Research Report

Relationship between Customers' Size of Wallet, Share of Wallet, and Total Wallet: New Insights from the Blockchain

NOWADAYS, FIRMS LACK INFORMATION TO DERIVE THE SHARE OF WALLET, A VITAL METRIC THAT IDENTIFIES HOW MUCH ADDITIONAL SPENDING A FIRM COULD CAPTURE FROM EACH CUSTOMER. HOWEVER, DECODING BLOCKCHAIN DATA ENABLES OBSERVING ALL TRANSACTIONS OF EACH WALLET, RESPECTIVELY CUSTOMER, ON THE ETHEREUM NFT MARKET. TO SHED LIGHT ON THE SHARE OF WALLET, WE ANALYZED 22.7 MILLION TRANSACTIONS FROM OVER 1.3 MILLION CUSTOMERS ACROSS EIGHT COMPETING FIRMS ON THE ETHEREUM NFT MARKET.

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Introduction

Customers' share of wallet is the share of a customer's total spending that goes to a particular firm within a specific market. It is a valuable metric because it identifies how much additional spending a firm could capture from each customer. Information about the size of wallet, i.e., the revenue or profit contribution of a customer, is readily available in firms that observe their customers' behavior over time, such as online retailers, banks, energy suppliers, and telecommunication providers. Unfortunately, it is much more difficult to derive the share of wallet because a customer's total wallet is typically not observable in traditional settings (Chen and Steckel, 2012). This unavailability of important data limits the ability to derive conclusions about the relationships between share of wallet, size of wallet, and total wallet.

Remarkably, the emergence of Blockchain technology and its continued adoption introduces new possibilities to explore and empirically investigate the relationships between the share and the size of wallet. Blockchains store transaction information publicly on distributed ledgers (Peres et al., 2023), and decoding them enables us to analyze transactions, firms, and customers on the Ethereum non-fungible token (NFT) market with unprecedented accuracy and low costs. This study is the first that exploits the unique opportunities that decoding of the Blockchain provides to derive valuable metrics in customer relationship management (CRM), here mainly the share of wallet.

Our empirical analysis focuses on the share and size of wallet. However, the fundamental argument of this article is that the opportunities that come with decoding Blockchains go far beyond an analysis of the share and size of wallet. Therefore, we also describe how Blockchain transaction transparency affects other parts of CRM, particularly those regarding customer acquisition and retention.

One of the important findings of the study is the significant variation among companies in terms of the distribution of their customers across quintiles and their effectiveness in securing a large share of their customers' wallet, indicating their competitive positioning within the NFT market.

Research Setting

An NFT is a cryptographic asset with a unique identifier, differentiating it from cryptographic fungible tokens, e.g., cryptocurrencies (Peres et al., 2023).

Our study focuses on NFTs as tokenized digital assets, where ownership transfers are achievable by transferring the NFT. Hence, the NFTs of our study represent heterogeneous digital goods whose creators can sell them in primary markets, and subsequent owners can re-sell them in secondary markets. Examples include digital collectibles, such as PORSCHE 911 NFTs, digital sneakers for metaverses, e.g., by Nike, and virtual land in the metaverse, e.g., The Sandbox.

Like traditional firms, Blockchain-based firms earn fees from successful transactions, e.g., by charging sellers a percentage of the transaction volume. The main difference between Blockchain-based and traditional firms is that traditional firms store transactions on internal databases. In contrast, Blockchain-based firms rely on Blockchains to store transactions. To interact with the Blockchain, Blockchain-based firms deploy smart contracts on the Blockchain (Peres et al., 2023). Customers interact with the firm's smart contract to settle transactions, e.g., process payments, transfer assets, and store transaction outcomes on the Blockchain (Cong and He, 2019).

The interaction with smart contracts requires a cryptographic wallet, e.g., to initiate or sign transactions. These cryptographic wallets, subsequently referred to as wallets, are identifiable by their unique wallet address (Jørgensen and Beck, 2022).

In 2022, when cryptocurrency prices rose to new heights, NFT trading peaked in terms of trading volumes in USD. Since its peak in 2022, falling

cryptocurrency prices and decreasing transaction numbers led to falling NFT trading volumes. Even though NFT trading is an emerging industry, Blockchain-based firms for NFT trading have generated significant fees and facilitated millions of transactions between NFT owners (Borri et al., 2022).

Description of the Empirical Study

For our empirical study, we leverage Ethereum data on NFT sales to investigate customers' size and share of wallets across eight firms. We focus on data from Ethereum because it pioneered NFT trading and is more mature than other Blockchains.

We retrieve our data from Flipside Crypto, a major Blockchain data provider. Flipside Crypto offers various Blockchain data by curated data models, thus offering stable results and public, accessible documentation. The documentation allows tracking and verifying data decoding activities back to the raw transaction records. Furthermore, Flipside Crypto's NFT sales data allows us to select customers that sold NFTs at one of eight major Ethereum-based firms, i.e., Blur, GEM, LooksRare, NFTX, OpenSea, Rarible, sudoswap, and X2Y2. For every customer and firm, we retrieve the number of transactions and fees in USD, hence the size of wallets. As firms charge fees to sellers, we focus our analysis on sales exclusively. Our sample includes all NFT sales between January 1, 2022, and December 31, 2022.

Across the eight firms (see Table 1), we observe 1.86 million customers, which conduct 22.79 million transactions, paying over USD 1.02 billion in fees, representing most of the firm-enabled Ethereum NFT trading market during our observation horizon, e.g., excluding peer-to-peer transactions.

Results of the Empirical Study

Summary statistics on firms and customers describe a market that is, to a degree, concentrated on a few firms and customers (see Table 1).

Considering the number of firms alone, the NFT market's HHI values (Herfindahl-Hirschman Index for the estimation of market concentration) of 4,802 for market share (fees) and 7,496 for market share (transactions) reflects that the market is still young and maturing with some firms capturing a large portion of market shares.

Table 2 summarizes the firms' successes in capturing a large share of wallets across their customers. OpenSea's customers have a significant share of wallet (>80%) with this firm, an exception in the market. However, some smaller firms have noticeable amounts of customers with a large share of wallets, e.g., sudoswap (64.8%) and Rarible (52.1%), and to a lesser extent LooksRare (19.9%). These findings might indicate that these firms' offerings differ from those of other firms.

The distribution of shares of wallets across firms reflects that most customers sell on a few platforms, e.g., OpenSea and one of the other firms. This behavior results in a high portion of customers with a high share of wallet at OpenSea and a high portion of customers with a low share of wallet with the other firms. OpenSea's prominent market position is also apparent by exploring customers' transactions across firms. Regarding fees, OpenSea is only second.

For comparison, we have included the mean values for the share of wallet estimates from a major U.S. bank investigated by Du et al. (2007).

Firms	Number of Customers	Fees (USD m)	Fees per Customer (USD)	Market Share (Fees)	Number of Transactions (USD k)	Transactions per Customer	Market Share (Transactions)
OpenSea	1,211,026	454.0	374.9	44.3%	19,650.7	16.2	86.2%
GEM	305,727	5.6	18.5	0.6%	1,545.3	5.1	6.8%
Blur	112,596	0.5	4.8	0.1%	523.0	4.6	2.3%
X2Y2	103,409	17.3	166.9	1.7%	602.5	5.8	2.6%
LooksRare	87,053	546.1	6,273.3	53.2%	277.5	3.2	1.2%
sudoswap	24,805	0.4	14.1	0.0%	125.6	5.1	0.6%
Rarible	1,629	1.2	116.9	0.1%	40.3	3.8	0.2%
NFTX	5,404	0.0	3.0	0.0%	23.8	4.4	0.1%
Sum, Mean	1,860,649	1,025.1	871.5	100.0%	22,788.7	6.0	100.0%
HHI				4,802			7,496

Note: m for million, k for thousand, HHI for Herfindahl-Hirschman Index

Table 1: Summary Statistics for All Firms on the Ethereum NFT Market

Firms	Share of Wallets					Sum	Mean
	0-20%	20-40%	40-60%	60-80%	80-100%		
OpenSea	0.6%	0.8%	1.6%	3.3%	93.6%	100.0%	96.1%
GEM	79.0%	7.7%	4.0%	1.8%	7.5%	100.0%	15.5%
Blur	90.7%	3.7%	1.9%	0.8%	2.9%	100.0%	7.1%
X2Y2	79.3%	5.9%	3.3%	1.7%	9.8%	100.0%	16.7%
LooksRare	61.3%	10.0%	5.3%	3.4%	19.9%	100.0%	30.4%
sudoswap	27.3%	2.9%	2.7%	2.2%	64.8%	100.0%	69.1%
Rarible	35.1%	5.9%	4.0%	3.0%	52.1%	100.0%	59.0%
NFTX	95.4%	0.6%	0.5%	0.4%	3.1%	100.0%	4.0%
Mean	58.6%	4.7%	2.9%	2.1%	31.7%	100.0%	
Du et al. (2007)	54.7%	13.9%	9.3%	7.6%	14.6%	100.0%	

Table 2: Firms' Customer Distribution over Share of Wallet Baskets for Ethereum NFT Market

As their study estimated total wallets to derive the share of wallets, we expect differences. However, there are similarities, such as the overall distribution, e.g., the 20% basket being the largest, followed by the largest share of wallet basket (>80%). Also, there is a decreasing trend in the share of customers from the 20% basket to the 80% basket. However, this large difference is primarily due to OpenSea's strong market position.

In summary, there are notable differences between firms regarding distributions of their customers (quintiles) and their success in capturing a large share of wallet of their customers, reflecting their competitive positioning in the NFT market. We suggest distinguishing observed firms into market leaders, followers, and niche players.

The growth potential for the market leader OpenSea is somewhat limited, as most customers already have a significant share of wallets with OpenSea. Nonetheless, the outstanding position of OpenSea presents an opportunity for other firms to engage in competitive actions and gain customers from OpenSea. However, market followers and niche players seem to take different competitive approaches.

The niche players, Rarible and sudoswap, seem to have successfully attracted different customer groups, as both firms have customers with large shares of wallets. On average, Rarible generated over USD 116 in fees per customer, suggesting a comparably attractive but small niche (1,629 customers and USD 1.2 million fees). In contrast, sudoswap has more customers (24,805) but is less profitable overall (USD 0.4 million) and per customer (USD 14.1).

The market followers GEM, Blur, X2Y2, LooksRare, and NFTX share similar distributions across their customer bases and share of wallets. Notably, they all seem to focus on large customers, which are overrepresented across their customer bases. Therefore, they seem to follow the traditional marketing advice to focus on customers with large total wallets.

Furthermore, we investigate correlations between firms' observable variables, such as the size of wallet and the number of transactions, and unobservable variables, such as total wallet and share of wallet. We hardly observe correlations between firms' observable and unobservable variables.

Further Research in Customer Relationship Management

Firms may use the total wallet and potential wallet metrics to operationalize their CRM goals along the CRM activities of customer acquisition, development, and retention.

Fungible and non-fungible tokens play a key role as marketing instruments for Blockchain-based firms. Firms may emit tokens to finance their operations (Cong et al., 2019), use tokens as means of payment within their firm, platform, or ecosystem (Nofer et al., 2017), and relate token holdings to decentralized governance mechanisms (Beck et al., 2018).

Tokens have exciting applications for CRM activities for three reasons: First, they constitute a tradeable value. Second, they are transferrable with little friction and costs. Third, they are available to Blockchain-based firms at marginally no cost.

However, data privacy is a major issue, as over time wallets will potentially be identifiable, either by enough data within a wallet or by linking off-chain data to a wallet's transactions. As such, it is questionable if observable solutions adhere to existing privacy regulations, such as the GDPR (Skiera et al., 2022).

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