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Exploring the Role of User-Driven Communities in NFT Valuation: A Case Study of Discord

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Abstract

There has been a recent increase in interest in NFTs, as the number of high-priced trades has risen. While some research attempts to identify the factors behind these value spikes using traditional market analysis and machine learning, few studies focus on the user-driven communities where vast amounts of information are shared. We aim to address the need for understanding the factors that influence NFT prices within user-driven communities, specifically within Discord, an influential platform for NFT projects. To do this, three NFT projects are selected - Coolman's Universe, Degen Toonz, and Mfer - based on their size, value, and active user base. Chat data are collected from these projects, and three methods are used to gain insights into how communication among users evolves around influential Discourse leaders. The analysis shows that there are distinct ways and styles in which discourse leaders communicate with community members. Furthermore, the common sentimental experience of the leaders regarding the project value is identified to highlight the important aspects of communities. Conducting a social network analysis to examine the leader's significance within the community enables us to take the initial step towards comprehending the value of an NFT from the perspective of a user-driven community.

Key Words: NFT, Non-Fungible Token, Community, Discord, Sentiment Analysis, Network Analysis.

I. INTRODUCTION

Non-Fungible Tokens (NFTs) are a type of digital token built on blockchain technology, which allows for the unique proof of ownership of digital data on the chain [5,8,19]. This concept has enabled new practices of digital ownership and has been adopted as a term for various derivatives built on NFT principles.

There has been a significant increase in public attention to NFTs, as evidenced by Google Trends data. In February 2021, the digital artwork of Beeple, “Everydays: The First 5,000 Days,” gained widespread attention after being auctioned for $69 million at Christie's [9]. This event sparked further interest in NFTs from a variety of stakeholders. Google Trends data shows that public interest reached its all-time high in January 2022, when the NFT project “Bored Ape Yacht Club” gained media attention after being popularized by celebrities worldwide [14]. According to the L'atelier NFT market report, the NFT market has experienced significant growth, with dollar trade increasing from $82 million in 2020 to $17 billion in 2021 [10].

However, the market's rapid growth has also raised concerns about the asset's volatility, with some NFTs experiencing price spikes of up to 2,000% within a year. There have been various attempts to understand and predict the value of NFTs, with many approaches utilizing quantitative methods such as market analysis and machine learning. However, despite the importance of the community factor, only a few studies have explored its role in NFT valuation. This study aims to fill this gap by examining the factors influencing NFT prices within Discord communities, which are particularly influential for NFT projects.

To do this, we collected data from Discord projects and used three different methods to analyze the communication of significant users. Through qualitative analysis, we identified why users join the community and their expectations. Sentiment analysis allowed us to explore how users experience different events within the community. Finally, network analysis helped us identify the discourse leaders and their influence within the community. Our findings provide valuable insights into the complexity of NFT community values.

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II. BACKGROUND

2.1. Literature Review

The fact that the NFT industry is growing but still in a nascent phase left our team with a handful of academic publications that delves into the topic of NFT value capture based on community. Popular discussions happened around predicting the value of an NFT based on market indices, such as trade volume and floor price. Nadini et al.[5] identify the predictability of NFT sales based on machine learning, taking in statistical features of the market and the project. The research shares findings that sale history and visual features as good predictors of price and identifies factors, such as median price and recent sale price, to correlate with primary and secondary sales in the market. However, as the author acknowledges, the study was conducted as a general overview of a market, which excluded measurement of "collective attention" from social media that could function as a source for market behavior. Another study by Kong & Lin [3] takes a similar approach but specifically identifies NFT's value as an investment asset. In their study, the return of the NFT asset class is evaluated based on three panels: characteristics, network factors, and market indices. Overall, we could observe a trend where there are active attempts to identify this new asset class based focusing on asset property and market transactions.

A few recent studies examined social media data concerning NFT's growth and valuation. Luo et al. [4] analyzed keywords people use when using social media. This study collected data from Twitter and OpenSea projects and explored the relationship between NFT price and the number and content of the tweets. While the study found some words in tweets show a certain level of predictability in the price of NFT, the data was limited in that it did not include community-generated data such as Discord or Reddit. Kapoor et al. [15] gauged the impact of Twitter features on the virality of NFTs using machine learning. They found that the count of user membership lists and the number of likes and replies are important features. This study showed good potential in utilizing social media features to predict the growth of NFTs. However, the downside is that the NFT marketplace is not well established yet compared to other financial markets.

Our direction to conduct our study as a community-based valuation approach is based on the findings from the recent studies of NFT based on communities that took place in the field of HCI. While a short amount of research measures the value of NFT based on community traits, studies point to the significance of the community's role in the value of NFT. For instance, Baytas et al. [13] propose a foundational study that identifies stakeholders of the NFT ecosystem and the relations between them. Among stakeholders, NFT owners were determined to purchase NFTs to acquire a particular value proposition provided by the community. The project identifies potential use cases of a community but is limited to suggesting its potential due to the few real-world data they collected. However, in another study, through an empirical method, we could grasp a better context of why community is important to different stakeholders in NFT [11]. The study conducted qualitative user research focusing on NFT creators and identified the features, such as "mutual support" and new opportunities like "collaboration," as an essential community functions. Based on the insights, the study proposes a design implication where the community could benefit from having active community moderation - to incentivize good behaviors and punish bad behavior - for the integrity of the community. In summary, in the field of HCI, some findings point out the importance of the community to different NFT holders. However, research that focuses on the dynamics between end-users and the community is still scarce.

Drawing on the limitations and findings of previous studies, we defined our scope of research to the end-user of the NFT: the buyer or potential buyer of NFT that participates in the NFT community for the value proposed by the community. We noticed that the dynamics between end-users and the community is an under-explored topic that could be significant in evaluating the project's value. To test our questions, we aim to quantify and visualize users' stance on the community by using sentiment analysis. Applying sentimental analysis based on social media, such as Twitter, Reddit, and Chain node, has been practiced for fiat cryptocurrencies epitomized by studies targeting price prediction of bitcoin and Ethereum in several studies [2,6,16]. As relatively few foundational studies have begun to examine the value of NFTs based on user sentiment, and considering that NFTs can be viewed as an asset class, we expect that our research on the discourse occurring within NFT project communities will yield valuable insights [17]. By identifying the insights from user discussions, the study could shed light on the community value of NFT and imply their significance that contributes to the longevity and productivity of the project.

2.2. Research Goal

Through the courses of our studies, we aim to continue on the limitations of previous studies and introduce new insights to the domain by focusing on the NFT communities and achieving the following goals:

1. Identifying the purpose of the participation
2. Observing the sentiments of users going through different occasions
3. Drawing a landscape of user network to identify the dynamics of their communications

By reaching these milestones, we hope to learn how a productive community is built and how it plays a vital role in NFT projects and propose valuable insights that teams can consider. However, there are some limits to the study. As the private sector of discussions might not be revealed to our team, we might leave out some essential data that includes important insights. Also, while different studies from the field identify significant active users or influencers in user-driven communities, identifying discourse leaders in projects as a heuristic to base the analysis is a novel attempt. Due to the natural constraint of heuristics, there might be unknown or unidentified errors that distort the result we collect. Although realistic concerns, we wish our exploratory study could bring new discussion regarding NFT and the value of its community.

III. RESEARCH METHOD

The NFT market is a continuously growing field that provides interest to many. The market has been continuously growing since 2019, with a volume of $24,532,783 to $17,694,851,721, increasing 21,350% in two years. At the same time, buyers grew by almost 3,700%, and sellers grew by 1,800% as well [10]. The outrageous increase in the number of people contributing to the NFT world is a factor that should no longer be ignored. This new type of investment has brought more wealth to the people than the traditional investment types [13]. NFT collectibles are unique because of their rareness and function to be “owned and displayed as part of ‘a’ collection.” The collectibles take over 50% of the market and remain profitable to NFT investors. Not only in the primary and secondary markets where these NFT collectibles are resold, maintained a positive income for many. These collectibles most likely grew in price on the secondary market. To understand each collectible better, joining each collectible's community is essential. The community promotes each other’s artwork and creates value for it. Rather than only focusing on the art piece itself, the artist's reputation can affect the price of their creation [11]. This paper will focus on the community aspect, specifically Discord, of the NFT world and observe its correlation to the value of NFT collectibles by watching three projects with top market volume and which have a discord community where we can access chat data.

3.1. Community Selection Rationale

Community plays a vital role in many aspects of human life. People desire to become part of a group and feel welcome by fellow people like them—uniting with a common idea to make memories together. According to the study “Social motivators of live-streaming viewer engagement on Twitch” by Hilvert-Bruce, eight socio-motivational motivators affect people getting involved with the live stream communities. The commonality that could be noticed from the eight motivators; Entertainment, Information Seeking, Meeting New People, Social Interactions, Social Support, Sense of Community, Social Anxiety, and External Support. These reflect people’s desire to continue interacting with one another; hence, people continuously seek an online community they can be part of and rely on [17]. These characteristics are also visible in the NFT communities found on the Discord platform.

There are many different types of platforms that allow users to make a community from which they can call themselves apart. Discord is a platform that was created to connect online gamers to communicate with each other. While other platforms, such as Skype and Messenger, provided a service for the user to communicate with each other, Discord added a unique feature, freedom, into their application. There were no rules formed by Discord themselves about user behaviors. Users could contribute to building upon the platform to create communities and establish a network about a specific topic they enjoyed [7]. This freedom of users being able to express themselves without any restrictions by the community is both an advantage, and a disadvantage it has that differentiates it from other platforms even though the platform began to connect gamers, the pool of users that use Discord expanded to “local hiking clubs, to art communities, to study groups” [11].

On the other hand, Twitter is another community that can be used to promote and communicate with others, but it is hard to get personal with many of its users. Creating an account and joining a community on Twitter is relatively simple. In contrast, a Discord community can make a verification process to allow only those genuinely interested in specific topics to join. Telegram and Discord are relatively similar. While the membership size is more significant in Telegram, Discord has a more effective active participation rate resulting in a larger market cap [21]. Also, the interface of Discord is simple and easy to learn, allowing users to prefer the platform. Discord combines various platforms’ advantages to create a private community where people can discuss the topics they want to focus on.

Twitch and Discord are the major online platforms allowing users to communicate and create a community. There is a reward system for the community’s contributors, and hierarchies and ranks are formed. The difference between the two is that Twitch is a streamer-based community where the viewers interact with a streamer with veto power on decisions. In contrast, Discord is a user-based platform where users are in control. Like Twitch’s chat system, which allows users with different ranks to interact more directly with the streamer, Discord has more features that would enable

users to interact more diversely by creating new channels for specific features or further discussions. These characteristics of enjoying with each other also stand as a positive characteristic for users to get attracted to using Discord over other platforms.

3.2. Research Methodology

Our team proposes a hybrid exploratory analysis of the communication data of Discord, one of the largest NFT community platforms. The main objective is to identify the essential characteristics of the NFT community through discourse leaders and discover the implications of community to project value.

The dataset for the research is the chat messages of discourse leaders within NFT project channels in Discord, excluding the project team members. In every social community, leaders bring organic discussion, suggestions, and questions to the group. Aside from general NFT community members, these discourse leaders are perceived to play a significant role in the community, not just sharing information but influencing the NFT value. The author identification tags, post times, and channel name are also recorded for data collection corresponding to each chat message. Also, spam-related content is discarded from the dataset with caution after cleaning. After collecting the raw data, the data is preprocessed to be suitable for our study application using Python. Some preprocessing steps include dropping missing values, lemmatization, and removing stopwords. Then, the data is processed for our three exploratory analyses: Qualitative Analysis, Sentiment Analysis, and Network Analysis. The data extraction for raw chat data and basic sentiment data is done by utilizing open-source tools, Gyrrrz's "Discord Chat Explorer (DCE)" [20], and Orange [18]. For each data analysis, codes are built and run on Python 3.10.4. The raw dataset and codes used for the project are available at https://github.com/DJK-98/NFTDiscord.

First, through qualitative analysis, the discourse leaders' communication are exhaustively analyzed to identify the characteristics of each leader. The difference and commonalities between leaders for each project is studied to build a representative user persona that can provide an overview of what users expect from the project community. Raw chat data is collected with the open-source application named "Discord Chat Explorer (DCE)" [20]. The application allows us to extract the vast amount of text data in Discord channels efficiently. After extraction, we use Python codes to organize chats from the identified discourse leaders to use as a data set for further analysis. The data is also uploaded on GitHub for reference.

Second, discourse leaders' emotional tone within their communication is examined through sentiment analysis: positive, negative, or neutral. Orange, a data mining tool for sentimental analysis, is used to analyze the sentiment of each discourse leader based on their chat data. Our team makes a jargon list specialized to both general NFT and each project to obtain more precise analysis data. The process detail is illustrated in the sentiment analysis section in the results chapter. This way, the motivations with their emotional tone are further researched and analyzed. The analysis results are visualized through a trend chart, reflecting on the magnitude and alteration of the leaders' emotions. A process to validate the sentiment analysis result is implemented by labeling each chat message and comparing it with the result.

Scrutinizing the reason behind discourse leaders' emotions would help to find the relationship between the emotional tone of the community and NFT-related events or activities, such as NFT giveaways and collaboration announcements. A method is employed to find some possible events when there were abnormal changes in emotion trends. Our team is able to recognize the main driving factors of such abnormal features of emotions within communities. In addition, relationships between significant market indices, including trade volume and price, and the leaders' sentiment are evaluated. A visualization is presented to illustrate this relationship by comparing the change in the trend of these two variables and sentiment scores and assessing the correlation between each market value and sentiment score.

Lastly, the personal network of discourse leaders within each project community is identified through network analysis. We identify the strength of communication between users using the mentioned data recorded in the collected chat data. By visually showing whom leaders relate to, we aim to demonstrate the significance of the leading figures in each project and look at the communication dynamics based on their communication network.

IV. DATA COLLECTION

4.1. Project Selection

Our team searched for NFT projects in the community developing stage but had a significant number considering their size and value. Also, our team focused on selecting different NFT projects to identify the considerable commonality and differences between projects. Thus, we underwent the process of organizing standards that will allow consistent characteristics of the projects. Considering all this, our team identified projects that fulfill the following measure.

1. The project falls into the collectible category in OpenSea. While there is a faint line between different categories, OpenSea provides one of the most

popular distinctions of NFT in its category. We selected collectibles as it has the most significant market pie currently. Also, projects should be on the Ethereum chain, the most widely used chain for NFTs.

2. Style is created generatively. There are different styles of NFT. Our team selected projects with the generative art style to avoid adding the complexity of analysis from different art styles.
3. The transaction volume must be in a significant number and active for recent dates. The monthly transaction volume was set to 10 K ETH−30 K ETH, which also falls into the top 50 projects in May 2022 by volume.
4. There should be an active community on Discord with roughly 20 K members. Community size does not necessarily mean the project is high quality, but a certain number should be secured for community activities. We assumed communities with a more significant number of members provided us with more data.
5. The project mint date should be within six months. The mint date signifies a day similar to the first sales date of the business. Mint happening in 6 months means that the project is in a relatively early stage but not too early that there are high chances that active team-to-user and user-to-user communication are happening.

Our team identified three projects that fulfill the conditions. Three projects are called: Coolman's Universe (CMU), Degen Toonz, and Mfer. While these projects share significance in both community and project size scales, they have different characteristics regarding their community building. CMU has a community that largely migrated from the existing fan community of the creator's content. Degen Toonz has a relatively newly founded community with members joining from more diverse backgrounds. Mfer has a unique community without any administrator and is governed by the users. Projects with similar sizes but distinctive community characteristics were selected to study the potential cause of specific communication and further excavate insights. The project brief and information will be explained in the section below.

4.2. Project Overview

4.2.1. Coolman's Universe (CMU)

Coolman's Universe is an NFT collection of 10,000 generative art created by Danny Casale, also known as Coolman Coffeedan, working with ten different team members. He gained popularity from the original animation he uploaded on video platforms, including YouTube, with 2.7 million subscribers up to this date. He created the NFT collection on the character "Speshie" and expanded his Universe into the NFT field to connect with fans further.

Table 1. Coolman's Universe 30 days statistics.

Category	Value
Total volume	247,000 ETH
Floor price	0.67 ETH
30 days volume	50th (at 656 ETH)
Discord member count	21,500
Mint date	December 20, 2021
Mint price	0.095 ETH

The creator of the NFT aims to "put a smile on as many faces as possible" with his collection by delivering a message that "you are special." The community follows this cultural trait and has roles related to them. Purchasing the NFT will allow different perks mentioned in their roadmap. Their current road map in Q2 includes giveaways, custom stickers, community vote rights, and several airdrops. Leveraging on its popularity, they are preparing a new collection mint named "Babies" upcoming in June.

Coolman's Universe's 30 days market statistics are listed in Table 1.

4.2.2. Degen Toonz

Degen Toonz is an NFT collection of 8,888 generative art featuring cartoon-style PFP. The collection was created by a digital artist, Prince Lail, with four other team members. Purchasing NFT allows different giveaways open to holders and provides community voting rights to allow contributions to the community's major decisions. Holders also get access to exclusive merch that is built based on Toonz.

Degen Toonz is expanding its roadmap to the metaverse, where they ambitiously claim to build Toon Town by buying lands on dao of community preference. Holders then receive benefits by earning a governance token named Toonz as a reward for holding NFTs. Degen Toonz's 30 days market statistics are listed in Table 2.

Table 2. Degen Toonz 30 days statistics.

Category	Value
Total volume	14,100 ETH
Floor price	1.89 ETH
30 days volume	9th (at 5,800 ETH)
Discord member count	23,000
Mint date	February 23, 2022
Mint price	0.075 ETH

4.2.3. Mfer

Mfer is an NFT collection of 10,021 pieces of generative art with scribbled, easygoing art. The collection was created by a user named Sartoshi who grew his influence in Twitter space with his memes and tweets before the project. As a hard Cryptopunk fan, Sartoshi homaged the collection by mirroring several traits into his metadata.

Mfer takes a unique approach in terms of roadmap policy. They take the mindset of "you can state a roadmap that says where you will go, but you can also plant seeds and see where they grow" and leave the community to decide their roadmap. Mfer's 30 days market statistics are listed in Table 3.

4.3. Discord Chat Mining

Based on our team's rationale in the previous section, we collected chat data from the Discord NFT servers. First, data was scraped from each NFT project, and then our team identified the significant characters from each project named discourse leaders.

4.3.1. Data Scraping and Pre-Processing

Raw data was collected with the open-source application named "Discord Chat Explorer (DCE)". DCE is an easy tool that supports chat collecting functions in CLI or GUI format, and users can freely collect chat data from the specific channel in the servers they want.

Our team utilized DCE to collect chat data that would best represent the ideas of the project. First, chat from the recent three months (From February 28th to May 30th) were extracted. The recent three months include the chat data of half of their project duration. Recent chat allows our team to identify the contemporary trend in the community. Second, the chats from the general channels were extracted. Having a general channel is a widely used convention for Discord channel design. It is a free discussion room primarily open to every channel member. As the access to alpha channels - channels only open to NFT holders - was limited, our team decided to focus on the general channel, which has the most active communication happening in number and interactivity.

Then, the 3-month data from each server were extracted in text format to be preprocessed through the Python codes. Text data was cleaned into the username and chat content and filtered out stop-words for further utilization.

Table 3. Mfer 30 days statistics.

Category	Value
Total volume	37,400 ETH
Floor price	1.9 ETH
30 days volume	20th (at 2,000 ETH)
Discord member count	18,000
Mint date	November 30, 2021
Mint price	0.069 ETH

Table 4. Discourse leader and chat counts.

Category	CMU	Degen Toonz	Mfer
1st (Count)	Rose_Garden#7713, (12,047)	Sigyn#0001 (14,227)	Bbglitch#5179 (38,412)
2nd (Count)	Billiano#5812 (11,760)	bigbellydaddyty#4781 (9,656)	Netspawn#0420 (29,377)
3rd (Count)	ScaryGary#0892 (7,152)	TipOfTheSpear.nft#1424 (9,468)	28#0234 (15,688)

4.3.2. Discord Leader Identification

Based on the chat data extracted from each server, our team made a heuristic approach to identify the most significant discussion leaders in each project. The discourse Leader is an important figure that contributes to the activeness of the community, which in turn creates value for NFT projects [12]. By identifying each Discourse leader from the project, our team expected to observe the value and meaning of the community and the dynamics between users in the community. Discourse Leaders were chosen from the users who had the most chat left in the general channel in the last three months. We also filtered out the team members who operate the project. It includes users such as project founders or moderators who manage the community. Using simple Python codes, we identified Discourse Leaders for each project.

Table 4 includes nicknames and the number of chats each Discourse Leader has left in each project for the set chat duration.

V. RESULTS

After data processing, we conducted three explorative data analyses: qualitative analysis, sentiment analysis, and network analysis. A qualitative analysis has been conducted to identify the characteristics of leaders in the Discord community. For each community, we analyzed the role of the most actively engaged users and made them into a persona representing the character. Secondly, we conducted sentiment analysis on the text data collected. Since sentiment analysis help to discover the overall tone and mood in the posts generated by general users, it is an essential exploratory tool that helps to find the most significant events in the communities. Lastly, we conducted a social network analysis to explore how frequently Discourse leaders are mentioned in postings.

5.1. Discourse Leader Qualitative Analysis

Qualitative analysis for Discourse Leader in each project aims to identify the purpose behind community participation factors for users in the NFT community. By manually going over the extensive chat data and having an organic conversation in the discourse community with each Discourse Leader, we identified some of the important reasons that motivate Discourse Leaders to participate and build the community. By identifying each factor, we could identify what aspects the team should consider when making the communicative system for the project. Characteristics of each discourse leader are identified through qualitative analysis. The following excerpt includes the data extracted from each project discord server.

5.1.1. Leader Analysis

Coolman's Universe (CMU)

Rose_Garden #7713

This user is deeply engaged with the NFT discussion, including minting, floor price, ROI, and other discussions. His conversations focus on CMU and daily greetings. The messages only mention a little about other collections if there is a trend or trending information alongside CMU.

"I think ROI the floors are a better play."
"Recently, someone tweeted a diagram showing holder crossover of CMU, Doodles, CoolCats. Does anyone have the tweet/graph?"

Billiano#5812

This user brings a positive attitude to the group; the messages raise the deeper meaning of the CMU and how different it is from other collectibles. However, the messages promote CMU and the collectibles rather than having discussions to contribute to the community.

"I love CMU so much that even if I liquidated out, I would still keep spesh... that is how amazing this place is. I just want us to wake up before it is too late, like how will this look a month from now if we are at .5 and trying to drop the babies man."
"Well, thank you! How about you? Are you new to Coolman's Universe?"

ScaryGary#0892

This user is optimistic about the CMU and the collectibles but has yet to make many meaningful contributions with messages, primarily reactions and showing interest in the community rather than the collectibles themselves.

"Love this community"
"This community is a family"
"If my wife doesn't own a Spesh, then divorced"

Degen Toonz

Sigyn#0001

This user has great insight into NFTs and Crypto. His messages focus on NFTs but not much on the Toonz collection itself. He is very engaging in conversation and eager to answer questions. Occasionally, he has input about Toonz collection, such as release dates, personal favorites, etc.

"by experience, I know only owners should ever access twitter project account."
"I disagree. I co-own a crypto project. I would safely say that 90% are far from knowing the minimum required even in crypt…"

TipOfTheSpear.nft#1424

This user is energetic throughout the chat, emphasizing his contribution to the chat and continuing to build the NFT community. He is found to be one of the collection owners but has a strong sense of using NFT collectibles as an investment. He enjoys his communication with fellow Degenz and sharing information.

"front page of opensea!"
"I still have two I minted that are not revealed."
"they are going to the moon!!!!!"

bigbellydaddyty#4781

This user shows interest in the Toonz and initiates a conversation to gather information. The messages contribute to information about the art itself. He has a strong feeling towards the community and a sense of belonging.

"wow yall strong asf community; might have to try to scrap some funds to get some"
"Bought my first today rank 1200 for .69 so hyped"
"That bulletproof vest toon is fireeeee"

Mfer

bb_glitch #5197

This user views Mfers as an opportunity to invest and contributes to the conversation about the price: floor price, purchase price, and sold price. bb_glitch positively contributes to the community, but not many meaningful texts are found.

"sup bro I'm bout to mint"
".40 floor then .75 same day"
"imagine the celebrations lmaoooo"

Netspawn#0420

This user is engaging in conversations about Mfers with others. He tends to initiate conversations with many reactions to people's chat and strongly believes about Mfers and their future.

"this shit is LIFE if you're looking for a 3eth swing in one day.... like bull said, that was extraordinary"
"u mfers are wildin"
"1 mfer = 1 mfer"

28#0234

This user has a small insight into the mfers but little informational input. His messages focus more on the chat and contribution rather than delivering some information.

"LFGGGGG MFERS WE ARE ABOUT TO ENTER THE WORLD WIDE WEBB!!!!!!!!!!!!!!!!"
"TIME TO DELIST ALL MFERS AT 10 ETH"

5.1.2. Community Persona

Based on the characteristics of the discourse leaders and the community environment, personas were created by our team. Their biography depicts the style of the chat that most users utilize in the community, and their characteristics portray the energy and characteristics of the community.

5.1.2.1. Coolman's Universe Persona

"Biography: Coolman's Universe NFT collections are more than just blockchain-based artwork. The community has been ongoing even before web3 thrived around the world. The community believes that CMU will prosper in or outside the web3. NFT is just one of the ways to be part of the more extensive community that Danny Casale built."

The persona represents thoughtful, emotional, passionate, diligent, helpful, honest, and polite characteristics. CMU holders tend to add jargon to their nicknames. It may be the trend extending from the original fandom culture from Danny Casale. Considering the core user solidity formed prior to the project, even though many users may not know about blockchain and NFTs, the community tends to welcome anyone and help new users get involved and adjust to the community.

5.1.2.2. Degen Toonz Persona

"Biography: Brand that thrives in web3. DEGENTOONZ is Just a young man seeking a job as he invests in Web3. I believe that blockchain is the item that he needs to learn to get a job in the current market. I also see that Degen Toonz will become a brand and grow in market size."

The persona represents dynamic, adventurous, extroverted, resourceful, communicative, and ambitious characteristics. Unlike CMU, Degen Toonz has core members with in-depth knowledge about NFT and users who sought the potential of the collectible to grow into a brand. Many discussions about the community and the potential of the NFT. They show some effort in helping new users to join the community. However, there is a more robust energy formation when users who have already been part of the community discuss particular topics.

5.1.2.3. Mfer Persona

"Biography: Mfer is the VIBE! Mfer does not have an official community, and I can interact with other users and communicate with one another through this community. Boundedness is the primary focus for me. The community is fire and vibes along with me. The sense of belonging really drags me to communicate with other Mfers. LFG!"

The persona represents aggressive, overcritical, energetic, vulgar, fearless, philosophical, judgmental, and wild characteristics. Users vary in the Mfer community, mainly because no original brand or project team leads the main narrative. Officially it is not the official community but a user-driven community. Some join the community knowing little about the project but have rumors about how NFT could bring profit. Some others own Mfer and want to talk about it, while others simply appreciate the art. The wide variety of users created a semi-chaotic environment for the users, which created a sense of an underground community. There seems to be a shortage of official discussions compared to the previous projects.

A previously done research showed that people join online communities for two social factors, a Sense of belonging and Trust in each other regarding information. These factors were applied to our observation, and we noticed a relationship between the type of community and user interaction [7]. In communities that heavily sided towards a sense of belonging, language use became more dynamic and not filtered. At the same time, communities with trust in themselves were more polite and meaningful conversations.

5.1.3. Implications of Qualitative Analysis

The commonality of the discourse leaders from the three communities was that they were very free to communicate their opinions. The communities were not restricted to talking only about their collectibles but expanded to the outside world. However, the differences were visible with how they communicated based on the depth of the community and their belief in the community. Coolman's universe had a vision in mind even before its NFTs were created, Degen Toonz began creating a brand with the rise of NFT, and Mfer has been more about the community and the chat about NFTs in general. A community has more informative input from the users based on the roadmap and project

Table 5. Community purpose and expected requirements.

Category	Purpose	Requirement
Coolman's universe	To Support Daniel and the CMU culture	Bridging the gap between the original fandom and newcomers. Activities and events for solidity.
Degen Toonz	To contribute to the creation of the new brand.	Delivering specific roadmaps. A more functional user-driven organization to foster discussion about branding
Mfer	To communicate with each other not only on the collectibles but anything.	Autonomous governance structure should be implemented. Filter processes more strictly created due to the inexistence of central management.

vision. Based on the discourse leaders' analysis, the discussion leader's role and attitude towards the community portrayed the commitment and attitude of the entire community. The discourse leaders knew what they were involved in and created an environment to make what they knew about their project into a meaningful project for the community.

Coolman's Universe's discourse leaders created a strong community with respect for each other even before the NFT became a big market. Next DegenToonz discourse leaders created a community believing their collectibles would become big brands. However, this community rose along with the rise of NFT and does not yet have a strong community like Coolman's Universe. Mfer's discourse leaders, on the other hand, were not as engaging as the other discourse leaders in other communities. However, they focused on interacting with other people rather than the collectibles themselves. Mfer collectibles were just another topic for them to use for interaction and making friends. Based on these observations, communities should incorporate a system to differentiate the actual investors who are serious about the collectibles and filter out the ones that are not serious and contribute to harming the community with the ill use of language. Below is a summary table addressing the primary community participation purposes identified with what strategies the team can use to foster a productive community environment.

5.2. Sentiment Analysis

Sentiment analysis was made to identify the community response to specific events in the project's timeline. Comprehending users' emotions is crucial to understanding their community experience and supporting the production environment in the discord servers. Thus, for the sentiment analysis, our team focused on identifying positive and negative sentiments and tried to make a connection between the sentiments and events to collect insights. This way, we can observe the most significant factors that influence sentiment in a community and identify methods that can alleviate pains or foster a positive atmosphere.

5.2.1. Data Analysis Method

Through sentiment analysis, our team analyzed the sentiments of the discourse leaders in each of the NFT projects. Firstly, we used the data we preprocessed and the chats only with NFT terms to analyze meaningful chat content. Then, we applied it to a data-mining application called Orange. Through this tool, we got the sentiment score for all the chats of each of the discourse leaders. A temporary structure of our Orange file is shown in Fig. 1.

For Coolman's Universe, daily sentiment scores for each discourse leader are illustrated in Fig. 2.

It could be seen that the locations of the highest points and the lowest points in the graphs are similar. We then specifically saw the chat contents for each of the respective points to figure out through which kind of talk they are influencing the Community positively or negatively. Topics related to high sentiment were 'suggestions for the NFT team,' 'love towards the NFT,' and "motivation to create a bigger community, while topics related to low sentiment were 'NFT hack' and 'NFT price drop.' The NFT hack incident explained the lowest sentiment point period. Also, there were wrongly scored chats due to certain terms. Some were 'concerning,' 'drop,' and 'no.' Chats that involved these terms were scored as negative sentiment even though they were positive.

For DegenToonz, some of the highest and lowest sentiment points are in similar periods, as shown in Fig. 3. Topics related to high sentiment were 'expectations of NFT price increase' and 'encouragement for Discord NFT team recruitment.' In contrast, topics related to low sentiment were 'discord scammers' and 'criticism of other NFTs.' Moreover, like Coolman's Universe NFT, there were errors in sentiment scoring in which chats that involved words like 'dead' and 'but' were scored negative but should have been scored positive.

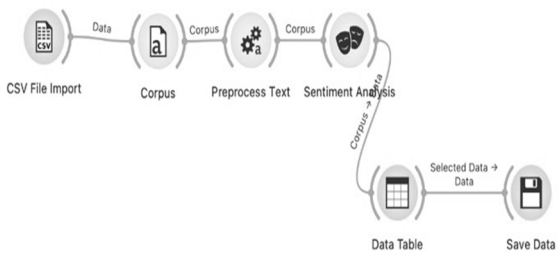

Fig. 1. Sentiment analysis architecture.

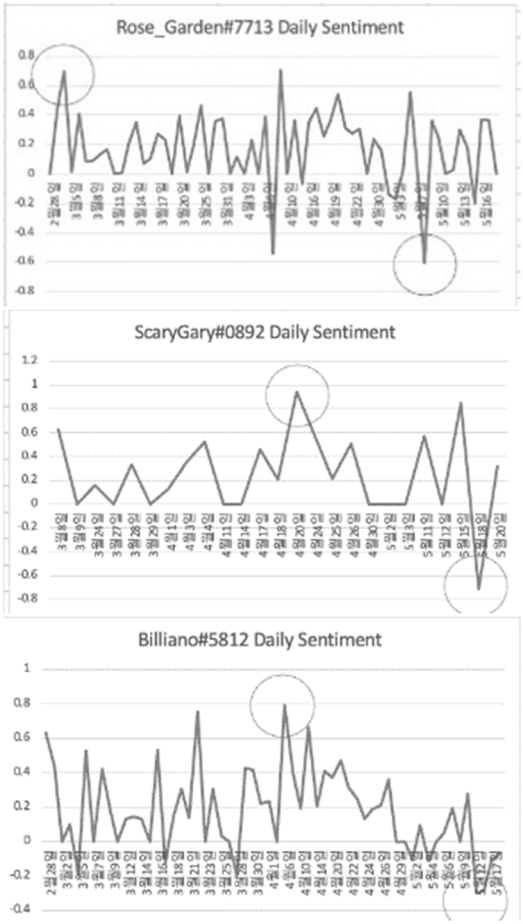

Fig. 2. Coolman's universe daily sentiment.

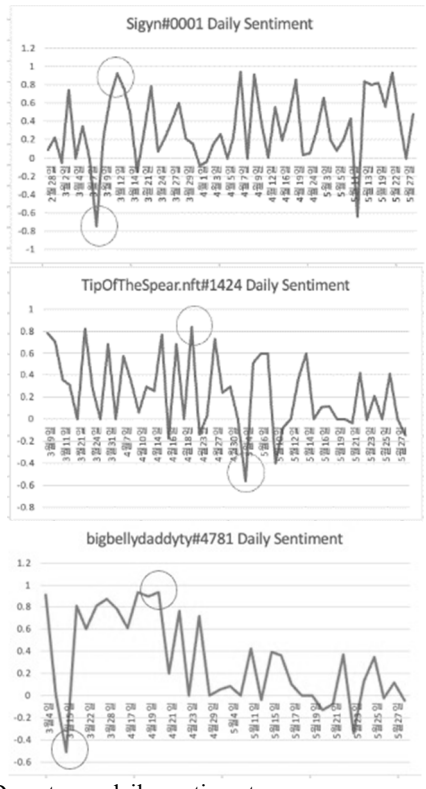

Fig. 3. Dgen toonz daily sentiment.

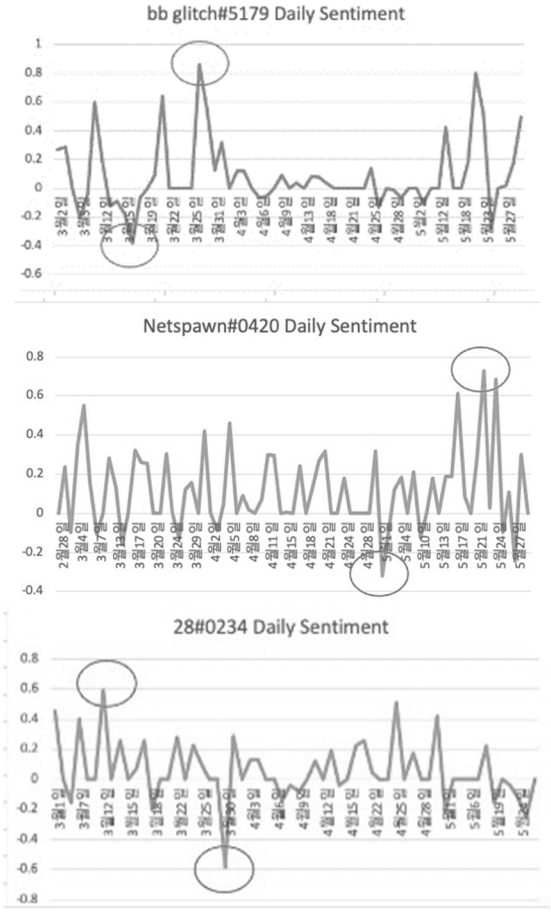

Fig. 4. Mfer daily sentiment.

For Mfer, each of the highest and lowest points is in different locations by each discourse leader, as seen in Fig. 4. Topics related to high sentiment are 'banishment of a disrespected member from Discord' and 'greetings of chat participants.' In contrast, topics related to low sentiment are 'NFT price decrease' and 'conversation on an NFT holder.' Also, chats that included the words 'lol' and 'lmao' were wrongly scored as negative chats.

5.2.2. Correlation of Transaction Price to Volume

The graph is created for the weekly average sentiment scores of the three discourse leaders previously mentioned, and a derivative graph was created below with the visual graph of NFT transaction price. These graphs aim to determine whether the sentiment score's most significant increase or decrease can be explained through the NFT transaction price or volume. In Coolman's Universe, the most significant decrease in sentiment was in week 10, when there was a decrease in average transaction price after a 60% increase in week nine, as seen in Fig. 5 and Fig. 6. The price eventually reached its lowest price during the last three months. Then, in the following week, in week 11, the most significant sentiment increase occurred when a price increase occurred after seven weeks of price decrease.

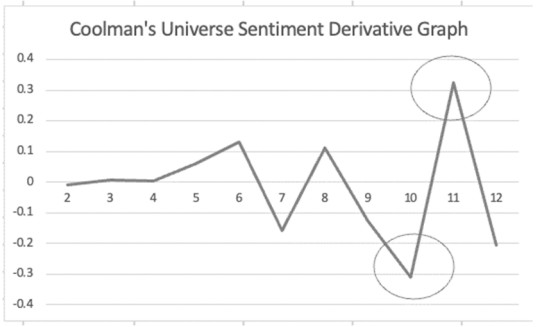

Fig. 5. Coolman's universe sentiment derivative graph.

Fig. 6. Coolman's universe transaction price and volume.

Next, for Degentoonz, the most significant sentiment decrease occurred in week 3, when the lowest transaction volume occurred, as can be observed in Fig. 7 and Fig. 8. In week 4, the sentiment score increased the most in the following week, when the average transaction price recovered and was consistent for the whole week.

Lastly, in Mfer, the sentiment score increased the most in Week 11 when a sudden significant increase in transaction average price and volume occurred, illustrated in Fig. 9 and Fig.10. In week 13, there was a sharp decrease in sentiment score when the average NFT price reached its lowest price

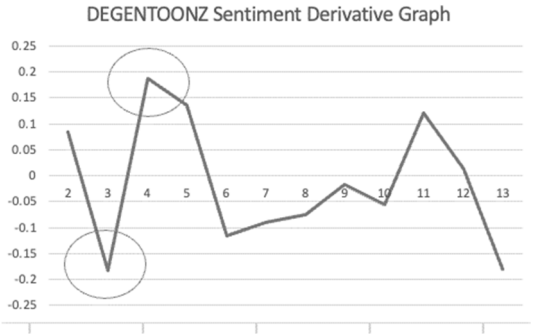

Fig. 7. Degen toonz sentiment derivative graph.

Fig. 8. Degen toonz transaction price and volume.

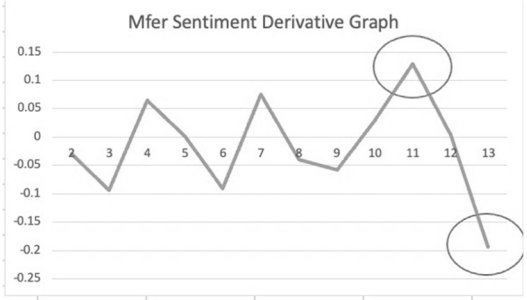

Fig. 9. Mfer sentiment derivative graph.

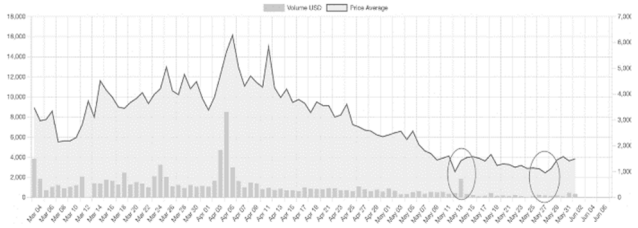

Fig. 10. Mfer transaction price and volume.

during the last three months.

5.2.3. Implications of Sentiment Analysis

According to the sentiment analysis, discourse leaders share similar sentiments within the community. Regarding positive sentiments, they concern the sentiments of Discord community members as well as for the good of the community. Therefore, members within NFT communities should consider other members and the community communities to bolster the positive sentiment within the communities. Regarding negative sentiments, they respond to the adverse effects on the project itself and the general NFT community, such as NFT price drops or scam events. Activities, including raising the members' morale by sharing possible factors for potential floor increase or sharing positive news in the community, are needed to counter such negative sentiments. Managers in each community should also administer the community to prevent any detrimental members from entering or any malicious communication hosted by hostile users. Such emphasizes the importance of a security monitoring role for the management team. Even though it might not seem directly related to the project's current value, hacking and scams can severely damage the community, causing mistrust and leading to the fall of a robust community.

Furthermore, it could be inferred that the transaction price and volume positively correlate to the sentiment of the discourse leaders within the community. The relationship between the price and sentiment still requires detailed scrutiny regarding the identification of its cause and effect, as complex factors influence an NFT. However, we sought the possibility that user sentiment could be a potential subject related to the prediction or evaluation of the price of an NFT.

5.3. Social Network Analysis

5.3.1. Data Analysis Method

Next, social network analysis was performed using the preprocessed comparable data and building an additional Python code. Ids that mentioned the selected leaders in the chat were extracted using the codes.

5.3.2. Discourse Leader's Network

Next, social network analysis was performed by utilizing the preprocessed comparable data and building an additional Python code. Ids that mentioned the selected leaders in the chat were extracted using the codes.

In Coolman's Universe, from Fig. 11, it is shown that the three discourse leaders we selected are in the top 5 most frequently mentioned people. The rest three graphs illustrate the top 7 most frequently mentioned people by each of the three discourse leaders. In the three graphs in Fig. 12, we can see that all three leaders mention each other a lot. However, there are no mutually frequently mentioned users, meaning the three do not have any ordinary people they mutually mention a lot other than each other.

In Degen Toonz, the discourse leaders are included in the top 5 most frequently mentioned people, as can be seen in Fig. 13. And, contrastingly to the previous example of Coolman's Universe, the leaders don't mention each other a lot, but have three mutually frequently mentioned people, which can be seen in Fig. 14. The three people were identified as the project founder or the community managers.

In MFER, the three discourse leaders we selected are in the top 5 most frequently mentioned people, according to the data in Fig. 15. They mention each other a lot but, again, do not share frequent mentions regarding the community's other users. The result is similar to that of Coolman's Universe.

5.3.3. Implications of Social Network Analysis

We have seen that in all three projects, the three selected discourse leaders are within the top 5 frequently mentioned people. It proves that the three have a significant, influential role within the community, ensuring their role as discourse leaders. Also, since the selected discourse leaders have a high frequency of mutual mention of the projects, it can be inferred that discourse leaders, in general, often communicate with each other to share their status and additional NFT information. Their mutual communication and bonding have a high potential to influence the community and set the conversation's tone. Lastly, our analysis of the three selected discourse leaders revealed that they do not have mutually frequently mentioned people, indicating that community members have selective standards for recognizing

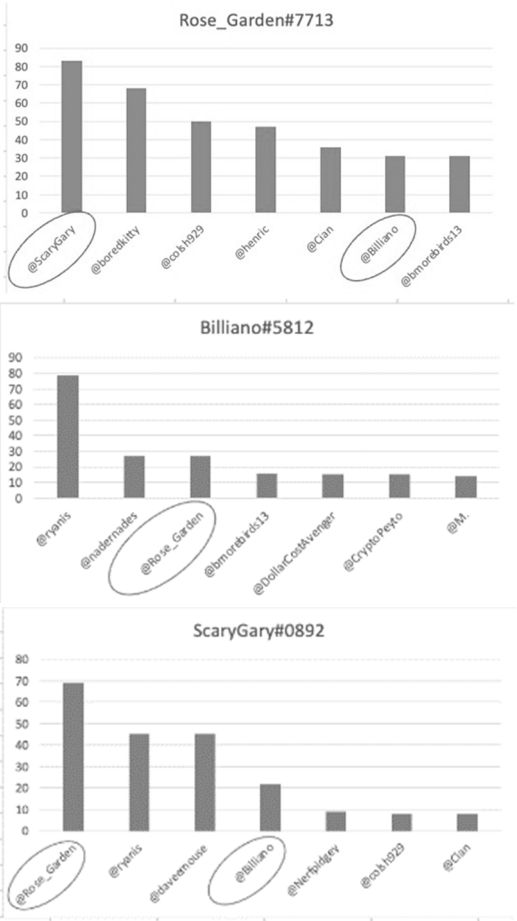

Fig. 12. 'Rose Garden' frequent mentions (Top), 'Billano' frequent mentions (Bottom-Left), 'ScaryGary' frequent mentions (Bottom-Right).

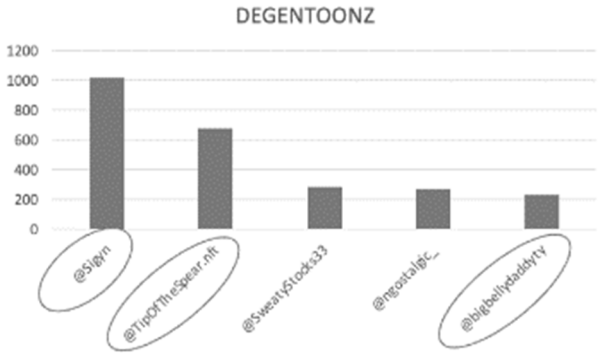

Fig. 13. Degen Toonz frequently mentioned users (Left).

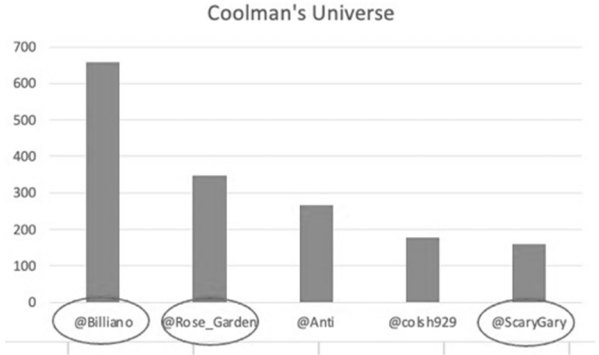

Fig. 11. CMU frequently mentioned users (Left).

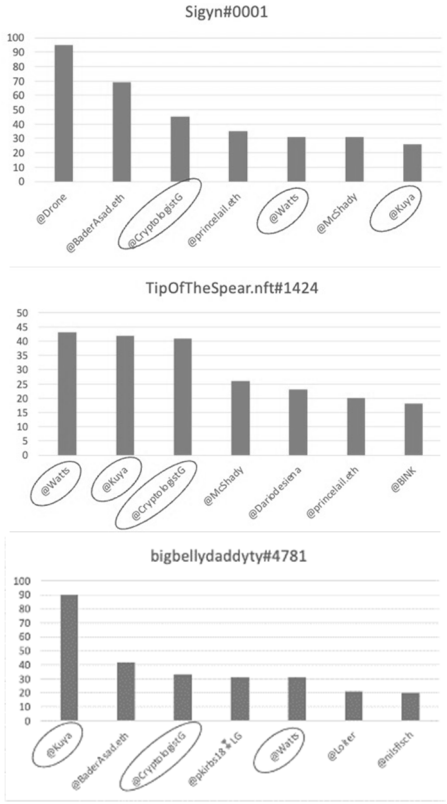

Fig. 14. 'Sigyn' frequent mentions (Top), 'TipOfTheSpear' frequent mentions (Bottom-Left), 'BigBellyDaddyty' frequent mentions (Bottom-Right).

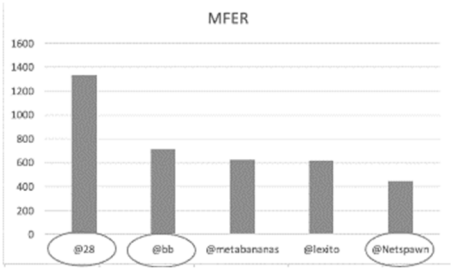

Fig. 15. Mfer frequently mentioned users (Left).

discourse leaders. These leaders are generally accepted as easily mentionable users in the community, particularly when an issue arises.

As discourse leaders are influential figures, the managing team could monitor the critical topics of conversation and extract sentiments to analyze the atmosphere of the community. It could function as an effective method for communities with a considerable number of members, and monitoring every user's response is impossible. As per the scope of the study, we have not yet identified the precise reason behind a user contributing one's time to become an influential figure identified as a discourse leader in our study. However, in further studies, identifying the causes and ensuring delivery of the expected incentives to the leaders will become essential to managing the community efficiently. The positive mindset and successful vision shared

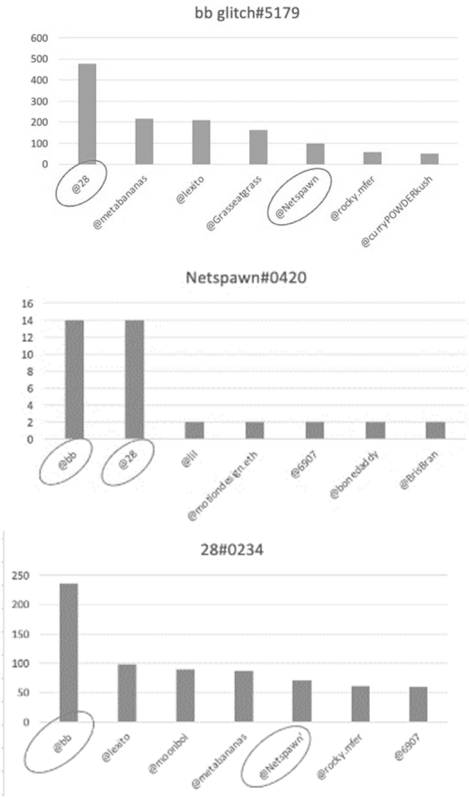

Fig. 16. 'BB Glitch' frequent mentions (Top), 'Netspawn' frequent mentions (Bottom-Left), '28' frequent mentions (Bottom-Right).

in the community via discourse leaders could create favorable movement in trade volume.

VI. CONCLUSION

This study aimed to encompass various factors related to values connected to the NFT community, mainly focusing on the communities in Discord, a popular platform for NFT projects. Through the study, we tried to delve into the relatively nascent field of NFT valuation by focusing on the actual chat log in user-centered communities. To identify the details and implications of each project, we used different analysis methods, including qualitative, sentiment, and network analysis.

By conducting qualitative analysis, we were able to derive three representing personas for each community in Discord. In Coolman's universe, the persona represents thoughtful, passionate, and polite characteristics. The strength of this community is that it welcomes people new to NFT with kindness and passion. Degen Toonz, on the other hand, is represented with a more extroverted and ambitious persona. This reflects the in-depth knowledge the leaders show in their community. Mfer is also aggressive and energetic. Since no team is leading the conversation, it covers many discussions. There are varying characteristics

for different project communities. Hence management requires thorough scrutiny of the character of their community. This could be done by identifying the major discourse leaders who set the atmosphere and lead discussions on the matters related to the project.

Although, there is a wide range of conversation topics hosted by different leaders, the general common issues that directly influenced the sentiments were topics regarding the projects' market value. This calls for a need to effectively handle the community sentiment for negative cases, such as floor price drops, and endorse users to support the project by incentivizing positive communication hosted by discourse leaders. Meanwhile, the Social Network Analysis says that while identified discourse leaders actively communicate with other leaders, there are considerably low numbers of mutual mentions besides the leaders from other users. Hence, discourse leaders are defined as a particular set of users with an extensive network spreading out to the individual user, identified as leaders who have the potential to influence the atmosphere of the community. Therefore, determining the sentiments and the leaders' requirements could be a practical approach for higher market value to counter adverse events or positive leverage results.

There were limitations based on some constraints we had. Even though we focused on relatively new and trendy projects, they were still massive in size and expensive in their price. The price barrier of a project blocked us from the option to be granted access to all the channels existing in the server, including alpha chat channels which are generally opened for the NFT holders exclusively. We have missed the data from these channels, so we may have overlooked essential information that pointed to different insights. The study's premise assumes that user discussion in the NFT community is formed and led by a handful of significant figures who actively contribute to the server with consistent communication. Although several studies identify the existence of crucial communication contributors, it is not perfectly proven that discourse leaders play a role in NFT communities as critical as some other leaders in user-driven communities. Also, due to the lack of a similar approach to the issue, the standard to select discourse leaders was created roughly based on the number of chats in a given duration. Although the number of talks was significant compared to other users, we may have left out the prominent figures who contribute more in quality than quantity, such as influencers. To conduct our study efficiently, we have used applications that sometimes left us withlimited options. For example, DCE did not support methods to scrap all data across all channels in the server, leaving us an opportunity to focus on one significant track that is likely to provide as many details. Our Python code might have yet to identify NFT-related jargon since they are relatively new in text processing.

Despite the constraints, this exploratory study on NFT communities illuminates some of the critical implications that NFT communities could have. We hope that the findings and implications could facilitate further discussion in the relevant field for a more precise and more profound understanding of user interaction and its implication for the value of an NFT project. For future studies, we might scale the difference between the influence of user participation and team-led narratives to measure how meaningful the user interactions are in specific NFT projects. In this study, there was a limit to comparing all the small details between projects. Therefore, detailed user participation level, ratio, and intensity comparisons were undiscussed. As we extend this study to include a detailed comparison with team-led narratives, we can explore more significant factors influencing the motivations behind the hype in the recent NFT trading.

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