Review of: "Characterizing the Initial and Subsequent NFT Sales Market Dynamics: Perspectives from Boom and Slump Periods"

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In this article, the authors study the NFT market dynamics, aiming to understand the underlying mechanisms that influenced the initial boom in the mid 2021 and the decline in mid 2022. After accounting the changes in the activity frequency, the authors highlight the the hidden costs that were incurred by creators, collectors, and its impact on the health of the NFT ecosystem.

Some of the key findings:

1. Despite the median NFT price plummeting in the slump, the median creator royalty rate increased from the boom to the slump
2. The differentiating factors of return sale loss/ profit in the secondary market tend to arise from 1) the number of days a collection made a sale 2) the previous price 3) the median price of a collection 4) the profit-to-loss ratio in a collection, and 5) the creator royalty rate
3. In the slump period (June 2022), the price of the NFT in the primary market was valued conservatively while the secondary market remained more resilient to price changes.
4. The likelihood to sell an NFT within the first day of listing the collection significantly decreased in June 2022 compared to January 2022. In other words, NFTs suffered from recency hype partially driven due to overall market slump.
5. The majority of the revenue of the NFT market is driven by interactions between the buyers and sellers in the highest category of selling/ purchasing power.
6. Popularity of a NFT collection appears to be short-lived, especially during the slump period.

Comments:

1. Data: The authors use a robust data collection method to systematically collect all of the NFT sales and its features during the observation period. The authors disregard NFT transfers without a sale price which is critical when considering ownership transfer to multiple wallets held by the same individiual. Finally, the authors consider the gas fee and the royalty rate that were incurred in each sale, allowing us to estimate the "true" value of a NFT.
2. Methods:

   1. The authors group entities (buyers, sellers, collections) based into five groups based on their selling/ purchasing

price – very high, high, medium, low, and very low. Further, the categories re-sale prices as loss, break even, and profit.

2. The authors look at the relationship between the selling price and the rank of the buyer, and test the distribution using a powerlaw. It is unclear to me the value of this result so I would suggest the authors to provide theoretical explanation behind this distribution. I would also suggest the authors to report the powerlaw exponent in the main text and better explain the mechanisms that may have generated these distributions.

3. The authors utilize the Linear Discriminant Analysis (LDA) to dissect the different factors that may affect the pricing dynamics of the NFT. The results described using this method needs to be better explained. The authors mention that *"in a slump, purchasing an NFT from a very young (less than two months) collection and selling it within two months can minimise loss or increase the chance of making a profit"* – the authors need to explain why the two months category was chosen. This section could benefit from some quantitative insights such as "holding on to a NFT part of a collection that is longer than 2 months will result in a X% reduction in profitability".

   1. As a side note, in the parameters table and the main text, I would recommend using the complete variable name rather than the computer variable (e..g median_nft_price_buyer).

3. In addition to offering interesting data-driven insights, the authors discuss the implications for findings and how it is relevant to designing regulatory mechanisms. I would suggest the authors to spend a section or two commenting on the overall NFT ecosystem from the perspective of different categories (art, gaming etc.) – are there certain findings that are more applicable to art collections compared to gaming collectibles? More broadly, it would be useful to comment on the stability of the ecosystem.

Overall, the paper is well written and offers data-driven insights backed with sound methods that is applicable to a broad audience of readers.