GAP BODHI TARU
A GLOBAL JOURNAL OF HUMANITIES
(ISSN – 2581-5857)
Impact Factor: SJIF - 5.551, IIFS - 5.125
Globally peer-reviewed and open access journal.

A STUDY ON HOW SENTIMENT ANALYSIS PLAYS A MULTIFACETED ROLE IN CUSTOMER EXPERIENCE WITH SPECIAL REFERENCE TO INDIAN FINTECH INDUSTRY

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Abstract

The financial industry's digitalization has given rise to financial technology, or Fintech. Here sentiments play a very vital role in assessing the behaviour of the customers. These sentiments can also be tracked via AI tools as well. Sentiment in the Fintech industry refers to the overall attitude or opinion expressed by individuals, organizations, or the market as a whole towards various financial products, services, companies, or events. This sentiment can range from positive to negative and can greatly influence financial decision-making processes. In Fintech, sentiment can be assessed through various channels, including social media, News and media, Customer reviews and feedback, Market data, Textual analysis. Understanding sentiment in this industry is very crucial and it has several reasons as well which includes Investment decisions, Risk management, Customer engagement, Regulatory compliance. Sentiment analysis plays a significant role in Fintech industry by providing insights into market dynamics, customer behaviour, and risk management strategies. Natural Language processing(NLP) plays a crucial role in enabling computers to comprehend human language, allowing them to process, analyse, and generate text or speech. It encompasses various tasks such as text classification, sentiment analysis, machine translation, named entity recognition, and more.

The data is collected via questionnaire through google forms which was sent through WhatsApp to the individuals. In this study, total 40 responses were received. To analyze the results T-test was used for testing the hypothesis. The findings suggest a strong link between the sentiment of customers and several dimensions of their interactions with Fintech services, such as User Interface (UI), transaction experience, customer support, personalized service, and overall satisfaction. This underscores the importance of these factors in shaping positive user perceptions and experiences. Overall, the findings from the study provide valuable insights that can help Fintech companies refine their strategies and offerings to enhance customer satisfaction and loyalty, thereby strengthening their position in the market.

Keywords: *- Sentiment analysis, Artificial Intelligence, Fintech, Customer behaviour*

INTRODUCTION

Sentiment analysis plays a crucial role in understanding customer experience in the Indian Fintech industry. It involves analyzing customer texts using Natural Language Processing (NLP) techniques to determine the polarity and intensity of emotions expressed. NLP enables computers to accurately understand and process human language to extract sentiments. Different levels of sentiment analysis include document level, sentence level, aspect level, and entity level. This process provides valuable insights into how technology influences consumer behavior and perceptions. Sentiment analysis is crucial for Fintech companies as it helps in understanding customer emotions, identifying pain points, and monitoring satisfaction. This analysis also aids in enhancing customer experience, innovating products and services, and increasing customer retention and acquisition. By continuously monitoring sentiments, companies can gauge the effectiveness of their initiatives, address customer concerns, foster trust, and ultimately drive business growth and innovation. The process of using sentiment analysis in the fintech industry involves defining goals and objectives, collecting and preparing data, choosing a suitable sentiment analysis tool, analyzing and visualizing results, and implementing and evaluating actions. The goal is to improve customer experience, satisfaction, and retention by analyzing specific aspects of customer sentiment, such as product satisfaction, customer service interactions, and brand perception. The analysis can also help identify correlations between sentiment and other relevant metrics, enabling businesses to make informed decisions and improve customer experience. The use of sentiment analysis in fintech can result in various benefits including increased customer satisfaction and loyalty, better customer experience, improved product and service innovation, competitive advantage, better customer service, personalized offerings,

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identification of new opportunities and market trends, and the creation of a unique value proposition. By actively listening to customer feedback, fintech companies can promptly address concerns, personalize interactions, offer tailored recommendations, and build stronger relationships, ultimately leading to increased engagement and the ability to identify emerging trends and optimize offerings.

LITERATURE REVIEW

The FinTech industry in India is experiencing a notable shift due to open banking initiatives, reduced switching costs, cloud-based platforms, and the elimination of fixed expenses. This has led to increased innovation and opportunities for new entrants. To stay competitive, companies must prioritize user-friendly interfaces, seamless experiences, and cutting-edge features. Additionally, they need to focus on agility, innovation, and customer-centricity as competition intensifies. (Kini, Savitha, & Hawaldar, 2024)

Sentiment analysis has become increasingly important in the era of artificial intelligence, as it allows businesses to extract and categorize emotions from textual data. By analyzing customer feedback and social media posts, companies can make informed decisions to improve customer experience and innovation. The technique involves classifying public opinion into positive, negative, or neutral categories. This study also explores how variations in sentiment expression impact reviews, offering commercial benefits like targeted marketing and improved brand differentiation. (Kumar, Gahalawat , Roy, Dogra , & Kim, Exploring Impact of Age and Gender on Sentiment Analysis Using Machine Learning, 2020)

Fintech firms are leveraging advanced technologies like AI, machine learning, blockchain, and big data to revolutionize the finance industry. They offer more personalized and efficient financial solutions across segments such as lending, wealth management, and insurance. Digital wallets provide convenient payment solutions, but security concerns persist due to cyber threats. Providers implement strong security measures to protect users' financial information. Mobile wallets consolidate payment methods into a single platform, driving the transition to a cashless society through secure and contactless payments. (.Kathiravan, et al., 2021)

The fintech sector leverages advanced technologies to transform financial transactions and services, providing enhanced customer experiences through convenience, flexibility, and personalized solutions. Fintech companies prioritize technology to streamline operations, reduce costs, and effectively reach customers. Robo-advisors offer tailored investment advice and portfolio management services based on individual financial goals, risk tolerance, and investment preferences. These platforms continuously analyze market trends and user behavior to optimize strategies and adapt to changing conditions. (Barbu, tiu Florea, Dabija, Constantin, & Barbu, 2021)

Social networks such as Twitter play a crucial role in analyzing sentiments for real-time customer experience improvement. These platforms act as hubs of collective intelligence, reflecting public opinions and experiences, and can provide valuable insights into how customers perceive products, services, and brand interactions. Sentiment analysis techniques, leveraging natural language processing and machine learning algorithms, enable businesses to process extensive social media data to gauge overall customer sentiment and experience. By monitoring Twitter conversations related to their brand or industry, companies can identify customer feedback patterns and sentiment trends, allowing for a proactive approach in responding to customer inquiries and enhancing brand reputation. Social media also allows businesses to engage directly with consumers, build trust, and cultivate positive relationships, influencing public opinion and consumer behavior in the digital age. (Ranjan, Sood, & Verma, 2019)

Big data analytics has transformed e-commerce and retail by providing valuable insights into consumer behavior and preferences. Retailers can enhance the shopping experience and drive sales through personalized product recommendations, targeted promotions, and optimized pricing strategies. Real-time shopping experiences have been revolutionized, enabling seamless and personalized interactions across various touchpoints. Furthermore, big data analytics facilitates better connectivity between retailers and shoppers, enabling more efficient communication and engagement strategies. By leveraging data-driven insights, businesses can optimize operations, drive sales, and deliver exceptional customer experiences in today's digital marketplace. (YI & Liu, 2020)

Sentiment analysis, also known as opinion mining, is a critical component of natural language processing. It involves analyzing people's opinions and emotions in written language, primarily for businesses to understand customer feedback from social media, online reviews, and surveys. This analysis helps in identifying areas for improvement, tracking brand perception, and making data-driven decisions. It is also used for market research, competitive analysis, categorizing customer inquiries based on sentiment, and gauging public opinion in political analysis. (Tarnowska & Ras, 2019)

Measuring customer satisfaction with chatbot interactions is challenging for service providers due to limitations of traditional post-interaction surveys, such as low response rates and potential biases. To address this, providers could consider real-time approaches like integrating sentiment analysis into chatbot systems for immediate feedback on customer sentiment. This would help alert providers to potential issues and allow for prompt intervention. Incorporating feedback mechanisms directly into the chatbot interface and leveraging machine learning algorithms to recognize signs of dissatisfaction could enhance customer satisfaction and demonstrate commitment to addressing customer needs. Moreover, digital platforms like email and instant

messaging enable swift issue resolution, leading to enhanced customer satisfaction. Chatbots are widely used in various industries to support staff during online customer interactions, and it's crucial for providers to analyze attitudes and viewpoints in written language to understand user communication. (Feine, Morana, & Gnewuch, 2019)

Customer reviews play a crucial role in helping businesses understand and improve customer satisfaction. Analyzing reviews across various aspects such as service quality, deliverables, staff practices, and pricing enables businesses to identify areas for enhancement. Satisfied customers are more likely to become repeat customers and brand advocates, making customer satisfaction closely linked to business success. In today's digital age, customers express their opinions and experiences through social media, blogs, and review sites, emphasizing the importance of actively listening to customer feedback. By leveraging sentiment analysis using natural language processing and machine learning algorithms, businesses can identify trends and areas of praise or criticism, ultimately enabling them to build stronger relationships and prioritize customer experiences for long-term success. (Agarwal, 2019)

Social media has fundamentally shifted customer-company relationships, granting users the power to shape interactions with businesses. Unlike traditional channels, social media has democratized the exchange of information, giving customers a strong voice. As a result, companies must adapt their CRM strategies to engage effectively on social media, actively listening, responding, and participating in real-time conversations. Monitoring user interactions provides valuable insights, helping to refine CRM strategies and enhance overall customer experience. Integrating social media monitoring tools into CRM systems can track brand mentions, sentiment analysis, and customer engagement metrics, allowing companies to identify areas for improvement. Furthermore, social media serves as a platform for soliciting feedback, conducting surveys, and cultivating stronger customer relationships. Leveraging social media as part of CRM strategies enables companies to enhance the overall customer experience and drive long-term success. (Rubaiee, Alomar, Qiu, & Li, 2018)

OBJECTIVES

Our main objective is to understand the sentiments expressed by customers towards different aspects of fintech services such as user interfaces, transaction experiences, customer support interactions, overall satisfaction and personalized services.

Objective 1: To access how the customers feel about the User Interface of Fintech platforms.

Objective 2: To understand the transaction experience of the customers with regards to ease, speed, security, and reliability of transactions conducted through fintech platforms.

Objective 3: To analyse the sentiment of the customers through responsiveness and effectiveness of customer support.

Objective 4: To explore the sentiment of the customer with regards to personalized services.

Objective 5: To analyse the satisfaction of the customers with regards to the services used by considering factors such as convenience and values for money.

HYPOTHESIS OF THE STUDY

H1: There is a significant relationship between the sentiments of the customers and user interface.

H2: There is a significant relationship between the sentiments of the customers and transaction experience.

H3: There is a significant relationship between the sentiments of the customers and customer support.

H4. There is a significant relationship between the sentiments of the customers and personalized services.

H5. There is a significant relationship between the sentiments of the customers and overall satisfaction.

RESEARCH METHODOLOGY

The aim of this study is to find out how the sentiment of the customers plays an important role in the experience of the customers with reference to Indian Fintech Industry. The Hypothesis for this study was determined on the basis of literature review.

In order to reach the aim a structured questionnaire was prepared in a google form and was sent to more than 50 individuals via among all age groups who use fintech services . Out of which 40 responses were received in order to understand the gaps occurring .

Here, the use of a 5-point Likert scale in the questionnaire provides respondents with a structured framework to express their agreement or disagreement with statements related to sentiment analysis and customer experience in fintech. This approach allows for quantifiable data that can be analysed to identify trends, patterns, and correlations among responses

FINDINGS AND ANALYSIS OF THE STUDY

To check for the results the we have applied T-test by using stastical software named: SPSS

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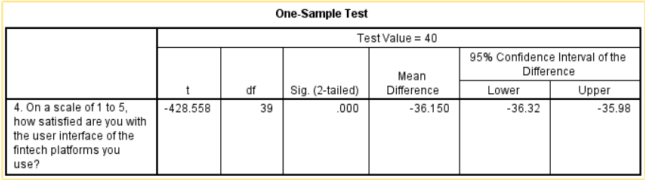
T-Statistic: This is the calculated value of the t-test. It represents the number of standard deviations that the sample mean deviates from the hypothesized mean.
Degrees of Freedom: This is calculated as the number of observations in the sample minus one (n-1). For the sample size of 40, the degrees of freedom will be 39.
Sig. (2-tailed) or p-value: This is the probability of observing the test results under the null hypothesis. A p-value less than the significance level (commonly set at 0.05) would lead to reject the null hypothesis, suggesting that the observed mean significantly differs from the hypothesized mean.
In the below figure 1 it is seen that at 39 degree of freedom , tvalue is -428.558 at significance level 0.05. While comparing the same from the T table it is analysed that the value comes 2.023. Therefore 2.023 > -428.558 . This means that the result is not significant. Here we will reject the null hypothesis and accept the alternate hypothesis. Therefore H1 is accepted. Thus, there is a significant relationship between the sentiments of the customers and user interface.

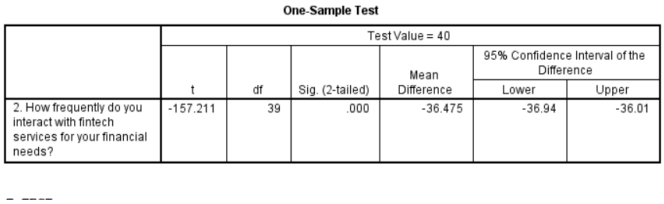


One-Sample Test

	Test Value = 40					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
4. On a scale of 1 to 5, how satisfied are you with the user interface of the fintech platforms you use?	-428.558	39	.000	-36.150	-36.32	-35.98

Figure 1

In the below figure 2 it is seen that at 39 degree of freedom , tvalue is -157.211 at significance level 0.05. While comparing the same from the T table it is analysed that the value comes 2.023. Therefore 2.023 > -157.211 . This means that the result is not significant. Here we will reject the null hypothesis and accept the alternate hypothesis. Therefore H2 is accepted. Thus, there is a significant relationship between the sentiments of the customers and transaction experience.

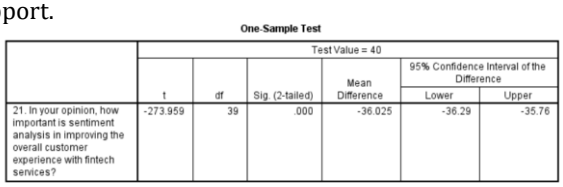


One-Sample Test

	Test Value = 40					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
2. How frequently do you interact with fintech services for your financial needs?	-157.211	39	.000	-36.475	-36.94	-36.01

Figure 2

In the below figure 3 it is seen that at 39 degree of freedom , tvalue is -273.959 at significance level 0.05. While comparing the same from the T table it is analysed that the value comes 2.023. Therefore 2.023 > -273.959. This means that the result is not significant. Here we will reject the null hypothesis and accept the alternate hypothesis. Therefore H3 is accepted. Thus, there is a significant relationship between the sentiments of the customers and customer support.

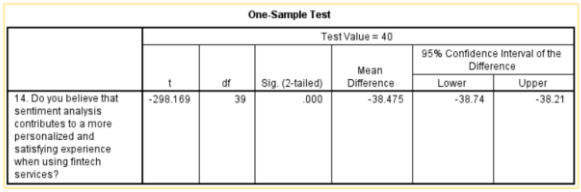


One-Sample Test

	Test Value = 40					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
21. In your opinion, how important is sentiment analysis in improving the overall customer experience with fintech services?	-273.959	39	.000	-36.025	-36.29	-35.76

Figure 3

In the below figure 4 it is seen that at 39 degree of freedom , tvalue is -298.169 at significance level 0.05. While comparing the same from the T table it is analysed that the value comes 2.023. Therefore 2.023 > -298.169. This means that the result is not significant. Here we will reject the null hypothesis and accept the alternate hypothesis. Therefore H4 is accepted. Thus, there is a significant relationship between the sentiments of the customers and personalized services.



One-Sample Test

	Test Value = 40					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
14. Do you believe that sentiment analysis contributes to a more personalized and satisfying experience when using fintech services?	-298.169	39	.000	-38.475	-38.74	-38.21

Figure 4

In the below figure 5 it is seen that at 39 degree of freedom, tvalue is -326.704 at significance level 0.05. While comparing the same from the T table it is analysed that the value comes 2.023. Therefore 2.023 > -326.704. This means that the result is not significant. Here we will reject the null hypothesis and accept the alternate

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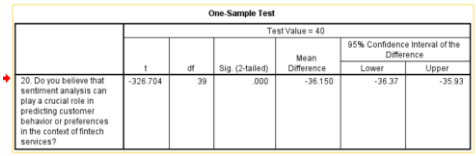
hypothesis. Therefore H5 is accepted. Thus, there is a significant relationship between the sentiments of the customers and overall satisfaction.



One-Sample Test

	Test Value = 40					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
20. Do you believe that sentiment analysis can play a crucial role in predicting customer behavior or preferences in the context of fintech services?	-326.704	39	.000	-36.150	-36.37	-35.93

Figure 5

CONCLUSION

The results of the study highlight the critical role that sentiment analysis plays in the fintech industry, particularly in influencing key aspects of the customer experience. The findings suggest a strong link between the sentiment of customers and several dimensions of their interactions with fintech services, such as User Interface (UI), transaction experience, customer support, personalized service, and overall satisfaction. This underscores the importance of these factors in shaping positive user perceptions and experiences.

Key Insights from the Study:

Preference for Fintech Platforms: The fact that Paytm and PhonePe are the most commonly used platforms for financial transactions suggests that these services are doing well in terms of meeting customer expectations in critical areas such as ease of use, reliability, and feature set.

Recommendation Rates: The high recommendation rate (62.5%) indicates that a significant majority of users are satisfied with their fintech platforms. This level of endorsement reflects well on the perceived value and reliability of these services, which is crucial for organic growth in the competitive fintech market.

Influence of Reviews: The observation that customers consider reviews on social media before recommending a service highlights the importance of maintaining a positive online presence and actively managing social media interactions. It shows that online reviews and sentiments can significantly influence potential users' decisions.

One of the participant of this research states that *"I have had an experience of contacting Paytm money customer support. They have deleted the option of contacting them which makes customers more frustrating. Raising of tickets should not be the only option available. Customers do receive a call back if case is escalated."*

This participant's feedback highlights a critical issue in customer service within the fintech sector, particularly with a platform as widely used as Paytm Money. The lack of direct contact options such as phone support can indeed be frustrating for users, especially in urgent situations where immediate assistance is required. This feedback underscores the importance of providing a more responsive and accessible customer support system to enhance user satisfaction and trust.

Another participant states that *"Every Fintech Platform has a good customer service but in some cases, the customer service are not experienced enough to understand customer's needs."*

This participant's feedback underscores the importance of not only having a customer service team but also ensuring that they are adequately trained and experienced to meet the diverse needs of customers. While it's positive to hear that many fintech platforms offer customer service options, the effectiveness of these services ultimately depends on the quality of support provided.

FUTURE IMPLICATION

Enhancing Customer Interfaces and Experiences: Given the significant relationship between customer sentiment and UI, transaction experience, and overall satisfaction, fintech companies should invest in optimizing their user interfaces and simplifying transaction processes to enhance usability and satisfaction.

Leveraging Sentiment Analysis: Regular sentiment analysis on user feedback across platforms can help fintech companies identify and address common pain points, and tailor their services to meet the evolving needs of their customers better.

Proactive Customer Support: The link between sentiment and customer support suggests that proactive and effective customer service is vital. Implementing AI-driven tools such as Chatbot's for immediate response and using sentiment analysis to understand and resolve issues can significantly enhance user satisfaction.

Personalized Services: As personalization also correlates strongly with positive sentiment, fintech services should focus on customizing user experiences. This could include personalized financial advice, customized offers, and user-centric innovations.

Social Proof and Marketing: Since reviews and recommendations have a considerable impact on user acquisition, fintech companies should encourage satisfied customers to share their positive experiences online. Additionally, leveraging influencers and satisfied customers to improve social proof can help attract new users.

Overall, the findings from the study provide valuable insights that can help fintech companies refine their strategies and offerings to enhance customer satisfaction and loyalty, thereby strengthening their position in the market.

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