

St. Francis Institute of Technology, Mumbai-400 103

**Department Of Information Technology**

A.Y. 2024-2025

Class: TE-ITA/B, Semester: VI

Subject: **Business Intelligence Lab**

**Experiment – 10: Study and application of open source BI tool (Qlikview, Tableau, Pentaho, Rapid Miner)**

1. **Aim:** Study and application of open source BI tool (Qlikview, Tableau, Pentaho, Rapid Miner)
2. **Objectives:** After study of this experiment, the students will be able to know different BI Tools
3. **Outcomes:**

**CO6:**Apply BI to solve practical problems : Analyze the problem domain, use the data collected in enterprise apply the appropriate data mining technique, interpret and visualize the results and provide decision support

0. **Prerequisite:** Introduction to all Open Source BI tools.

0. **Requirements:** Personal Computer, Windows XP /Windows 7/8 operating system, Internet Connection, Microsoft Word.

0. **Theory:**

- a. What is BI
- a. Need of BI
- a. Applications of BI
- a. List Tools of BI
- a. Elaborate on Pentaho, Rapid Miner, Qlikview, Tableau
  - Features
  - Data Set required
  - Working
  - Advantages
  - Limitations
  - Applications

0. **Laboratory Exercise:** Attach screenshots for tableau and Qlikview using sample dataset

0. **Post-Experiments Exercise**

a. **Questions:**

- o Compare and Contrast between Qlikview and Tableau

a. **Conclusion:**

- o Summary of Experiment
- o Importance of Experiment
- o Application of Experiment

0. **Reference:** Business Intelligence: Data Mining and Optimization for Decision Making by Carlo Vercellis, Wiley India Publications

## **Theory:**

### ***What is BI***

BI stands for **Business Intelligence**. It refers to the technologies, processes, and practices used to collect, analyze, and present business data to help companies make informed decisions. BI systems typically include tools for data mining, reporting, dashboard creation, and querying to analyze trends, performance, and opportunities within the organization.

Some key aspects of BI include:

1. **Data Collection:** Gathering data from various sources like databases, spreadsheets, or external data providers.
2. **Data Analysis:** Using statistical methods, algorithms, or machine learning models to analyze data for patterns and insights.
3. **Reporting and Visualization:** Creating reports and dashboards that display key metrics and trends for decision-makers.
4. **Decision Support:** Providing actionable insights that help guide business strategy, operations, and planning.

### ***Need of BI***

In the evolving landscape of global commerce, Business Intelligence (BI) has emerged as a critical enabler of organizational efficacy, competitive differentiation, and strategic foresight. Rooted in data analytics, information systems, and decision science, BI represents a paradigm shift from intuition-based governance to empirically grounded management. This transition is propelled by multifaceted drivers, which collectively underscore BI's indispensability in modern enterprises.

1. Data-Driven Decision Making
2. Competitive Advantage
3. Operational Efficiency
4. Improved Customer Understanding
5. Regulatory Compliance
6. Real-Time Monitoring
7. Data Consolidation
8. Predictive Capabilities

### ***Applications of BI***

- **Retail & E-Commerce**
  - Demand forecasting, personalized recommendations, dynamic pricing
- **Healthcare**
  - Predictive patient care, hospital resource optimization, fraud detection
- **Banking & Finance**
  - Credit risk analysis, fraud prevention, customer retention
- **Manufacturing & Supply Chain**
  - Predictive maintenance, quality control, logistics optimization
- **Telecommunications**
  - Network optimization, customer churn prediction, usage analytics
- **Marketing & Advertising**
  - Campaign ROI tracking, sentiment analysis, customer journey mapping
- **Human Resources**
  - Talent analytics, performance tracking, attrition prediction

- **Government & Public Sector**
  - Smart city planning, fraud detection, emergency response
- **Education**
  - Student performance tracking, enrollment forecasting, curriculum optimization
- **Energy & Utilities**
  - Smart grid management, predictive maintenance, sustainability reporting

**Impact: BI drives efficiency, cost savings, and data-driven decisions across industries.**

**List of common Business Intelligence (BI) tools:**

1. QlikView
2. Tableau
3. Pentaho
4. RapidMiner
5. Power BI
6. SAP BusinessObjects
7. Google Data Studio
8. IBM Cognos
9. MicroStrategy
10. TIBCO Spotfire
11. Domo
12. Looker
13. Sisense
14. Zoho Analytics
15. Board International

**Elaborate on Pentaho, Rapid Miner, Qlikview, Tableau**

Tool	Key Features	Data Set Required	Advantages	Limitations	Applications
Pentaho	Open-source, ETL, Reporting, Data Mining, Dashboards	Structured data from multiple sources	Flexible, integrates well with data sources	Complex setup, requires expertise	Data integration, Reporting, Data mining
RapidMiner	Data mining, Predictive analytics, Machine learning	Structured & unstructured data	Strong analytics, user-friendly	Limited scalability with large datasets	Predictive analytics, Fraud detection, Segmentation
QlikView	In-memory analytics, Interactive Dashboards	Data from databases, Excel, cloud	Fast data processing, flexible reporting	Steep learning curve, expensive	Dashboards, Financial reporting, Sales analysis
Tableau	Data visualization, Dashboards, Real-time analytics	Relational databases, Cloud, Flat files	Intuitive interface, strong community	Limited ETL, costly for enterprises	Data visualization, Business reporting, Analytics

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Create a Viz

## Created account in Tableau Public

22	21 CA-2016-145330	6/27/2016	9/17/2015 Standard Cla:TB-21520	Eric Hoffman Consumer	United States Los Angeles	California	90049 West	TEC-AC-1000 Technology Accessories	Imation 8GB
23	22 CA-2016-137330	12/9/2016	12/13/2016 Standard Cla:KB-16585	Ken Black Corporate	United States Fremont	Nebraska	68025 Central	OFF-AR-1000 Office Suppli Art	Newell 318
24	23 CA-2016-137330	12/9/2016	12/13/2016 Standard Cla:KB-16585	Ken Black Corporate	United States Fremont	Nebraska	68025 Central	OFF-AP-1000 Office Suppli Appliances	Acco Six-Out
25	24 US-2017-156909	7/16/2017	7/18/2017 Second Class SF-20065	Sandra Flana Consumer	United States Philadelphia	Pennsylvania	19140 East	FUR-CH-1000 Furniture Chairs	Global Delux
26	25 CA-2015-106320	9/25/2015	9/30/2015 Standard Cla:EB-13870	Emily Burns Consumer	United States Orem	Utah	84057 West	FUR-TA-1000 Furniture Tables	Bretford CR4
27	26 CA-2016-121755	1/16/2016	1/20/2016 Second Class EH-13945	Eric Hoffman Consumer	United States Los Angeles	California	90049 West	OFF-BI-1000 Office Suppli Binders	Wilson Jones
28	27 CA-2016-121755	1/16/2016	1/20/2016 Second Class EH-13945	Eric Hoffman Consumer	United States Los Angeles	California	90049 West	TEC-AC-1000 Technology Accessories	Imation 8GB
29	28 US-2015-150630	9/17/2015	9/21/2015 Standard Cla:TB-21520	Tracy Blumst Consumer	United States Philadelphia	Pennsylvania	19140 East	FUR-BO-1000 Furniture Bookcases	Riverside Pal
30	29 US-2015-150630	9/17/2015	9/21/2015 Standard Cla:TB-21520	Tracy Blumst Consumer	United States Philadelphia	Pennsylvania	19140 East	OFF-BI-1000 Office Suppli Binders	Avery Recycl
31	30 US-2015-150630	9/17/2015	9/21/2015 Standard Cla:TB-21520	Tracy Blumst Consumer	United States Philadelphia	Pennsylvania	19140 East	FUR-FU-1000 Furniture Furnishings	Howard Millk

## Downloaded SuperStore Dataset from Tableau

New Workbook (Tableau Public) Publish As... Tanmay Bhatkar

Show Me

Orders (sample\_-\_superstore) Create Extract Filters Extract will contain all data. 0 Add

Orders

Orders 21 fields 9994 rows 100 rows

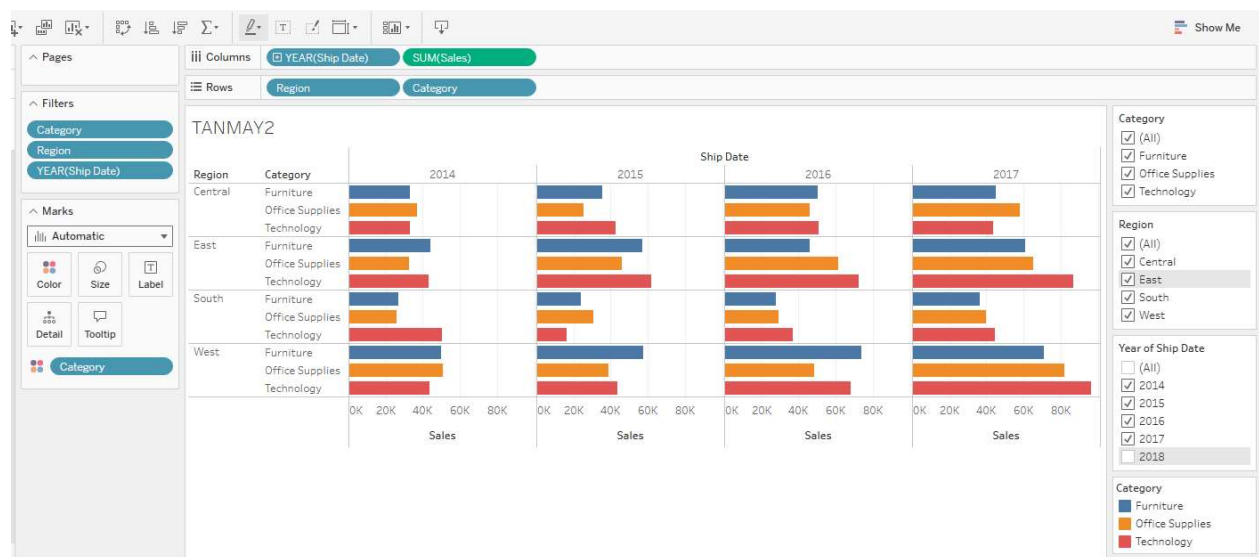
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Row ID	Order ID
Order Date	Order Date
Ship Date	Ship Date
Ship Mode	Ship Mode
Customer ID	Customer ID
Customer Name	Customer Name
Segment	Segment

#	Order ID	Order Date	Ship Date	Ship Mode	Customer ID	Customer Name	Segment
1	CA-2016-152156	11/8/2016	11/11/2016	Second Class	CG-12520	Claire Gute	Coi
2	CA-2016-152156	11/8/2016	11/11/2016	Second Class	CG-12520	Claire Gute	Coi
3	CA-2016-138688	6/12/2016	6/16/2016	Second Class	DV-13045	Darrin Van Huff	Coi
4	US-2015-108966	10/11/2015	10/18/2015	Standard Class	SO-20335	Sean O'Donnell	Coi
5	US-2015-108966	10/11/2015	10/18/2015	Standard Class	SO-20335	Sean O'Donnell	Coi
6	CA-2014-115812	6/9/2014	6/14/2014	Standard Class	BH-11710	Brosina Hoffman	Coi
7	CA-2014-115812	6/9/2014	6/14/2014	Standard Class	BH-11710	Brosina Hoffman	Coi
8	CA-2014-115812	6/9/2014	6/14/2014	Standard Class	BH-11710	Brosina Hoffman	Coi
9	CA-2014-115812	6/9/2014	6/14/2014	Standard Class	BH-11710	Brosina Hoffman	Coi
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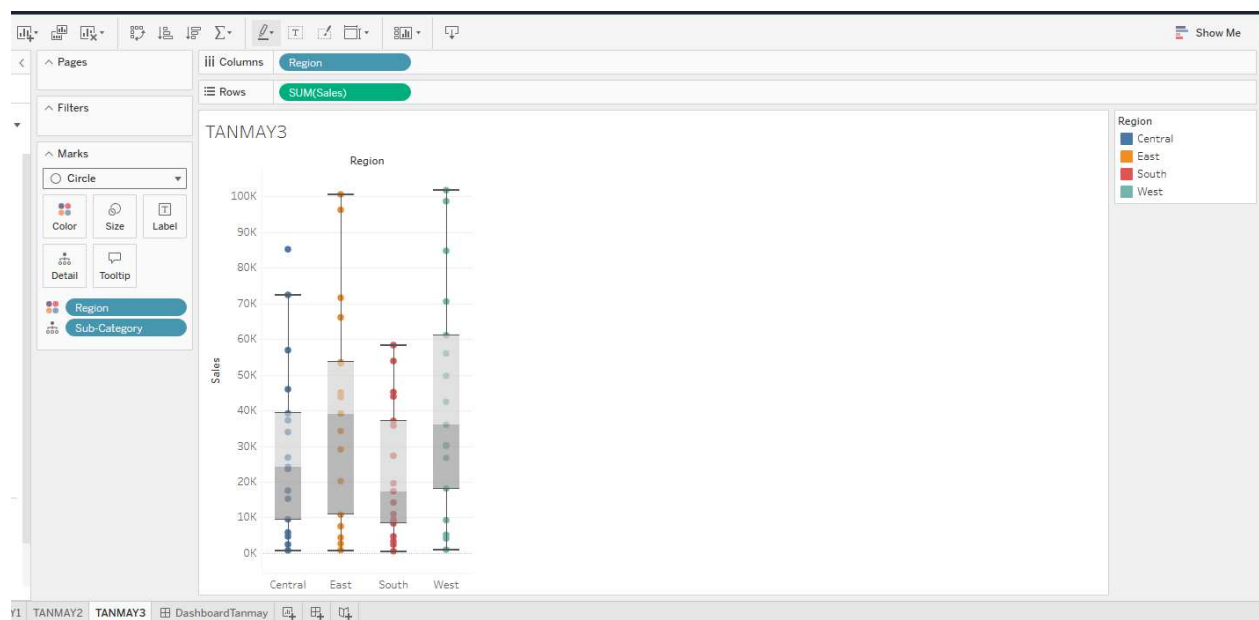
## Uploading Order Sheet on Tableau

TANMAY1				
Region		Category		
Central		Furniture	Office Supplies	Technology
East				
South				
West				

Viewing Sales information in textual format



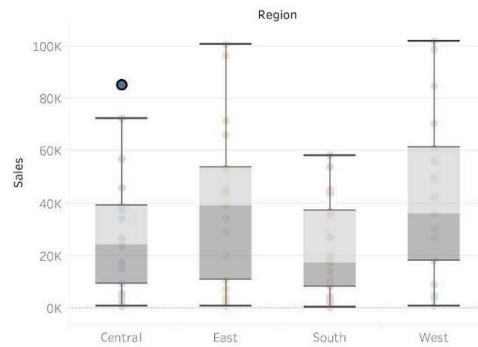
Region and category wise sales every year(Ship Date)



TANMAY1

Region	Category	
	Furniture	Office Supplies
Central	163,797	
East	208,291	
South	117,299	
West	252,613	

TANMAY3



TANMAY2



## DASHBOARD

TanmayExp10Tableau by [Tanmay Bhatkar](#)



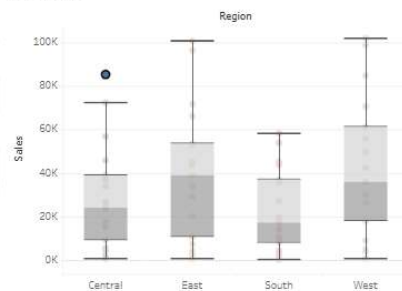
StoryTanmay

Tanmay Bhatkar

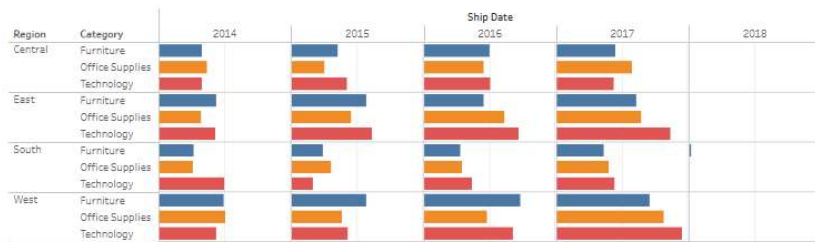
TANMAY1

Region	Category	
	Furniture	Office Supplies
Central	163,797	
East	208,291	
South	117,299	
West	252,613	

TANMAY3



TANMAY2

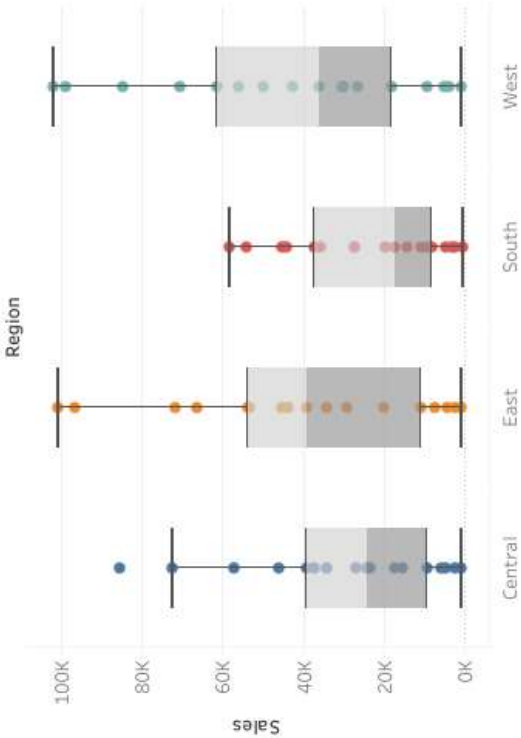


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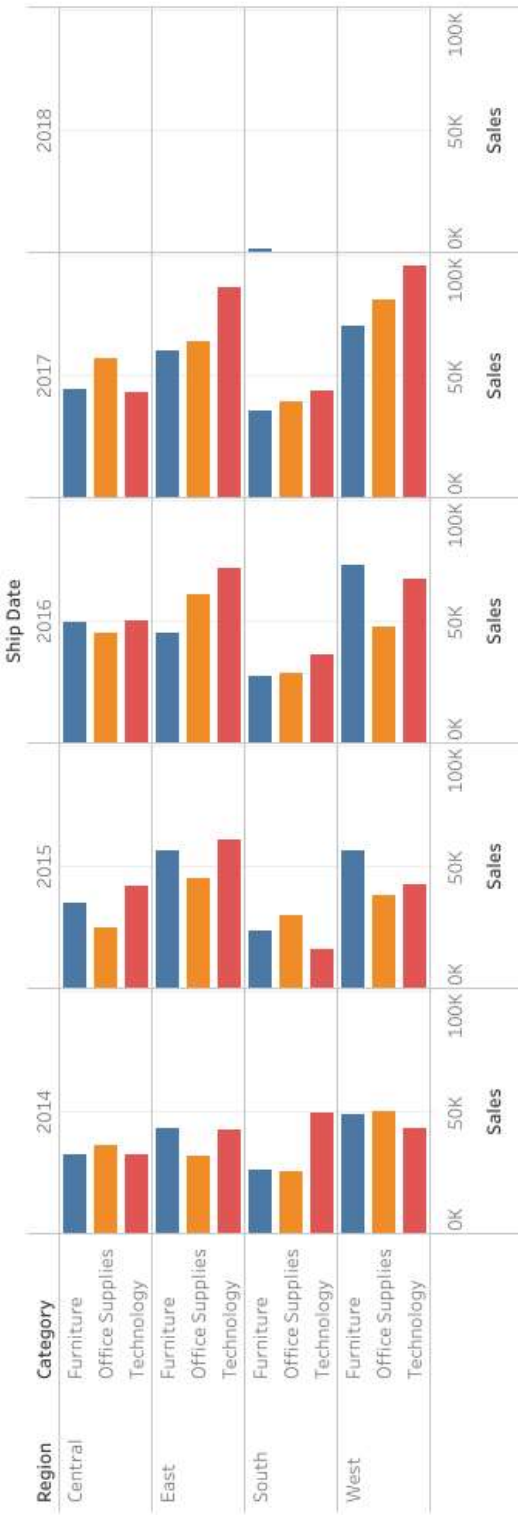
TANMAY1

Region	Category	Furniture	Office Supplies
Central		163,797	
East		208,291	
South		117,299	
West		252,613	

TANMAY3



TANMAY2





Qlik Results