

Amity University Online, Noida, Uttar Pradesh, India

In partial fulfilment of the requirements for the award of the degree

**Masters of Business Administration**

**Minor Project Report On**

Customer Churn Analysis: A Machine Learning Solution using EDA and Predictive Modelling

**Submitted By:**

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**Enrolment No:** A9920123006194

**Course Name:** Minor Project (PGMIPR57)

**Date:** October, 2024

ANNEXURE B

**DECLARATION**

I, **Pranoy Chakraborty**, a student pursuing **MBA, Semester 3 (Specialization: Data Science)** at **Amity University Online**, hereby declare that the project work entitled **“Customer Churn Analysis: A Machine Learning Solution Using EDA and Predictive Modelling”** has been prepared by me during the academic year **2023-2024** under the guidance of **Ms. Neha Tandon**, **Assistance Professor, Amity University Online**. I assert that this project is a piece of original bona fide work done by me. It is the outcome of my own effort, and it has not been submitted to any other university for the award of any degree.

Name and signature of the student

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PRANOY CHAKRABORTY

**PLAGARISM REPORT**

This is to certify that I, **Pranoy Chakraborty**, enrolled in the 3rd semester of the degree program “Master of Business Administration”, and undertaking the course by the title “Minor Project”, for the third semester in the academic session of July’ 2023, have submitted this report under strict compliance of the guidelines specified by Amity University by keeping the percentage of plagiarism below the permissible limits.

This plagiarism in this report has been checked using the tool “Dupli Checker” and it came out to be 100%.

**ACKNOWLEDGEMENT**

I would like to convey my profound gratitude to **Ms. Neha Tandon,** my professor and supervisor, for her invaluable guidance, mentorship, and steadfast support throughout this project. Her expertise and encouragement have been instrumental in enhancing my understanding of customer churn dynamics and the application of data analytical techniques.

I am also indebted for her astute advice, assistance, and generous dissemination of knowledge. Her guidance and motivation have empowered me to engage in rigorous research, address complex data challenges independently, and navigate intricate machine learning methodologies with confidence. Additionally, her moral support has been a significant source of strength throughout this endeavour.

Finally, I extend my heartfelt appreciation to all individuals who have contributed directly or indirectly to this project. Your support and encouragement have been invaluable, and I am deeply appreciative of the collective effort that has facilitated this undertaking.

**ABSTRACT**

Customer churn is a critical issue for businesses, especially in the highly competitive telecom industry, where retaining existing customers is more cost-effective than acquiring new ones. This project, titled **"Customer Churn Analysis: A Machine Learning Solution Using EDA and Predictive Modelling,"**. The primary goal of this project is to build a robust predictive model that can accurately forecast customer churn in the telecommunications sector. The telecom industry, with its diverse customer base and varying service offerings, demands a highly customized approach to churn prediction. Unlike generic solutions, churn prediction models must be tailored to the specific Line of Business (LoB), operational workflow, and data architecture of the company in question. Therefore, this project focuses on developing a solution that is specifically aligned with the **Indian telecom industry**, which has its own unique characteristics and challenges.

The project leverages **Exploratory Data Analysis (EDA)** to uncover insights and patterns from the data, focusing on key factors that drive customer churn. Machine learning algorithms, such as **logistic regression** and decision trees, are employed to build a predictive model capable of accurately identifying potential churners. The data used in this project is a telecom customer churn dataset prepared by IBM, and Indian Telecom Sector data which is a particular emphasis on its applicability to Indian telecom providers.

Additionally, this project demonstrates the deployment process of the churn prediction model, offering a step-by-step guide for integrating it into real-world systems. The deployment is aimed at enabling telecom providers to make data-driven decisions, improve customer retention, and reduce churn rates.

By the end of this project, a comprehensive machine learning solution is developed that not only predicts churn but also offers actionable insights for improving customer loyalty in the **Indian telecom sector**.

**Keywords**: Customer Churn, Predictive Modelling, Machine Learning, Exploratory Data Analysis, Indian Telecom Sector, Logistic Regression, Churn Prediction, Data Science, Telecom Analytics, Customer Retention