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Social Media Sentiment Analysis and Banking Reputation Management

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Abstract

Social media makes customer reviews more influential on public trust. Banks now safeguard their reputations differently. This work analyzes how NLP-driven sentiment analysis improves financial organizations' online perception monitoring, evaluation, and control. Financial institutions may make their services safer, more customer-friendly, and more tailored by categorizing user-generated data as positive, negative, or neutral. Case studies like UniCredit in Europe show that internet reviews affect brand equity and consumer loyalty. Advanced tools like AI, machine learning, and predictive analytics can help with marketing, service enhancements, and ideation. They also provide real-time monitoring and crisis prevention. It has trouble identifying irony, handling data privacy, and resolving moral dilemmas. Sentiment analysis in strategic decision-making improves trust, resilience, and transparency, according to research. Thus, sustainable and competitive banking requires real-time ethical reputation management.

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Introduction

Digitalization has transformed banking client engagement and reputation management. Client thoughts and experiences are more visible and influential than ever thanks to social media. Online chatter swiftly spreads across networks, shaping banking reputation (Rust *et al.*, 2021) ^[13]. Social networking is both helpful and risky for banks. Reputation determines customer trust and organizational longevity; thus, these conversations must be monitored. Cheng *et al.* (2021) ^[4] shows how banks use social media for sentiment research, marketing, sales, and operations improvement in Figure 1.

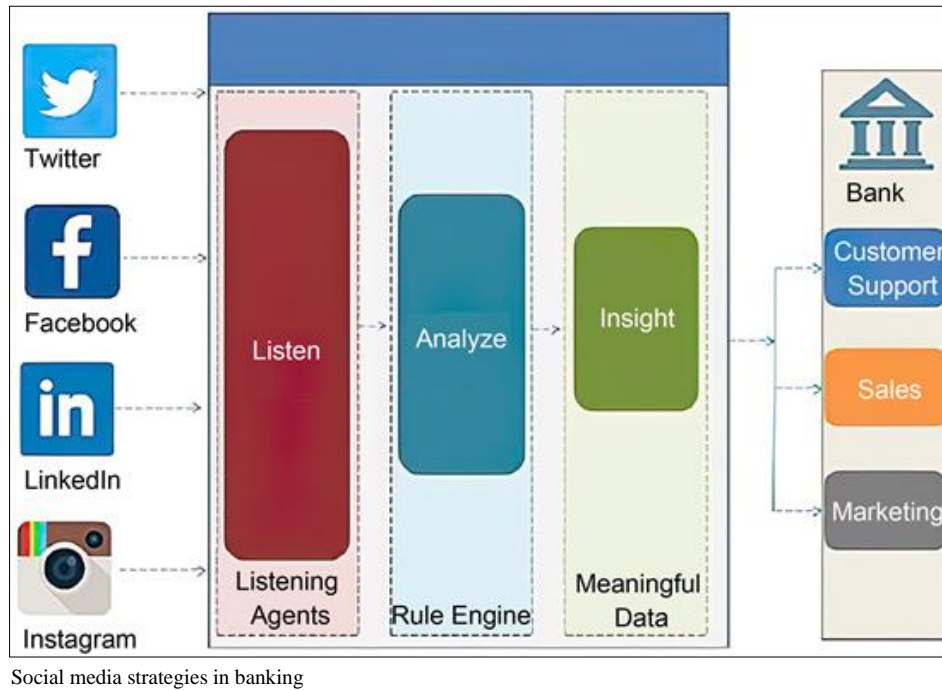


Fig 1: Social Media Strategies in Banks

Botchway and colleagues allege that user-generated content especially on social media networks severely impact a financial institution's reputation. This is because positive reviews usually build trust and encourage repeat business, while on the other hand, unfavorable remarks damage an organization's reputation especially if ignored. Social media interactions have impacted the brand image of European banks, notably UniCredit (Botchway *et al.*, 2019) ^[2]. In order to preserve trust and a good brand reputation in the competitive financial business, Casado-Molina *et al.* suggest that banks track, evaluate, and respond to social sentiment in real time (2020).

Natural language processing (NLP) has been used for years to analyze social media's huge volumes of unstructured material. Xu *et al.* (2022) ^[17] found that NLP helps organizations estimate reputation risks and understand public opinion. It classifies emotions as positive, negative, or neutral. With real-time information, sentiment research helps banks enhance customer service, marketing, engagement, and crisis management. Thus, this paper investigates NLP-driven sentiment analysis plays a role in managing reputation in the financial sector. It will do this by discussing its applications, benefits, limitations, and crucial improvements needed to support the industry's long-term strategic goals.

Social Media and Banking Reputation

Banks now connect with clients two-way via social media. The bank can update customers, answer inquiries, and promote financial services on Twitter, Facebook, and LinkedIn. Millions can now monitor and share real-time customer experiences, improving consumer interaction. This makes financial institutions more visible and attention-grabbing (Casado-Molina *et al.*, 2020) ^[3]. Thus, social media has entered banking reputation management, presenting

opportunities and challenges.

Although social media provides unmatched opportunity for engagement, it also carries reputational danger. Good customer experiences recorded online may instill a sense of legitimacy and loyalty in customers, whilst a negative comment can go a long way toward deteriorating the overall brand perception. According to research, a single viral post has the potential to undermine years of image-enhancing efforts (Rust *et al.*, 2021) ^[13]. Given this duality, banks must implement robust monitoring measures. As a result, when sentiment analysis is used properly, financial institutions may respond in a timely manner, reducing risks and turning issues into opportunities to restore lost trust and demonstrate transparency (Xu *et al.*, 2022) ^[17].

Customers' remarks, complaints, online reviews, and user comments have a significant impact on people's trust in the bank. Social media allows feedback to reach a large number of people in much less time than traditional word of mouth. According to studies, bank customers are increasingly turning to internet platforms for peer reviews to help them make judgments about financial services and goods (Mashaabi *et al.*, 2022) ^[10]. Negative evaluations describe poor service, unethical practices, and neglect, which destroys trust, whereas positive experiences and interactions foster a stronger relationship. As a result, customer-generated content has emerged as a low-key yet effective means of accountability. Banks that prioritize openness, timeliness, and customer happiness online are better positioned to maintain their reputation and foster long-term competition (Kufile *et al.*, 2022) ^[9].

Case studies demonstrate how social media sentiment can directly affect a bank's reputation. Specifically, an examination of the social media presence of the UniCredit Bank across indicated that customer postings determined the

image of the institution and the level of engagement with it (Botchway *et al.*, 2019)^[2]. Similar to the government sector, the application of sentiment monitoring and crowdsourcing to employer branding has allowed U.S. banks to stay competitive within the financial sector (Sajid *et al.*, 2022)^[14]. The instances show that no longer is the reputability of a bank a topic of press releases or annual reports, but rather is a continuously evolving process due to what customers can and do say about their experiences on the Internet (Rust *et al.*, 2021)^[13].

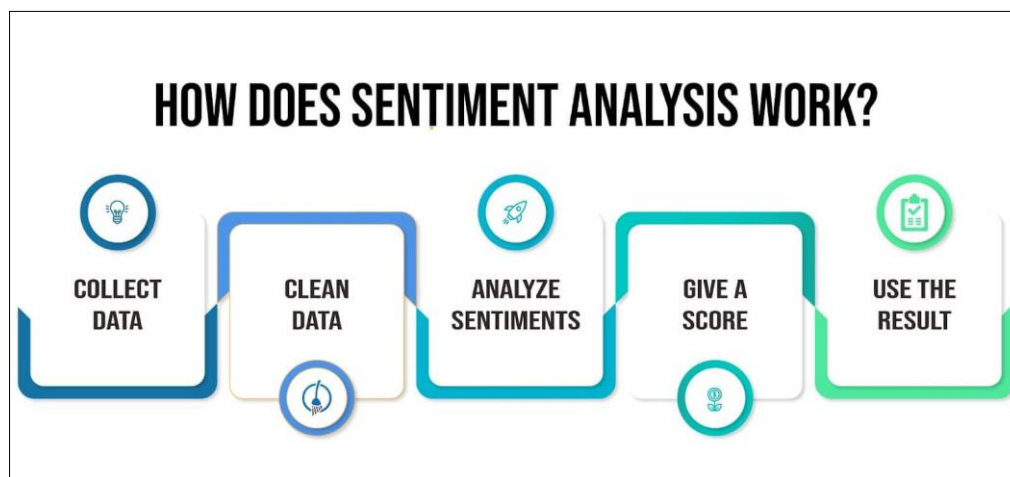
Banks are also subject to viral content and reputational crises caused by overnight public outrage. When a consumer complaint is handled incorrectly across many channels, it can swiftly escalate into a larger reputation disaster. When they do not answer quickly, the delay may be interpreted as indifference or neglect, increasing suspicion (Kufile *et al.*, 2022)^[9]. On the other side, proactive crisis management involves timely, responsive communication that minimizes reputational damage. According to the researchers, banks require systematic approaches to crisis prevention such as social listening technologies and real-time sentiment monitoring in order to anticipate and respond to emerging dangers before they become viral difficulties.

Overcoming the obstacles of scale, speed, and authenticity are all necessary for effective social media reputation management. There is an issue with monitoring fascinating debates because millions of postings are made every day and are difficult to follow with a simple human brain. Ravi (2021)^[12] states that with the emergence of such complexities,

financial institutions are uptrending the use of AI and NLP to filter, analyse, and categorise sentiment data accurately. The increasing impact of social media finally points to the importance of banks managing reputation as a real-time asset, not a fixed concept. This involves the incorporation of social listening, sentiment analysis, and proactive engagement into business strategies in general. By accepting the possibilities and threats of using digital platforms, banks can find their way through reputation issues, as well as promote customer confidence. Case evidence indicates that, through positive social sentiments, institutions reap competitive benefits in customer loyalty, crisis management, and brand equity (Rust *et al.*, 2021)^[13]. Therefore, social media is difficult and a strategic driver towards banking reputation management.

Natural Language Processing (NLP) for Sentiment Analysis

NLP is a key technique in financial services, especially for evaluating unstructured social media data. As online banking grows, clients share comments, grievances, and appreciation online. Financial firms can use NLP to examine this massive textual data and gain actionable insights. From data collection to outcomes application, Figure 2 shows the procedures. Banks can assess public opinion, identify issues, and adjust communication tactics with this expertise. Hu (2020)^[7] note that NLP combines human expression and machine interpretation, making it a valuable tool for studying perceptions that directly affect banking reputation and trust.



Sentiment Analysis, Adapted from Unlocking sentiment analysis: NLP's impact and insights.

Fig 2: Sentiment Analysis using NLP

Text classification into positive, negative, neutral, or mixed opinions is the heart of sentiment analysis. NLP systems analyze word patterns, tone, and context to help banks evaluate client perceptions of their services (Mashaabi *et al.*, 2022)^[10]. A favorable social media post on customer service is different from a negative one about hidden fees. Mixed or neutral feelings provide more subtlety. This classification helps banks prioritize responses, handle concerns, and use positive feedback to boost brand image.

Machine learning, deep learning, and hybrid approaches have improved sentiment analysis accuracy. Support vector machines and logistic regression are effective but constrained by predetermined feature sets. Recurrent neural networks and transformers capture contextual meaning and perform better with complicated language patterns. Both methods are optimized for precision and scalability in hybrid methods. Ravi (2021)^[12] shows how these improvements allow banks to manage enormous datasets and improve sentiment

categorization, enabling reputation monitoring and proactive decision-making in competitive marketplaces.

Social media data is massive and unstructured, making sentiment analysis difficult. Manual tracking is tough due to millions of comments, tweets, and articles daily. NLP automates tokenization, contextual analysis, and text cleaning. Sarcasm, slang, and cultural variances are detectable by advanced models, although constraints remain (Mashaabi *et al.*, 2022)^[10]. Filtering unnecessary content and focusing on reputational issues helps streamline bank operations. Good data management saves money and lets institutions react quickly to changing client attitudes (Hu, 2020)^[7].

NLP can automate financial reporting and risk assessment beyond brand perception. NLP to shape report narratives to improve financial communication. Banks predict financial risks and market volatility by monitoring news and investor emotion. These processes can be automated to improve decision-making and eliminate errors. Consumer emotion and financial narratives assist banks manage trust and credibility in a competitive financial sector.

Classifying complaints is another NLP strength. Deep learning and sentiment detection algorithms help banks prioritize complaints and direct them to relevant departments for speedier resolution. Blümel and Zaki (2022)^[11] prioritizes reputational issues to improve complaint management. Automation speeds response times, improving customer satisfaction and reducing public platform escalation. Sentiment research helps banks stay proactive and turn customer complaints into engagement and service improvements, protecting and improving brand reputation.

NLP-driven sentiment analysis helps banks handle massive data, understand complex client sentiments, and improve service. Finance system integration enables real-time brand perception monitoring, crisis prevention, and customer experience. AI and machine learning promise better precision and contextual understanding despite language and cultural variations. NLP in reporting, risk management, and complaint handling can boost bank trust and reputation (Xu *et al.*, 2022)^[17]. Modern banking strategic reputation management requires sentiment analysis.

Sentiment Analysis for Real-Time Reputation Management

Reputational intelligence organizes, analyzes, and interprets internet conversations to manage brand image. This requires real-time consumer opinion monitoring in the banking business to spot issues before they escalate. Reputational intelligence helps financial organizations integrate social media data into actionable results to build trust and credibility (Casado-Molina *et al.*, 2020)^[3]. Real-time sentiment analysis provides a snapshot of brand health based on real-time reactions. According to Rust *et al.* (2021), this responsiveness allows banks to anticipate crises, increase communication, and quickly react to changing client expectations in highly competitive marketplaces.

Banks are using increasingly advanced social media sentiment tracking technologies and dashboards. These technologies visualise customer sentiment from Twitter, Facebook, and review sites. Feedback is categorized as positive, negative, or neutral, and trending topics are detected. Kufile *et al.* (2022)^[9] argue that integrating social listening platforms into sentiment analytics can enable banks to gain valuable insights about any significant online conversation. The tools also identify top influencers and recurring themes to assist banks in tailoring reputation management efforts. With such technologies, the institutions keep a constant beat of the customer perception and brand positioning.

The detection of any emerging issue in real-time is essential in avoiding reputational damage. Customer dissatisfaction due to obscured costs, unanswered issues, or lack of safety will go viral once it is neglected. Sentiment analysis tools help identify any abnormal spikes in detrimental discussions before it is too late for a bank to mitigate them. As pointed out by Kotadiya *et al.* (2021)^[8], timely feedback about dissatisfaction minimizes the chances of escalation and builds customer trust. Being constantly aware of the conversation, banks have the possibility to act transparently and compassionately, transforming potential crises into a chance to show responsibility. This is offensive behavior that makes the customer more confident in an organization, as clients prefer institutions that actively respond to complaints quickly and have the ability to address them fully.

Predictive analytics is a follow up to real-time sentiment tracking, which provides future risk analysis with precedents. Banks can be ready to meet a reputational crisis in advance by studying the trends of sentiments and making concrete action plans. According to Rust *et al.* (2021)^[13], predictive modeling enables institutions to channel their resources in key areas of focus where negative perceptions are likely to arise. As an example, a repetitive low level of satisfaction with mobile banking services could indicate an update in the technology. Banks may use predictive sentiment analytics to respond not only to present concerns, but also to forestall reputational crises, transforming them into not only forward-thinking businesses, but also those constantly striving to improve.

Examples of the banking sector show how real-time sentiment analysis helps management in the case of a crisis. Sentiment monitoring systems used by banks have enabled effective actions during service outages or cyber-attacks, as the organization can appropriately calm down its clients on social platforms. The case of the UniCredit credit institution by Botchway *et al.* (2019)^[2] shows how the organization responded to social media criticisms, and this had a direct effect on changing its image. U.S. banks that apply real-time sentiment analytics have improved crisis transparency, reducing reputation damage (Sajid *et al.*, 2022)^[14]. Both instances show that proactive involvement with sentiment data can address consumer problems and build credibility and

resiliency.

Real-time sentiment analysis is crucial for banking reputational risk management. Tools, dashboards, and prediction models help institutions spot risks, prepare responses, and maintain customer confidence. Casado-Molina *et al.* (2020) ^[3] argue that reputational intelligence involves both crisis response and creating a culture of transparency. Using real-time monitoring, banks can convert customer feedback into actionable intelligence that will enhance brand equity. With digital interactions still driving perceptions, managing rep in a dynamic context will always be an important activator of sustaining trust and competitiveness in the financial services sector.

Applications in Customer Service and Personalization

In a digital-first market, banks must understand customer behavior to compete. Social media sentiment analysis helps financial organizations understand customer opinions about products, services, and brands. Analysis of sentiment trends helps banks detect pain points like discontent with mobile banking apps or repeated customer service delays, according to Kotadiya *et al.* (2021) ^[8]. This information enables proactive service delivery adjustments, making it more responsive and customer-centric. Sentiment analysis helps banks gain deeper behavioral insights that improve client experiences.

NLP-driven sentiment analysis improves banking personalization. Banks can personalize financial products, marketing efforts, and communication by studying social media interactions. Personalization boosts consumer pleasure and loyalty. Mashaabi *et al.* (2022) ^[10] reported that customers desire customized financial services. Specialized sentiment-driven offers increase engagement and cross-selling. Personalization helps customers feel understood and valued, improving bank response and attentiveness.

Sentiment analysis also has a first-hand role in increasing customer satisfaction and loyalty. By quickly acting upon the negative sentiments and increasing positive feedback, banks develop trust and credibility towards stakeholders. Olayinka (2021) ^[11] state that loyalty towards financial services is founded on customer satisfaction, and sentiment analytics offers the means of realizing it, being able to record and analyze customer sentiment data and act based on what is established. Consider the case where a bank is empathetic and solves online complaints; more people will find them trustworthy. In the long term, not only is the individual concern addressed, but a collective goodwill in general is created, and this could lead to enhanced brand loyalty and a competitive edge.

Case studies demonstrate how sentiment analysis-supported

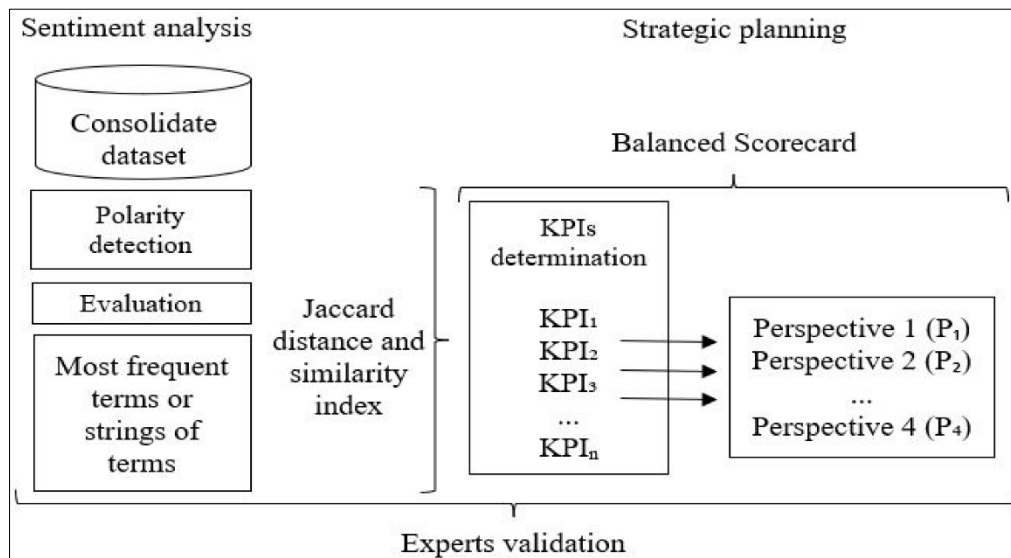
recommender systems personalize banking. Ghobakhloo and Ghobakhloo (2022) ^[5] examined how AI-driven recommendation models might exploit client emotions to offer financial products. Green bonds and ethical banking may target social media investors. Product relevance and consumer engagement increase with sentiment-based customization. Integration of recommender systems with real-time sentiment data would improve personalized services, keeping banks nimble and customer-focused amid fast-changing financial situations.

Sentiment monitoring also helps banks find hidden service improvement and innovation opportunities. Traditional surveys miss subtle signs of unmet demands in customer feedback. Kufire *et al.* (2022) ^[9] state that banks can find new product and service opportunities by integrating social listening data into consumer analysis. Dissatisfaction with online loan applications may prompt banks to simplify and speed up their platforms. Banks may improve customer experience and differentiate themselves from competitors by acting on sentiment-driven information, boosting their reputation and market leadership.

Overall, sentiment analysis in customer service and customisation helps banks enhance customer connections. NLP-driven insights help banks meet client needs by understanding behavior and making personalized suggestions. According to Kotadiya *et al.* (2021) ^[8], proactive involvement increases loyalty and happiness, whereas creative recommender systems increase product relevance. Unstructured web data can be turned into effective tactics to improve service quality and develop trust. Sentiment research is essential to banking reputation in an era of continuously changing client expectations.

Strategic Integration of Sentiment Analysis in Banking

Implementing sentiment analysis in the approach to banking can start with social listening, where the banks can obtain concerns, expectations, and feedback in real-time. Tracking posts on social media sites will allow banks to identify trends and take appropriate action before they become a full-fledged reputation crisis. According to research, organizations that employ social listening effectively have higher levels of consumer trust and loyalty because they are responsive and transparent. Such a proactive approach will not only gratify customers, but will also provide vital information for the creation of new products and enhancing communication techniques, allowing the bank to stay in touch with its clients. Figure 3 depicts the nature of strategic planning in selecting social media sites for data collection, as it is critical to have the greatest tools that an institution may employ to improve its reputation.



Sentiment Analysis in Social Media Planning, Adapted from Grande-Ramírez *et al.* (2022)^[6]

Fig 3: Sentiment Analysis in Social Media Planning

Sentiment-based decision-making improves marketing and consumer relations by delivering actionable insights. Banks can create ads based on current customer sentiments, ensuring that communications are relevant to the audience and do not rely on traditional assumptions. Favorable trend correlations indicate product promotion, whilst adverse feedback underscores chances for service enhancement. Enhanced personalized communication fosters client loyalty (Rust *et al.*, 2021)^[13]. Sentiment analytics will assist customer service representatives in prioritizing issues and expediting the resolution of disgruntled consumers. This strategy enhances reputation and competitiveness in the

rapidly evolving financial services sector. AI, ML, and blockchain are changing banking processes, including sentiment analysis and reputation management. Figure 4 shows how AI has improved banking data analysis, productivity, and cost reductions. AI/ML lets banks analyze vast amounts of unstructured social media data to accurately detect small changes in people's attitudes (Ravi, 2021)^[12]. Blockchain increases openness and data integrity, allowing clients to trust that insights are based on real-world interactions. These advancements give banks a more data-driven and dependable reputation management method that fits within the global financial sector's digital transformation.

Application of AI in Banking, Adapted from Sorrentino (2018)^[15]

Fig 4: Application of AI in Banking

Although sentiment analysis is intriguing, its application raises significant ethical and regulatory concerns. Data privacy, informed permission, and adherence to financial regulations are all issues that must be addressed in order to prevent the abuse of personal information. Regulators have emphasized the importance of transparency in the gathering, analysis, and implementation of customer data in decision-making (Casado-Molina *et al.*, 2020)^[3]. Banks that include ethical norms and the use of technology lessen the risk of hurting their image as a result of any perceived surveillance or data exploitation. In the long run, financial firms that strike a perfect balance between sentiment analysis and good governance will boost stakeholder confidence and gain a competitive advantage in the financial sector.

Challenges and Limitations

Despite its potential, sentiment analysis in banking is difficult, especially in NLP. Jokes, irony, slang, and culturally unique terms can confuse algorithms, resulting in distorted results and poor decision-making (Mashaabi *et al.*, 2022)^[10]. After a service issue, a sarcastic remark like “Wonderful, bank!” is misinterpreted as favorable. These restrictions explain why NLP models must be improved and contextual, domain-specific data added to improve accuracy. Without filling these gaps, sentiment research will yield irrelevant accounts that can harm strategic decision-making. Banking sentiment analysis also has ethical and data privacy considerations. When done secretly, social media surveillance and usage of customer discussions can be intrusive, raising consent and regulation concerns. Many laws protect customer data by putting limits on how it can be gathered, kept, and used. The General Data Protection Regulation (GDPR) is one of these laws (Casado-Molina *et al.*, 2020)^[3]. If banks break these rules, they could face legal and public relations problems. Even though sentiment analysis is important for strategy, to stay in business and keep clients and authorities' trust, one should find a balance between new ideas and smart data management.

Another problem is that financial services use algorithms too much. A lot of customer comments can be analyzed by automated tools, but if an institution uses them too much, it might miss out on human judgment and qualitative insights. The algorithms might make data flaws worse, which could lead to unfair or biased results (Rust *et al.*, 2021)^[13]. Negative feelings can cause premature product adjustments or reputation overreactions. Banks should use algorithmic and human monitoring to make complicated, context-specific strategic decisions to reduce this risk.

Image, emoji, and speech data should be added to sentiment analysis algorithms to better capture customer sentiments in future studies. Banks operate in multiple markets, thus cross-linguistic and cross-cultural flexibility is crucial (Ravi, 2021)^[12]. To gain stakeholder trust and explain algorithmic conclusions, an explainable AI architecture is needed. Investment in these advances will improve financial

institutions' prediction accuracy and ethical reputation. Solving these open research questions will let banks use sentiment analysis for innovative reputation management.

Future of Banking Reputation Management with AI

AI-driven sentiment monitoring and predictive analytics will shape banking reputation management. Trends show banks deploying advanced machine learning algorithms to monitor real-time client sentiment across digital channels. This as per Rust *et al.* means that financial firms can identify reputational risks before crises using these strategies (Rust *et al.*, 2021)^[13]. Sentiment data and predictive risk models help banks forecast customer unhappiness, fraud, and compliance issues. This proactive approach improves reputational resilience and consumer trust through timely interventions and service improvements. Banking reputation management sentiment tracking and predictive analytics will improve with AI. Future trends suggest banks are real-time evaluating client sentiment on digital platforms using advanced machine learning algorithms. These technologies help financial institutions identify reputational threats before crises (Rust *et al.*, 2021)^[13]. Banks respond on sentiment data and predictive risk models to identify consumer dissatisfaction, fraud, and compliance issues. Proactive, customized solutions boost consumer confidence and reputational resilience.

AI is expected to promote customer-focused banking in the future. Making sentiment analysis judgments clear and understandable to stakeholders will depend on XAI frameworks (Ravi, 2021)^[12]. AI-powered knowledge and regulatory compliance can increase traceability and bank reputation. Additionally, sentiment analysis in tailored financial services, product innovation, and long-term relationship management will boost loyalty. Finally, AI can help banks save their reputations and become resilient, consumer-driven institutions poised for future problems.

Conclusion

In today's competitive market, banks utilize AI-powered real-time sentiment analysis to enhance their reputation and improve client interactions. Banks can mitigate risk and build confidence by closely monitoring customer impressions and responding promptly and responsibly. Current implementations show that emotion tracking boosts customer engagement, brand image, and loyalty. Integrating these technologies into strategic decision-making helps banks provide customer-focused financial services and meet market needs, retaining resilience and relevance, according to research. This applies especially in the fast-changing digital world.

Ethical responsibility in conjunction with technical adoption are required in modern banking. Therefore, maintaining public trust requires a balancing between privacy, openness, and algorithmic fairness. Although AI-driven sentiment monitoring provides insights. Transparent and ethical AI models may provide banks an edge by combining innovation

and integrity. Thus, reputation management will be digital, fast, accurate, accountable, and inclusive. Real-time sentiment monitoring is a technology innovation and strategic business requirement for responsible and trustworthy banking in an age of high customer expectations.

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