

SOCIAL LISTENING THROUGH SENTIMENT ANALYSIS OF TWITTER DATA: A CASE STUDY OF PAYTM IPO

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Abstract: *Purpose.* Microblogging sites are being used by people across the globe to share their opinions and to express sentiments for everything in real time. Through social listening, companies analyse the sentiments to assess the way forward, and the researchers use it to analyse the trend or an event and give forward-looking recommendations. The objective of the paper is to analyse the sentiments of people relating to Paytm IPO which can be used to predict the way forward.

Design/methodology/approach. The study attempts sentiment analysis. For this purpose, QSR NVIVO 12, the qualitative analysis tool was used to retrieve the tweets from the Twitter website. NCapture was installed for this purpose. Post data cleaning, stemming, query augmentation and classification, the Twitter data was analysed.

Findings. The sentiments around the IPO of Paytm have been negative and sarcastic. The extremely negative tweets were near twice the number of extremely positive tweets.

Practical implication. The study can help an investor in evaluating the investment that they might be planning in the given company. For the company, whose IPO is being considered, an analysis of the sentiments around the IPO can help in taking corrective measures, if the sentiment is negative, towards reputation building.

Originality/value. The study is an original contribution to the extant literature in the field of sentiment analysis.

Keywords: social media, Twitter data, sentiment analysis, opinions, tweets.

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I. Introduction

Social Media has proliferated the lives of our generation in a way unheard of and not experienced by any technology infiltration. The way we live has changed, the way we communicate has evolved, the methods of shopping have shaped up differently, and so is the way we share our opinions. Social media listening is a metaphor used for following online conversations to draw meaningful inferences (Crawford, 2009). Social listening is an absolute must in today's time where the opinions are being shared and comments made are of unimaginable magnitude. The analysis of what is being said online is a productive method to decipher the online engagements, which were overlooked earlier or not considered worth paying attention to. Today, microblogging websites have advanced to become a source of diverse information. This is due to the nature of microblogs on which people post real-time messages expressing their opinions on a variety of topics, discuss current issues, complain, and express positive sentiments for products they use in day to day lives. Companies manufacturing such products have started to use these microblogs to get a hint of general sentiment for their product. These companies study user feedback and reply to users on microblogs. However, developing a technology to detect and summarise an overall sentiment is challenging.

II. Need of the Study and its Objective

In recent years, academics and professionals have been paying attention to the impact of market sentiment on the performance of listing firms. A research question yet to be answered concerns how retail investor sentiment and attention might affect IPO pricing in the primary market.

In this paper, we look at a popular microblog called Twitter and build a model for categorizing "tweets" into positive, negative, and neutral sentiments. Through Social listening, the sentiments are analysed. For instance, the companies analyse as the buzz about them or their competitors to assess the way forward, and the researchers use it to analyse the trend or an event to give forward-looking recommendations. As a case study, Paytm IPO is used to exhibit our case. Thus, the objective of the paper is to analyse the tweets relating to Paytm IPO so as to deduce how the sentiments of the tweets predict the way forward.

III. About Paytm

One 97 Communications Ltd., founded in 2000, is one of India's leading digital platforms for both consumers and merchants. The company had a 333 million+ client base and 21 million+ registered merchants as of March 31, 2021, to whom it provides payment, finance, and commerce, as well as cloud services. In 2009, the firm created "Paytm App," its first digital mobile payment platform. The app was created to provide clients with cashless payment options. With a gross brand value of US\$6.3 billion, it is now India's largest payment platform and most valuable payment brand (Kantar BrandZ India Report, 2020). Cashless transactions in stores, mobile phone recharges, online money transfers, paying miscellaneous utility bills, access to digital banking services, purchasing rail and air tickets, playing online games, buying insurance products, making investments, and more are among the services available to customers. Merchants can utilise the platform to advertise their products and services, as well as provide payment solutions.

Competitive strengths

- India's chief digital payment service platform.
- Strong brand identity with US\$ 6.3 billion brand value.
- Broad customer base of around 333 million, 114 million transacting users on annual basis, and 21 million registered merchants.
- Paytm app to access a range of digital payment services over mobile phone.

Company Financials:

A snapshot of company's financials is provided in Table 1.

Table 1. Summary of Financial Information (Consolidated)

Particulars	For the period ending (₹ in million)		
	31-Mar-21	31-Mar-20	31-Mar-19
Total Assets	91,513	103,031	87,668
Total Revenue	31,868	35,407	35,797
Profit After Tax	17,010	29,424	42,309

Source: <https://www.hbuupdates.com/Paytm-ipo-last-date-today/>.

As is evident from Table 1, Paytm's profits after tax has exhibited a declining trend since the last 3 financial years. On November 8, 2021, it brought out an initial public offering, the net proceeds from which was expected to be utilised towards the following purposes:

- Strengthening and growing the Paytm ecosystem through acquisition and retention of consumers and merchants and providing them with greater and better access to technology and digital financial services.
- Investment in new business adventures, acquisitions, and strategic partnerships.
- General corporate purposes.

The details of IPO are provided in Table 2.

Table 2. Paytm IPO Details

IPO Opening Date	Nov 8, 2021
IPO Closing Date	Nov 10, 2021
Issue Type	Book Built Issue IPO
Face Value	₹1 per equity share
IPO Price	₹2080 to ₹2150 per equity share
IPO Listing Date	Nov 18, 2021

Source: <https://groww.in/ipo/Paytm-ipo>.

Table 3 provides further details relating to Lot size of the IPO.

Table 3. Lot Size details of Paytm IPO

Application	Lots	Shares	Amount (Cut-off) (₹)
Minimum	1	6	12,900
Maximum	15	90	-

Source: <https://www.chittorgarh.com/ipo/Paytm-ipo/1128>.

As is evident from table 3, a retail investor could apply in Lots. One Lot comprised 6 shares. A retail-individual investor can apply for up to 15 lots (90 shares).

IV. Review of Literature

Kaurav et al. (2021) examine the concept of NEP in higher education in India. For this study, the authors collected data from the MHRD website and Twitter. Computer-assisted qualitative data analysis software was used for sentiment analysis for the paper "Implementation of NEP in higher education has been positively received by people". However, for the higher educational institutes (HEIs), teachers and researchers, the study suggested for practical applications.

Sharma & Gupta (2021) studied Atmanirbhar Bharat package, which was introduced in May 2020 by the GOI. This package is aimed to empower the population affected by the Covid-19 pandemic. The study used data extracted using the #Atmanirbharbharat from Twitter in between May 12, 2020 to April 11, 2021 (10:09:52AM) using N Capture; 15018 tweets were extracted and analysed on the qualitative software tool NVivo. The themes 'defence' and 'products' were among the top five. The study concluded that a lack of medical facilities for Covid-19 patients has exposed the health system in India. Also, its access and reach will be challenging for the common man.

Gian et al. (2020) studies 416 companies (between 2010-2016) to analyse the effect that the number of tweets and the sentiments of tweets had on their IPO price. The result of the study revealed that the more positive

sentiments, the closer was the IPO price to its maximum achievable value.

Liew & Wang (2016) examined the cross-sectional relationships between the first day returns of 325 IPOs (2013-14) and their corresponding tweet sentiment. The results emphasised a positive correlation between the sentiments of the tweets and the IPO returns.

Goel & Mittal (2012) established the correlation between "Public sentiment" and "Market sentiment" using sentiment analysis and machine learning principles. To predict public mood Twitter data was used, and DJIA values of the previous day were used to predict stock market movements. The authors use Self Organizing Fuzzy Neural Networks (SOFNN) on the DJIA values, and Twitter feeds to validate their test results which were found to be 75.56% accurate. The study concluded that Twitter could be used to capture the public mood and a high degree of correlation exists between peaceful and contented mood dimensions with DJIA values.

Wang et al. (2012) gauge public sentiments expressed on Twitter and the electoral events during the 2012 U.S election. The study is a real-time sentiment analysis of sentiments expressed by people towards presidential candidates during the presidential elections on the microblogging platform. The authors also used sentiment analysis to explore how these events affect public opinion. The authors are of the opinion that sentiment analysis is an instant and continuous analysis of sentiments and can be conveniently used to create an opinion about the dynamics of the electoral process.

Bajo, Raimondo (2017) analyzed the impact of media on the demand and pricing of an IPO. The study recognized that there has always existed information asymmetry between the issuer/underwriter and the potential investor as a result of which latter has to depend on external sources, including media, to gather as much information as possible to arrive at an investment decision regarding an IPO. The analysis was based on 27,309 newspaper reports for 2814 US IPOs over a span of 18 years from 1995 to 2013. It was found that there exists a statistically significant direct relationship between sentiments and IPO pricing meaning whereby that positive tone corresponds to IPO underpricing. Moreover, timing and reputation of a media house play an equally important role.

Ahmad et al. (2016) estimated the relationship between firm-specific tone expressed in media and firm returns through Vector Autoregressive model. For this, over 5.5 million news articles related to 20 US firms were studied over the period from 2001 to 2010. It was found that firm-level negative tone results in reduction of returns the next day. However, the results were not consistent implying that the sentiments may contain new fundamental information about a firm that has already been factored in share price assuming markets are efficient.

Chung et al. (2017) analysed 382 Korean firms listed in the Korean Stock Exchange between 2007-2014 to study the impact of premarket and aftermarket IPO sentiments on stock returns. It was revealed that premarket sentiments impact initial returns in terms of difference between issuer's offer price and IPO opening price of first day. After market negative sentiments lead to subsequent underperformance of the stock. However, this was found to be a short-term phenomenon evidenced in one month from opening of IPO.

The review of literature reveals that although there are many studies who use sentiment analysis for gauging public sentiment with respect to policies (e.g., NEP) or events (e.g., elections), there is a dearth of case studies that analyse public sentiment towards an IPO. This gap was particularly pronounced for studies in developing countries like India. Since performance of a stock market, including IPOs, is a significant barometer of performance of an economy, role of public sentiments in shaping the IPO price is an area of research worth exploring. This study attempts to fill this research gap.

V. Research Methodology

The QSR NVIVO 12, the qualitative analysis tool, has been used to retrieve the tweets from the Twitter website. NVivo 12 program aids in analysing the unstructured data from social networking websites. The qualitative analysis through NVivo has been used extensively to analyse the reviews, the social media posts and interview data, adding credibility to them and removing any bias.

A. Data Cleaning: For the purpose of the study, the tweets about the Paytm IPO from November 7, 2021 (a day prior to the IPO) to November 27, 2021, were captured and analysed. NCapture was installed for this purpose.

The string used for the search was “Paytm IPO”. The data cleaning was undertaken to arrive at meaningful inferences. The data downloaded from Twitter contains a lot of metadata like the twitter @handle, a crisp bio, display name, location, number of followers, the text of the tweets and many others. For the purpose of this study, only the actual texts of the tweets have been used. In all 8011 tweets were extracted in the first instance. The tweets with abusive language, promotional tweets, and non-English tweets were removed. A total of 7936 tweets were finally captured through Ncapture and imported to NVivo. The dataset once imported to NVivo, sentiment analysis was done, and the word frequency was analysed.

B. Stemming: Many words in the English language have different forms but similar interpretations e.g., invest, investing, investment, etc all have a common root of invest. Stemming to the root word has been accepted to have meaningful inference.

C. Query Augmentation: The NVivo software enables the process of analysing the tweets of the users and categorising them into sentiments by clubbing the synonyms together e.g., scam, fraud, etc.

D. Classification: The set of 7936 tweets with stemming and query augmentation are classified into negative and positive sentiments by the autocode feature in NVivo.

The Twitter data was analysed using the Natural Language processing leading to text mining for sentiment analysis of the Paytm IPO and providing insights into the launch.

Sentiment Analysis, also referred to as opinion mining, classifies the opinions or messages in tweets on a scale of positive, neutral, and negative (Arun, Srinagesh, & Ramesh, 2017). It examines the sentiments and emotions portrayed in the tweets' text. It is intended that the multi-layered manual and computer-assisted analysis used in this study would result in a more sophisticated comprehension of each tweet's content. Once the software categorized the tweets based on the sentiments, the team read every tweet to analyse the tweets based on the sarcastic tone and remove them from one category to the other. The Word Frequency Analysis (WFA) was performed to analyse the unstructured text from the tweets. WFA through NVivo gives the number of times a word is used in the entire i.e., 7936 tweets, and generates a word cloud for the reader to understand the process better. The size of the text in the word cloud implies the frequency of the word.

VI. Data Analysis

The 7936 tweets were captured from www.twitter.com with search words Paytm and IPO. The language restricted was English, and the time period fixed was for 20 days from one day prior to the IPO -7.11.2021 to 27.11.2021.

A. Word Frequency Analysis

The word frequency analysis is explained below with the help of the word cloud (Fig 1) and in the tabular form in Fig 2. The top three most frequently used terms have been explained with the help of the accompanying tweets.



Figure 1. Word Cloud of Paytm IPO

investors	people	crash	tanked	crores	looks	justice	spent	total	users	think	around		
							opens	disapp	picture	ipoetic	allotme	profit	
		chinese	driven	trading	money		wives	upset	falling	holder	correct	first	disco
market	listing				investm		today	startu	level	#stoc	cash	anyth	subs
		encouraged	spoken	nykaa	mouth		dema	lessc	takin	busin	lowe	badly	intere
	biggest				valuation	delhi		nearly	capit	ecof	future	dou#	pa mig
		enlightened	abroad	shares		indian		trust	debu	ever	exist	prom	digita
price					issue		custor	@vija	recie	mod	seeir	polic	windc
	years	largely	making	retail	raised		offer	bless	boug	neve	dem	oppo	great

Figure 2. The Word Cloud expanded in tabular form

A.1. Investors: The mention of "investors" (n=2049) and its synonyms in the tweets is about the impact of Paytm IPO on the investors, their hard-earned money, the impact of the IPO on the investors, and accusing Paytm of helping the Chinese investors. Some of the tweets highlighting the most frequently used word are enlisted below:

- "Disaster in #Paytm. Wealth created in short span due to Valuations Wealth eroded 40% in two days. Who is affected? Retailers who applied in IPO and investors who bought at higher levels. Watch above 1500 closing basis."
- "Several of Paytm's investors including BlackRock and Canada Pension buy more shares of Paytm after its stocks plunged as much as 41% below the IPO price."
- "Idea: I want Start-up funding as one of the asset classes. I think many people in India have money but a few have the network to invest in Start-ups."
- Inspiration: Paytm's IPO: people accused it is a way to give exit to Chinese investors at cost of Indian investors."

A.2. Market: Market (n=1882) and its synonyms are used in the tweets highlighting a few pertinent points like the Paytm IPO may define how this may redefine the way the share market behaves towards the e-commerce IPO. A few other points about the market is the advice to be patient in the market and not aim to get rich instantly. And also, the Chinese conspiracy by the markets has been highlighted.

- "With every passing day it is becoming even more clear that the Paytm IPO #PaytmIPO is defining the strategic inflection point for the Indian stock market."
- "Paytm IPO lesson. "You don't get wealthy by investing in an IPO and then selling out on a listing day. Rather, the only way to play this is to look at it as a punt and allocate small amounts towards buying such stocks and then holding them for the long-term."
- "Do you think the way Paytm is doing at the markets, was the IPO a conspiracy to return money back to the Chinese investors at a premium?"

A.3. Price: The tweets discuss the pricing (n=1509) of the share as a main point of inflection. Some people talk of Public Interest Litigation (PIL) against the wrong higher pricing; the users also talk about the fact that what matters to the market is the 'price' and also the indication that it may be a scam. The fall in the price of 40% is by no way something that can be ignored, so the tweets are full of reference to too ambitious a price for an e-commerce IPO.

- "PIL against SEBI wrong pricing of Paytm IPO a 19-year-old files case in Delhi court."

- "Several of Paytm's investors including BlackRock and Canada Pension buy more shares of Paytm after its stocks plunged as much as 41% below the IPO price."
- "Paytm is up nearly 40% from its low. Zero cash producing worst business model soothsayers of IPO days must be wondering what happened right in last 3 days ... Price is what matters in the street, prophecies of EBITDA need to attend school again."
- "Guess everyone understands Paytm business now and the doubters are believers now. All this in 3 days. People are so rational and sensible. Maybe they did not price the IPO wrong after all. Is it still a scam guy?"
- "Paytm down 44% (1295) from the IPO price (2150) in 2 trading days!"

B. Sentiment Analysis

The sentiment analysis was applied to the 7936 tweets on Paytm IPO using Nvivo-12.

Table 4 shows the number of tweets with respect to positive and negative sentiments.

Table 4. Sentiment Analysis

Total Tweets		7936
Positive Tweets		2207
Very Positive	650 (*300)	
Moderately Positive	1557	
Negative Tweets		2871
Very Negative	1119	
Moderately Negative	1752	

*Source: Twitter and NCapture in NVivo.

The sentiments around Paytm and its IPO are more inclined towards the negative side as revealed by the analysis of the tweets, where extremely negative tweets are near twice the number of extremely positive tweets. And moderately negative tweets are also slightly higher than the positive ones. *On analysing the sentiment of the tweets, more than half of the very positive tweets have a sarcastic tone more inclined towards the negative interpretation.

The negative sentiments are expressed in some of the following tweets:

"Disaster #Paytm."

"Paytm cashback points are a bigger scam than the Paytm IPO."

"Kind of poetic that 5 years after demonetisation, the Paytm IPO should flop so very badly."

"Movement in IPO Paytm looks artificial."

"Realise that it (Paytm) is still deep in read, has no viable business model and yet valued at \$10 billion."

Similarly, tweets are focussed on how Paytm does not seem to be good e-commerce investment, with no profit-making scenario in the near future (as quoted by Mr. Vijay Sharma himself), but some artificial market forces seem to be manipulating the market after the debut fiasco. The conspiracy theory of Paytm being a part of the 'demonetization' decision is also seen as a contributor to the negativity around the IPO. Chinese investor is a propellant for the negative sentiment as well.

The positive tweets on sentiment focus around the fact that its major comparison with Nykaa is not justified as people tweet that even Nykaa is not worth the IPO price subscribed. Investment firms buying in the open market repose confidence in the IPO of Paytm. Confidence of the users in the leadership of Vijay Shekhar and irrespective of the IPO, Paytm as an app is well-appreciated. The positive sentiments are elaborated by the following tweets:

"Market Sentiment improved significantly after Paytm recovery and Appraisal of Listed IPO in secondary market."

"Investment firm #Blackrock purchased huge quantities of Paytm shares in open market at 1500-1750 yesterday."

"Bcoz I use Paytm on daily basis, as a customer and I know @Vijay Shekhar will figure out how to make the profitable at scale."

"Tho Paytm didn't do well in IPO but Paytm is an amazing app and no one can deny it."

*Some of the sarcastic tweets are mentioned below, which belong more to the negative sentiments category:

"Euphoria of IPO gains shall fade now with Paytm disaster."

"Paytm IPO was the biggest success for China."

"Most are well educated but never bothered to research before investing."

The word frequency analysis and sentiment analysis both indicate that the investors are wary of the markets now, especially after the crash of the Paytm IPO.

VII. Conclusion

The sentiments around the IPO of Paytm have majorly been negative and sarcastic. The built-up of belief around Paytm started after demonetization, where its traffic increased 500% in a single day. A study funded by the Internet and Mobile Association of India (2017), found that Paytm was the most downloaded app, even more than amazon and Flipkart. This level of usage and the success of IPOs of Nykaa, policy bazaar, etc had the e-commerce bandwagon giving signals of successful listing to Paytm IPO. However, the Twitter users' negative sentiments centred around Paytm being a flawed business model and it being a co-conspirer of demonitization measure imposed on India in 2016. Further, questions were raised about its pricing, with some labelling it as a scam aimed to assist Chinese investors. Public Interest Litigation against SEBI's wrong pricing of IPO became the centre of conversations. All in all, the sentiment analysis of number and tone of tweets brought out a negative reaction labelling an investment in it as a wrong financial decision. It would be an interesting study to analyse how Paytm's IPO and the reputation of the company shape up in the coming months.

VIII. Implication of the Study and Further Scope of the Study

Paytm became a household name when demonetisation was announced in India. Considering its popularity, the study attempted to gauge public sentiment around its IPO. The sentiment analysis of the social media chatter around the time of any IPO can help the investor in evaluating the investment that they might be planning in the given IPO. For the company, whose IPO is being considered, an analysis of the sentiments around the IPO can help in taking corrective measures, if the sentiment is negative, towards making the IPO successful.

The further scope of the study is that it can be expanded to the new IPOs and they may be compared to see if the sentiments on the social media platforms (Twitter and others), translate into the success of the IPO. There is a plethora of information and social chatter around the IPOs being launched and a comparative study will have far-reaching implications.

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