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

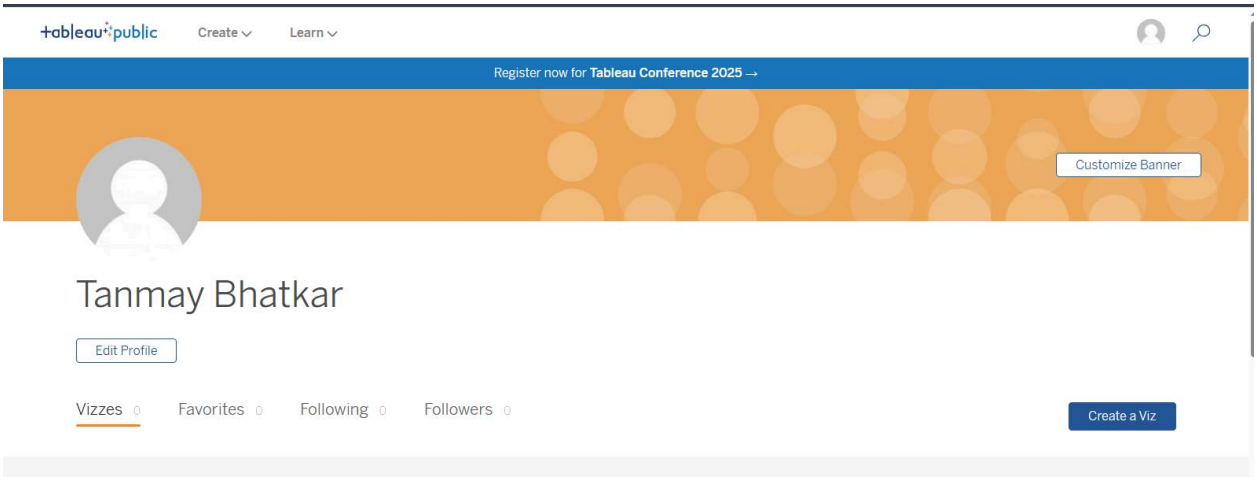
Impact: BI drives efficiency, cost savings, and data-driven decisions across industries.

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**

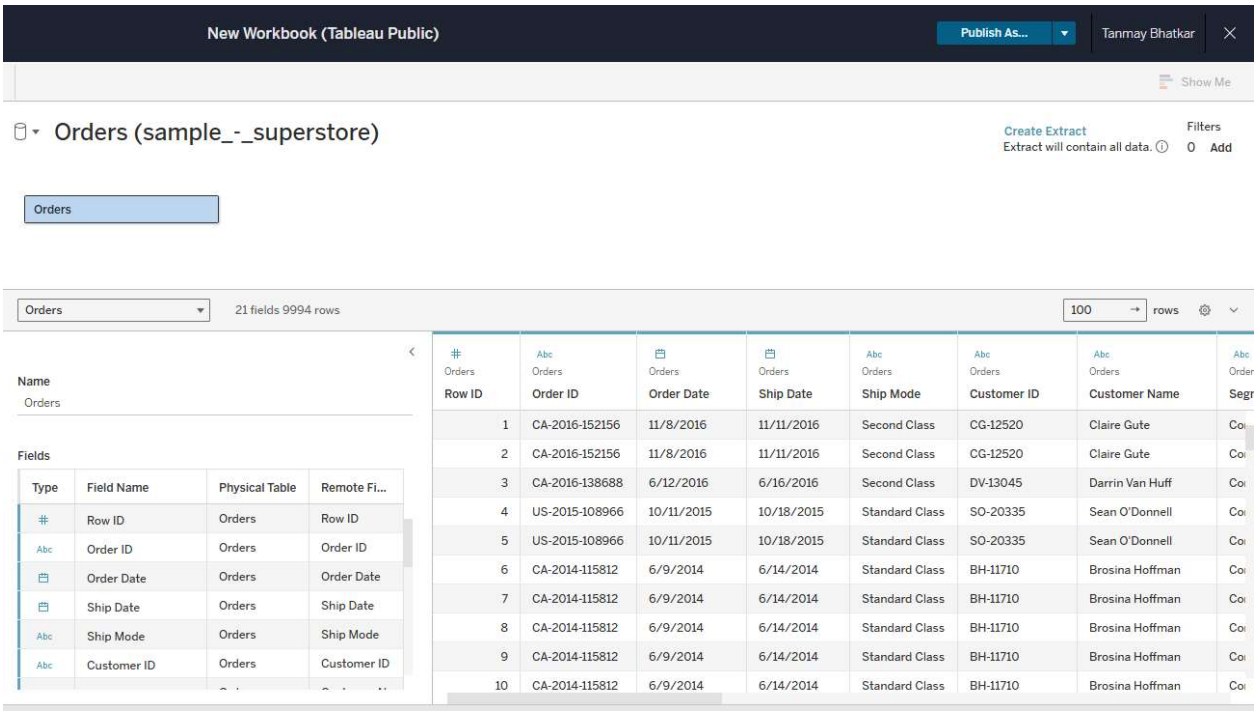
Elaborate on Pentaho, Rapid Miner, Qlikview, Tableau

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

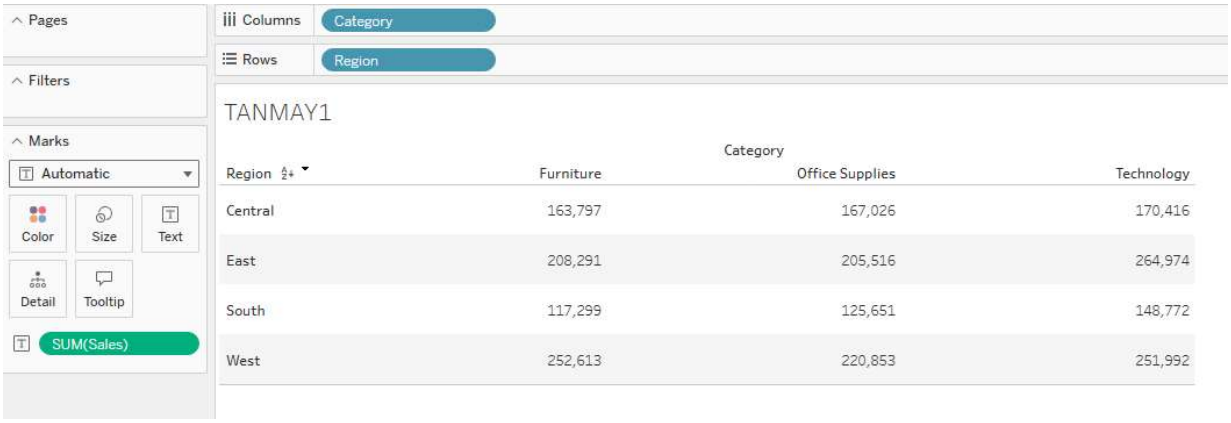


Created account in Tableau Public

Downloaded SuperStore Dataset from Tableau

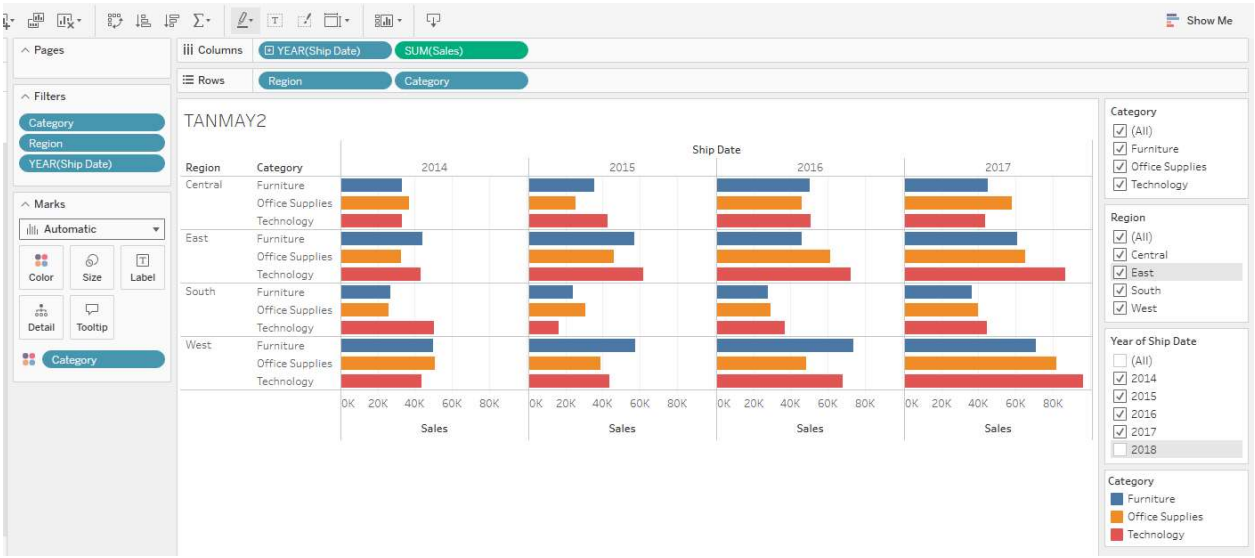


Uploading Order Sheet on Tableau

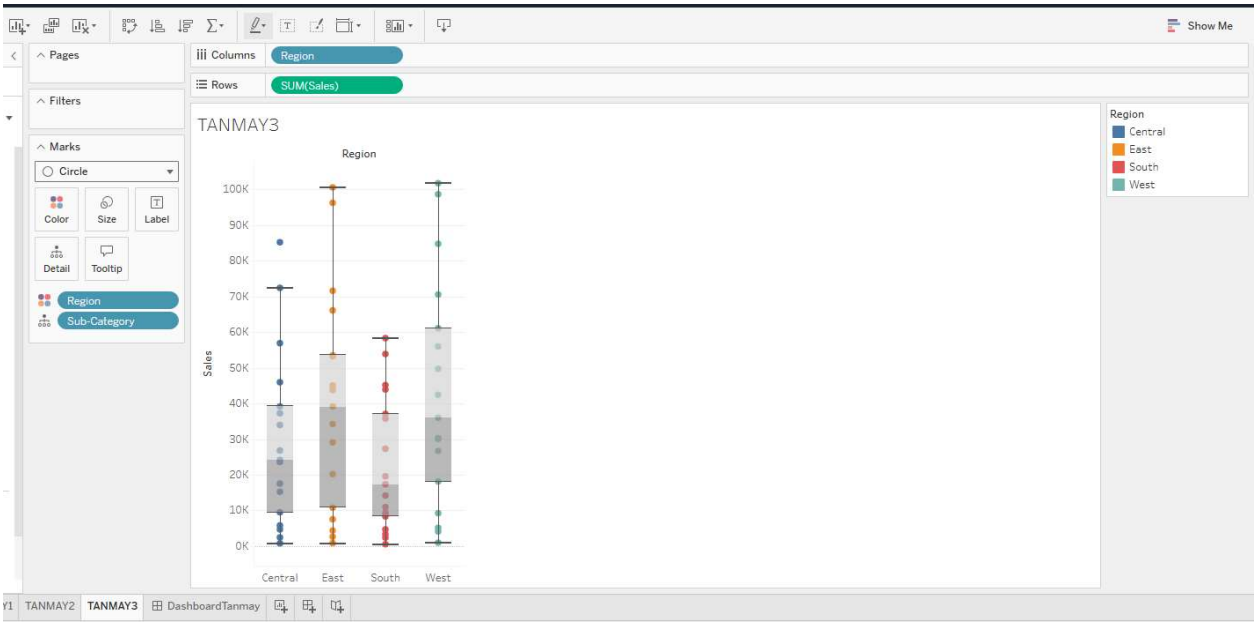


Region	Category: Furniture	Office Supplies	Technology
Central	163,797	167,026	170,416
East	208,291	205,516	264,974
South	117,299	125,651	148,772
West	252,613	220,853	251,992

Viewing Sales information in textual format



Region and category wise sales every year(Ship Date)

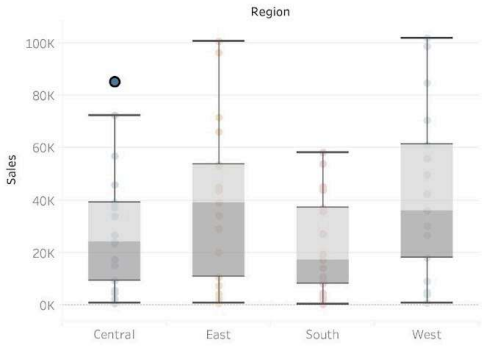


Sheet 3

TANMAY1

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

TANMAY3



TANMAY2

DASHBOARD

Creating Story in Tableau

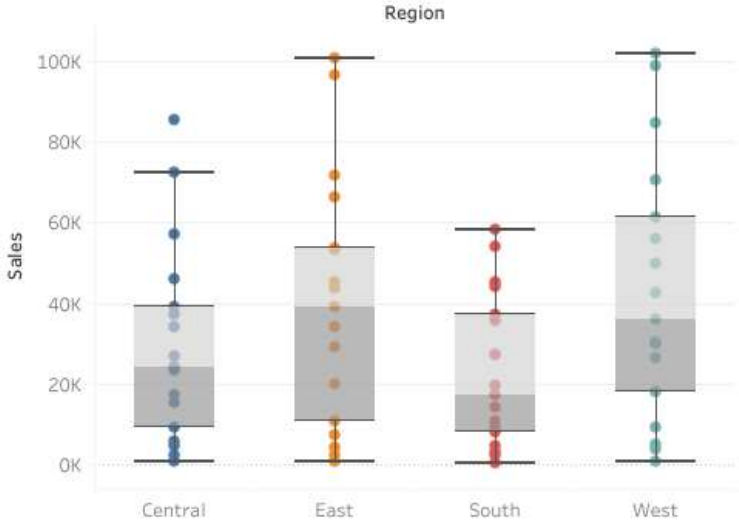
StoryTanmay

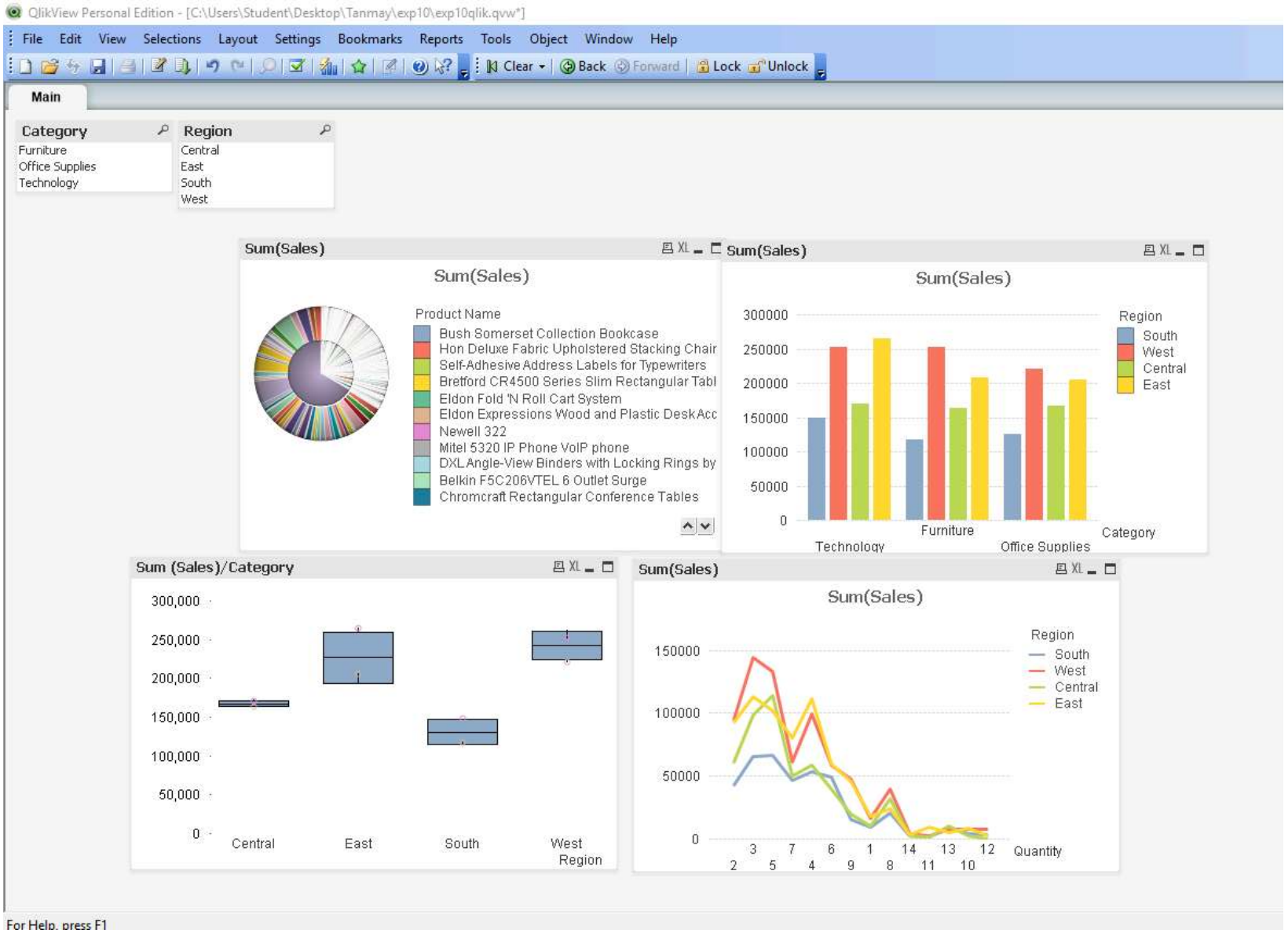
Tanmay Bhatkar

TANMAY1

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

TANMAY3



TANMAY2

Qlik Results