

Consumer Perception of Digital Transactions in India – Sentiment Analysis Using Twitter Data

Objective:

This study aims to analyze consumer perceptions of digital transactions in India using sentiment analysis on Twitter data. The focus is on understanding how Indian consumers feel about digital payment systems, such as UPI and mobile banking, particularly after the demonetization of INR 500 and INR 1,000 currency notes.

Data Collection:

The study utilizes Twitter data collected between January and September 2018. Tweets were gathered using the Twitter API with the following three key hashtags related to digital transactions:

1. **NPCI_BHIM:** Refers to the Bharat Interface for Money (BHIM) app, which facilitates UPI-based transactions.
2. **DTPaymentNews:** Focuses on digital payment news and trends.
3. **DigitalIndia:** Reflects the broader initiative promoting digital services in India.

In total, 16,546 tweets were collected across these three hashtags, with the following distribution:

NPCI_BHIM: 6,157 tweets

DTPaymentNews: 684 tweets

DigitalIndia: 9,705 tweets

Methodology:

1. Data Preprocessing:

Tweet Extraction: Tweets were extracted using the Twitter API based on the selected hashtags.

Cleaning and Preprocessing: The collected tweets underwent cleaning to remove:

- Stop words (e.g., "the", "and", "is")
- Extra punctuation marks
- URLs
- Redundant spaces
- Word Database: A sentiment word database (based on the work of Hu and Liu, 2004) was used to classify words as positive or negative.

2. Sentiment Analysis:

- The sentiment of each tweet was determined using Lexical Analysis by comparing the words in the tweet against the sentiment word database.

- Sentiment Classification: Tweets were classified into three categories:

- Positive

- Negative

- Neutral

- Sentiment Score Calculation: Each tweet was assigned a sentiment score based on the ratio of positive to negative words. The overall sentiment was calculated by aggregating these scores.

3. Data Analysis:

- Frequency Analysis: The most frequent positive and negative words were identified to understand consumer sentiment better.

- Histogram Visualization: The sentiment distribution was visualized through histograms to show the overall mood of consumers for each hashtag.

- Result Interpretation: The results from the sentiment analysis were analyzed to identify patterns in consumer attitudes towards digital transactions.

Key Findings:

1. Positive Sentiment:

- The sentiment analysis revealed that the majority of tweets under NPCI_BHIM and DTPaymentNews expressed positive views about digital transactions, particularly about the ease of use and convenience of mobile banking and UPI platforms.

- Consumers appreciated the BHIM app for its simplicity and efficiency in making digital payments.

2. Negative Sentiment:

- Negative sentiment was found mainly in tweets that discussed issues related to transaction failures, security concerns, and lack of digital literacy among some sections of society. However, these negative tweets were significantly fewer compared to positive ones.

3. Growth of Digital Transactions:

- The results also indicated a growing trend in the adoption of digital payments, especially post-demonetization, with discussions around Digital India showing enthusiasm towards mobile banking, UPI, and other digital payment systems.

4. Impact of Government Initiatives:

- Hashtags like Digital India showed high levels of engagement, with many tweets emphasizing the government's role in promoting digital literacy and driving the adoption of digital payments in rural and urban areas.

Conclusion:

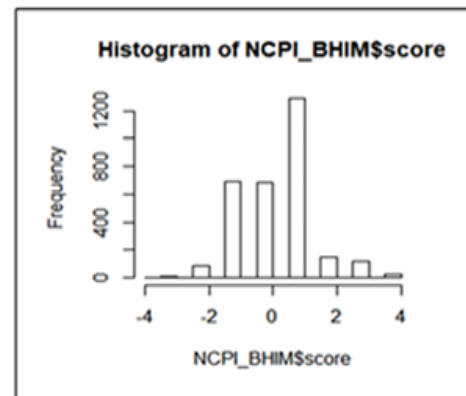
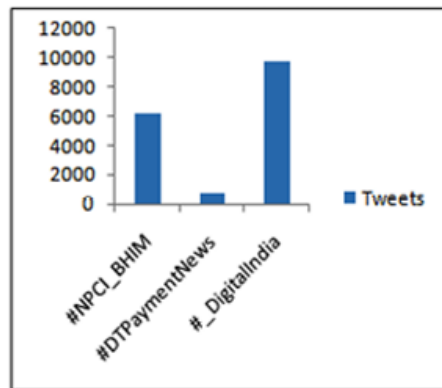
The sentiment analysis of Twitter data reveals a positive shift in consumer perception towards digital transactions in India, particularly after the demonetization event. Consumers have shown increasing trust in digital payment methods such as UPI and mobile banking apps like BHIM, although concerns regarding security and digital literacy remain. The Digital India initiative has played a pivotal role in driving this transition, with widespread adoption expected to continue in the coming years. This analysis highlights the significance of social media as a tool for understanding public sentiment and provides valuable insights for businesses and policymakers to address consumer concerns and promote further adoption of digital transactions.

Keywords:

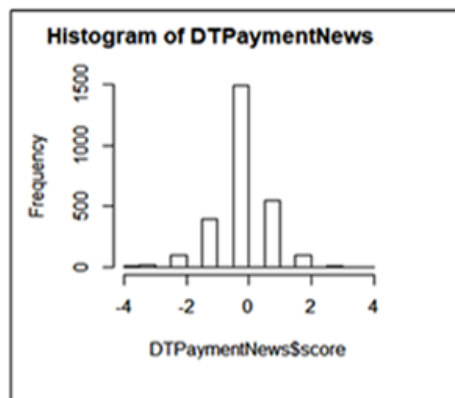
Sentiment Analysis, Digital Transactions, Mobile Banking, Twitter, India, UPI, BHIM, Social Media Analytics, Digital India, Text Mining, Data Analysis

Full Publication : <https://www.igi-global.com/article/consumer-perception-of-internet-banking-and-mobile-banking-using-twitter-analytics/297978>

Top hashtags in digital transactions (see online version for colours) Results of sentiment analysis – #NPCI_BHIM



Results of sentiment analysis – #DTPaymentNews



Results of sentiment analysis – #_DigitalIndia

