Tokenizing Luxury: Exploring the Value of NFTs in the Fashion Luxury Industry

Abstract:

The purpose of the paper is to explore the topics discussed, the sentiment expressed, and the emotions conveyed from the User-Generated Content (UGC) on Twitter in relation to NFT (Non-Fungible Token) initiatives of luxury fashion brands. The paper also examines the relationship between the sentiment of UGC, and the activities on NFT marketplaces. The research is based on the analysis of 2.3 million tweets discussing 21 NFT initiatives, and how the sentiment toward these initiatives is related to 2.9 million transactions taking place on OpenSea.

The results reveal that, in general, the sentiment regarding NFTs in the luxury sector is neutral, and tweets discussing the metaverse and luxury do not seem to elicit strong emotions. UGC analysis reflects topics related to the NFT initiatives of these luxury brands, including their collaborations with artists and celebrities, which are often influenced by the Asian cultures. The perceived value of NFTs in the luxury watch category appears to be primarily functional and utilitarian. In contrast, NFTs in the metaverse cloud and the fashion category are associated with more hedonic, experiential, and symbolic value.

Through analyzing transactions on OpenSea , the study provides evidence that NFTs in the luxury fashion sector are not predominantly viewed as speculative investments. Instead, they are seen as having a utilitarian and functional value akin to physical luxury fashion items. The findings contribute to Web3 literature by providing empirical evidence of the value co-creation process through topics, sentiment and emotions consumers associate with UGC related to NFT luxury fashion brands, and the metaverse on social medias.

Keywords: Blockchain, Non-fungible tokens, NFT, luxury fashion industry, metaverse, sentiment analysis, consumer value, Web3.

1. Introduction

Digital shopping environments have evolved from transaction and showroom focused spaces into multidimensional, multi-sensorial, experiential and collaborative virtual worlds- aka the metaverse (e.g., Kaplan and Haenelien, 2022; Hennig-Thurau and Ognibeni, 2022). Luxury brands are experimenting with the metaverse. For instance, Gucci created the "Gucci vault" space where players, creators and the brand come together in a unique gaming experience in the Sandbox metaverse, a space that includes Non-Fungible Tokens (NFT) treasure hunt, Gucci NFT wearables and fashion accessories for purchases (Schulz, 2022). Much of the hype around virtual environments is focused on NFTs, which have seen an explosion of interest over the past years. NFT is a cryptographic tradeable right to digital assets where ownership is recorded in smart contracts on the blockchain, allowing to establish the provenance of the digital object offering information about who owns it, previously owned it and which of the many copies is the original (Colicev, 2023; Dowling, 2022; Peres et al., 2022). In the luxury fashion industry, NFTs have a wide range of use cases ranging from product authentication and verified ownership to serving as collectable pieces in their own rights (Joy et al., 2022; Sung et al., 2023; Colicev, 2023). These digital assets are offering new ways for consumers to shop, exchange, collaborate, socialize and inhabit new identities. Whether they are digital only (i.e., NFTs that can be worn in games and metaverses and transferable and composable across platforms) or digital/physical hybrids (i.e., phygital – NFTs that can be redeemed for physical items or rendered on a person in a picture or video), the demand for NFTs in the luxury industry and the metaverse has increased, and the buzz around them on social media (SM) has amplified. Thus, the goal of this study is to investigate, through unstructured data, the topics, the sentiment, and emotions of luxury brands NFTs initiatives extracted from UGC on Twitter and its relationship to marketplace activities. In particular, we focus on three interrelated research questions: (1) what NFT luxury fashion-related topics do consumers discuss on Twitter? (2) what is the general sentiment toward NFTs within and across brands in the luxury sector? (3) Is there a connection between user sentiment on Twitter and NFT luxury market interest on marketplaces? Theoretically, we ground the research in consumers value theories. Specifically, we use Wiedmann et al. (2009) and Tynan et al. (2010)'s frameworks to organize the value that consumers co-create and derive from luxury fashion NFTs. We bolster our analysis with 21 semi-structured interviews with NFTs holders and creators, on the value perception of NFT, and confirm that the value of NFTs for consumers, including economic and non-economic benefits, as well as ownership rights. Our findings theoretically contribute to Web3 literature by providing empirical evidence of the topics, sentiment and emotions consumers associate with UGC related to NFT luxury, and the metaverse on SM. It is the first study that assess UGC on social media and relates it to consumer value perception and marketplace activities. The results allow practitioners to leverage the potential of UGC to gain insights on actual perceptions and emotions resulting from a luxury brand's social media NFTs activities; enabling NFT collection creators to reach consumers with more effective strategies.

2. Theoretical background

We draw on the service-dominant (S-D) logic in marketing (Vargo & Lusch, 2004), where value stems from experiences and is co-constructed during encounters (e.g., Grönroos, 2000). Research on value co-creation points toward the creation of value as a joint process, which is driven by the integration and exchange of resources among multiple actors (Vargo et al., 2017). S-D logic advocates the importance of context through which value is derived (Vargo and Lusch, 2017). In the context of NFTs and the metaverse, the virtual space for the luxury brands does not provide value for users per se; however, when customers utilize their avatars to play games, to entertain, to socialize, to navigate, to shop, to buy digital artifacts, and to interact, then the operand resources provide value. The metaverse enables consumers to co-construct experiences by utilizing a variety of company-controlled operand resources (e.g., visual cues, music, NFTs, digital skins) embedded with operant resources (e.g., brand meanings, company heritage) in conjunction with consumers' own operant resources, such as social relations, cultural understandings, brand knowledge, and situated creativity (Koivisto and Mattila, 2018). We base our article on the premise that value co-creation depicts a participatory process (Tynan et al., 2010) in which consumers and luxury brands jointly generate and develop meaning related to the NFT offers and the metaverse experiences.

Research on NFTs and the metaverse, and, more specifically, their value drivers is in its early stages. For instance, Pirnay et al. (2023) adopted Holbrook's (1999)'s framework to analyze 46 NFT organizational initiatives and found that the three most frequently represented values are "speculations", "art and memories" and "possession of rarity". Yimlaz et al. (2023) analyze the customer journey (i.e. liking, purchasing, holding and/or selling) and the key stage-based value drivers. They show that NFT value is multidimensional, including monetary, functional, emotional and social categories, and is involved in the different stages of the customer journey. Zalan and Toufaily (2023) argue, that the value of NFT is mainly speculative and utilitarian and that NFTs themselves are best thought of as *derivatives,* which are facilitated by the NFT technological and legal design, as a tradable ownership right, and a claim on the uncertain value creation by the project. Sung et al. (2023) reveal that the desire for NFTs luxury fashion increases as a result of higher perceived economic value (i.e., resale without depreciation) and social value, and higher perceived NFT authenticity and scarcity, which influence consumers' assessments of potential gains and losses associated with (not) buying NFTs. These processes affect purchase intentions in the metaverse as well as in the real world. Wongkitrungrueng and Suprawan (2023) find that the metaverse experiential value (hedonic, utilitarian, and symbolic) indirectly affects consumer-brand engagement through brand image and virtual purchase intentions. The empirical literature on the impact of emerging technologies (NFT, metaverse) on luxury brands is new, fragmented and largely a-theoretical (with some exceptions), reflecting the novelty of the phenomenon.

3. Research design

We adopt an inductive research design, where we mine Twitter for posts relating to the NFT initiatives of 21 luxury fashion brands (Fashion/Jewellery and Watches). Our final sample consists of 2,280,755 tweets as shown in Table 1 . The last tweets in our sample are on 31 December 2022. Of the 21 brands in the sample, three brands have NFTs traded on OpenSea marketplace, namely Dolce & Gabbana, Tiffany & Co and Yves Saint-Laurent (YSL). Transactions for these three brands can only be located in 2022 and our sample numbers 2,966,362 observations over the official collections (see Table 2). These observations represent bids made by users for items in the collections as well as successful sales. We summarize the OpenSea dataset by computing the number of bids and sales and the number of unique users, as in Table 2, but we also note the maximum value per day (on a bid or on a sale) as well as the total volume of bids/sales made. We provide further insights into value perceptions of luxury NFT by conducting twenty-one semi-structured interviews with market participants and NFT experts. Interviewees were users that have engaged with the brands, either in the physical or the digital world (i.e. metaverse), or both. The interviews were conducted through digital platforms (e.g., ZOOM, Webex) in October-November 2022. The respondents in the sample identify themselves as creators of NFT collections (n=3), traders/investors of NFTs (n=7), collectors (n=6), and traders and collectors of NFTs (n=5). The majority were male (89%), 28 years old on average, and their experience with Web3 is of an average of 4.4 years.

The first step in our analysis involves the extraction of important topics and terms, using Latent Dirichlet Allocation (LDA). In our approach, we utilize LDA to yield a set of top keywords per topic, which are the words that have the highest probability of being associated with that topic. We analyze the sentiment of the NFT-related tweets in our sample using two approaches, namely a rules-based and a dictionary-based approach. For the former, we compute the daily sentiment of each tweet expressed on Twitter by users that engage with the NFT initiatives of each brand using Sentiment.ai. After pre-processing, we compute the sentiment of each post separately and then build a daily weighted average of the sentiment, using the number of impressions (likes, comments, retweets, quotes) to gauge their relative importance. The resulting data series was computed with daily frequency for each brand and takes values in the range [-1, 1] with the two extremes, signifying negative and positive respectively. We, also apply a dictionary-based approach. We compute emotion intensity, using the NRC word-emotion association lexicon of Mohammad and Turney (2013). This lexicon categorizes words according to eight emotions, and permits us to recognize the underlying emotions shared by Twitter users. This enhances our understanding of the UGC and the conveyed information.

4. Empirical Findings

In our first analysis, we delve into the specific topics discussed about NFT fashion luxury brands at aggregate level, in 3 groups: 1/Fashion and jewellery, 2/ watches, and 3/ Metaverse. Each cloud includes the terms contained in that cloud and a coefficient of importance of the term, which LDA reports as the “beta” coefficient (see figure 1). The comparison between the three groups of NFT initiatives reveals several pronounced similarities and differences. First, the main topics, shared mainly in the tweets and hashtags, for each group and brand, are related to the NFT initiatives descriptions, collaboration with artists, designers, musicians and other brands, as well as topics in relation to the context/ culture of the NFT drop. This is to be expected, as Twitter is primarily a news sharing platform. Second, our findings also reveal the role of SM influencers in promoting NFTs collections for the luxury sector, the gamification of the luxury experience in the metaverse and the combination of multi-sensory physical and digital phenomena in the luxury sector. We also notice through the LDA analysis, that by creating digital assets that are unique and valuable, brands are tapping into a new market of consumers who are looking for ways to express themselves and engage with their favorite brands in the metaverse. Third, the initiatives of brands collaborating with Takashi Murakami, are discussed both in the Metaverse (*hoodie*) and the Watches groups *(seed, claim, takashimurakami* and *hublot*). The Metaverse consumers tend to discuss utilities (e.g., access to exclusive events), prestige, scarcity value and elements of "fun" "hedonism" and "experiential" while authenticity, certification and utility are more emphasized in the Watches group (i.e., predominantly utilitarian value related to the premises of blockchain technology). Fourth, although the works of Takashi Murakami are central to the Watches Group, the Twitter discussion of these initiatives are not embedded in the Asian and Gen Z culture to the extent that the Fashion and Jewelry (e.g., *bambam*), and the Metaverse (e.g., *aespa*) groups are. A possible explanation is that watches are very high priced, rarely purchased items (e.g., a Patek Philippe watch may go for as high as six figures). Unlike other luxury brands, physical watches typically have an older clientele who are less likely to be interested in NFTs and the metaverse and are probably not even on Twitter. For many luxury watch brands, Gen Z is still a very small portion of their customers (Pinnock, 2023). Further, we find evidence of value co-creation (e.g., Vargo et al., 2017), not only through information and knowledge sharing, but also through engaging in various immersive, gamified, multi-sensory experiences, which is particularly evident in the Gucci Metaverse and the Metaverse group, such as with the *Aespa* band and the *Metaluxuria* collection. Moreover, users are keen to suggest new NFT use-cases (as in the Watches category), while the Patek Philippe NFT initiative is a rare example of user-driven innovation. For the sentiment results, in the Fashion and Jewellery cluster, only 24% of the tweets are categorized as positive, and 40% are categorized as negative, and the remaining 36% are neutral. The general sentiment in this category of luxury is more negative or neutral. The opinions on NFTs initiatives in the luxury fashion sector do not seem to form a consensus and vary across the brands (see table 3). In the general luxury watches cluster, the sentiment toward NFT initiatives varies between positive (38.2%) and neutral (36.4%), followed at the end by negative tweets (25.4%). Tweets in relation to the metaverse hold a high negative sentiment (38.8%) (see table 3), indicating that the perception of normalizing the metaverse concepts in the luxury industry and having consumers being more comfortable with the fusion of virtual and real experiences through NFTs, is still not well accepted. The value of the metaverse is still not very clear for consumers in general. For the entire sample of nearly 2.3 million tweets (the final row in the table), the neutral tweets are much higher (36.2%) than the positive or negative ones among all brands. Neutrality of opinions about NFTs may matter when the technology is new, because the NFT market is niche and consumer's familiarity with NFT is limited (Yilmaz et al., 2023; Forrester, 2022). Consumers' interest in NFTs remains also niche. In fact, Forrester (2022) found that just 12% of surveyed consumers are interested in more NFT releases from brands. For the entire sample (see figure 2), the tweets discussing NFT initiatives mainly evoked the emotions of *anticipation, joy, and trust.* As the distribution of emotions is nearly equal in each emotion, this explains the neutral sentiment of the entire sample. For the metaverse, we notice a low emotional profile of tweets for all types of emotions, both negative and positive. There are no emotions induced in the tweets when consumers discuss the metaverse and VR in relation to fashion luxury brands. The answer to our third research question is reflected in figure 3. In each panel we observe that there is no relationship between the data from the two sources (online discussions on Twitter and NFT user market interest from OpenSea). The figures do not appear to move together. Regardless of the sentiment toward NFT initiatives from luxury brands, the bid volume and the number of bids only appear to be high at the drop dates or at the introduction of NFT offers, showing no correlation between the sentiment and the market interest. Online sentiment in relation to NFTs does not motivate users to participate in the NFT market for luxury brands. It also shows that when an NFT is collected or bought, users have no interest in flipping and reselling it afterwards, signifying a limited interest for NFT speculation in the luxury sector.

5. **General discussion, implications and conclusion**

Our results show that consumers tend to emphasize a multidimensional perspective of value in the luxury fashion/jewellery group and the Metaverse group (even if the general sentiment is neutral and the emotions are low or absent) , mainly the perception of experiential/hedonic, symbolic/ expressive (e.g., status signaling, prestige, conspicuous consumption) (Tynan et al., 2010; Smith and Golgate, 2007), utilitarian/functional value and emotional value ("fun"), while the value perceived in the watches group is mainly utilitarian/functional (related to authenticity, certification and utility). These results are largely consistent with Yilmaz et al. (2023). We note through the topics and themes revealed through the LDA analysis, that consumers describe, tweet, re-tweet and share NFT initiatives airdrops, news, promotions and discuss collaborations with artists, designers, musicians and other brands, as well as the broader socio-cultural context of the initiatives, related mainly to the Asian cultures. Our findings confirm Wang (2022)'s perspective that luxury products and brands are part of a rich network of socio-cultural narratives (the Asian culture in our findings), and that consumers can become sensitive to luxury meanings and symbolism and associate luxury with context-based lifestyles. Through the innovative design of NFTs for virtual fashion items, accessories, or even music, the "*artification*" of luxury has become a trend in products, in stores (Kapferer, 2014; Wang, 2022) as well as in the digital immersive experiences. Our research aligns with previous research on luxury brand value co-creation to show that art and digital technology-based brand activities (e.g., metaverse, NFT) interact with brands and create value (Tynan et al., 2010; Choi et al., 2016).

The NFT initiatives (D&G, Tiffany &Co and YSL) have not seen great trading volume on OpenSea. This reinforces the view that luxury brand NFTs derive value primarily as utilitarian assets, and not as tradable financial assets, an investment, or a speculative instrument – that is, providing monetary value – thus resembling the physical items of these brands. Overall, we conclude that the value consumers seek to derive from luxury brands NFT and metaverse initiatives is largely utilitarian and to a lesser extent emotional. Specifically, based on our UGC analysis, authenticity, certification of ownership and utility are what consumers seek from luxury brand NFTs. Luxury brand marketers should delve deeper into the causes of the negative or neutral general sentiment (evident in the Fashion/Jewellery and the Metaverse clusters) and understand the drivers of value in the Watches cluster (where the general sentiment and emotions are positive). Our analysis of the UGC, as posted on Twitter, is limited by the potentially skewed demographics of Twitter. Given the new developments in the platform, new research can utilize data from emerging SM platforms (including Discord and Threads, Meta's new effort). Further investigation is needed about sensory, hedonic, gaming and art-related aspects of the NFT luxury initiatives in the metaverse from the consumer perspective. Finally, future research can examine other drivers of brand value and link these to NFT value coming from different sources. In this manner, NFT activity can be more closely linked to real-world outcomes, including financial performance. In conclusion, our research opens new research avenues related to NFTs and the metaverse in the luxury fashion industry. Additional UGC research is warranted to examine how these advanced technologies are transforming consumer value and the luxury market.

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Appendix

Table 1. Number of NFT-related Tweets per Group

Group	2020	2021	2022	Total
Metaverse	23	22,834	65,512	**88,369**
Fashion and Jewellery	-	16,479	495,217	**511,696**
Watches	8	571,787	1,108,835	**1,680,630**
All	**31**	**611,100**	**1,669,564**	**2,280,695**

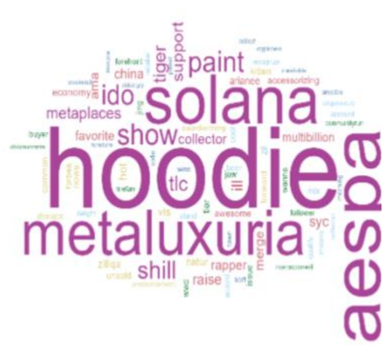
Table 2. NFT Bids and Unique Users on OpenSea per Collection

Month	Dolce and Gabbana		Tiffany & Co		YSL		Total Bids and Sales
	Bids and Sales	**Unique Users**	**Bids and Sales**	**Unique Users**	**Bids and Sales**	**Unique Users**	
2022/03	-	-	-	-	-	-	**157**
2022/04	427,943	275	-	-	-	-	**428,000**
2022/05	2,381,534	314	-	-	-	-	**2,381,597**
2022/06	148,579	61	-	-	1,610	181	**150,252**
2022/07	136	15	-	-	18	9	**189**
2022/08	4,773	21	914	61	16	4	**5,729**
2022/09	56	16	6	4	2	1	**127**
2022/10	56	8	3	3	18	1	**193**
2022/11	85	16	32	4	31	2	**409**
2022/12	537	8	8	2	5	1	**850**
Totals	**2,963,699**	**734**	**963**	**74**	**1,700**	**199**	**2,966,362**

Table 3. Results of Sentiment Analysis on Brand Tweets

Brand/Group	Positive	Negative	Neutral	Total	Percentages		
					Positive	**Negative**	**Neutral**
Fashion and Jewellery							
Dolce and Gabbana	6,768	10,230	4,851	**21,849**	31.0%	46.8%	22.2%
Jimmy Choo	289	411	568	**1,268**	22.8%	32.4%	44.8%
Salvatore Ferragamo	40	17	24	**81**	49.4%	21.0%	29.6%
Gucci	24,205	16,845	82,500	**123,550**	19.6%	13.6%	66.8%
Burberry	979	532	2,180	**3,691**	26.5%	14.4%	59.1%
Hermes	3,190	1,470	2,206	**6,866**	46.5%	21.4%	32.1%
YSL	56,878	141,022	68,421	**266,321**	21.4%	53.0%	25.7%
Guerlain	455	377	459	**1,291**	35.2%	29.2%	35.6%
Balenciaga	1,383	1,416	1,461	**4,260**	32.5%	33.2%	34.3%
Versace	299	263	161	**723**	41.4%	36.4%	22.3%
McQueen	78	48	84	**210**	37.1%	22.9%	40.0%
Louis Vuitton	4,897	6,776	4,061	**15,734**	31.1%	43.1%	25.8%
Tiffany & Co	18,329	10,114	13,236	**41,679**	44.0%	24.3%	31.8%
Prada	4,836	15,014	3,913	**23,763**	20.4%	63.2%	16.5%
Valentino	162	141	107	**410**	39.5%	34.4%	26.1%
Watches							
Patek Phillippe	390	615	573	**1,578**	24.7%	39.0%	36.3%
Bulgari	1,722	642	947	**3,311**	52.0%	19.4%	28.6%
Breitling	72	134	85	**291**	24.7%	46.0%	29.2%
Hublot	638,974	423,996	606,471	**1,669,441**	38.3%	25.4%	36.3%
Franck Muller	1,226	901	3,375	**5,502**	22.3%	16.4%	61.3%
Rolex	277	99	131	**507**	54.6%	19.5%	25.8%
Fashion and Jewellery	122,788	204,676	184,232	**511,696**	24.0%	40.0%	36.0%
Watches	642,661	426,387	611,582	**1,680,630**	38.2%	25.4%	36.4%
Metaverse	24,895	34,335	29,199	**88,429**	28.2%	38.8%	33.0%
All Brands	790,344	665,398	825,013	**2,280,755**	34.7%	29.2%	36.2%

Group Fashion and Jewellery



Metaverse

Group Watches

(15 brands) (6 brands)

Figure 1. Word Clouds of Important Terms

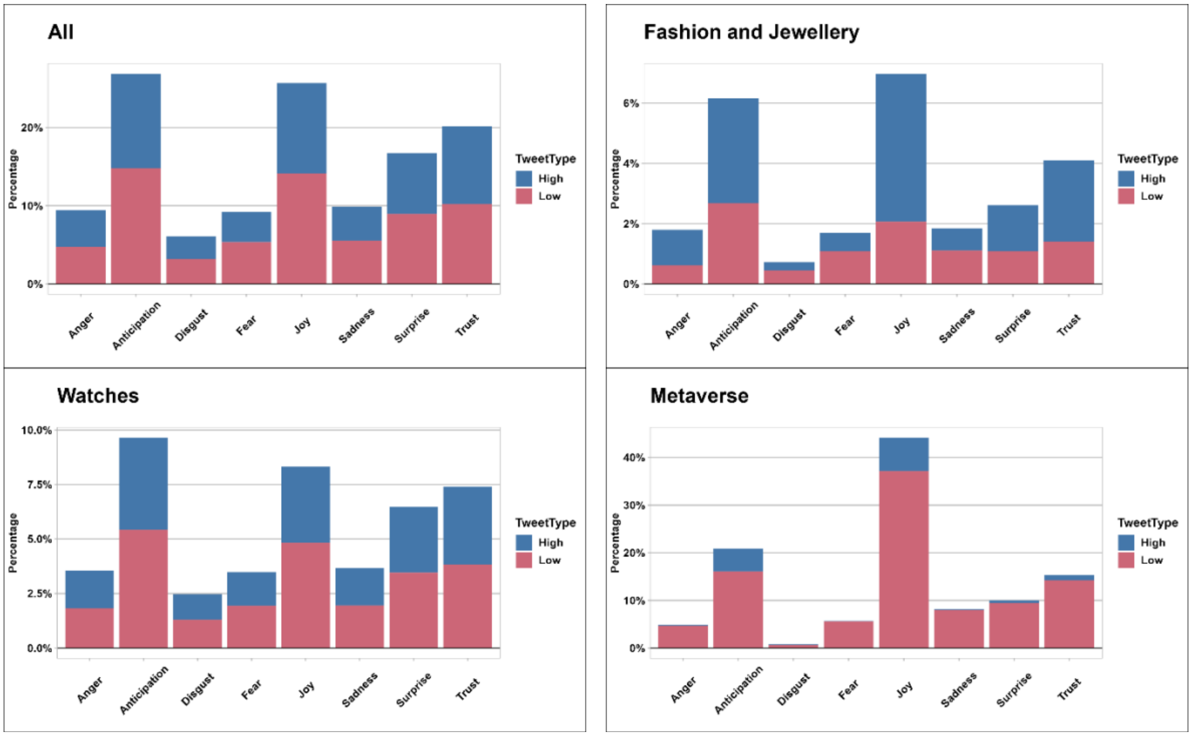


Figure 2. Percentage distribution of emotions

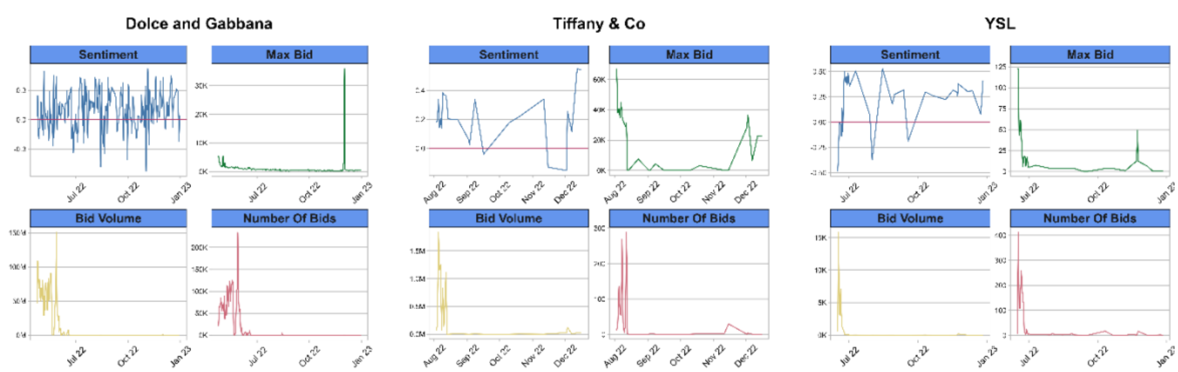


Figure 3. Sentiment and NFT Transactions