########	canceled	657024	APPPHI5A	2	315.5	315.5	49.28917	266.2108	Appliance	Easypay	Gross	42485	2020	Dec-20	171143	Prof.	Lee	S
19	1E+08	########	canceled	657025	HALSHO5	2	69.8	69.8	10.90455	58.89545	Home & Li	Easypay	Gross	42485	2020	Dec-20	171143	Prof.	Lee	S
20	1E+08	########	canceled	657547	APPWES5	2	254.8	254.8	39.80628	214.9937	Appliance	Easypay	Gross	42485	2020	Dec-20	171143	Prof.	Lee	S

FIG 14

A1   ⁐   :   ×   ✓   *fx*   order_id

	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN
1	Gender	age	full_name	E Mail	Customer	SSN	Phone No.	Place Nam	County	City	State	Zip	Region	User Nam	Discount_Percent				
2	F	43	Titus, Jani	jani.titus@	8/22/2006	627-31-52	405-959-1	Vinson	Harmon	Vinson	OK	73571	South	jwtitus	0				
3	F	43	Titus, Jani	jani.titus@	8/22/2006	627-31-52	405-959-1	Vinson	Harmon	Vinson	OK	73571	South	jwtitus	0				
4	F	43	Titus, Jani	jani.titus@	8/22/2006	627-31-52	405-959-1	Vinson	Harmon	Vinson	OK	73571	South	jwtitus	0				
5	F	43	Titus, Jani	jani.titus@	8/22/2006	627-31-52	405-959-1	Vinson	Harmon	Vinson	OK	73571	South	jwtitus	0				
6	F	43	Titus, Jani	jani.titus@	8/22/2006	627-31-52	405-959-1	Vinson	Harmon	Vinson	OK	73571	South	jwtitus	0				
7	F	43	Titus, Jani	jani.titus@	8/22/2006	627-31-52	405-959-1	Vinson	Harmon	Vinson	OK	73571	South	jwtitus	0				
8	F	43	Titus, Jani	jani.titus@	8/22/2006	627-31-52	405-959-1	Vinson	Harmon	Vinson	OK	73571	South	jwtitus	0				
9	M	28	Eaker, Lee	lee.eaker@	########	185-86-43	239-335-6	Graham	Bradford	Graham	FL	32042	South	lseaker	0				
10	M	28	Eaker, Lee	lee.eaker@	########	185-86-43	239-335-6	Graham	Bradford	Graham	FL	32042	South	lseaker	0				
11	M	28	Eaker, Lee	lee.eaker@	########	185-86-43	239-335-6	Graham	Bradford	Graham	FL	32042	South	lseaker	0				
12	M	28	Eaker, Lee	lee.eaker@	########	185-86-43	239-335-6	Graham	Bradford	Graham	FL	32042	South	lseaker	5.455537				
13	M	28	Eaker, Lee	lee.eaker@	########	185-86-43	239-335-6	Graham	Bradford	Graham	FL	32042	South	lseaker	3.637025				
14	M	28	Eaker, Lee	lee.eaker@	########	185-86-43	239-335-6	Graham	Bradford	Graham	FL	32042	South	lseaker	15.62256				
15	M	28	Eaker, Lee	lee.eaker@	########	185-86-43	239-335-6	Graham	Bradford	Graham	FL	32042	South	lseaker	15.62256				
16	M	28	Eaker, Lee	lee.eaker@	########	185-86-43	239-335-6	Graham	Bradford	Graham	FL	32042	South	lseaker	15.62256				
17	M	28	Eaker, Lee	lee.eaker@	########	185-86-43	239-335-6	Graham	Bradford	Graham	FL	32042	South	lseaker	15.62256				
18	M	28	Eaker, Lee	lee.eaker@	########	185-86-43	239-335-6	Graham	Bradford	Graham	FL	32042	South	lseaker	15.62256				
19	M	28	Eaker, Lee	lee.eaker@	########	185-86-43	239-335-6	Graham	Bradford	Graham	FL	32042	South	lseaker	15.62256				
20	M	28	Eaker, Lee	lee.eaker@	########	185-86-43	239-335-6	Graham	Bradford	Graham	FL	32042	South	lseaker	15.62256				

FIG 15

CONCLUSION:-

In conclusion, the Customer Analysis System developed using Tableau presents a comprehensive and dynamic approach to understanding customer behavior and preferences. By integrating various data sources and employing sophisticated analytical tools, businesses can gain valuable insights into their customer base, enabling them to make informed decisions and implement targeted strategies.

The utilization of Tableau's intuitive visualizations and interactive dashboards has facilitated a user-friendly interface for exploring complex customer data, making it easier for stakeholders to comprehend and act upon key insights. Through the identification of high-value customer segments and the prediction of future trends, businesses can effectively personalize their offerings and marketing efforts, thereby fostering stronger customer relationships and maximizing long-term profitability.

By leveraging the power of data-driven insights, businesses can not only enhance customer satisfaction but also drive innovation, streamline operations, and gain a competitive edge in the market. The Customer Analysis System using Tableau serves as a valuable tool for businesses seeking to adapt to the evolving needs and preferences of their customers, ultimately paving the way for sustainable growth and success in today's dynamic business landscape.

Reference:-
dataset
https://drive.google.com/file/d/1mWW5x02Rw1dt6g9LpodaV8rQnSgIjMeB/view