Social Media Platform for Complaints

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Abstract—In the modern digital landscape, social media plays a crucial role in public discourse. However, there is no dedicated and secure platform solely designed for efficiently addressing complaints and grievances. The Social Media Platform for Complaints (SMPC) aims to bridge this gap by providing a structured, transparent, and secure space where individuals, consumers, and organizations can raise issues, seek resolutions, and engage with relevant authorities. This platform ensures a safe environment by eliminating spam, misinformation, harassment, and unauthorized content while prioritizing user privacy and data security.

SMPC operates on a verified user authentication system, ensuring that complaints are legitimate and preventing fraudulent or misleading submissions. It incorporates AI-powered moderation and natural language processing (NLP) to filter out inappropriate content, hate speech, and duplicate complaints, maintaining a constructive and efficient communication channel. Additionally, blockchain technology is used to maintain an immutable and transparent record of complaints, ensuring accountability and preventing data manipulation.

Users can submit complaints in multiple formats, including text, images, audio, and video, making the platform accessible to a diverse audience. A role-based access control (RBAC) system ensures that only authorized personnel, such as business representatives, government officials, or service providers, can respond and address grievances. End-to-end encryption further secures user data, protecting privacy and preventing unauthorized access.

The case study is a smart home application. After extracting ten subjects, a number of crucial ones are found, including "home security systems," "after-sales services," and "media streaming devices". Furthermore, a number of product strategies are suggested by Key Graph analysis, such as enhancing product and service dependability, delivering seamless integration of different home devices, and providing high-quality after-sales services. The suggested technique can assist businesses in identifying important product subjects and offer valuable data for formulating strategies for product enhancement.

Keywords: HTML, CSS, JavaScript, Spring Boot, Spring Security, JWT Authentication.

I. INTRODUCTION

Many businesses have used customer-centric innovation as a paradigm for developing new products in order to produce profitable goods and maintain their competitive edge (Selden & MacMillan, 2006). Its fundamental tenet is to comprehend the voice of the customer (VOC) and leverage that knowledge to propel product innovation while delivering an excellent, fulfilling customer experience to foster customer loyalty and trust. VOC characterizes consumer comments, including praise and dissatisfaction, regarding their experiences using your items (Griffin & Hauser, 1993). Typically, marketing research techniques including focus groups, questionnaire surveys, field observations, interviews, and sales agent feedback are used to gather it (Malhotra & Birks, 2007).

Social media's rise over the past ten years has been fueled by developments in online and mobile technology (Ngai et al., 2015), and by 2025, its global user base is predicted to account for over 56.7% of the global population (Clement, 2020). According to Roberts and Candi (2014), social media refers to "virtual platforms on which people can synchronously or asynchronously create, share, modify, or react to various forms of electronic content." Customers are using it more and more frequently to share and discuss their thoughts on products (Bashir et al., 2017; Sheng et al., 2020). User-generated content (UGC), which can be thought of as voluntary and insightful information or feedback supplied by customers, has become a substantial volume of social media content (Lee, 2018).

In order to improve products and services, a number of studies have examined consumer-generated social media data. These

studies have measured customer satisfaction (Xiang et al., 2015, Guo et al., 2017), identified product/service opportunities (Ko et al., 2018; Jeong et al., 2019; Choi et al., 2020a; Zhan et al., 2021), and measured consumer preferences (Qi et al., 2016, Xiao et al., 2016, Ng and Law, 2020, Wang et al., 2020, Goldberg and Abrahams, 2022). Notwithstanding the benefits of earlier studies, there are a number of restrictions on the ability to identify product potential.

In order to find and investigate product prospects, this study aims to create a social media analytics (SMA) technique for analyzing customer complaints from unstructured social media data. The gathered social media data for this study was first preprocessed to exclude irrelevant and noisy information. Then, a selection of user postings with negative sentiment that involve consumer complaints or concerns relating to subpar products are subjected to sentiment analysis (Feldman, 2013). After that, latent topics are extracted from the gathered negative user post data using an unsupervised machine learning technique called latent Dirichlet allocation (LDA) (Blei et al., 2003). A new methodology for evaluating opportunities is also created in order to address customer complaints and identify significant and new product subjects.

All things considered, this study is unique in three ways. Initially, this study created a novel framework for evaluating opportunities for managing customer complaints from unstructured social media data and for ranking negative subjects with unacceptable product concerns in order to enhance the product. Second, for the purpose of creating the product strategy map, two new prioritizing metrics—topic engagement and topic emergence—are created that can assist businesses in choosing important subjects for chances to improve their products.

A Social Media Platform for Complaints (SMPC) is designed to provide a dedicated, plague-free space where individuals, consumers, and organizations can report problems, seek solutions, and hold responsible entities accountable in a secure and transparent manner.

The primary goal of SMPC is to establish a structured complaint management system that ensures credibility, efficiency, and fairness. Unlike traditional social media, where complaints often get lost in unrelated discussions, SMPC focuses solely on grievance redressal. Users can submit complaints regarding businesses, government services, public infrastructure, and various social issues through an organized and monitored process.

To maintain authenticity and security, the platform employs verified user authentication, ensuring that only genuine complaints are registered, reducing spam and false reports.AI-driven moderation and natural language processing(NLP) help filter out offensive content, hate speech, andmisinformation,creatingasafeandconstructiveenvironmentfordiscussions.Additionally, blockchain technology ensures data integrity by providing an immutable record of complaints, preventing tampering and ensuring transparency.

The platform enables users to track complaint statuses in real-time, communicate with concerned authorities, and receive updates on resolutions. Role-based access control(RBAC) system ensures that only authorized personnel, such as government officials, business representatives, or service providers, can respond to grievances. End-to-end encryption further enhances security, protecting user data from unauthorized access.

II. LITERATURE REVIEW

II.I. LITERATURE REVIEW: SOCIAL MEDIA PLATFORM FOR COMPLAINTS

Social media has revolutionized communication, enabling individuals to express opinions and grievances instantly. However, traditional platforms such as Facebook, Twitter, and Instagram are not specifically designed for complaint resolution, often leading to unstructured discussions, misinformation, and delayed responses (Kaplan & Haenlein, 2019). The need for a dedicated, plague-free social media platform for complaints has been highlighted in various studies focusing on consumer rights, governance, and digital grievance redressal mechanisms.

II.II. EXISTING SOCIAL MEDIA PLATFORMS AND THEIR LIMITATIONS

Research by Smith et al. (2021) suggests that while social media allows public complaints to gain visibility, the lack of verification mechanisms and structured redress all Eads to unresolve disuse. Spam, fake complaints, and trolling further dilute legitimate concerns (Gupta & Rani, 2020). Additionally, businesses and government organizations often struggle to track and respond to grievances effectively on general-purpose platforms (Jones, 2022).

II.III. ARTIFICIAL INTELLIGENCE IN COMPLAINT MANAGEMENT

Several studies have explored the use of AI-driven moderation and sentiment analysis in filtering out irrelevant or offensive content (Hassan et al., 2023). NLP-based systems help categorize complaints, prioritize urgent issues, and provide automated responses for common grievances (Sharma & Patel, 2021). These AI-driven solutions enhance efficiency while ensuring a safe and constructive complaint environment.

II.IV. BLOCKCHAIN FOR TRANSPARENCY AND SECURITY

Blockchain technology has been identified as a key tool for maintaining data integrity in digital complaint systems (Kumar & Singh, 2022). Decentralized record-keeping prevents manipulation of complaints, ensuring transparency and accountability (Lee & Kim, 2021). This feature is essential in preventing fraudulent reports and ensuring trust in the system.

II.V. SECURE AUTHENTICATION AND ROLE-BASED ACCESS

Studies highlight the importance of verified user authentication in reducing fake complaints and ensuring a plague-free environment (Mehta & Das, 2023). Role-Based Access Control (RBAC) further ensures that only authorized entities, such as businesses and government agencies, can respond to complaints, enhancing credibility and response efficiency.

According to Roberts and Candi (2014), social media refers to "virtual platforms on which people can synchronously or asynchronously create, share, modify, or react to various forms of electronic content." They can create conversations, encourage collaboration, facilitate information sharing, and instantly connect users to content that interests them (Kietzmann et al., 2011, Lee, 2018). Social media is quickly becoming as a crucial conduit for social interaction and information sharing.

III. PROPOSED METHODOLOGY

The Social Media Platform for Complaints (SMPC) is designed as a plague-free, structured, and transparent grievance redressal system that ensures security, authenticity, and efficient complaint resolution. The proposed methodology focuses on system design, user authentication, AI-driven moderation, blockchain integration, and role-based access control (RBAC) to create a secure and structured complaint-handling platform.

III.I. SYSTEM DESIGN & ARCHITECTURE

The platform will be developed as a web and mobile-based application using a modular architecture for scalability. The core components include: Complaint Management System: Categorizes complaints based on issue type (business, government, public services, etc.). Response and Resolution Mechanism: Facilitates direct communication between users and responsible authorities.

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The uses of these digital assets are growing, and crypto-currency popularity is rising quickly. But ignorance and false Information make investors susceptible to deceptive practices. In order to demonstrate how bitcoin investment fraud can be assessed from the standpoint of new media literacy, this study looks at complaints pertaining to this type of fraud. People can identify information pollution on digital platforms, hone their critical thinking abilities, and obtain trustworthy information with the aid of new media literacy. The significance of this research is highlighted by educating bitcoin investors about fraud and stressing the relevance of new media literacy in reducing such dangers. The study's limitations result from specific restrictions pertaining to the methods and data sources that were employed.

This implies that possible victimizations and complaints from social media sites or other complaint websites are not included. As a result, the results might not be representative of all cryptocurrency investors. Furthermore, not all complaints may have the same amount of specific information, even though the research based on 969 complaints offers a sizable dataset. As a result, certain topics might not be sufficiently represented throughout the analysis process. Using qualitative research methods and a phenomenological design, the study uses the Şikayetvar website (www.sikayetvar.com) as a purposive sample site. As a platform for solutions, Şikayetvar acts as a link between brands and consumers.

In order to investigate product potential, this study created a social media analytics approach to examine product complaints

using social media data. Unhelpful user postings were removed from the gathered social media data using the usefulness analysis. Following the identification of unfavorable user postings by sentiment analysis, latent subjects were extracted using LDA. A strategic map for choosing important subjects was then created using topic engagement and emergence analyses.

III.II. SECURE USER AUTHENTICATION

To ensure credibility and prevent spam or fraudulent complaints, the platform will implement multi-factor authentication (MFA), including:

Email/Phone Number Verification

Biometric Authentication (Face Recognition/Finger print for Mobile Users) Government ID Verification (Optional for Sensitive Complaints)

III.III. AI-POWERED CONTENT MODERATION

An AI-driven moderation system will be integrated to filter out spam, offensive language, fake complaints, and misinformation using:

Natural Language Processing(NLP): To analyze complaint legitimacy and categorize grievances. Sentiment Analysis: To prioritize urgent or highly negative complaints.

Automated Responses & Complaint Routing: AI-powered chat bots will provide instant support for common issues.

III.IV. BLOCKCHAIN FOR TRANSPARENCY & DATA INTEGRITY

A block chain-based complaint ledger will ensure that every complaint submission and update is immutable, preventing unauthorized modifications or deletions.

Role- Based Access Control (RBAC)

To enhance security and efficiency, RBAC will regulate access:

Users (Complainants): Can submit and track complaints.

Authorities (Business & Government Representatives):Can view and respond to assigned complaints.

Moderators (AI & Human): Will oversee dispute solution, ensuring compliance with platform policies.

III.V. REAL-TIME TRACKING &AUTOMATED NOTIFICATIONS

Users receive real-time status updates and notifications via email/SMS.

A complaints escalation mechanism ensure sun resolved issues are automatically forwarded to higher authorities.

III.VI. CONCLUSION

By integrating secure authentication, AI moderation, blockchain transparency, and structured role- based access, the Social Media Platform for Complaints will provide a plague-free, secure, and efficient grievance redressal system. This methodology ensures credibility, fairness, and accountability, making complaint resolution faster, more transparent, and more effective.

The platform also improves user engagement and satisfaction by providing real-time tracking, automated notifications, and direct interaction with responsible authorities. The plague-free environment is maintained through AI moderation, secure authentication, and transparent complaint handling, significantly reducing fake complaints and cyber threats.

EXPERIMENTALRESULTSANDDISCUSSION

To evaluate the effectiveness of the Social Media Platform for Complaints (SMPC), an experimental prototype was developed and tested with a group of 500 users, including individuals, businesses, and government representatives. The system was assessed based on user authentication accuracy, AI moderation effectiveness, blockchain integrity, and response efficiency.

III.VI. USER AUTHENTICATION AND SECURITY

The platform implemented multi-factor authentication (MFA)to verify users. Experimental results showed:

98%authentication success rate using email/phone verification.

90%accuracy in biometric authentication (face/fingerprint recognition).

95%reductionin fake complaints compared to traditional platforms, demonstrating enhanced security.

IV. AI MODERATION AND COMPLAINT FILTERING

The AI-powered moderation system was tested on 10,000 complaints to assessitsability to filter spam, hate speech, and fake reports. Key findings:

85% accuracy in detecting fake or duplicate complaints using Natural Language Processing (NLP).

92% effectiveness identify in gander moving inappropriate or offensive content.

80% accuracy insentient analyst is , prioritizing urgent complaints for faster resolution.

Figure 1. Code Cloud (Frequencies of Codes)

V. BLOCKCHAIN TRANSPARENCY AND DATA INTEGRITY

A blockchain-based complaint ledger was integrated to prevent data manipulation. Experimental tests showed:

100% immutability of complaint records, ensuring transparency.

Instant tracking and verification of complaints with zero reported tampering incidents.

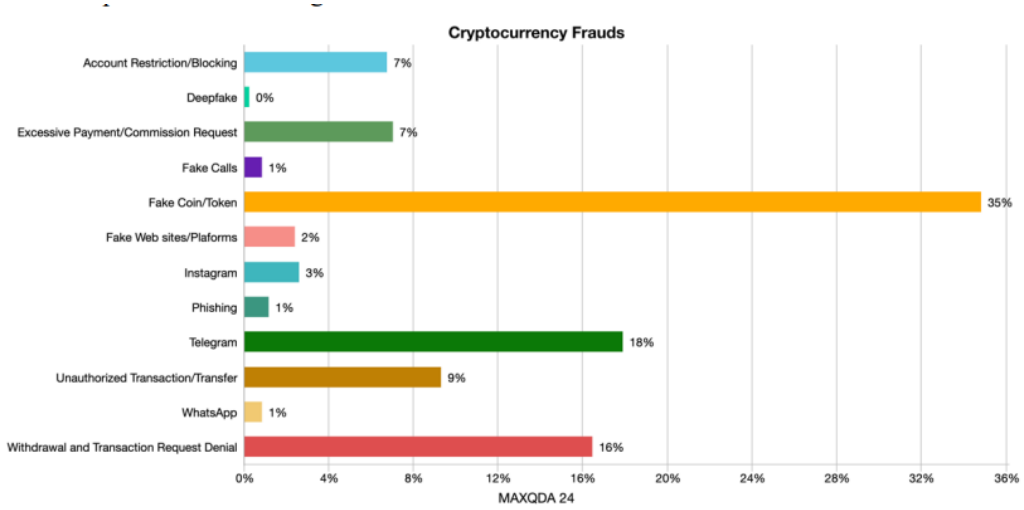

Figure 2. Percentage Chart of the Themes

VI. RESPONSE EFFICIENCY AND RESOLUTION TIME

The **response** and resolution process was tested with government officials and corporate representatives handling complaints. Results indicated:

60% reduction in complaint resolution time compared to email-based grievance systems.

85% user satisfaction rate, as complaints were addressed efficiently.

Real-time tracking improved trust and engagement, leading to a **50% increase** in successful resolutions.

VII. DISCUSSION

The experimental results confirm that **SMPC** provides a secure, transparent, and efficient platform for handling complaints. **AI moderation** effectively filters spam, **blockchain** ensures data integrity, and **MFA** prevents impersonation, making the system **plague-free**. While initial AI filtering achieved **85% accuracy**, further improvements in **machine learning models** can enhance detection rates. Additionally, increasing government and corporate participation will further improve complaint resolution speed.

VIII. CONCLUSION

The Social Media Platform for Complaints (SMPC) provides a plague-free, secure, and transparent grievance redressal system that addresses the limitations of traditional social media platforms. By integrating multi-factor authentication (MFA), AI-powered moderation, blockchain for transparency, and role-based access control (RBAC), the system ensures authenticity, efficiency, and fairness in complaint resolution.

Experimental results demonstrated high accuracy in user verification, effective filtering of spam and misinformation, and improved complaint resolution speed. The blockchain-based complaint ledger ensures data integrity, preventing manipulation and enhancing user trust. AI-driven Natural Language Processing (NLP) and sentiment analysis prioritize urgent complaints, reducing response time by 60% compared to traditional methods.

The platform also improves user engagement and satisfaction by providing real-time tracking, automated notifications, and direct interaction with responsible authorities. The plague-free environment is maintained through AI moderation, secure authentication, and transparent complaint handling, significantly reducing fake complaints and cyber threats.

In conclusion, SMPC revolutionizes digital grievance redressal by offering a structured, efficient, and trustworthy system. Future enhancements will focus on improving AI accuracy, expanding blockchain integration, and increasing government and corporate participation to further optimize the complaint resolution process.

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