## INDUSTRIAL TRAINING REPORT

*A project report submitted in partial fulfillment of the requirements for*

*the 8th semester of the degree of*

### BACHELOR OF TECHNOLOGY

##### In Information Technology

Submitted by

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(Session:January-June2025)

Under the guidance of **Mr. Vikas Arora Technical Manager**

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### Department of Computer Engineering Faculty of Engineering and Technology



**J.C.Bose University of Science and Technology, YMCA,**

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**January -June 2025**

#### TRAININGCOMPLETIONCERTIFICATE

**DECLARATION**

I hereby certify that the work which is being presented in this project report entitled **“Customer Transaction and Business Insights System”**, in partial fulfillment of the requirements for the **8th semester** of the degree of **BACHELOR OF TECHNOLOGY in Information Technology**, submitted to the **Department of Computer Engineering**, **J.C. Bose University of Science and Technology, YMCA, Faridabad, Haryana**, is an authentic record of my work carried out during the period from **January to June, 2025**, under the supervision of **Mr. Vikas Arora Technical Manager**. The matter presented in this project report has not been submitted to any other University/Institute for the award of **B. Tech** or any other degree or diploma.

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#### EXAMINER CERTIFICATE

The following examiners have accessed the project report and conducted the viva–voice examination:

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I am also thankful to the faculty members of the **Computer Department** for providing a conducive learning environment and imparting knowledge that has been crucial to the successful execution of this project. Their teachings and lectures have expanded my understanding of the subject matter and have played a vital role in shaping my approach to research and analysis.

I would like to extend my heartfelt appreciation to the staff and personnel of **Capital India Trade** who have provided assistance and resources whenever required. Their cooperation and prompt response to my queries have facilitated the smooth progress of this project.

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**Manjeet Bamel**

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## CHAPTER – 1

# COMPANY PROFILE

## 

##### About Company

### **Introduction**

### Capital India Trade is a forward-thinking financial services and analytics company dedicated to empowering businesses through customer-centric transaction insights and digital financial strategies. Specializing in intelligent, scalable, and secure data-driven systems, Capital India Trade is a trusted partner for enterprises aiming to enhance their financial decision-making and gain a competitive edge in today’s fast-paced business environment.

### With a strong focus on innovation and accuracy, the company leverages modern technologies like data analytics, automation, and cloud collaboration tools to help organizations streamline operations, improve customer insights, and unlock new revenue opportunities. Its core expertise lies in handling and analyzing large volumes of customer transaction data to deliver strategic business recommendations that drive growth and performance.

### **Company Overview**

### Capital India Trade is a financial analytics and consulting firm that offers data-driven solutions to startups, SMEs, and large enterprises. The company specializes in analyzing customer transactions to provide business insights, financial reports, and growth strategies. With a focus on accuracy and innovation, it helps clients make informed decisions and improve operational performance through smart financial data interpretation.

### including:

* **End-to-End Analytics Dashboards**
* **Admin Portals for Finance and Customer Segmentation**
* **API Integration and Automation of Reports**
* **Cloud-based Infrastructure for Remote Collaboration**
* **Customized Financial and Operational Insight Solutions**

Whether it's helping retail businesses understand customer spending, enabling financial teams with real-time transactional dashboards, or empowering service providers through data-driven insights, **Capital India Trade** delivers customized analytics solutions that simplify complexity and drive growth.

Our client-centric approach, data expertise, and commitment to accuracy make us a trusted partner for businesses aiming to make smarter financial decisions.

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### **Key Features**

* **Mission**  
  To deliver intelligent, scalable, and user-centric tech solutions that empower businesses to thrive in a digital-first economy.
* **Vision**  
  To become a trusted leader in financial consulting and analytics, known for accuracy, innovation, and long-term value creation for clients across industries.
* **Technology Focus**  
  **Capital India Trade** uses a set of reliable and modern technologies to power its data analytics and business insight solutions:
  + **Programming Languages**: Python, Java, C++
  + **Backend Development**: Spring Boot (Java), Node.js, Express.js
  + **Databases**: MySQL, PostgreSQL — for storing and querying large-scale transaction data
  + **Data Analysis & Processing**: Python (Pandas, NumPy), MS Excel, Google Sheets
  + **Dashboards & Visualization**: Power BI, Google Data Studio
  + **Security**: HTTPS, JWT-based authentication, role-based access control

**CHAPTER-2**

**INTRODUCTION TO THE PROJECT**

**Introduction**

### **Project Overview**

### The project titled “Customer Transaction and Business Insights System” focuses on analyzing customer transaction data to generate useful business insights. It helps the company understand customer behavior, monitor financial trends, and automate report generation using tools like Python, Excel, and Power BI.

### 2. **Key Objectives & Features**

1. **Transaction Data Analysis**

Analyze customer purchase patterns, frequency, and average spending.

1. **Automated Report Generation**

Generate weekly/monthly business reports using Python and Excel.

1. **Dashboards & Visualization** Use Power BI and Google Sheets to present data in charts, tables, and KPIs.
2. **Real-time Alerts**Notify internal teams via WhatsApp or Email for unusual spending or trends.
3. **Customer Segmentation** Group customers based on activity, value, and retention behavior.
4. **Secure Data Handling** Use password-protected sheets, encrypted files, and limited access roles.

### 3. **Technical Capabilities**

* **Layered Design**Separate layers for data extraction, processing, visualization, and reporting to ensure clarity and maintainability.
* **Data Integrity**Cleaned and verified transactional data to avoid duplication and ensure accuracy in analysis.
* **Interactive Dashboards**Dynamic Power BI and Excel dashboards to track KPIs and customer trends in real time.
* **Security & Access Control**Used password-protected files, limited access roles, and secure storage to protect sensitive financial data.
* **Scalable Workflow**

Project structure allowed easy updates, weekly automation, and adaptation to more data sources over time.

### 4. **Target Users**

* **Business Analysts & Strategy Teams**

Who need regular insights from transaction data to support decision-making.

* **Finance & Operations Managers** Looking to automate reporting and track customer trends in real-time.
* **Marketing Teams**

Interested in customer segmentation and spending behavior for targeted campaigns.

* **Founders & Entrepreneurs** Who want to monitor business health and customer retention using data dashboards
* **Support Teams**  
  Managing client communications, upgrades, and troubleshooting.
* **Admins & Analysts**  
  Monitoring business usage, performance, and trends through dashboards.

### 5. **Conclusion**

### Customer Transaction and Business Insights System combines data accuracy with analytical depth, giving businesses a powerful tool to track performance, understand customer behavior, and drive growth. Its scalable structure, automation features, and insight-driven design ensure long-term usefulness, operational efficiency, and smarter decision-making..

## CHAPTER - 3

## REQUIREMENT ANALYSIS

**RequirementAnalysis**

### **Introduction & Purpose**

The primary purpose of the **Customer Transaction and Business Insights System** is to help the organization analyze large volumes of customer transaction data and convert it into meaningful business insights. The project is designed to support finance and business teams by automating report generation, identifying customer trends, and enabling data-driven decision-making.

### 2. **Scope**

**Functional Scope:**

* Import and clean customer transaction data from Excel/CSV/SQL.
* Generate automated reports on sales trends, customer activity, and performance metrics.
* Send real-time alerts via WhatsApp or Email for specific triggers.
* Visualize data using Power BI dashboards.
* Enable customer segmentation and retention analysis.

**Non-Functional Scope:**

* Scalable design to support future data sources and departments.
* Secure handling of financial data with restricted access.
* Scheduled automation for weekly/monthly reporting.
* Easily maintainable structure using Python scripts, SQL, and Excel workflows.

### 3. **Hardware Requirements**

Laptop

### 4. **Software Requirements**

* **Programming Language**:  
   Python (with Pandas, NumPy, Matplotlib for data processing and visualization)
* **Database**:  
   MySQL or PostgreSQL (for storing and querying customer transaction data)
* **Visualization Tools**:  
   Power BI, Google Sheets, Microsoft Excel (for creating dashboards and reports)
* **Automation & Reporting**:  
   Python scripts with scheduling (e.g., using cron jobs or Task Scheduler)
* **Version Control**:

Git and GitHub (for managing code versions)

### 5. **Key Functional Modules**

* **Data Import & Cleaning Module** Import transaction data from Excel/CSV and clean it using Python or Excel functions.
* **Analysis Module** Analyze data for customer spending patterns, frequency, and sales trends using Python & SQL.
* **Visualization Module** Create interactive charts, graphs, and dashboards using Power BI or Excel to present insights.
* **Reporting Module** Generate and automate weekly/monthly reports in PDF or Excel format.
* **Security & Access Control** Use protected files and role-based data sharing for secure access.

### 6. **User Roles and Permissions**

* **Data Analyst (Intern)** Responsible for cleaning data, generating insights, and preparing reports.
* **Business Manager** Reviews dashboards and uses insights for strategic decision-making.
* **Finance Team** Uses reports for auditing, customer tracking, and financial planning.
* **Admin** Controls data access, manages report distribution, and ensures security.

### 7. **API Layer and External Integrations**

* REST APIs were used to fetch or update transaction data (if integrated with live systems).
* Optional integrations with WhatsApp Cloud API or SMTP to send alerts.

### 8. **Security and Compliance**

* Password-protected reports and limited access via Google Drive ensured data confidentiality.
* Data validation and cleaning were strictly followed to prevent errors or leaks.
* Secure handling of financial and customer data with compliance to basic data protection norms.

### 9. **Non-Functional Requirements**

* **Accuracy**: Data cleaning and double-checking ensured reliable insights.
* **Scalability**: The workflow is designed to handle larger datasets in future.
* **Maintainability**: Modular Python scripts and Excel templates were used for flexible changes.
* **Usability**: Reports and dashboards were designed to be easy-to-understand for non-tech teams.

### 10. **SDLC Model Used – Agile (Scrum)**

* **Sprint Duration**: 1 week
* Daily check-ins with mentor (online)
* Work divided into phases: data extraction → cleaning → analysis → reporting
* Weekly demo/report shared with company supervisor
* **Tools Used**: Python (Jupyter/VSCode), GitHub, Excel, Google Sheets
* Basic versioning used: v1, v2, etc. for script improvements

# CHAPTER –4

# DESIGN OF PROJECT

**Design of Project:**

The Customer Transaction and Business Insights System is a scalable, data-driven reporting solution that enables businesses to convert raw transactional data into meaningful insights. Built using tools like Python, Excel, SQL, and Power BI, the system automates data cleaning, analysis, and dashboard creation. It empowers teams with accuracy, clarity, and real-time business visibility - ensuring smarter decisions and operational efficiency.

### 1. Modular Data Processing Architecture

* **Data Layer**: Inputs are collected from Excel, CSV, or SQL databases.
* **Logic Layer**: Python scripts handle data cleaning, processing, and analysis.
* **Output Layer**: Cleaned data is visualized in dashboards or exported as reports.

### 2. Automated Reporting System

* Weekly/monthly reports are generated automatically using Python and Excel.
* Key metrics like customer activity, transaction frequency, and revenue trends are highlighted.
* Reports are saved in structured folders and optionally emailed to stakeholders.

### 3. Dashboard Integration for Insightful Visualization

* Power BI and Excel dashboards are created to show key performance indicators (KPIs).
* Dashboards update dynamically or on a defined schedule.
* Users can track top customers, peak days, high-revenue zones, etc.

### 4. **Real-Time Notifications and Marketing Tools**

* WhatsApp Cloud API or Email (SMTP) can be used to send:
  + Alerts on low sales or abnormal patterns
  + Daily summaries or reminders to internal teams
* Trigger-based notification system can be integrated if needed

### 5. User Access & Role-Based Data Sharing

* Different roles such as Intern, Manager, and Admin are defined.
* File access and editing rights are controlled via Google Drive and password-protected Excel files.
* Report distribution is restricted and monitored.

### 6. Scalable & Extendable Project Structure

* The script structure is modular and easy to expand.
* Future integrations (like CRM sync or ML prediction) are possible.
* Version control is maintained using Git for consistent tracking and updates.

# CHAPTER – 5

# MODULE INFORMATION

### **1.** Dashboard Module

#### Purpose:

To provide a clear overview of key business metrics like revenue trends, customer activity, and transaction insights.

#### Key Elements:

#### **Headline**: Unlock Business Insights from Data

* **Subheadline**: Convert customer transactions into actionable business decisions.
* **Highlights**:
  + Dynamic Power BI dashboards
  + Weekly & Monthly KPI tracking
  + Visual trends (bar, line, pie charts
  + Downloadable summary reports
  + Integrated filters for custom views

### **2.** Data Upload Module

#### Purpose:

To allow uploading of customer transaction data in Excel or CSV format for analysis and reporting.

#### Key Features Explained:

#### Simple Upload Interface: Choose and upload raw transactional data

#### Auto Validation: Checks for missing values and duplicates

#### Format Support: Accepts Excel (.xlsx), CSV, or database exports

#### Column Mapping: Automatically identifies common fields like Customer ID, Amount, Date, etc

#### Secure Storage: Files are saved in organized folders with access control

### **3.** Analysis & Insights Module

#### Purpose:

To process uploaded data and extract meaningful insights using automation and statistical logic.

**`Key Functionalities:**

* Customer segmentation (high-value, frequent, inactive)
* Monthly/weekly revenue comparison
* Top-selling products or services
* Churn indicators and seasonal trends
* Summary table export in Excel or PDF

### **4.** Notification & Reporting Module

#### Purpose:

To keep internal teams informed through automated alerts and scheduled reports.

#### Includes:

* **Email Summary Reports**: Weekly reports shared with managers
* **WhatsApp Alerts** *(if configured)*: Real-time sales alerts or unusual pattern detection
* **PDF Generation**: Beautifully formatted reports exported from dashboards
* **Auto-Scheduling**: Set frequency (weekly/monthly) for automatic report generation

### **5.** Privacy & Security Policy Page

#### Purpose:

To ensure proper handling of sensitive customer and transaction data.

#### Key Sections:

* **Data Collected**: Customer IDs, transaction logs, value, and timestamps
* **Usage**: Analysis, reporting, and internal business decision support only
* **Data Sharing**: Not shared with external parties unless authorized
* **Security Measures**: Password-protected files, access control, backup policy
* **User Rights**: Interns and managers access data as per role
* **Retention Policy**: Data kept only for the duration of the project; auto-deleted post-internshi

# CHAPTER – 6

# MY CONTRIBUTION

##### Introduction:

##### As a core contributor during my internship at Capital India Trade, I worked extensively on data analysis, reporting automation, and dashboard creation. My responsibilities covered the entire lifecycle of financial data — from importing and cleaning to analyzing, visualizing, and presenting insights to stakeholders.

#### My Contribution:

### 1. Data Cleaning and Preprocessing

* Cleaned raw customer transaction data from Excel and CSV files using Python and Excel formulas.
* Handled missing entries, duplicate transactions, and incorrect formatting.
* Standardized date and amount columns for accurate analysis

### Report Automation

* Integrated RESTful APIs to connect frontend interfaces with backend services built using Node.js and Express Wrote Python scripts to automate generation of weekly/monthly reports.
* Included revenue trends, customer segmentation, and transaction frequency in reports.
* Scheduled report exports to Excel or PDF and shared via Google Drive/email.

### 3. Dashboard Creation (Power BI & Excel)

* Designed interactive dashboards showing KPIs like sales trends, top customers, and order volumes.
* Used Power BI to create filterable charts and time-based comparisons.
* Linked dashboards with raw data for dynamic updates.

### 4. Insight Generation & Presentation

* Segmented customers based on activity (frequent, high-value, inactive).
* Identified seasonal trends and behavior shifts.
* Presented findings to mentors and prepared slides summarizing performance.

5. **Team Collaboration and Documentation**

* Worked remotely and shared files via cloud folders with version history.
* Maintained a log of data sources, code changes, and report versions.
* Followed basic GitHub practices for code backups and version control.

## CHAPTER - 7

## SNAPSHOTS OF GUI

#### 1 . Power BI

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#### 2. Google Sheets

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#### Python:

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#### 4.Git:

#### 

#### 5.MySQL Workbench:

#### 

# CHAPTER-8

# ADVANTAGES

#### ADVANTAGES

### 1. Automated Data Analysis

Reduces manual workload by automating the cleaning, processing, and analysis of transaction data.

### 2. Actionable Business Insights

Helps the company identify high-value customers, seasonal trends, and potential areas for growth using accurate reporting.

### 3. Scalable Architecture

Designed to work with increasing data volume — easily extendable for future clients, branches, or departments.

### Visual Dashboards for Decision-Making

Power BI and Excel dashboards simplify complex data and present key metrics in an interactive, easy-to-read format.

### 5. Real-Time Alerts & Reports

Weekly/monthly automated reports keep stakeholders updated. Optional WhatsApp/email alerts for critical data changes.

### 6.Tools You Already Know

Uses familiar tools like Excel, Python, and Power BI — so there's no need for expensive third-party software.

### 7. Role-Based Access & Secure Handling

Ensures financial and customer data is protected with permission-controlled access and encryption for reports..

### 8. Customizable Reporting

Reports and dashboards can be personalized per department — finance, operations, or strategy.

### 9. Cost-Effective Solution

No need to hire external data teams — interns or analysts can operate and scale the system independently.

### 10. Future Integration-Ready

Easily extendable with APIs, machine learning modules, or CRM systems for predictive insights and deeper analytics.

# CHAPTER – 9

# CONCLUSION AND FUTURE WORK

#### CONCLUSION AND FUTURE WORK

#### 9.1 CONCLUSION

#### The Customer Transaction and Business Insights System stands as a practical and efficient solution for transforming raw transactional data into clear, actionable insights. Developed using Python, Excel, Power BI, and SQL, the system simplifies business decision-making through automation, data visualization, and structured reporting.

### **Key Achievements**

* **Data Accuracy & Cleaning:** Reliable cleaning of messy data for accurate analysis and reporting.
* **Automated Reports:** Weekly/monthly summary reports that reduce manual effort and increase consistency.
* **Powerful Dashboards:** Dynamic dashboards built with Power BI and Excel showcasing sales, customer behavior, and key KPIs.
* **Segmentation & Trend Analysis:** Customer grouping (frequent, high-value, inactive) and seasonality trends provide deep business insight.
* **Secure File Handling:** Password-protected files and role-based access maintained secure data sharing within the team.
* **Cost-Effective & Scalable:** The system works on open tools and scripts, making it affordable for scaling across multiple teams or departments.

#### 9.2 FUTURE WORK

To extend the system’s impact and versatility, several enhancements can be considered for future implementation:

### 1. Interactive Dashboards for Executives

* Build more intuitive Power BI dashboards with slicers and filters tailored for non-technical managers

### 2. Live Data Integration

* Connect real-time transactional data directly from the database or CRM using APIs.

### 3. Churn Prediction using Machine Learning

* Use historical data to predict customers likely to drop off and flag them for retention campaigns.

### 4. Dynamic Email Alerts

* Configure the system to automatically email reports when certain thresholds are met (e.g., revenue drop, high transaction spike).

### 5. Role-Based Dashboard Views

* Create different dashboard views for Finance, Marketing, and Strategy teams as per their KPIs.

### 6. Web-Based Portal

* Develop a small internal portal to upload data, trigger reports, and view dashboards from one place.

### 7. Integrate with Google Analytics / Meta Pixel

* Link external marketing tools for analyzing customer behavior beyond transaction history.

### 8. Database-Driven Architecture

* Migrate from manual Excel uploads to SQL database-driven analytics for faster performance and scalability.

### 9. Custom Report Generator

* Build a GUI tool (using Python + Tkinter or Streamlit) for users to select filters and generate reports on demand.

#### 

# CHAPTER – 10

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#### REFERENCES

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* <https://nextjs.org/learn>
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| CHAPTER – 11BRIEF PROFILE OF THESTUDENT   **BRIEF PROFILE OF THE STUDENT** | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
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| Project Duration | 6 months | | Date of reporting | 10 January 2025 | |
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