MS Excel: Project 1

Case Study: Fraud Detection and Customer Segmentation in Financial Services

Introduction: In today's digital era, financial institutions face increasing challenges in detecting and preventing fraudulent activities while effectively segmenting their customer base for personalized services. This case study explores the development of a robust analysis system utilizing transactional data and customer information to enhance fraud detection and customer segmentation strategies.

Objective: The primary objective of this project is to develop an integrated analysis system capable of:

1. Detecting fraudulent transactions within the financial institution's credit card system.

2. Segmenting customers based on their behavior, demographics, and transactional patterns for targeted marketing initiatives.

Data Overview: The dataset provided consists of four tables within the same workbook:

1. **Customers:** Contains customer demographics, including age, customer segment, and vintage group.

2. **Credit Cards:** Provides details about credit cards, including card family and credit limit.

3. **Transactions:** Includes transaction data such as transaction date, transaction value, and transaction segment.

4. **Fraud Flags:** Indicates whether each transaction is fraudulent or not.

Methodology:

1. **Data Exploration and Cleaning:**

   - Explore the data to identify inconsistencies or missing values.

   - Clean the data to ensure accuracy and consistency.

2. **Data Modeling and Relationships:**

   - Utilize Power Pivot to create relationships between the tables based on common identifiers such as customer ID and credit card ID.

3. **Fraud Detection:**

- Analyze transactional data and fraud flags to identify patterns indicative of fraudulent activity.

4. **Customer Segmentation:**

- Analyze customer demographics and transactional patterns to segment customers into distinct groups.

5. **Dashboard Design:**

- Design an interactive dashboard using Excel, incorporating PivotTables, PivotCharts, and slicers for data exploration.

- Include key metrics such as fraud detection rate, Segment Transaction Volume: and average transaction value.

- Ensure automatic data refresh to keep the dashboard up to date with the latest information.

Make Sure that Your Dashboard should reveal all answers to different questions and concentrate on heading of case study, this information will be used further for machine learning as well as marketing.