GLOBAL SALES DATA ANALYTICS

NALAIYA THIRAN PROJECT BASED LEARNING

Team ID – PNT2022TMID32748

PROJECT REPORT

TEAM MEMBERS:

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PURSUING : BACHELOR OF ENGINEERING

IN

ELECTRONICS AND COMMUNICATION ENGINEERING

SARANATHAN COLLEGE OF ENGINEERING,

PANJAPPUR, TIRUCHIRAPALLI.

Under the guidance of

Industry Mentor: Shanawaz Anwar, Faculty Mentor: Rajeswari

Indra Prakash

Project Report Format

1. **INTRODUCTION**
   - 1.1 Project Overview
   - 1.2 Purpose
2. **LITERATURE SURVEY**
   - 2.1 Existing problem
   - 2.2 References
   - 2.3 Problem Statement Definition
3. **IDEATION & PROPOSED SOLUTION**
   - 3.1 Empathy Map Canvas
   - 3.2 Ideation & Brainstorming
   - 3.3 Proposed Solution
   - 3.4 Problem Solution fit
4. **REQUIREMENT ANALYSIS**
   - 4.1 Functional requirement
   - 4.2 Non-Functional requirements
5. **PROJECT DESIGN**
   - 5.1 Data Flow Diagrams
   - 5.2 Solution & Technical Architecture
   - 5.3 User Stories
6. **PROJECT PLANNING & SCHEDULING**
   - 6.1 Sprint Planning & Estimation
   - 6.2 Sprint Delivery Schedule
   - 6.3 Reports from JIRA
7. **CODING & SOLUTIONING (Explain the features added in the project along with code)**
   - 7.1 Feature 1
   - 7.2 Feature 2
   - 7.3 Database Schema (if Applicable)
8. **TESTING**
   - 8.1 Test Cases
   - 8.2 User Acceptance Testing
9. **RESULTS**
   - 9.1 Performance Metrics
10. **ADVANTAGES & DISADVANTAGES**
11. **CONCLUSION**
12. **FUTURE SCOPE**
13. **APPENDIX**

    Source Code & GitHub Link

    Project Demo Link

ABSTRACT

Data Analytics refers to the techniques used to analyze data to enhance productivity and business gain. Data is extracted from various sources and is cleaned and categorized to analyze various behavioural patterns. The techniques and the tools used vary according to the organization or individual.

So, in short, if you understand your Business Administration and have the capability to perform Exploratory Data Analysis, to gather the required information, then you are good to go with a career in Data Analytics.

Analytics has become an integral part of life, from finding the shortest route to work to forecasting stock market trends.

Analyzing previous trends ensures that businesses always make the right decision. And as the scale of the decision and its impact magnifies, more robust analytics need to take over. The gut feeling cannot cut it anymore.

1.INTRODUCTION

1.1 Project Overview:

Customer Sales analytics go beyond just making smart marketing decisions. They can also have a huge impact on your bottom line. When Emily Weiss started her makeup and beauty blog, Into the Gloss, she wasn't expecting to create a billion-dollar brand. But, less than a year after launching the blog, she was getting so much ad revenue from the blog that she was able to quit her day job.

Three years later, her blog was so successful that she took a chance and launched the makeup brand, Glossier.

Product Sales Analytics can be highly effective for businesses with multiple or seasonal product offerings. It considers the performance of every product or service that the company offers.

It helps the sales team identify the products to focus on based on the revenue and sales targets.

1.2 Purpose:

The analytics can be tracked for a certain timeframe and demographic. Almost every business would want to track its sales effectiveness. The extent and type of analytics used to monitor teams vary across different industries and businesses.

Tracking productivity and sales effectiveness on a daily, monthly, and quarterly basis help in identifying your team's scope of improvement.

The metrics to track differ as per the targets that the business has set and its sales workflow.

B2Cs usually have a higher sales velocity and shorter sales cycles than B2Bs.

2. LITERATURE SURVEY

2.1 Existing problem

Walmart's Sales Data Analysis- A Big Data Analytics Perspective

We all are constantly thinking about the future and what is expected to happen in the coming weeks, months and even years, and to be able to do so, a look at the past is mandatory. Business needs to be able to see their progress and the factors affecting their sales [1]. In this technological era of large scale data, businesses need to rethink on the modern approaches to better understand the customers to gain competitive edge in the market. Data is worthless if it cannot be analysed, interpreted and applied in context [2]. In this work, we have used the Walmart's sales data to create business value by understanding customer intent (sentiment analysis) and business analytics.

Impact of big data analytics on sales performance in pharmaceutical organizations

In this era of technology development, every business wants to equip its salesforce with a sustainable salesforce automation system to improve sales performance and customer relationship management (CRM) capabilities. This study investigates the impact of big data analytics (BDA) on CRM capabilities and the sales performance of pharmaceutical organizations. A research model was tested based on 416 valid responses collected from pharmaceutical companies through a structured questionnaire. Structural equation modeling (SEM) was employed using Smart-PLS3 to confirm the contribution of BDA to improving CRM capabilities and sales performance. The study finds that individual characteristics such as self-efficacy, playfulness, and social norms, along with organizational characteristics such as voluntariness, user

involvement, user participation, and management support, are positive predictors of salesforce perception of BDA. This positive perception of BDA increased the person-technology fit in the salesforce, which ultimately increased the CRM capabilities and sales performance.

Best Selling Product and Category Prediction Using Sales Analysis

A sales analysis is a detailed report that tells about more profound understanding of a business's sales performance, customer data, and the revenue. This tells you which deals are worth chasing and which are better left behind. Also, for the deals your sales team does decide to pursue, they'll have a good approach ready to make the lead or customer more receptive to the sale. Using Sales Analysis helps to take retailers towards profit in this world of competition. Nowadays shopping malls keep the track of their sales data of each and every individual item for predicting future demand of the customer and update the inventory management as well. These data stores basically contain a large number of customer data and individual item attributes in a data warehouse. Further, anomalies and frequent patterns are detected by mining the data store from the data warehouse.

Use of Uncertain External Information in Statistical Estimation

A product's life cycle hinges on its sales. Product sales are determined by a combination of market demand, industrial production, logistics, supply chains, labor hours, and countless other factors. Business-specific questions about sales are often formalized into questions relating to specific quantities in sales data. Statistical estimation of these quantities of interest is crucial but restricted availability of empirical data reduces the accuracy of such estimation. For example, under certain regularity conditions the variance of maximum likelihood estimators cannot be asymptotically lower than the Cramer-Rao lower bound. The presence of additional information from external sources therefore allows the improvement of statistical estimation. Two types of additional information are considered in this work: unbiased and possibly biased. In order to incorporate these two types of additional information in statistical estimation, this manuscript minimizes mean squared error and variance. Publicly available Walmart sales data from 45 stores across 2010-2012

is used to illustrate how these statistical methods can be applied to use additional information for estimating weekly sales.

Prediction of Quality Food Sale in Mart Using the AI-Based TOR Method

John McCarthy invented the term artificial intelligence (AI) in 1956, defining it as “the science and engineering of creating artificial intelligence machines.” +at which we refer to as the simulation of human intelligence that is processed by machines is what we are talking about today. Cortana, Siri, and Google Assistant are the most prevalent artificial intelligence systems that we encounter in our daily lives. Since its inception, AI has undergone a significant transformation. Previously, AI has been able to do this through developing robots and machines that have been employed in a variety of disciplines, including robotics, space exploration, marketing, and healthcare. AI is also involved in the development of business analytics software, among other things. We often think of artificial intelligence as a robot or machine that performs our daily tasks, but we do not realise that it has always been present in our lives. For example, the Google search engine that we use is an example of AI that provides accurate search results even if we input something that is related to our desired output. Because they share a common application, AI, ML, and DL are frequently confused as being the same thing. AI is the science of teaching machines to mimic human behaviors, ML is the subset of AI that makes de- cisions based on the data fed into it, and DL is the subset of ML that uses neural networks to solve difficult problems.

2.2 References

1. Walmart's Sales Data Analysis- A Big Data Analytics Perspective by Manpreet Singh,Bhawick Ghutla,Reuben Lilo Jnr,Aesaan Mohammed,Mahmood Rahidh

2. Impact of big data analytics on sales performance in pharmaceutical organizations by Shahbaz M, Gao C, Zhai L, Shahzad F, Luqman A, Zahid R (2021) Impact of big data analytics on sales performance in pharmaceutical organizations

3. Best Selling Product and Category Prediction Using Sales Analysis by Ms. Archana Nikose,Tejal Mungale,Minal Shelke,Rohini Shelote

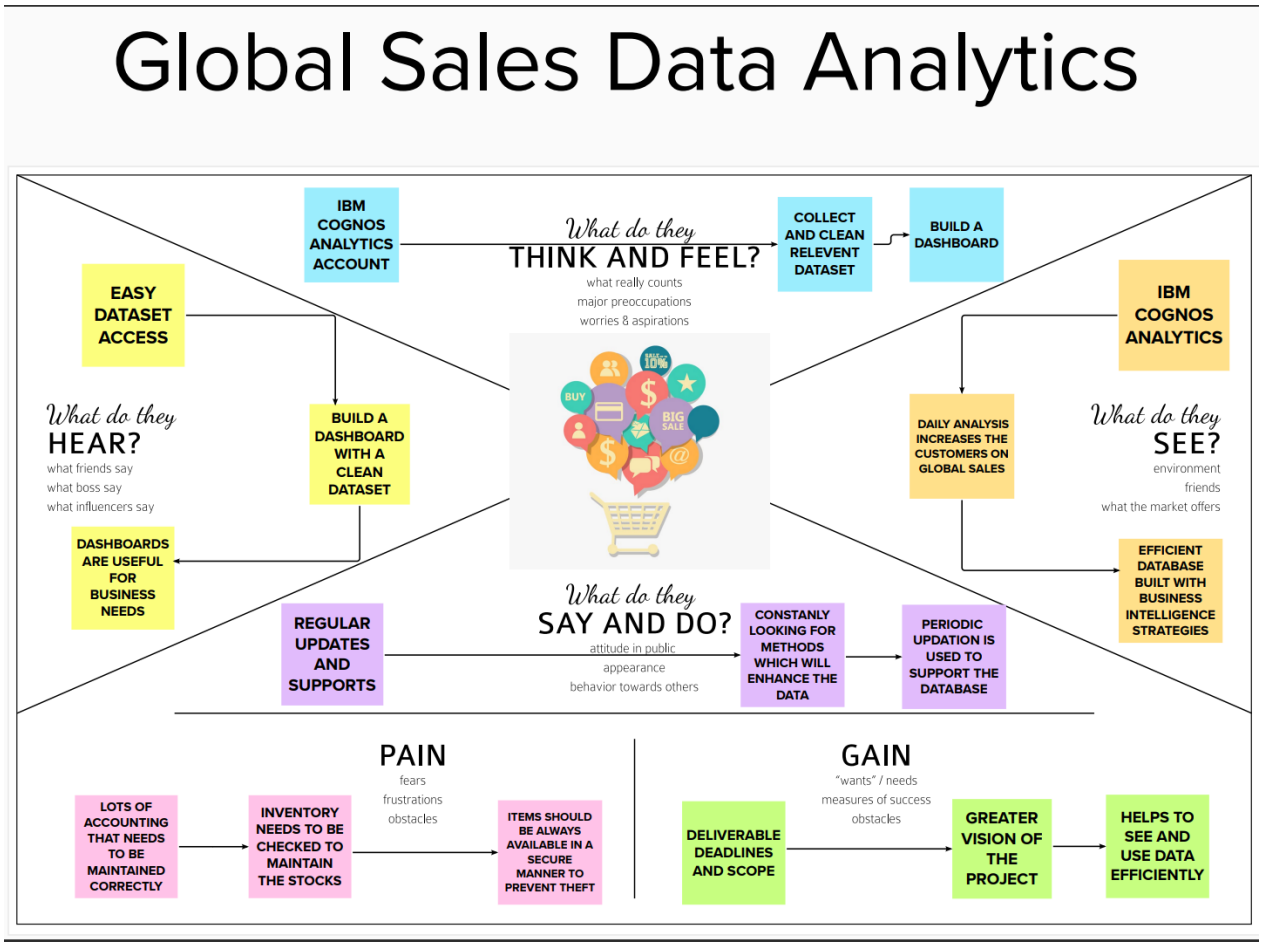
4. Use of Uncertain External Information in Statistical Estimation by Sergey Tarima, Zhanna Zenkova

5. Prediction of Quality Food Sale in Mart Using the AI-Based TOR Method by Daniyal Irfan, Xuan Tang, Vipul Narayan, Pawan Kumar Mall, Swapnita Srivastava, V. Saravanan

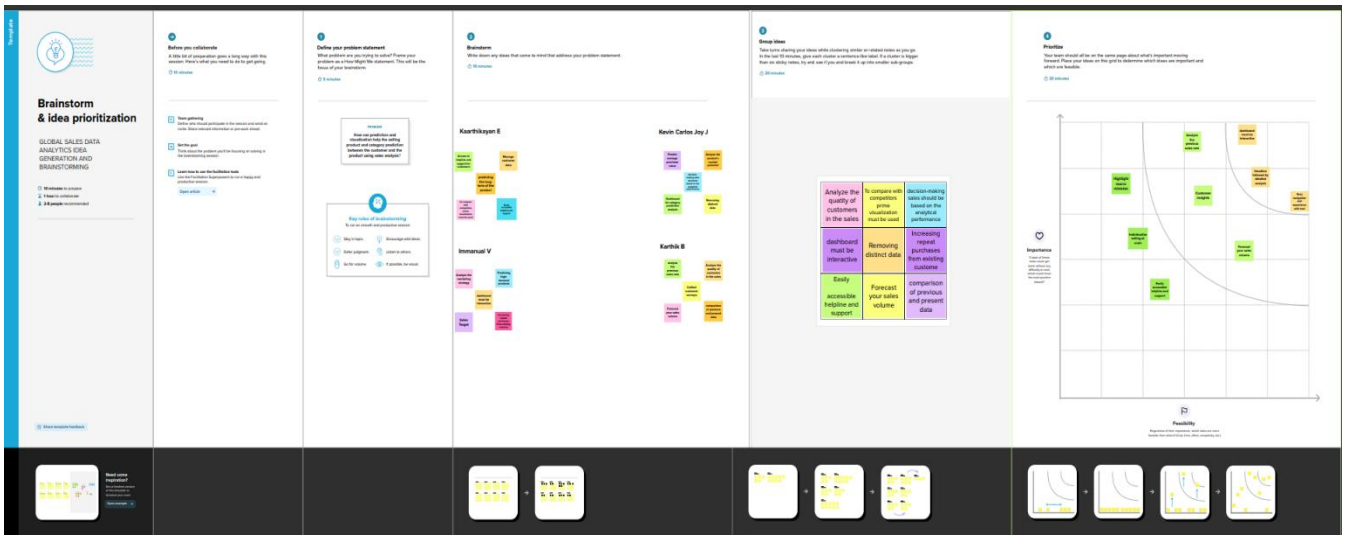
2.3 Problem Statement Definition

3. IDEATION & PROPOSED SOLUTION

3.1 Empathy Map Canvas:



3.2 Ideation & Brainstorming:



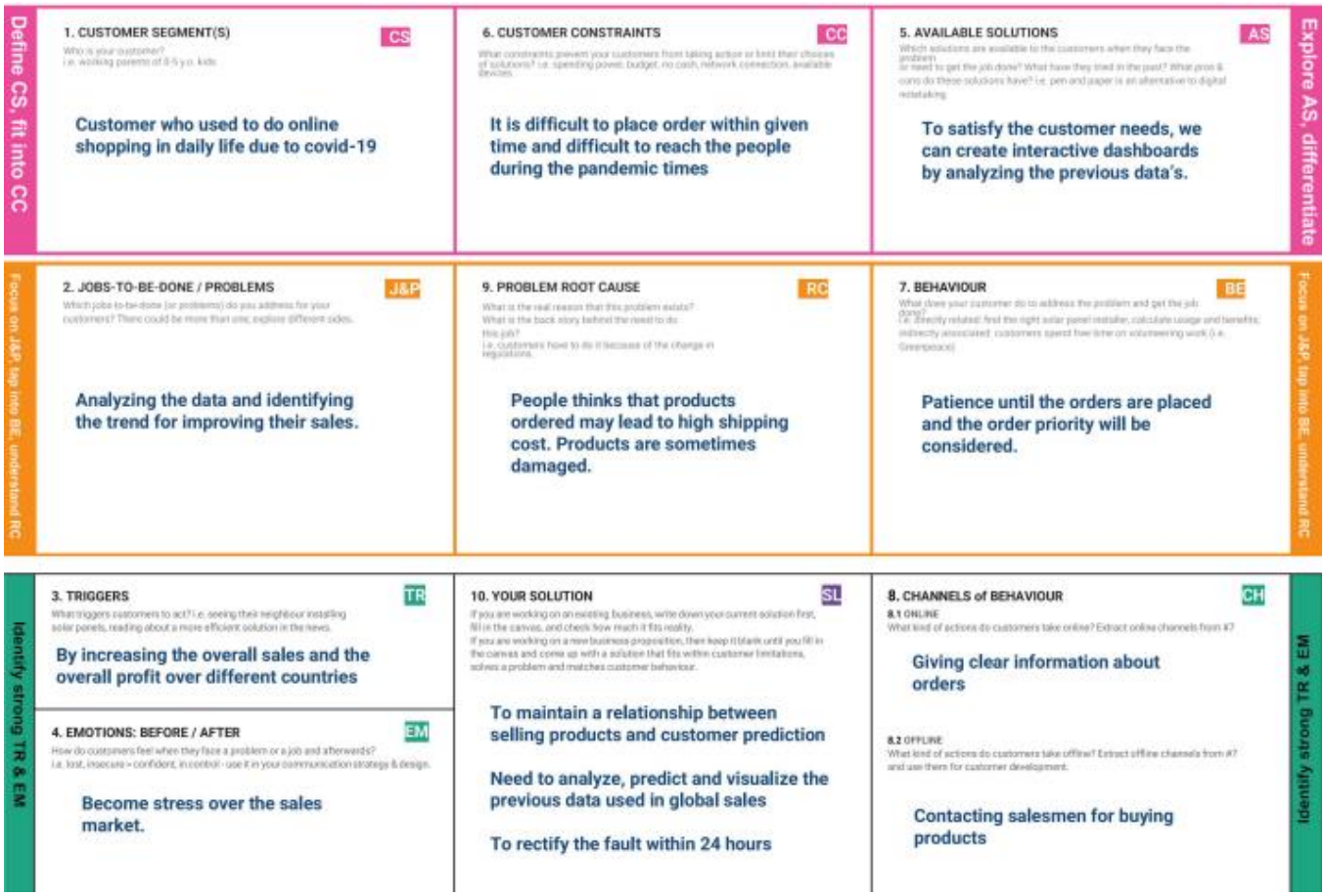
3.3 Proposed Solution:

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

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Because of this COVID-19, it's not easy to walk into a store randomly and buy anything you want. So shopping online is currently a need in our daily life. And so the relationship between selling Products and Customer prediction is in need. To solve this problem we need to analyze, predict and visualize the previous data used in the global sales.
2.	Idea / Solution description	To satisfy the customer needs we can create interactive dashboards by analyzing the previous data's with the help of IBM Cognos and get insights from it.
3.	Novelty / Uniqueness	In sales, many tasks are now managed through centralized cloud software, including CRMs, email marketing platforms, and integration tools. Many global, industry-leading brands are now using their sales data in ingenious ways to make better business decisions. But the Uniqueness of this project is that we can understand customer's preferences and a current market trend that helps them to manage stocks and predict future demand.

4.	Social Impact / Customer Satisfaction	Social Impact in global sales: Proactivity and Anticipating Needs, Ensuring fast delivery of products, Mitigating Risk and Fraud, Delivering Relevant Products, Optimizing and Improving the Customer Experience. Customer Satisfaction in global sales: perceived product quality, perceived product value, customer expectations, good communication with the customer, and complaint handling.
5.	Business Model (Revenue Model)	It improves the decision-making process of the customers since the data they're seeing is clear. By creating an interactive dashboard, the company gets to know about their customer's choices and can provide offers accordingly so this contributes to the rise in the company's revenue. Shipping the product to the customer correctly and Labeling the products to the customer can increase the company's revenue.
6.	Scalability of the Solution	The solution of scalability can be done by analyzing a wide range of datasets and different types of visualizations can also be done. Even though it gives valuable insights even for a larger amount of data and supports various fields of data. In global sales, they understand the deepest customer needs and fulfill them.

3.4 Problem Solution fit:



4. REQUIREMENT ANALYSIS

4.1 Functional 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 Gmail.
FR-2	User Confirmation	Confirmation via Email.
FR-3	Dataset	Dataset upload to Cognos Analytics Tool.
FR-4	Visualize/Analyze	Columns can be moved around to analyze the dataset.
FR-5	Dashboards	Create data visualization charts etc.
FR-6	Log Out	User can be able to log out after downloading the dashboards.

4.2 Non-Functional requirement:

Non-functional Requirements:

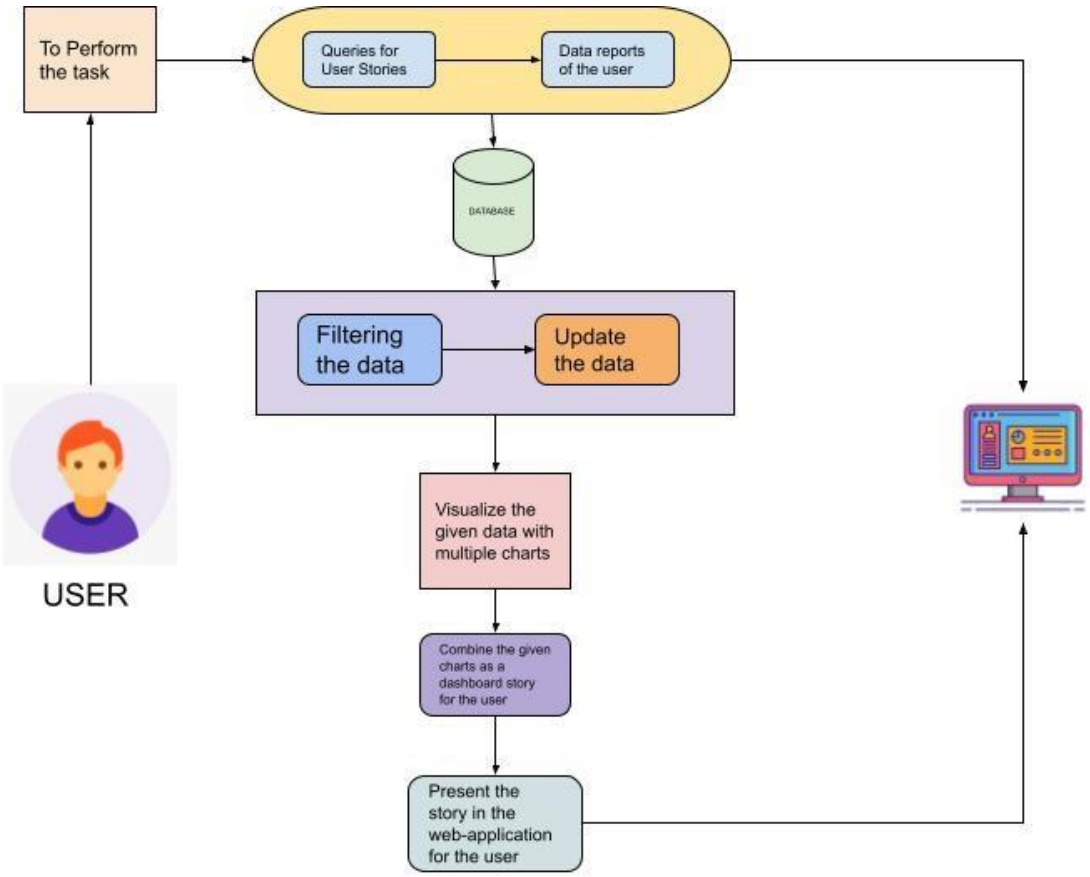
Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	Until the Dashboard contains the appropriate Store Sales Dataset, the user can view it.
NFR-2	**Security**	The Template/Dashboards are accessible to anyone with the proper Log In credentials.
NFR-3	**Reliability**	Templates are trustworthy since we upload and access them over the cloud.
NFR-4	**Performance**	The user can easily drag to any metrics they want to view, and it works as intended.
NFR-5	**Availability**	Anyone who is interested in learning more about Sales Data can access it for free.
NFR-6	**Scalability**	Templates and Dashboards are quiet flexible; users can change the metrics at any time.

5. PROJECT DESIGN

5.1 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.



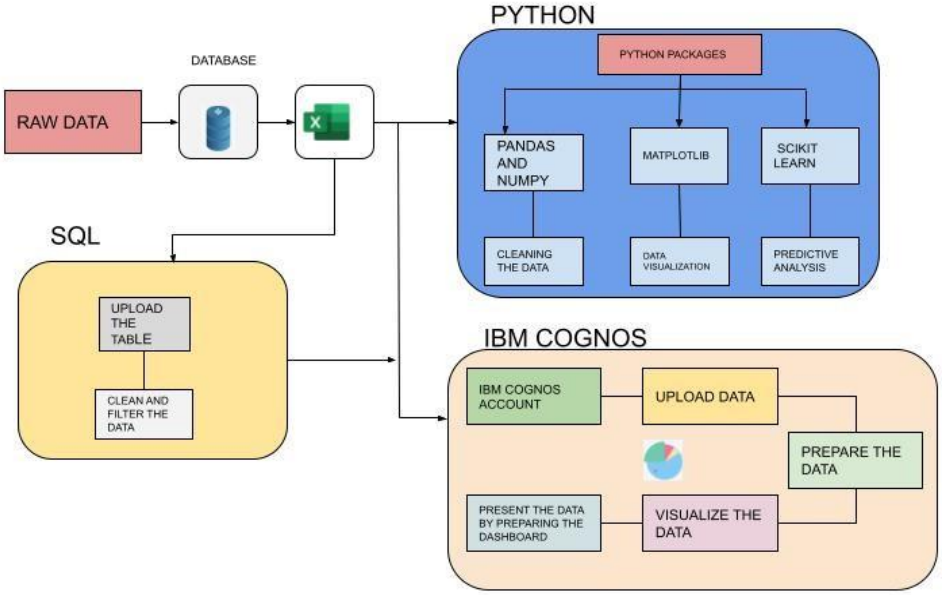
5.2 Solution & Technical Architecture:

Solution Architecture:

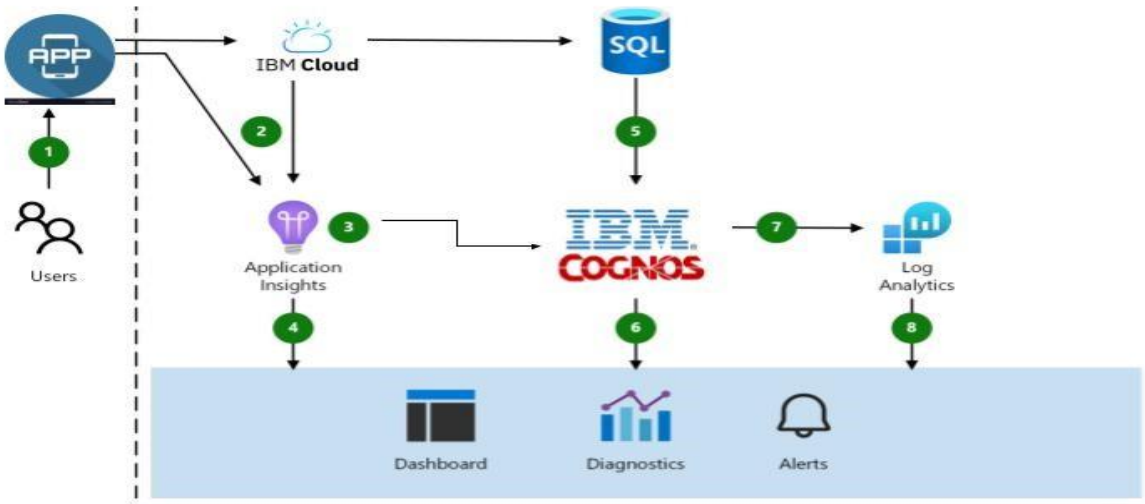
A complicated process with numerous sub-processes, solution architecture connects business issues with technological solutions. Its objectives are to

- Find the best technological solution to address current company issues.
- Describe to project stakeholders the software's structure, features, behavior, and other features.
- Define the solution's requirements, development stages, and features.
- Give details on how the solution is to be defined, managed, and delivered..

Solution Architecture Diagram: Global Sales data Analytics



Technical Architecture:



5.3 User Stories:

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
		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
		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
		USN-4	As a user, I can register for the application through Gmail		Medium	Sprint-1
	Login	USN-5	As a user, I can log into the application by entering email & password		High	Sprint-1

	Dashboard	USB-6	As a user, I can access the dashboard to get insights on a particular crop or region		Medium	Sprint- 2
Customer (Web user)	Activity	USN-7	As a user, I can register for the application through any web-browser	I can get a pop-up or a notification from the browser about the login	Low	Sprint-1
Customer Care Executive	Access Resources	USN-8	As a user, I can use my login credentials in the web-application to access the available resources	No one else can login into my account without the knowledge of use	High	Sprint-1
	Dashboard	USN-9	As a user I can raise my concern if not able to access my previous works on the dashboard	I can receive support of the backups saved in server through mail	High	Sprint-1
Administrator	Set events	USN-10	As a user, I can plan some events for the upcoming days or a to-do list for a day	I can synchronize all my progress in web as well as mobile application	High	Sprint-1
Customer	Tools	USN-11	I can perform the analysis I want using the filter tool in the Dashboard	I have an ease of accessing tools	High	Sprint-1

6. PROJECT PLANNING & SCHEDULING

6.1 Sprint Planning & Estimation:

6.2 Sprint Delivery Schedule:

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
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	Kaarthikeyan.E, Kevin Carlos Joy.J
Sprint-1	Login	USN-2	As a user, I need valid credentials to log in to my application.	1	High	Karthik.B, Kaarthikeyan.E
Sprint-1	Data Collection	USN-3	As a user, I need to gather the data in the form of CSV/XLS and clean the data	2	High	Karthik.B, Immanual.V
Sprint-2	Upload dataset	USN-4	As a user, I can view the data of the products	1	Low	Kaarthikayen.E Immanual.V
Sprint-2	Data Preparation	USN-5	As a user, I need to filter it for Data visualization.	3	High	Kevin Carlos Joy. J, Karthik.B
Sprint-2	Data visualization	USN-6	As a user, I can easily visualize the data in the form of charts.	4	Medium	Karthik.B, Immanual.V
Sprint-3	Dashboard	USN-7	As a user, I can view the summary of the product sales by the help dashboard.	2	Medium	Kevin Carlos Joy.J, Karthik.B
Sprint-3	Dashboard	USN-8	As a user, I must plan visualizations in a way that I'm able to gain insights regarding the sales based upon the category of sales and the respective region	4	High	Kaarthikeyan.E, Karthik.B
Sprint-3	Dashboard	USN-9	As a user, I must be able to gain insights from the charts/graphs through a variety of relationships established in the dashboard.	4	Medium	Kevin Carlos Joy.J, Kaarthikeyan.E

Sprint- 4	Prediction	USN-10	As a user, I see the prediction of the specific product's future sales expectation.	4	Medium	Immanual.V Kaarthikeyan.E
Sprint- 4	Report	USN-11	As a user, I can view the list of categorized products and their details as a report.	5	High	Kevin Carlos Joy.J, Immanual.V
Sprint-4	Story	USN-12	As a user, I can view the product and customer description and more additional information as a story.	5	High	Immanual.V Kevin Carlos Joy.J

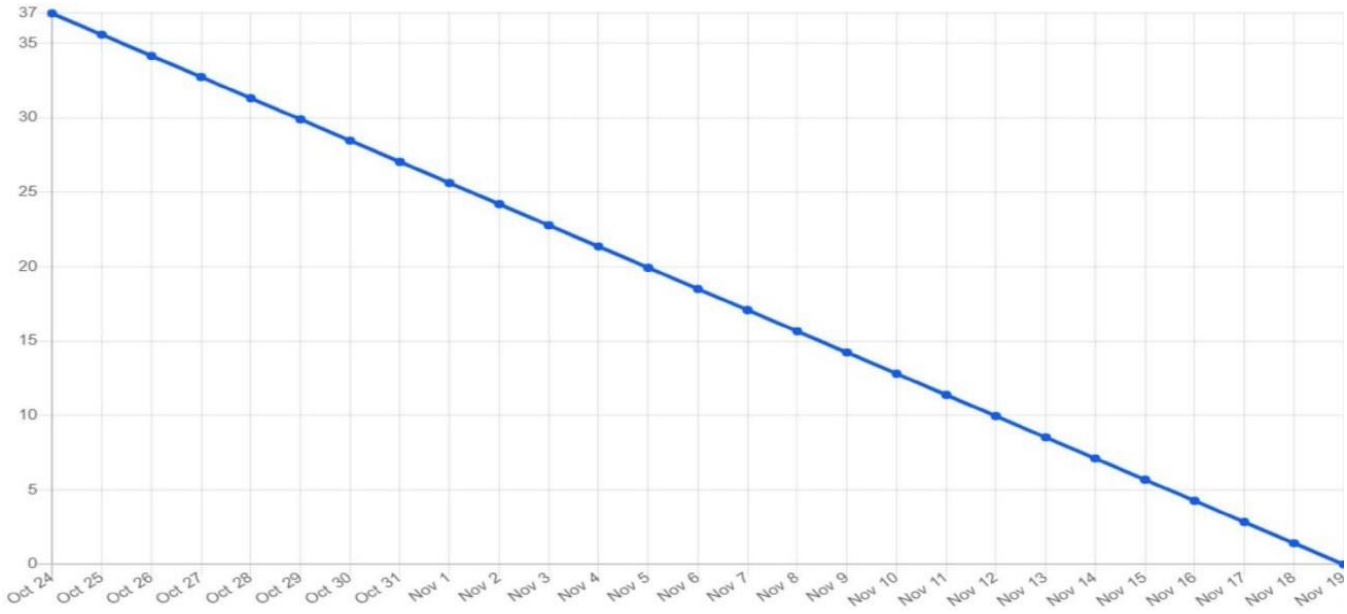
Sprints	**Total Story Points**	**Duration**	**Sprint Start Date**	**Sprint End Date (Planned)**	**Story Points Completed (as on Planned End Date)**	**Sprint Release Date (Actual)**
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	5	29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	8	05 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	10	12 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	14	19 Nov 2022

iteration unit (story points per day)

SPRINT	TOTAL STORY POINTS	DURATION	AVERAGE VELOCITY
SPRINT-1	5	6 Days	5/6 = 0.833
SPRINT-2	8	6 Days	8/6 = 1.33
SPRINT-3	10	6 Days	10/6 = 1.66
SPRINT-4	14	6 Days	14/6 = 2.33

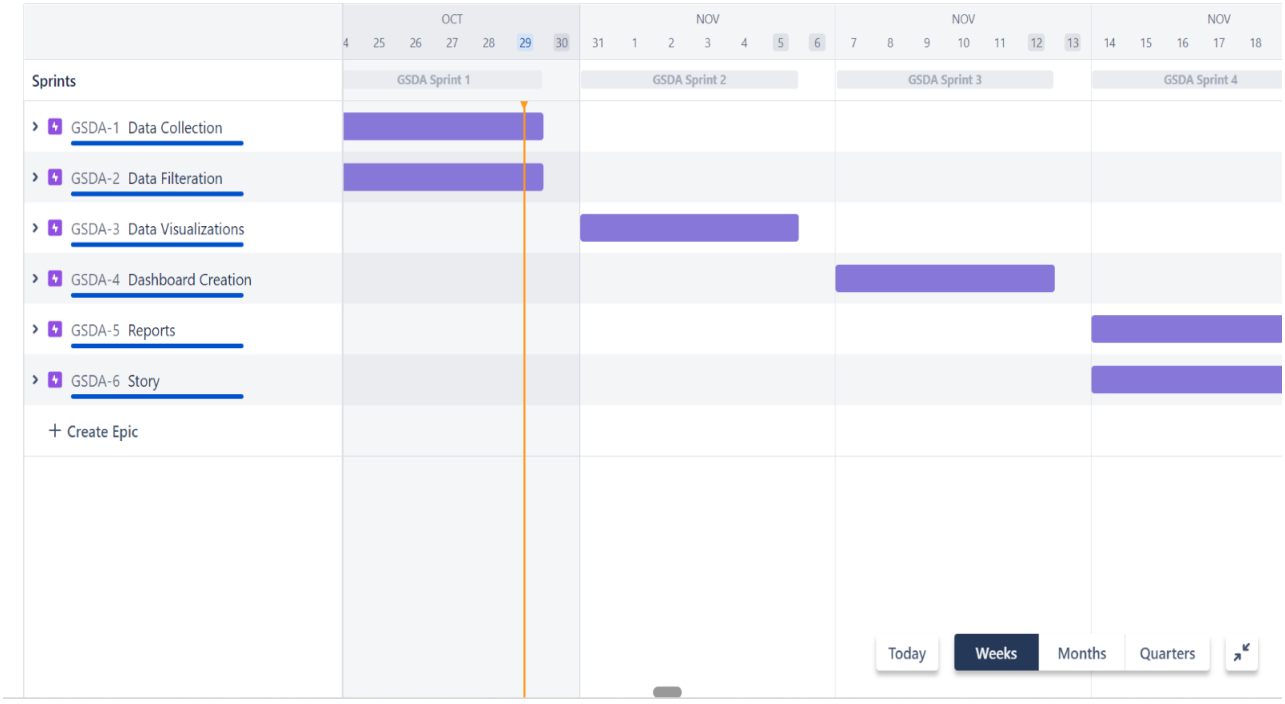
Burndown Chart:

A burn down chart is a graphical representation of work left to do versus time. It is often used in agile software development methodologies such as Scrum. However, burn down charts can be applied to any project containing measurable progress over time.



6.3 Reports from JIRA:

PLANNING TOOL:



Projects / GSDA

Backlog

KJ Epic Insights

Backlog (6 issues) 0 0 0 Create sprint

GSDA-7 As a user, I can view the data in the form of CSV/XLS file for filtration.	DATA COLLECTION	IN PROGRESS
GSDA-8 As a user, I can custom or filter the gathered data.	DATA FILTERATION	IN PROGRESS
GSDA-9 As a user, I can easily visualize the data in the form of charts.	DATA VISUALIZATIONS	IN PROGRESS
GSDA-10 As a user, I can view my dashboard and can perform stock prediction and analysis.	DASHBOARD CREATION	IN PROGRESS
GSDA-11 As a user, I can view the list of categorized products and their details as a report.	REPORTS	IN PROGRESS
GSDA-12 As a user, I can view the product and customer description and more additional information as a story.	STORY	IN PROGRESS

Create issue

7. CODING & SOLUTIONING

7.1 Feature 1:

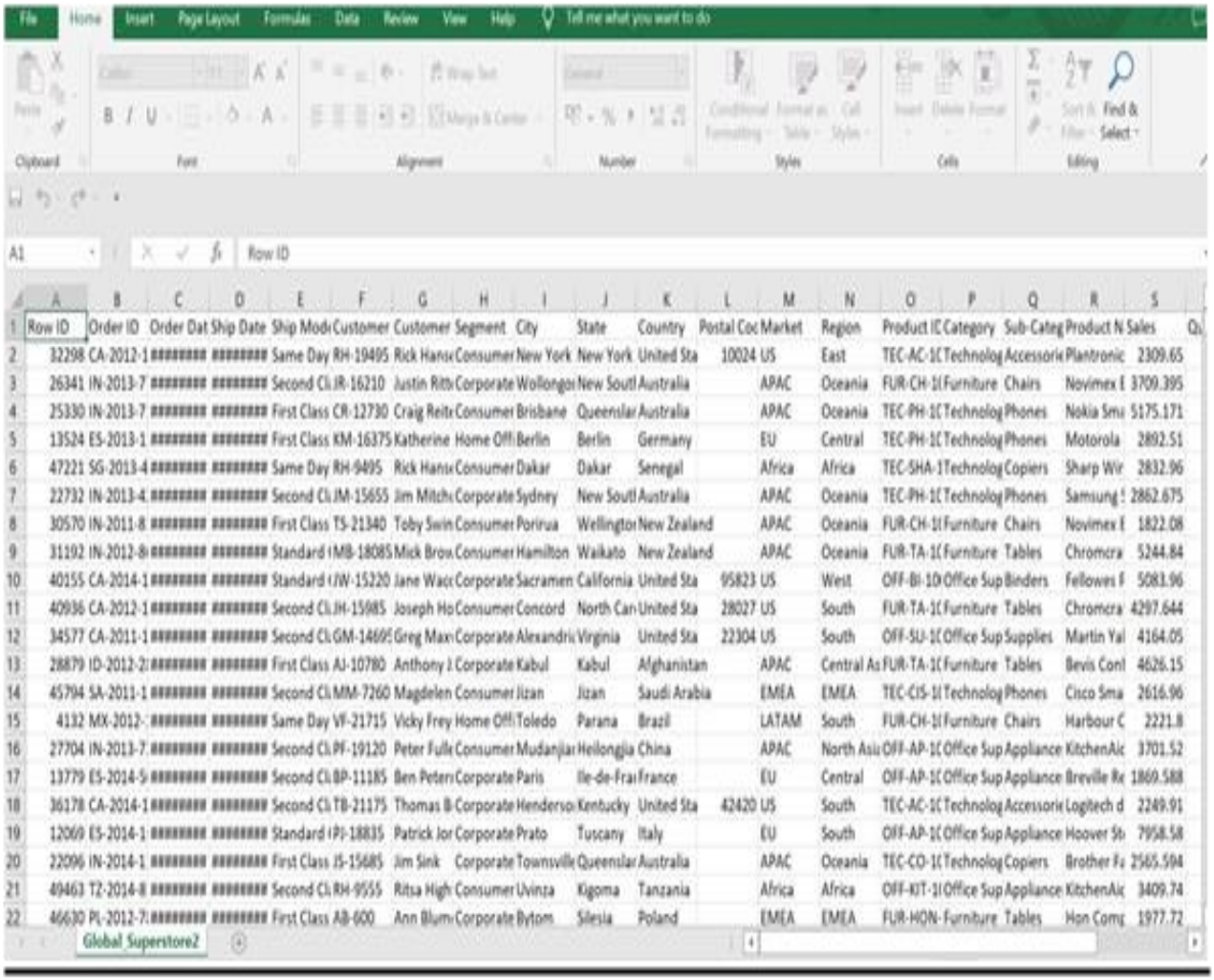
Sprint -1:

1.Data Collection: When you want to provide a suitable solution to the given problem statement, you need to understand the dataset, load it to the cloud environment, and prepare it as per the technology requirement.

Downloading the Dataset:

link:https://www.kaggle.com/apoorvaappz/global-super-storehttps://www.kaggle.com/apoorvaappz/global-super-store-datasetdataset

Understanding the Dataset: Once you download the Dataset, the rows you see are the details of the order done online by people across the globe in the time frame 1-jan-2011 to 31-dec-2014. There are no missing values in the majority of columns except postal code, you can drop it if not required.



File Home Insert Page Layout Formulas Data Review View Help Tell me what you want to do

Clipboard Font Alignment Number Styles Cells Editing

A1 Row ID

Row ID	Order ID	Order Dat	Ship Date	Ship Mod	Customer	Customer	Segment	City	State	Country	Postal Coc	Market	Region	Product IC	Category	Sub-Categ	Product N	Sales	Qu
32298	CA-2012-1	########	########	Same Day	RH-19495	Rick Hanse	Consumer	New York	New York	United Sta	10024	US	East	TEC-AC-1(	Technolog	Accessorie	Plantronic	2309.65	
26341	IN-2013-7	########	########	Second Cl	JR-16210	Justin Ritt	Corporate	Wollongo	New Soutl	Australia		APAC	Oceania	FUR-CH-1(	Furniture	Chairs	Novimex E	3709.395	
25330	IN-2013-7	########	########	First Class	CR-12730	Craig Reitz	Consumer	Brisbane	Queenslar	Australia		APAC	Oceania	TEC-PH-1(	Technolog	Phones	Nokia Smi	5175.171	
13524	ES-2013-1	########	########	First Class	KM-16375	Katherine	Home Offi	Berlin	Berlin	Germany		EU	Central	TEC-PH-1(	Technolog	Phones	Motorola	2892.51	
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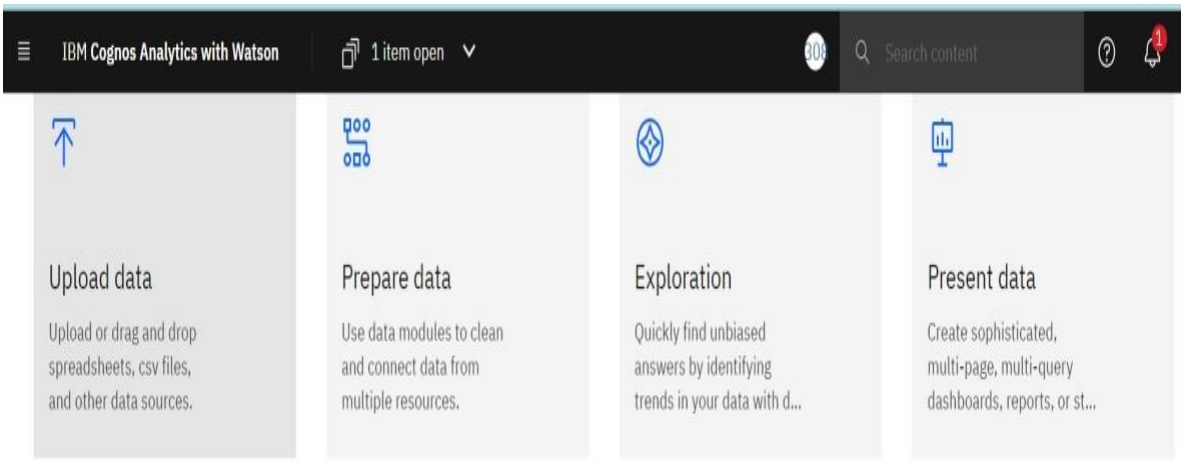
12069	ES-2014-1	########	########	Standard (	PJ-18835	Patrick Jor	Corporate	Prato	Tuscany	Italy		EU	South	OFF-AP-1(	Office Sup	Appliance	Hoover St	7958.58	
22096	IN-2014-1	########	########	First Class	JS-15685	Jim Sink	Corporate	Townsville	Queenslar	Australia		APAC	Oceania	TEC-CO-1(	Technolog	Copiers	Brother Fa	2565.594	
49463	T2-2014-8	########	########	Second Cl	RH-9555	Ritsa High	Consumer	Uvinza	Kigoma	Tanzania		Africa	Africa	OFF-KIT-1(	Office Sup	Appliance	KitchenAic	3409.74	
46630	PL-2012-7	########	########	First Class	AB-600	Ann Blum	Corporate	Bytom	Silesia	Poland		EMEA	EMEA	FUR-HON-	Furniture	Tables	Hon Comp	1977.72	

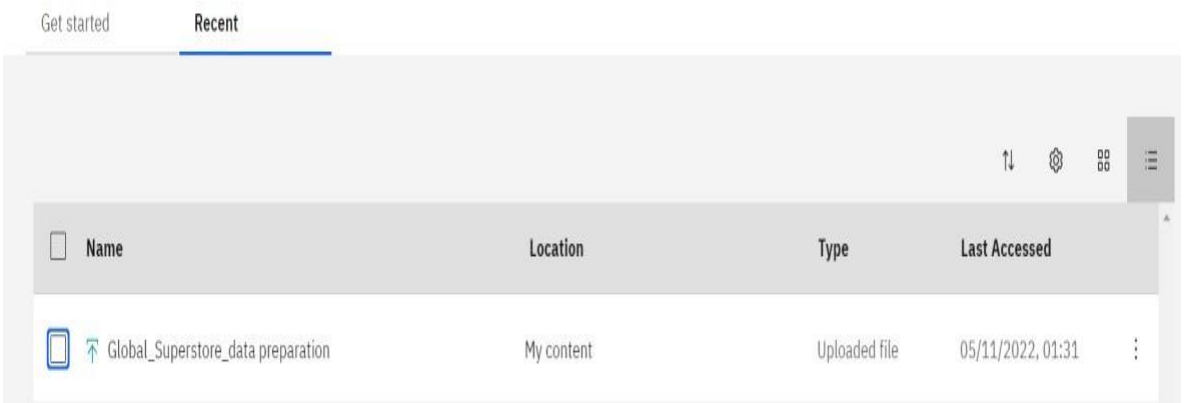
Global Superstore2

Loading the Dataset using IBM COGNOS ANALYTICS:

Before you can build a view and analyze your data, you must first connect the data to IBM Cognos. Cognos supports connecting to a wide variety of data, stored in a variety of places.

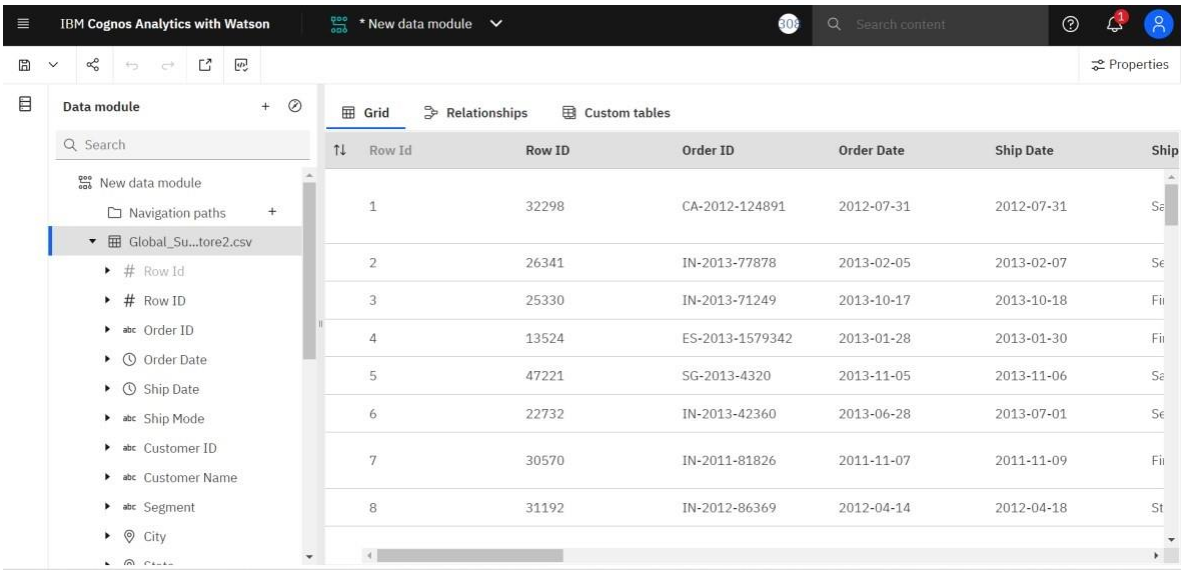
The data might be stored on your computer in a spreadsheet or a text file, or in a big data, relational, or cube (multidimensional) database on a server in your enterprise.





2.Data Filtration:

Filtering the dataset and preparing by using data modules to clean and connect data from multiple modules.



Year Data:

Sprint 2:

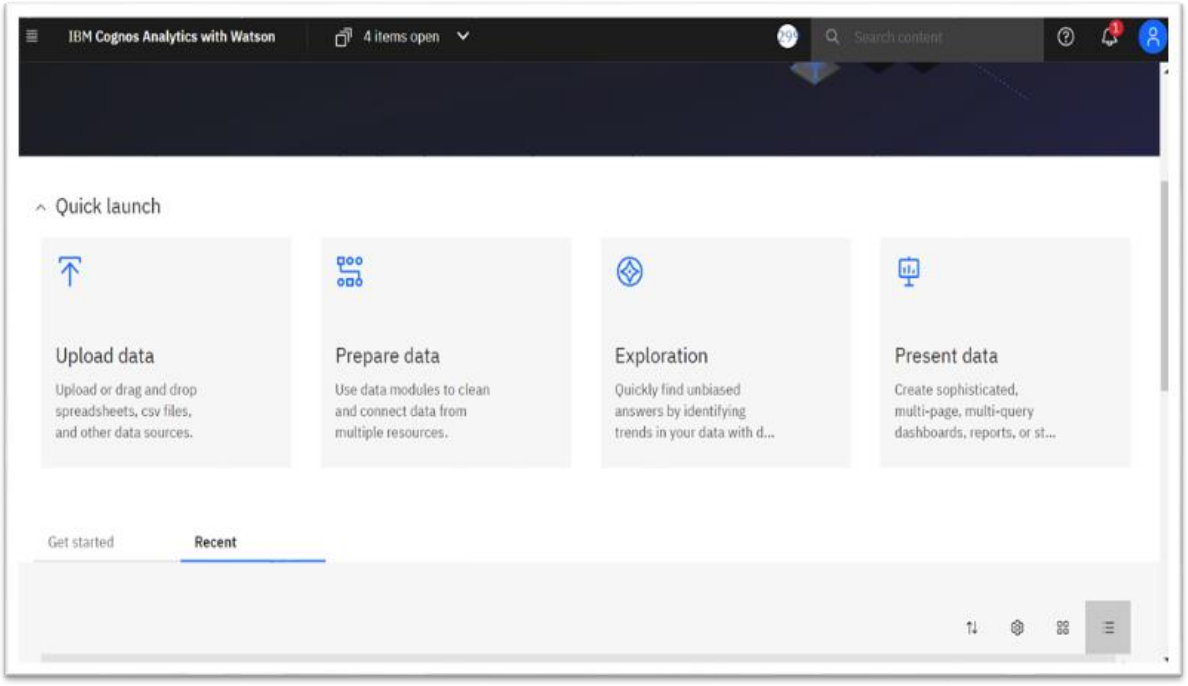
Data Visualization:

Data visualization is the graphical representation of information and data. By using visual elements like charts, graphs, and maps, data visualization tools provide an accessible way to see and understand trends, outliers, and patterns in data. Additionally, it provides an excellent way for employees or business

owners to present data to non-technical audiences without confusion.

In the world of Big Data, data visualization tools and technologies are essential to analyze massive amounts of information and make data-driven decisions.

IBM COGNOS:



Data Visualization:

The data Visualization is done by seven visualization charts .They are,

1.Sales by Segment colored by Category

2.Order Priority and Order Priority for Country regions and Order Priority points

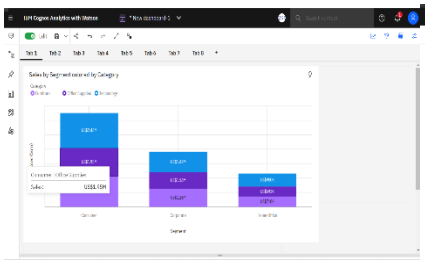
3.Discount and Shipping Cost for Segment colored by Segment

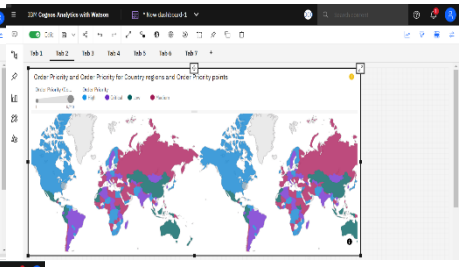
4.Profit by Region coloured by Region

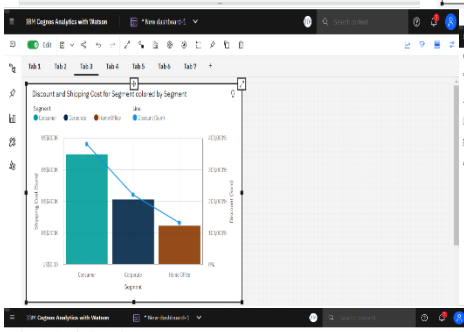
5.Sales by Market

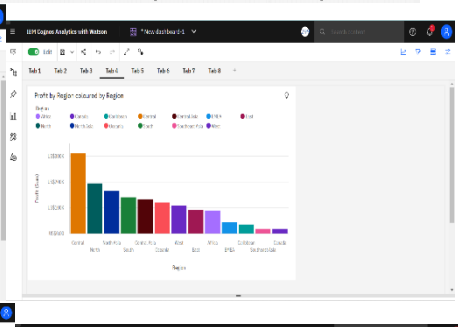
6.Region colored by Region sized by Sales

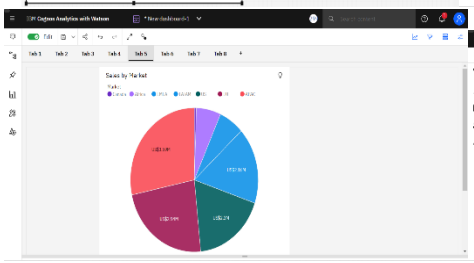
7.Sales by Order data(month) colored by Region

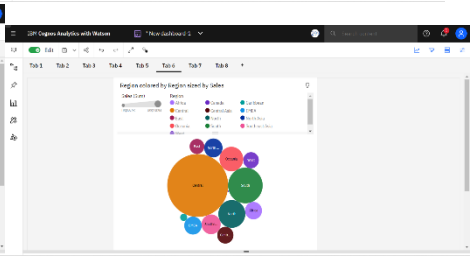


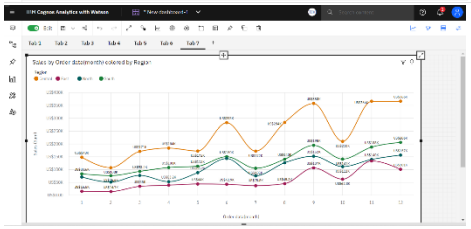












7.2 Feature 2:

Sprint 3:

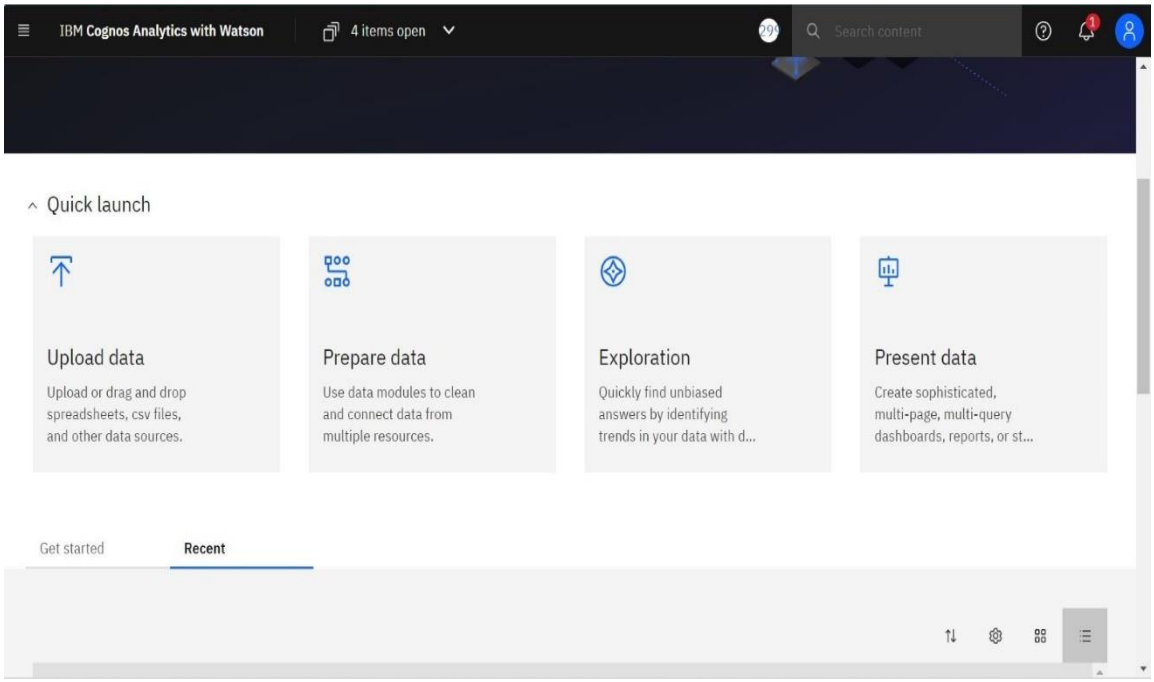
Dashboard Creation:

In business computer information systems, a dashboard is a type of graphical user interface which often provides at-a-glance views of key performance indicators (KPIs) relevant to a particular objective or business process. In other usage, "dashboard" is another name for "progress report" or "report" and considered a form of data visualization. In providing this overview, business owners can save time and improve their decision making by utilizing dashboards.[1]

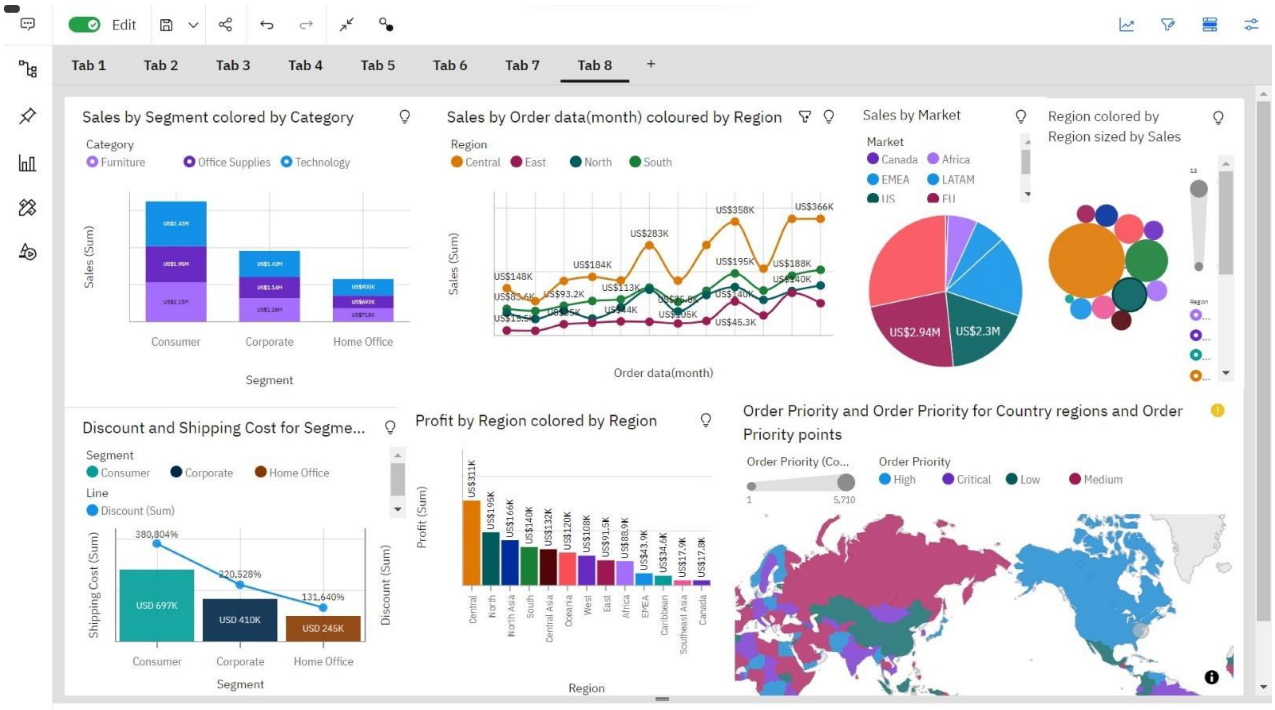
The “dashboard” is often accessible by a web browser and is usually linked to regularly updating data sources.

The COVID-19 pandemic of 2020 brought other dashboards to the fore, with the Johns Hopkins coronavirus tracker[3] and the UK government coronavirus tracker[4] being good examples.

IBM COGNOS:


IBM Cognos Analytics with Watson
4 items open
Search content
Quick launch
Upload data
Upload or drag and drop spreadsheets, csv files, and other data sources.
Prepare data
Use data modules to clean and connect data from multiple resources.
Exploration
Quickly find unbiased answers by identifying trends in your data with d...
Present data
Create sophisticated, multi-page, multi-query dashboards, reports, or st...
Get started
Recent

Dashboard:



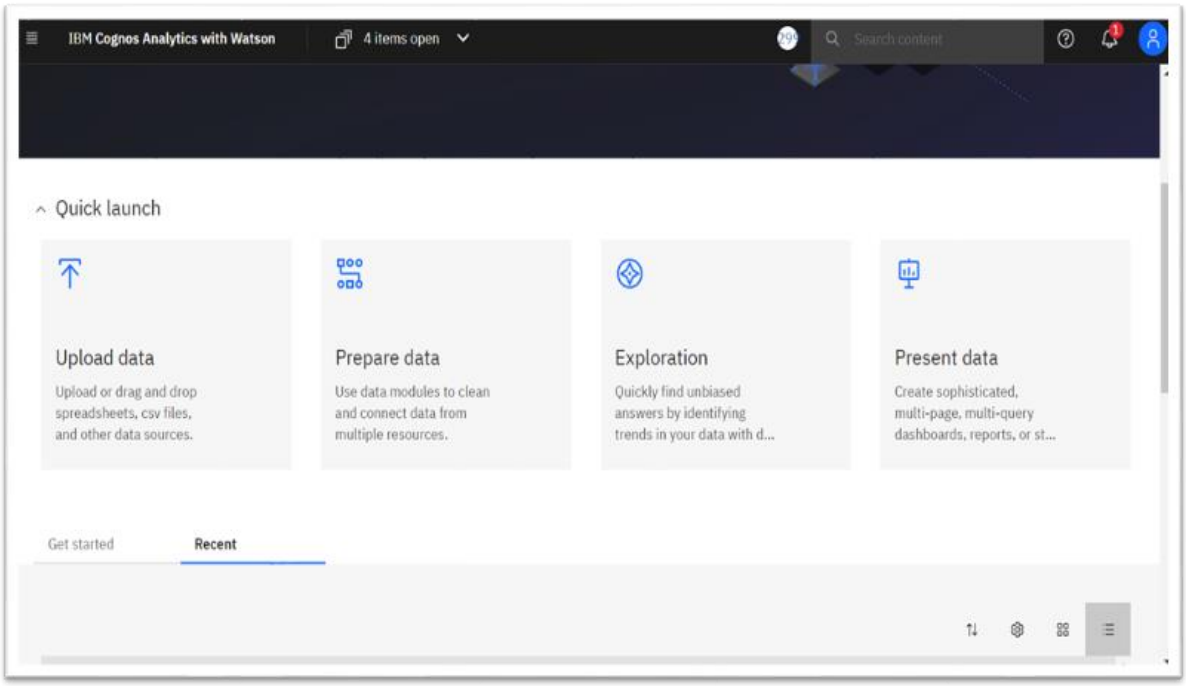
Sprint-4:

Report Creation:

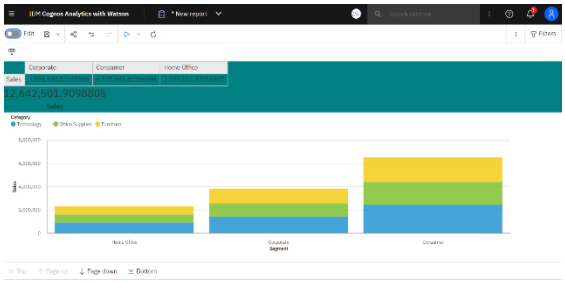
A data analysis report is a type of business report in which you present quantitative and qualitative data to evaluate your strategies and performance. Based on

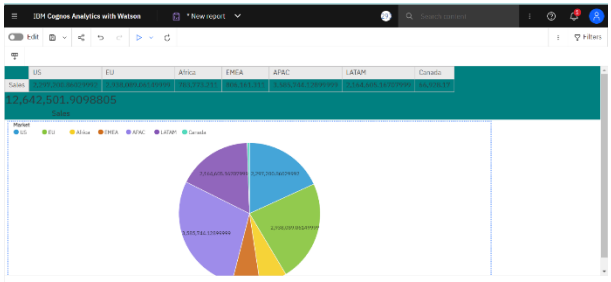
this data, you give recommendations for further steps and business decisions while using the data as evidence that backs up your evaluation.
Today, data analysis is one of the most important elements of business intelligence strategies as companies have realized the potential of having data-driven insights at hand to help them make data-driven decisions.

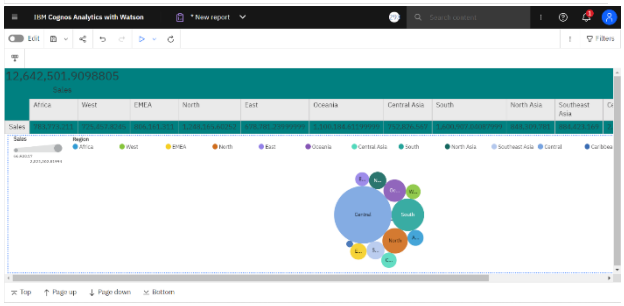
IBM COGNOS:

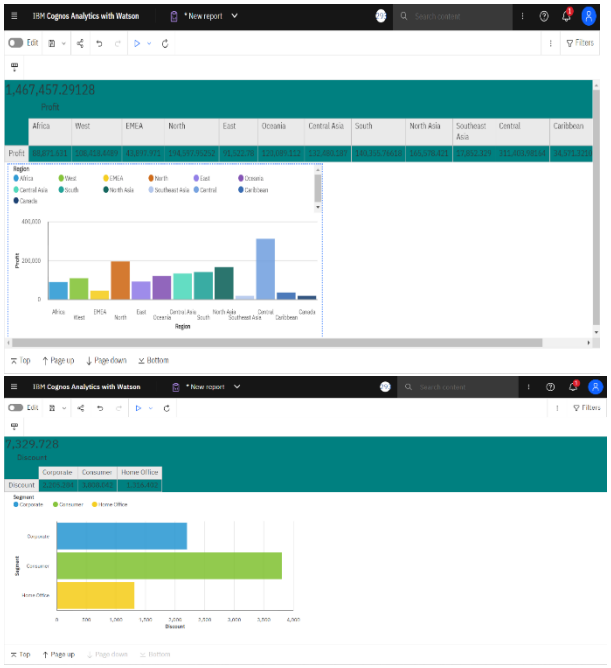


Report Creation:







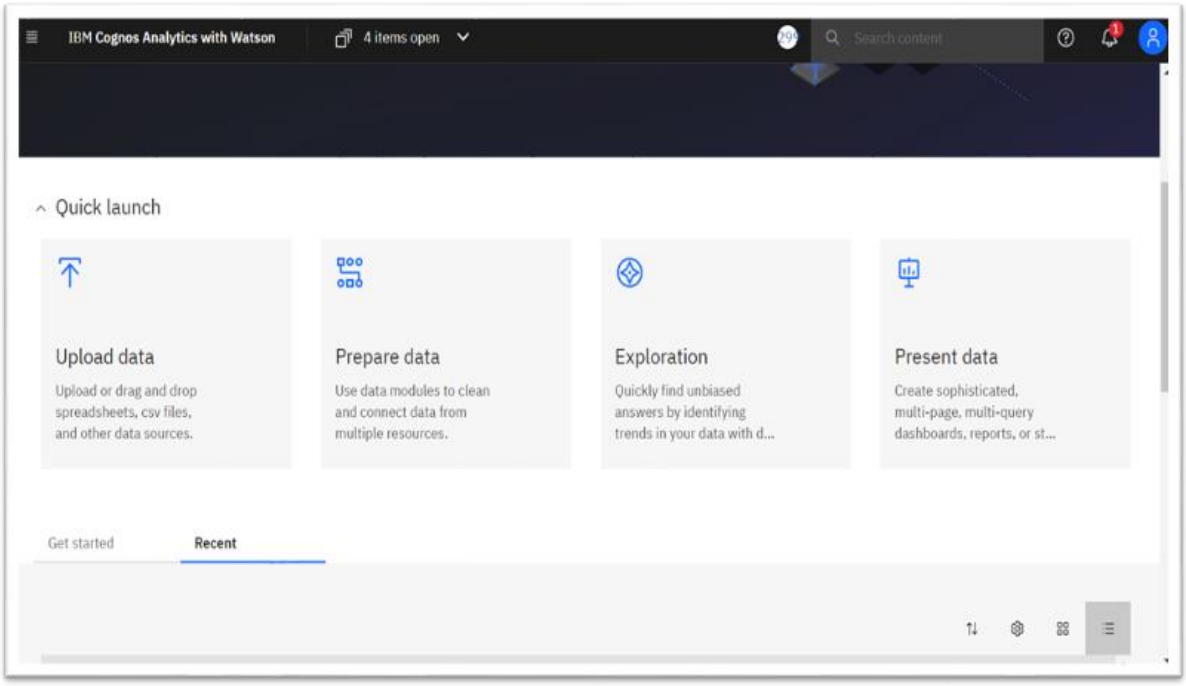


Story Creation :

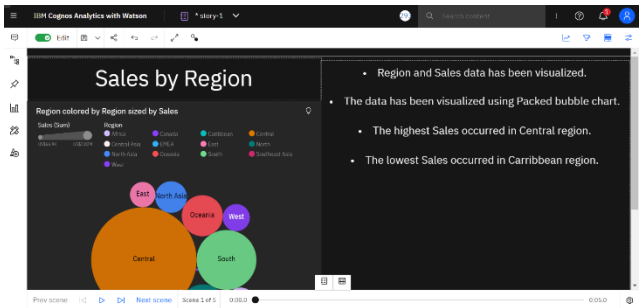
Data storytelling is the ability to effectively communicate insights from a dataset using narratives and visualizations. It can be used to put data insights into context for and inspire action from your audience. Data storytelling is a methodology for communicating information, tailored to a specific audience, with a compelling narrative. It is the last ten feet of your data analysis and arguably the most important aspect.

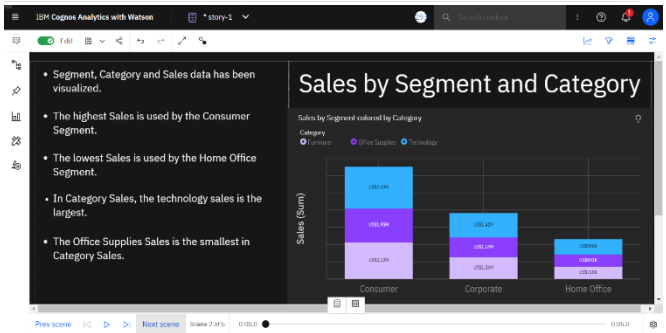
Evolutionarily, as Humans, we are naturally hard-wired to share stories as a means of sharing information.

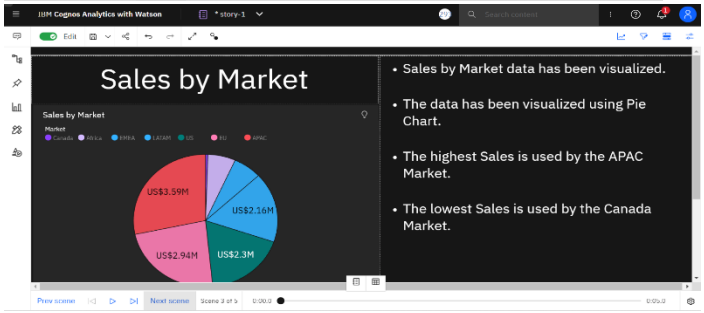
IBM COGNOS:

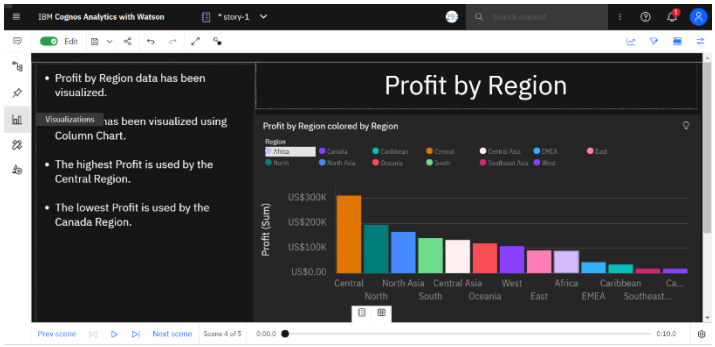


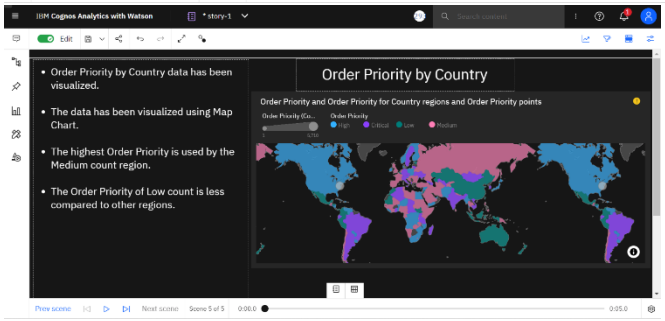
Story Creation:











8. TESTING

8.1 Test Cases:

				Date	16-Nov-22							
				Team ID	PNT2022TMID33748							
				Project Name	Global Sales Data Analytics							
				Maximum Marks	4 marks							
Test case ID	Feature Type	Component	Test Scenario	Pre-Requisite	Steps To Execute	Test Data	Expected Result	Actual Result	Status	Comments	TC for Automation(Y/N)	BUG ID	Executed By
LoginPage_TC_OO1	Functional	Home Page	Verify user is able to navigate to the homepage	IBM COGNOS ANALYTICS WITH WATSON	1.Enter URL and click go to the IBM COGNOS ANALYTICS website 2.Login with the registered credentials and navigate to the homepage	https://us1.ca.analytics.ibm.com/bi/?perspective=home	The Homepage is been viewed	Working as expected	Pass	NIL	Y	NIL	KARTHIK D
LoginPage_TC_OO2	Functional	Exploration	Verify the user can view the explorations, and identify the pattern that turns the data into insights for a business.	IBM COGNOS ANALYTICS WITH WATSON	1. Enter the Analytics Homepage 2. Click the Exploration Option 3. View the embedded exploration data in HTML Page or click the IBM Cognos link to directly view the exploration in IBM Cognos Watson 4. The Explorations can be viewed for filtered data such as the data is been visualized by charts.	https://us1.ca.analytics.ibm.com/bi/?perspective=explore&pathRef=.my_folders%2Fnew%20data%20module	Data exploration workspace is the first step of data analysis used to explore and visualize data to uncover insights from the start or identify areas or patterns to dig into more.	Working as expected	Pass	NIL	Y	NIL	KAARTHIKAVAN E
LoginPage_TC_OO3	Functional	Dashboard	Verify that users can view the responsive Data analytics dashboard.	IBM COGNOS ANALYTICS WITH WATSON	1. Enter the Analytics Homepage 2. Click the Dashboard option 3. View the embedded dashboard data in html page or click the IBM Cognos link to directly view the dashboard in IBM Cognos. 4.Next, the dashboard is created by combining the visualized charts into a dashboard that can be viewed by and necessary actions can be taken.	https://us1.ca.analytics.ibm.com/bi/?perspective=dashboard&pathRef=.my_folders%2Fnew%20dashboard-1&action=view&mode=dashboard&subView=model000001847127ff9df_00000000	Dashboard is viewed by the user to multi-task, visualize, analyze, and track data. The overall purpose of a data analytics dashboard is to make it easier for data analysts, decision makers, and average users to understand their data.	Working as expected	Pass	NIL	Y	NIL	KEVIN CARLOS JOY J
LoginPage_TC_OO4	Functional	Story	Verify whether the story is functioned on the Analytics Dashboard.	IBM COGNOS ANALYTICS WITH WATSON	1. Enter the Analytics Homepage 2. Click the Story option 3. The story is been viewed by letting the story for each visualized chart for the user.	https://us1.ca.analytics.ibm.com/bi/?perspective=story&pathRef=.my_folders%2Fstory-1&action=view&storeID=model000001848ee2c88f_00000023&ignoreTemp=0	A story is a type of storytelling that contains a set of scenes that are displayed in sequence over time for the user.	Working as expected	Pass	NIL	Y		MANIKAL V
LoginPage_TC_OO5	Functional	Reports	Verify that user can view and run the Reports in it.	IBM COGNOS ANALYTICS WITH WATSON	1.Enter the Analytics Homepage 2. Click the Reports option 3. View the embedded Report about the data. 4. Thus the Reports for the various data can be seen.	https://us1.ca.analytics.ibm.com/bi/?pathRef=.my_folders%2Fnew%20report&action=run&format=HTML&prompt=false	Reports can be viewed by the user showed in a type of business report in which you present quantitative and qualitative data to evaluate your strategies and performance.	Working as expected	Pass	NIL	Y	NIL	KEVIN CARLOS JOY J

8.2 User Acceptance Testing

1. Purpose of Document

The purpose of this document is to briefly explain the test coverage and open issues of the [ProductName] project at the time of the release to User Acceptance Testing (UAT).

2. Defect Analysis

This report shows the number of resolved or closed bugs at each severity level, and how they were resolved

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Subtotal
By Design	8	4	2	2	16
Duplicate	4	2	3	0	9
External	2	3	0	1	6
Fixed	22	7	4	18	51
Not Reproduced	0	0	1	0	1
Skipped	1	1	0	0	2
Won't Fix	4	0	2	1	7
Totals	41	17	12	22	92

3.Test Case Analysis

This report shows the number of test cases that have passed, failed, and untested

Section	Total Cases	Not Tested	Fail	Pass
Print Engine	4	0	0	4
Client Application	45	0	4	49
Security	2	0	0	2
Outsource Shipping	3	0	0	3
Exception Reporting	9	0	0	9
Final Report Output	4	0	0	4
Version Control	2	0	0	2

9. RESULTS

9.1 Performance Metrics

Sanno	Parameter	Screenshot / Values
1.	Dashboard design	The dashboard is created using four categories. They are Sales, Profit, Discount and Shipping Cost. 
2.	Data Responsiveness	The data is downloaded from the external API (Kaggle Data Set) which is uploaded in the IBM Cognos Analytics with Watson and then the data module is created.
3.	Amount Data to Rendered (DB2 Metrics)	The dataset which is downloaded from the external API and uploaded is rendered from the DB2 Metrics.
4.	Utilization of Data Filters	The process of examining a dataset to exclude, rearrange data according to certain criteria. It involves in finding the total no of sales per quarter and excluding records from last month. Utilization of Data Filters - 12
5.	Effective User Story	No of Scene Added – 5 https://us1.ca.analytics.ibm.com/bi/?perspective=story&pathRef=.my_folders%2Fstory-1&action=view&sceneId=model000001848ed2c88f_00000002&sceneTime=0
6.	Descriptive Reports	No of Visualizations / Graphs – 5 https://us1.ca.analytics.ibm.com/bi/?pathRef=.my_folders%2FNew%2Breport&action=run&format=HTML&prompt=false

10. ADVANTAGES & DISADVANTAGES

ADVANTAGES:

1.Boost sales productivity.

2.Identify new sales opportunities.

3.Plan effective sales targets.

4.Improve customer acquisition.

5.Incentivise sales teams.

6.Increase customer retention.

DISADVANTAGES:

1.Lack of alignment within teams.

2.Lack of commitment and patience.

3.Low quality of data.

4.Complexity & Bias.

5.Privacy concerns.

11. CONCLUSION

In sales, many tasks are now managed through centralized cloud software, including CRMs, email marketing platforms and integration tools, making sales data readily available.

Many global, industry-leading brands are now using their sales data in ingenious ways to make better business decisions, but any company can take advantage of insights and reporting tools to achieve data-driven sales success.

However, the prospect of sifting through the many sales metrics available to make sense of the data can be overwhelming, while knowing what to do with that information once you've got it is another challenge. In this article, we reveal how you can use data-driven sales to achieve your company's specific goals and needs.

12. FUTURE SCOPE

Companies around the globe generate vast volumes of data daily, in the form of log files, web servers, transactional data, and various customer-related data. In addition to this, social media websites also generate enormous amounts of data.

Companies ideally need to use all of their generated data to derive value out of it and make impactful business decisions. Data analytics is used to drive this purpose.

Data analytics is the process of exploring and analyzing large datasets to find hidden patterns, unseen trends, discover correlations, and derive valuable insights to make business predictions. It improves the speed and efficiency of your business.

Businesses use many modern tools and technologies to perform data analytics. This is data analytics for beginners, in a nutshell.

Data analytics is expected to radically change the way we live and do business in the future. Already today we use the analytics in our technology devices, for many decisions in our lives.

Not only how to drive from A to B and avoid traffic-jams, but also to identify waste in business processes with the help of Lean six sigma optimization projects.

Although organizations are taking steps to turn data into insights, our global survey showed that organizations are still struggling with data quality and the problem to find the right resources to turn these insights into true value and become more data-driven.

13. Appendix

Source Code & Github Link

1. Visualizations using IBM Cognos Analytics:

https://us1.ca.analytics.ibm.com/bi/?perspective=dashboard&pathRef=.my_folders%2FNew%2Bdashboard-1&action=view&mode=dashboard&subView=model000001846f364fda_00000000

2. Dashboards using IBM Cognos Analytics:

https://us1.ca.analytics.ibm.com/bi/?perspective=dashboard&pathRef=.my_folders%2FNew%2Bdashboard-1&action=view&mode=dashboard&subView=model000001846f364fda_00000000

3.Reports using IBM Cognos Analytics:

https://us1.ca.analytics.ibm.com/bi/?pathRef=.my_folders%2FNew%2Breport&action=run&format=HTML&prompt=false

4. Story using IBM Cognos Analytics:

https://us1.ca.analytics.ibm.com/bi/?perspective=story&pathRef=.my_folders%2Fstory-1&action=view&sceneId=model000001848ed2c88f_00000002&sceneTime=0

5. Github Repo Link:

https://github.com/IBM-EPBL/IBM-Project-15390-1659598115

Project Demo Links:

YouTube Link:
https://www.youtube.com/watch?v=vz3282t48RY

Google Drive Link:
https://drive.google.com/file/d/1aWqocfA6EFQuvPtnpHDUY2SISSIxMwQH/view?usp=share_link