Serverless Customer Feedback System with AWS Comprehend and Quicksight

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*of*

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**Introduction**

A Serverless Customer Feedback System using AWS Comprehend and Amazon QuickSight helps businesses collect, analyze, and visualize customer feedback in real time. Traditional feedback systems often require manual effort and take time to process, making it difficult to respond quickly to customer concerns. This solution automates the entire process using AWS services, ensuring fast and efficient

analysis.

AWS Comprehend, a machine learning tool, analyzes customer feedback to detect emotions, key phrases, and important topics. Amazon QuickSight then presents this data in interactive dashboards, helping businesses monitor customer satisfaction and identify areas for improvement.

The system gathers feedback from various sources, such as surveys, support tickets, and product reviews. AWS Lambda processes the feedback instantly and sends it to AWS Comprehend for sentiment analysis. The results are then stored in Amazon DynamoDB or Amazon S3, making data retrieval quick and efficient. Businesses can view these insights in QuickSight dashboards, allowing them to track trends and make data-driven decisions.

This solution is fully serverless, scalable, and cost-effective, meaning businesses don’t need to worry about managing servers. It also integrates with Amazon SNS for real-time notifications and AWS CloudWatch for monitoring system performance. With this system, businesses can quickly understand customer feedback, improve their services, and enhance customer satisfaction with minimal effort.

**Literature Review/** **Application Survey**

**Real-Time Applications Using AWS Comprehend**

**1.Customer Feedback Analysis**

Businesses collect feedback through surveys, online reviews, and customer service interactions. AWS Comprehend helps analyze these texts to identify customer sentiment (positive, neutral, or negative), enabling businesses to improve customer satisfaction and service quality [1]. This insight enables businesses to enhance customer satisfaction by identifying pain points, improving product offerings, and refining service quality. Additionally, companies can use sentiment trends over time to measure the impact of strategic changes.

**2.Social Media Monitoring**

Companies track customer opinions on social media platforms like Twitter, Facebook, and Instagram. AWS Comprehend analyzes comments, hashtags, and mentions to detect trends and sentiments, helping brands understand customer preferences and manage their reputation in real time [2]. By leveraging real-time sentiment analysis, businesses can respond promptly to negative feedback, engage with customers proactively, and adjust marketing campaigns based on evolving audience preferences.

**3.Healthcare and Medical Data Analysis**

AWS Comprehend Medical is used in the healthcare industry to analyze medical records, clinical notes, and patient feedback. Hospitals and pharmaceutical companies utilize this service to identify patient trends, disease patterns, and treatment effectiveness, helping doctors make informed decisions [3]. his helps doctors and healthcare providers make more informed, data-driven decisions, ultimately improving patient care and operational efficiency.

**4.Financial Services and Risk Management**

Banks and financial institutions use AWS Comprehend to analyze transaction records, loan applications, and customer feedback. This helps detect fraudulent activities, assess credit risk, and ensure compliance with financial regulations [4]. Additionally, AWS Comprehend aids in compliance monitoring by detecting anomalies in financial reports and ensuring institutions adhere to regulatory requirements.

**5.E-Commerce and Retail**

Online businesses and retail stores analyze product reviews, customer queries, and support chats using AWS Comprehend. This helps businesses track sales trends, customer preferences, and improve product recommendations based on real-time sentiment analysis [5]. By analyzing real-time feedback, businesses can identify areas of improvement, optimize marketing strategies, and personalize customer experiences for increased satisfaction and retention.

**Real-Time Applications Using Amazon QuickSight**

**1.Business Performance Monitoring**

Companies use QuickSight to track key performance indicators (KPIs) in real-time, such as sales revenue, operational efficiency, and employee productivity. This helps organizations make quick data-driven decisions [6].

**2.Customer Engagement Tracking**

E-commerce and media companies use QuickSight to analyze customer interactions, engagement levels, and browsing behaviors. This helps optimize marketing strategies and improve user experience [7]. Real-time analytics enable businesses to optimize their marketing campaigns by identifying which products, services, or content attract the most user attention. By continuously tracking engagement metrics, companies can personalize user experiences, improve customer retention, and boost conversion rates.

**3.Healthcare Analytics**

Hospitals and healthcare providers use QuickSight to track patient admissions, disease outbreaks, and resource availability, enabling effective hospital management and planning [8]. By visualizing patient data in real time, healthcare administrators can enhance hospital management, ensure adequate staffing, and streamline resource distribution. Additionally, QuickSight helps health organizations analyze large volumes of data to detect health trends, predict future demands, and improve overall patient care.

**4.Financial Data Visualization**

Banks and financial institutions use QuickSight to monitor transactions, detect fraud, and track market trends. Real-time dashboards provide insights into financial risks and opportunities [9]. By leveraging QuickSight’s interactive data visualization capabilities, financial organizations can gain deeper insights into financial risks and opportunities, ultimately making more informed strategic decisions.

**Organizations Using AWS Comprehend and Amazon QuickSight**

**1.Netflix**

Netflix analyzes viewer comments and reviews using AWS Comprehend to understand audience preferences. QuickSight helps track viewer engagement and content performance

**2.Intuit**

Intuit, a financial software company, uses AWS Comprehend to analyze customer support interactions. QuickSight provides insights into customer satisfaction trends

**3.The Guardian**

The Guardian uses AWS Comprehend to analyze reader comments and identify trending topics. QuickSight helps visualize reader engagement and news article performance

**4.Siemens**

Siemens processes industrial reports using AWS Comprehend. QuickSight enables predictive maintenance by analyzing equipment data.

**5.HubSpot**

HubSpot integrates AWS Comprehend to analyze customer messages. QuickSight creates reports that help businesses track sales performance

**References**

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