Assessing the College Campus Experience: A Data Analytics Approach

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Abstract

This study aims to assess the college campus experience through surveys, capturing diverse student perspectives on various aspects like campus atmosphere, facilities, faculty accessibility, extracurricular activities, diversity, safety, academic support, technology resources, intercultural interaction, mental health support, course satisfaction, food services, parking, and overall environment. Traditional survey methods are commonly used to assess campus experience, but they can struggle to capture the full range of individual student perceptions and experiences. The focus is on understanding the inherent limitations of surveys in capturing diverse viewpoints within a single college. The provided list of 17 survey questions covers various key areas of the college experience, offering valuable insights into student perceptions and satisfaction. These questions address subjective experiences, specific aspects of the environment, and overall satisfaction with various services and resources.

Keywords: College campus experience, Student perspective ,Survey methods, Data analytics, Descriptive analysis.

I.INTRODUCTION:

Data is generally raw pieces of information that simply includes basic numbers or text. Data Analytics is a process for translating basic facts and figures into specific actions by examining raw data. The purpose is to help people and environment take better decisions and achieve greater success.

A. Approaches of Data Analytics

1. Descriptive Analytics: This approach involves analysing past data to identify patterns, trends, and relationships. Descriptive analytics provides insights into what has happened in the past and is used to summarize and describe historical data.
Example: Patient data can be summarized to identify common health issues. For example, most of the people get the flu from October to June.

2. Diagnostic Analytics: It is used to identify the root cause of a problem or issue. Example: In case of cyber threat, it is used to identify the source of a security breach and prevent future attacks.

3. Predictive Analytics: It involves using statistical models and algorithms to predict future trends and to identify opportunities and risks. Example: In healthcare, predictive analytics can be used to identify patients at risk of developing a particular disease.

4. Prescriptive Analytics: This approach involves using algorithms to identify the best course of action to take based on the predicted outcomes of different scenarios.

Example: Using google maps for directions during peak hours. Each of these approaches has its own strengths and weaknesses, and the choice of approach depends on the specific business problem or question being addressed. By combining these approaches, organizations can gain a more comprehensive understanding of their data and makes more informed decisions.

B. Steps of Data Analytics

1.Define the problem or objective: Clearly state the issue or goal you hope to solve with data analysis. In this step, the business or research topic must be understood, and the important variables or metrics must be determined.

2.Data collection: Compile pertinent information from a range of sources, including external datasets, spreadsheets, databases, and APIs. Make sure the information gathered satisfies the necessary quality criteria and is relevant to the issue at hand.

3.Data Cleaning and Preprocessing: Fix problems with the data, such as mistakes, inconsistent formats, outliers, and missing numbers. Tasks like data imputation, duplication removal, variable standardization, and data transformation into an appropriate format for analysis could all be part of this step.

4.Data Exploration and Visualization: Perform exploratory data analysis (EDA) to comprehend the data's properties.

5.Data modeling and analysis: Use the right analytical methods according to the goals of the analysis and the type of data. This could entail machine learning algorithms, predictive modeling, statistical analysis, or other quantitative techniques.

6.Communicate the Results: Give stakeholders or decision-makers a clear, succinct, and visually appealing presentation of the findings. To effectively communicate the insights and assist in decision-making, use interactive dashboards, reports, presentations, and data visualizations.

C. Applications of Data Analytics

1.Customer insights: Data analytics can be used to gain insights into customer behavior, preferences, and needs. This information can be used to improve customer satisfaction, loyalty, and retention.

2.Fraud detection: Data analytics can be used to detect fraud and other suspicious activity. This can help businesses protect themselves from financial loss and reputational damage.

3.Risk management: Data analytics can be used to assess and manage risk. This can help businesses make better decisions about investments, operations, and other areas.

4.Marketing and sales: Data analytics can be used to improve marketing and sales campaigns. This can help businesses increase sales, improve customer engagement, and boost ROI.

5.Product development: Data analytics can be used to improve product development. This can help businesses create products that meet the needs of their customers and that are successful in the marketplace.

6.Decision making: Data analytics can be used to support decision-making. This can help businesses make better decisions about a wide range of issues, such as investments, operations, and marketing.

II. OVERVIEW OF THE PROBLEM

A. Problem Study

Assessing the college campus experience among college students by taking survey. This surveys can provide valuable insights into the college campus experience, including students' perceptions of their learning environment, social interactions, and access to technology, etc..

B. Challenges / Need of the study

Assessing the college campus experience through surveys can be challenging, and there are several needs that the study should address. Because, students from same college having different views on their college. So, It depends on perception of the students in different college.

III. DATA PREPARATION

A. Data Collection Approaches

We conducting a survey to assess the college campus experience using Google Forms by Self-administered Online Survey among college students.

https://docs.google.com/forms/d/e/1FAIpQLSdMVyilhR46y2pOVvbwbzoNA7OuEJM0w5hsrxjQp9KCGk7b8Q/viewform?usp=sf_link

B. Data Method

Exploratory Data Analysis is a method of evaluating or comprehending data in order to derive insights or key characteristics. EDA can be dividedg into two categories: graphical analysis and non-graphical analysis.EDA is a critical component of any data science or machine learning process. You must explore the data, understand the relationships between variables, and the underlying structure of the data in order to build a reliable and valuable output based on it.

Types of Exploratory Data Analysis:

1. Descriptive Statistics: Using metrics like mean, median, mode, standard deviation, range, and percentiles, descriptive statistics provide an overview and description of the fundamental characteristics of the data.

2. Data Visualization: To graphically portray data patterns and relationships, data visualization techniques make use of plots, graphs, and charts.

3. Data Cleaning and preparing: To address missing values, outliers, and inconsistencies, EDA entails cleaning and preparing the data.

4. Univariate Analysis: This type of analysis concentrates on examining each variable in the dataset separately.

5. Bivariate Analysis: Bivariate analysis looks at how two variables are related to one another.

6. Multivariate Analysis: In multivariate analysis, three or more variables are analyzed simultaneously.

7. Outlier Detection: Extreme values that drastically differ from the data's overall trends are known as outliers.

8. Feature Engineering: In order to improve a feature, a new variable is created or an existing variable is transformed.

C. Purpose of Data

The purpose of data in assessing the college campus experience survey is to gather objective and subjective information from participants to gain insights and understanding about various aspects of their experience on campus. The data collected serves several purposes:

1.Evaluation and Feedback: The survey data allows for the evaluation of different aspects of the college campus experience.

2.Identifying Areas for Improvement: By analysing the survey data, colleges can identify specific areas that may need attention or enhancement.

3.Measure Satisfaction**:** Data allows you to measure the overall satisfaction of students with various aspects of the college campus experience, such as academic support, campus facilities, extracurricular activities, social environment, and student services.

IV. Methodology

A. Descriptive Analysis / Model Used

Descriptive analysis refers to the process of summarizing and describing the main characteristics of a dataset. It involves exploring and understanding the data through various statistical measures, visualizations, and summary statistics. Descriptive analysis aims to provide insights into the data, identify patterns, and uncover important features.

Input Process Output(IPO) for Excel:

Input: Gender

Process: In Excel using pivot table to get an output

Output: Male:185, Female:65, Total:250