Customer Support Analytics Project Report

Executive Summary

This project presents a comprehensive **Customer Support Analytics Dashboard** designed to evaluate service performance, customer satisfaction, and operational efficiency. Using historical ticket data, the analysis focuses on identifying key drivers of customer satisfaction (CSAT), resolution time effectiveness, ticket priority handling, channel performance, and product-wise impact. The insights generated from this project support data-driven decision-making for improving customer experience, reducing resolution time, and optimizing support operations.

The dashboard consolidates multiple performance indicators into a single, executive-friendly view, enabling stakeholders to monitor trends, identify bottlenecks, and prioritize improvement initiatives. Overall, the findings indicate a strong correlation between faster resolution times and higher customer satisfaction, with noticeable variation across ticket types, channels, and products.

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1. Introduction

1.1 Project Background

In today's customer-centric business environment, effective support operations are critical for brand loyalty and retention. Organizations generate large volumes of customer support tickets across multiple channels such as chat, email, phone, and social media. Analyzing this data helps organizations understand customer behavior, service quality, and operational gaps.

1.2 Objectives

The primary objectives of this project are:

- To analyze customer satisfaction trends across ticket priorities and types
- To evaluate the impact of resolution time on CSAT ratings
- To assess channel-wise performance and workload distribution
- To identify product categories influencing customer satisfaction
- To provide actionable insights through an interactive analytics dashboard

1.3 Scope of the Project

The scope of this project is limited to historical customer support ticket data. The analysis includes ticket priority, ticket type, resolution time, customer satisfaction ratings, product purchased, and communication channel. Advanced predictive modeling is outside the current scope; the focus is on descriptive and diagnostic analytics.

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2. Methodology

2.1 Data Collection

The dataset consists of structured customer support ticket records containing:

- Ticket ID and priority level (Critical, High, Medium, Low)

- Ticket type (Billing inquiry, Product inquiry, Technical issue, etc.)
- Resolution time (in hours)
- Customer satisfaction rating (1–5 scale)
- Product purchased
- Ticket channel (Chat, Email, Phone, Social Media)

2.2 Tools and Technologies

- **Python**: Data cleaning, transformation, and analysis
- **Pandas & NumPy**: Data manipulation and aggregation
- **Visualization Libraries**: Dashboard creation and KPI visualization
- **Jupyter Notebook**: Exploratory data analysis and model execution

2.3 Analysis Approach

The analysis follows a structured approach:

1. Data preprocessing and validation
2. Aggregation of KPIs such as average CSAT and resolution time
3. Comparative analysis across ticket priorities, types, and channels
4. Visualization of trends and performance metrics using an interactive dashboard

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3. Dashboard Analysis & Key Findings

3.1 Ticket Priority vs Customer Satisfaction

The analysis shows that **Critical and High priority tickets** receive relatively lower CSAT scores when resolution time increases. Medium and Low priority tickets demonstrate more stable satisfaction levels, indicating effective handling or lower urgency expectations.

3.2 Resolution Time Impact

A strong inverse relationship is observed between **resolution time and customer satisfaction**. Tickets resolved within shorter durations consistently achieve higher CSAT ratings. Prolonged resolution times result in noticeable drops in satisfaction, highlighting the importance of timely issue resolution.

3.3 Ticket Type Analysis

Among different ticket types:

- **Technical issues** tend to have lower average CSAT due to complexity and longer resolution times
- **Billing and product inquiries** show higher satisfaction, indicating standardized and efficient handling processes

3.4 Channel Performance

The channel-wise analysis reveals:

- **Chat support** handles a high volume of tickets with comparatively better CSAT ratings
- **Phone support** performs well for complex issues but at a higher operational cost
- **Email and social media** channels show moderate satisfaction, with scope for faster response improvements

3.5 Product-Based Satisfaction

Customer satisfaction varies by product category. Certain products demonstrate consistently higher CSAT scores, while others indicate recurring issues that may require product-level improvements or better support documentation.

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4. Business Impact and Recommendations

4.1 Business Impact

- Improved visibility into customer support performance
- Identification of bottlenecks affecting customer satisfaction
- Data-backed prioritization of operational improvements
- Enhanced customer experience through faster and more effective resolutions

4.2 Recommendations

- Implement SLA-based monitoring for high and critical priority tickets
- Optimize workflows to reduce resolution time for technical issues
- Strengthen chat support with AI-assisted responses for faster handling
- Conduct root cause analysis for low-performing products
- Provide targeted training to support agents based on ticket type and channel

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5. Conclusion

This project successfully demonstrates how customer support data can be transformed into meaningful insights using analytics and visualization techniques. The corporate-style dashboard provides a clear and actionable overview of service performance, enabling stakeholders to improve operational efficiency and customer satisfaction. By leveraging these insights, organizations can move toward a more proactive, data-driven customer support strategy.

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