

SAAS SUBSCRIPTION TREND DASHBOARD

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Abstract

The SaaS Subscription Trend Dashboard is designed to analyze and visualize subscription-related business data in an interactive and user-friendly format. The system focuses on understanding subscription growth, customer behavior, revenue performance, plan-wise distribution, and subscription trends over different time periods. Data such as customer details, subscription plans, subscription dates, renewal status, cancellations, monthly recurring revenue, and payment information can be organized and processed for analysis. The dashboard presents important key performance indicators such as total subscribers, active subscriptions, new subscriptions, cancellations, churn rate, and recurring revenue. Time-based charts help identify subscription growth patterns and changes in customer demand. Plan-wise analysis allows users to compare the performance of different subscription packages and identify popular plans. Customer and subscription analysis can also help identify retention patterns and cancellation trends. Interactive filters enable users to analyze specific plans, customer segments, and time periods. Visual reports using charts, graphs, tables, and KPI cards convert complex subscription data into meaningful business insights. The dashboard can support SaaS businesses in monitoring performance, understanding customer trends, and improving subscription management strategies. Overall, the project demonstrates how data analytics and visualization can be used to develop an effective dashboard for monitoring SaaS subscription trends and supporting data-driven business decisions.

I. Introduction

Software as a Service (SaaS) has become an important business model in which customers access software applications through subscription-based plans. SaaS companies need to continuously monitor subscription growth, customer retention, revenue, renewals, and cancellations to understand their business performance. Managing large volumes of subscription data through spreadsheets or basic reports can make it difficult to identify important trends and customer behavior. The **SaaS Subscription Trend Dashboard** is developed to provide an interactive and visual platform for analyzing subscription-related business information. The dashboard collects and organizes data such as customer details, subscription plans, subscription dates, renewals, cancellations, revenue, and subscription status. Important performance indicators such as total subscribers, active subscriptions, new subscriptions, churn rate, and recurring revenue can be displayed using KPI cards. Monthly and yearly subscription trends help users understand the growth or decline of the customer base over time. Plan-wise analysis allows businesses to compare different subscription packages and identify popular plans. Cancellation and renewal analysis provides insights into customer retention and subscription behavior. Interactive charts, graphs, tables, and filters make it easier to explore the data according to specific requirements. The dashboard can help SaaS businesses identify

changing subscription patterns and monitor their overall performance. It also reduces the effort required to manually analyze large amounts of subscription data. Overall, the project demonstrates how data analytics and visualization can support effective SaaS subscription monitoring and data-driven business decision-making.

II. Literature Survey

Software as a Service (SaaS) has developed into a widely used software delivery model in which customers access applications through recurring subscription plans. Existing research on SaaS business models has focused on subscription growth, customer acquisition, recurring revenue, and long-term customer relationships. The shift from one-time software purchases to subscription-based services has increased the need for continuous monitoring of customer and financial performance. Organizations therefore require analytical methods to understand how subscriptions change over time and how customers interact with different service plans.

Customer retention and churn have received significant attention in studies related to subscription-based businesses. Churn analysis helps organizations understand the number of customers who cancel their subscriptions and the possible patterns associated with cancellation. Research has examined factors such as subscription duration, plan type, customer engagement, usage behavior, and renewal history to understand retention. Monitoring new subscriptions, renewals, and cancellations together can provide a better understanding of the overall health of a SaaS customer base. These analyses can help organizations identify changes in customer behavior and evaluate their subscription strategies.

Revenue analysis is another important area in SaaS research because recurring revenue is closely connected with subscription performance. Metrics such as Monthly Recurring Revenue, Annual Recurring Revenue, average revenue per customer, and customer lifetime value can be used to evaluate business performance. Plan-wise revenue analysis can help identify which subscription packages generate higher revenue and which plans have lower customer adoption. Time-based analysis can also reveal periods of rapid growth, declining subscriptions, or changes in revenue patterns. Such analytical approaches provide useful information for evaluating the financial performance of subscription-based businesses.

Data visualization and business intelligence have increasingly been applied to subscription analytics. Dashboards can combine multiple performance indicators into a single interface and present complex datasets through charts, graphs, tables, and KPI cards. Interactive visualization allows users to examine subscription trends based on dates, plans, customer segments, and subscription status. Compared with manually reviewing spreadsheets, dashboards can make important patterns easier to identify and support faster interpretation of business information. The use of filters and interactive components also enables users to explore specific areas of subscription performance without repeatedly preparing separate reports.

Based on these areas of research, an integrated SaaS Subscription Trend Dashboard can provide a practical approach for combining subscription, customer, churn, and revenue analysis. The proposed dashboard can display active and new subscriptions, cancellations, renewals, churn trends, recurring revenue, and plan-wise performance

in a centralized environment. By combining historical data analysis with interactive visualization, the system can help users understand subscription behavior and monitor business performance more effectively. Thus, the proposed project applies established concepts from subscription analytics and business intelligence to create a simple and useful analytical dashboard for SaaS organizations.

III. System Analysis

System analysis is an important stage in developing the SaaS Subscription Trend Dashboard for monitoring subscription-based business performance. The system focuses on analyzing customer subscriptions, subscription plans, renewals, cancellations, revenue, and customer activity. Subscription data is collected and organized into a structured dataset for further processing and analysis. Active, new, renewed, and cancelled subscriptions are evaluated to understand the growth and retention of the customer base. Revenue trends are analyzed across different time periods to identify changes in business performance. Plan-wise analysis helps determine the popularity and contribution of different subscription packages. Customer churn is analyzed to understand cancellation patterns and subscription retention. Key performance indicators such as total subscribers, active subscriptions, churn rate, and recurring revenue are displayed through dashboard components. Charts, graphs, tables, and KPI cards are used to present complex subscription information in a simple format. Interactive filters allow users to analyze specific plans, customer segments, subscription statuses, and time periods. The analyzed information helps users identify important trends and areas requiring attention. Overall, the system provides a centralized approach for understanding SaaS subscription performance and supporting data-driven business decisions.

Existing System

The existing system for monitoring SaaS subscriptions commonly depends on spreadsheets, basic databases, billing platforms, or manually generated reports. Subscription records are maintained with information such as customer details, plan types, subscription dates, renewal dates, and cancellation status. Revenue information may be stored separately from customer and subscription records, making combined analysis more difficult. Business users generally review individual reports to understand subscriber growth and financial performance. Identifying churn trends requires manual comparison of cancelled and active subscriptions over different periods. Plan-wise performance can also be difficult to determine when data is distributed across multiple files or reports. Traditional reports usually provide numerical information with limited graphical visualization. Changes in subscription performance may therefore take additional time to identify. Repeated calculations may be required to determine metrics such as churn rate, renewal rate, and recurring revenue. Manual analysis can also increase the possibility of data-entry and calculation errors. Comparing different customer segments and subscription plans becomes difficult without interactive filtering. Historical trends may not be presented in a single centralized view.

Disadvantages of Existing System

- Heavy dependence on spreadsheets and manual reports.

- Time-consuming analysis of subscription data.
- Limited visualization of subscription trends.
- Difficult to identify customer churn patterns quickly.
- Difficult to compare different subscription plans.
- Subscription and revenue data may be maintained separately.
- Repeated calculations are required for important metrics.
- Higher possibility of data-entry and calculation errors.
- Historical subscription patterns may be difficult to identify.
- Manual report preparation requires additional effort.

Proposed System

The proposed system provides an interactive SaaS Subscription Trend Dashboard for analyzing subscription, customer, and revenue-related information. The system collects data containing customer details, subscription plans, subscription dates, renewal status, cancellation information, and revenue. The collected data is cleaned and organized into a structured format before analysis. Important subscription metrics such as total subscribers, active subscriptions, new subscriptions, renewals, and cancellations are calculated. Churn analysis is performed to identify changes in customer retention and cancellation patterns. Revenue analysis is used to understand recurring income and financial performance across different periods. Plan-wise analysis helps identify popular subscription packages and their contribution to overall performance. Time-based charts display subscription and revenue trends for easier comparison. KPI cards provide quick summaries of important business indicators. Interactive filters allow users to explore information based on dates, plans, customer segments, and subscription status. The dashboard presents the processed information through charts, graphs, tables, and visual summaries. This approach reduces the effort required to manually analyze large amounts of subscription information. Overall, the proposed system provides a centralized and interactive platform for monitoring SaaS subscription trends and supporting better business decisions.

Advantages of Proposed System

- Provides centralized subscription analysis.
- Displays important SaaS performance indicators.
- Provides interactive charts and visualizations.
- Helps monitor active and new subscriptions.
- Helps identify customer churn trends.
- Supports renewal and cancellation analysis.
- Enables plan-wise performance comparison.
- Provides time-based subscription trend analysis.
- Supports recurring revenue analysis.
- Supports data-driven SaaS business decisions.

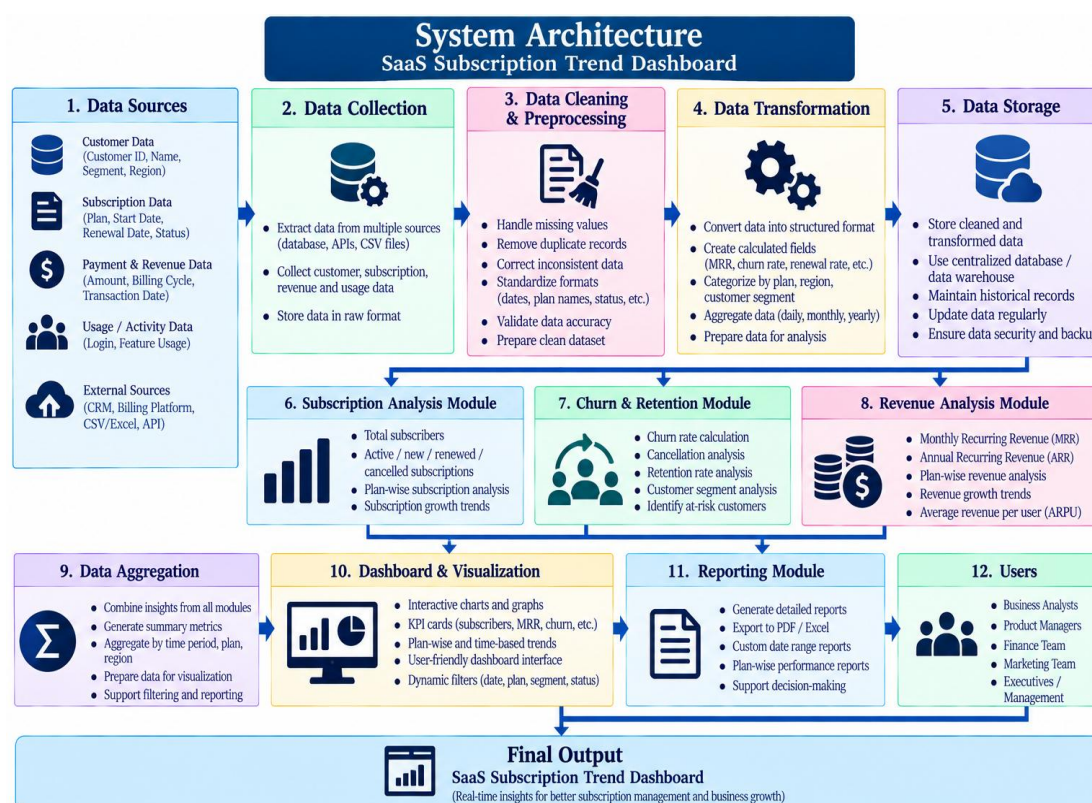
IV. Methodology

The methodology begins with collecting SaaS subscription data from available business records or datasets. The collected information includes customer details, subscription plans, subscription dates, renewal status, cancellation status, and revenue information. The dataset is examined and cleaned to remove duplicate, incomplete, or

inconsistent records. Relevant fields are transformed into a structured format suitable for analysis. Subscription metrics such as total subscribers, active subscriptions, new subscriptions, renewals, and cancellations are calculated. Churn rate and other customer retention indicators are derived from the processed subscription information. Revenue data is analyzed to understand recurring income and plan-wise financial performance. The processed information is categorized based on subscription plans, customer segments, and time periods. Appropriate charts, graphs, tables, and KPI cards are selected to represent the analyzed information. The dashboard is developed by connecting the prepared dataset with the required visualization components. Interactive filters are added to allow users to explore specific dates, plans, customer groups, and subscription statuses. Finally, the dashboard is tested to verify the accuracy of calculations, visualizations, filters, and displayed results.

System Architecture

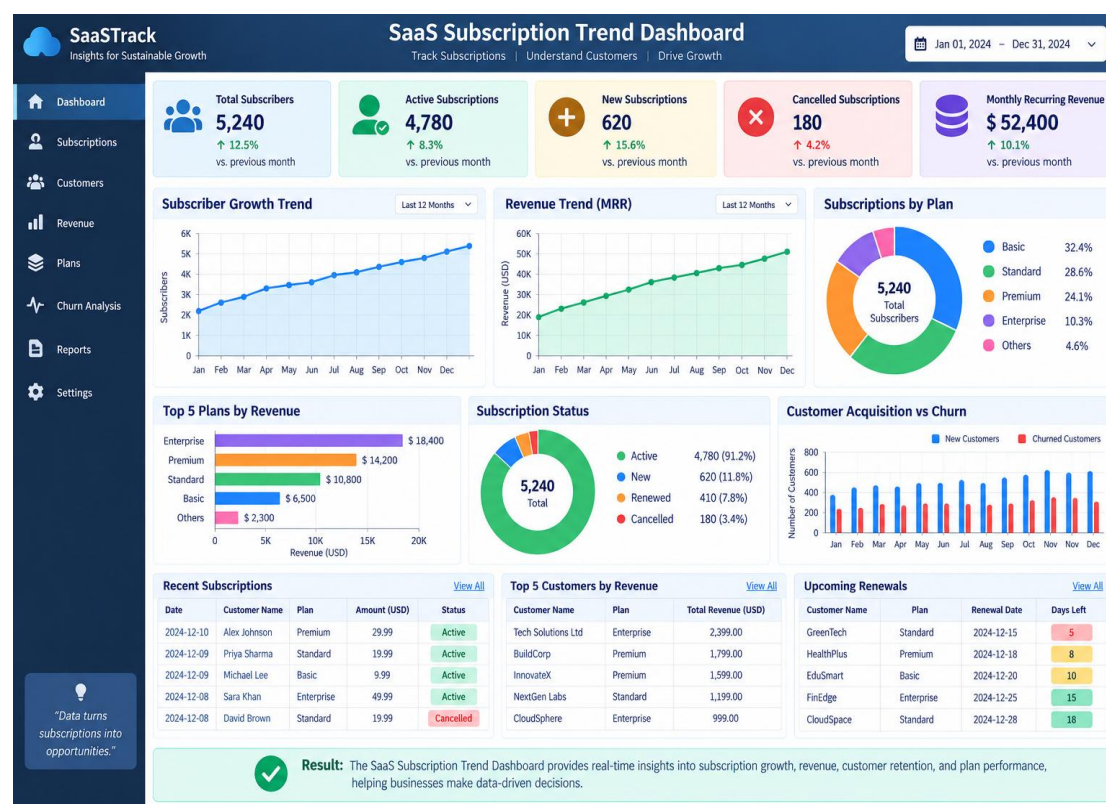
The system architecture represents the complete workflow of the SaaS Subscription Trend Dashboard from data collection to final visualization. The process begins with the SaaS Data Source, containing customer, subscription, plan, renewal, cancellation, and revenue information.



The Data Collection Module gathers the required subscription records from the available data source. The Data Cleaning Module removes duplicate, missing, and inconsistent records to improve data quality. The Data Transformation Module organizes the cleaned information into suitable fields and categories. The Subscription Analysis Module calculates active, new, renewed, and cancelled subscription metrics. The Churn and Retention Module evaluates cancellation patterns and customer retention trends. The Revenue Analysis Module analyzes recurring revenue, plan-wise

revenue, and time-based financial performance. The Data Aggregation Module prepares summaries based on plans, customers, and different time periods. The processed information is provided to the Dashboard Visualization Module for graphical representation. The KPI Module displays important indicators such as subscribers, churn rate, renewals, and recurring revenue. The Interactive Filter Module allows users to explore specific plans, dates, customer segments, and subscription statuses. Finally, the Reporting and Output Module presents charts, tables, trends, and business insights through the completed dashboard. Overall, the architecture follows the workflow **SaaS Data → Data Collection → Data Cleaning → Data Transformation → Subscription Analysis → Churn & Retention Analysis → Revenue Analysis → Data Aggregation → Visualization → KPIs & Filters → Reports → Final Dashboard.**

V. Result and Output



VI. Conclusion

The SaaS Subscription Trend Dashboard successfully provides an interactive platform for analyzing subscription-based business performance. The system organizes customer, subscription plan, renewal, cancellation, and revenue data into a structured format for analysis. Subscription trends are evaluated to understand the growth and changes in the customer base over different time periods. Active, new, renewed, and cancelled subscriptions are monitored to provide a clear view of subscription performance. Churn analysis helps identify customer cancellation patterns and supports better understanding of customer retention. Revenue analysis provides insights into recurring revenue and the performance of different subscription plans. KPI cards, charts, graphs, and tables present important business information in a

simple and understandable format. Interactive filters allow users to examine specific plans, customer segments, subscription statuses, and time periods. The dashboard reduces the effort required to manually analyze large volumes of subscription data. It helps business users identify important trends and areas that require attention. Overall, the project demonstrates the usefulness of data visualization and business intelligence techniques for SaaS subscription analysis. The proposed dashboard supports data-driven decision-making and provides a clear overview of subscription growth, revenue, retention, and overall SaaS business performance.

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