**A SYNOPSIS ON**



**CREDIT CARD FINANCIAL DASHBOARD USING POWER BI**



**Submitted in partial fulfilment of the requirement for the award of the degree of**

**BACHELORS OF COMPUTER APPLICATIONS**

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**CANDIDATE’S DECLARATION**

I/we hereby certify that the work which is being presented in the Synopsis entitled **“Credit card Financial Dashboard using Power BI”** in partial fulfillment of the requirements for the award of the Degree of Bachelors of Computer Applications in the Department of Computer Applications of the Graphic Era (Deemed to be University), Dehradun shall be carried out by the undersigned under the supervision of **Ms Ayushi Dwivedi** , Department of Computer Applications, Graphic Era (Deemed to be University), Dehradun.

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The above mentioned students shall be working under the supervision of the undersigned on the **“Credit Card Financial Dashboard Using Power BI”**

Signature Signature

**Supervisor** **Head of the Department**

**Internal Evaluation (By DPRC Committee)**

**Status of the Synopsis:** Accepted / Rejected

**Any Comments:**

**Name of the Committee Members: Signature with Date**

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**Chapter 1**

**Introduction and Problem Statement**

* 1. **Introduction**

In today’s data-driven financial landscape, organizations are increasingly leveraging advanced analytics to enhance their decision-making processes. The credit card industry, in particular, generates vast amounts of transactional data that, when analyzed effectively, can provide valuable insights into customer behavior, spending patterns, and overall financial performance. The development of an interactive financial dashboard is essential for visualizing and interpreting this complex data, enabling stakeholders to monitor key performance metrics and identify trends in real time.

This project focuses on creating a comprehensive Credit Card Financial Dashboard using Power BI, which integrates transaction and customer data from an SQL database. The dashboard will serve as a central hub for data analysis, offering an intuitive interface that allows users to explore various performance indicators and gain actionable insights. By streamlining the data extraction, transformation, and visualization processes, the dashboard aims to support stakeholders in making informed decisions that enhance customer engagement, mitigate risks, and drive business growth.

Through the implementation of various analytical approaches, including customer segmentation, anomaly detection, and predictive analytics, this dashboard will empower users to identify patterns, respond to emerging trends, and optimize marketing strategies. Ultimately, the Credit Card Financial Dashboard will not only improve operational efficiency but also foster a culture of data-driven decision-making within the organization.

* 1. **Problem Statement**

The credit card industry faces significant challenges in effectively analyzing and utilizing the vast amounts of transactional and customer data it generates. Organizations often struggle with disparate data sources, leading to inefficiencies in data processing, inadequate performance monitoring, and missed opportunities for strategic decision-making. As a result, stakeholders may lack the insights necessary to understand customer behavior, detect fraudulent activities, and identify emerging trends in spending.

Current analytical tools may not provide the real-time capabilities or user-friendly interfaces required for effective data visualization, limiting the ability to derive actionable insights. This can hinder timely responses to market dynamics and affect customer satisfaction and retention rates.

To address these challenges, there is a need for an interactive financial dashboard that consolidates transaction and customer data into a single platform. This dashboard should facilitate real-time monitoring of key performance metrics, enable detailed analysis of spending patterns, and support data-driven decision-making across the organization. By harnessing the capabilities of tools like Power BI, the goal is to transform raw data into meaningful insights, empowering stakeholders to make informed decisions that enhance operational efficiency and drive business growth.

**Chapter 2**

**Background/ Literature Survey**

The growing reliance on data-driven decision-making in the financial sector has led to the increasing importance of effective data visualization tools. Dashboards serve as critical instruments for monitoring performance metrics and uncovering trends, enabling organizations to make informed strategic decisions. Power BI, a robust business analytics service by Microsoft, has emerged as a leading solution due to its user-friendly interface and integration capabilities with various data sources, including SQL databases.

Previous studies emphasize the role of dashboards in enhancing organizational efficiency. For instance, few researchers have highlighted that interactive dashboards can significantly improve stakeholder engagement by presenting complex data in a visually intuitive manner. This transformation facilitates quicker comprehension of financial metrics, such as transaction volumes and customer behavior, thereby allowing organizations to respond rapidly to market changes.

Moreover, literature indicates that the use of real-time data analytics in dashboards contributes to proactive decision-making. For example, real-time monitoring of credit card transactions can help identify fraudulent activities and trends in consumer spending, which are crucial for risk management. The integration of customer segmentation data further allows organizations to tailor their strategies to specific demographic groups, improving customer satisfaction and retention.

The convergence of big data analytics and business intelligence tools like Power BI is reshaping the financial landscape. As organizations continue to accumulate vast amounts of transaction data, the need for effective visualization tools becomes increasingly critical. This project aims to harness the capabilities of Power BI to develop an interactive dashboard, providing stakeholders with actionable insights derived from comprehensive data analysis. By doing so, it addresses the gap in real-time performance monitoring and strategic decision-making within the credit card sector.

**Chapter 3**

**Objectives**

The primary objectives of the proposed project are:

* Develop a user-friendly financial dashboard using Power BI to visualize credit card transactions.
* Analyze spending patterns over different time periods and categories.
* Provide real-time updates and interactive reports.
* Ensure easy scalability to include additional financial metrics in the future.

**Chapter 4**

**Hardware and Software Requirements**

4.1 Hardware Requirements

|  |  |  |
| --- | --- | --- |
| Sl. No | Name of the Hardware | Specification |
| 1. | Processor | Intel i5 or higher |
| 2. | RAM | 8Gb or more |
| 3. | Hard Disk | 256GB or more |
| 4. | Internet Connection | Minimum 10 Mbps |

4.2 Software Requirements

|  |  |  |
| --- | --- | --- |
| Sl. No | Name of the Software | Specification |
| 1. | Operating System | Windows 10 or above Power BI Desktop |
| 2. | Data sources | Excel, SQL, Server, or other supported Database |
| 3. | Optional | API integrartion for real-time transaction data |

**Chapter 5**

**Possible Approach/ Algorithms**

The approach includes:

 **ETL Process (Extract, Transform, Load):**

* Utilize SQL queries to extract data from the database, transform it for consistency (cleaning and normalization), and load it into Power BI.

 **Data Modeling (Star Schema):**

* Organize data into fact and dimension tables to facilitate efficient querying and analysis, enhancing performance and clarity.

 **Aggregation Algorithms:**

* Use aggregation functions (SUM, AVG, COUNT) DAX queries to calculate total transactions, average spending, and transaction counts over defined periods.

 **Customer Segmentation (Clustering Algorithms):**

* Implement clustering algorithms (e.g., K-means) to group customers based on spending habits and demographics for targeted strategies.

**Data Visualization Techniques:**

* **Dynamic Charts and Graphs:** Use Power BI's visualization tools to create interactive charts (e.g., bar charts, pie charts, line graphs) that display key metrics and trends in an easily digestible format.

 **User Interaction Features:**

* **Filters and Drill-Downs:** Implement features that allow users to filter data by time periods, customer segments, or transaction types, enabling deeper insights and analysis.

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