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The Strength of Weak Tie In EXO's Fan Economy

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Abstract. This study examines how online fan activities relate to EXO sales from 2012 to 2023. EXO is used as a case. Drawing on the weak tie theory, we compare different indicators of the fan activity. YouTube views and Reddit post count are selected as main metrics, and we also check Reddit active user count to get full picture. Weak-tie visibility is related to YouTube views because the platform can share idol content to dedicated fans and casual audiences at the same time, which means the visibility is not limited to the core fan group and can reach potential buyers. For stronger-tie community support, we measure fan activity on Reddit. It shows fan discussions and repeated participation, and long-term engagement can also be found there. Our results show that YouTube views has a positive link with sales. But Reddit post count and active users do not show significant ties to sales. It is worth noting that not all fan activity has same economic weight. Weak-tie visibility can connect more to buying power. At the same time, strong-tie community activity can help maintain fandom loyalty. In fact, it does not directly increase sales. Overall, we suggest that the idol fan economy can be viewed as complex. Different platforms support various types of fan power.

Keywords: EXO, Annual Sales, Online Fan Activity, YouTube, Reddit

1. Introduction

In past ten years, fans play very big role in China idol industry. Fans vote and promote idols on social media, buy albums and merchandise, and support crowdfunding campaigns. These activities shape how the public views on idols. In turn, fans influence the companies behind them. These behaviors, termed as fan economy reflects fans' emotional investment, time, attention and money can enter the economic system around idols. In fact, China Daily reported that the country's fan economy topped 1.23 trillion yuan in 2024, where the idol segment alone can account for 420 billion yuan [1] and it is worth noting that these numbers can show the fan behavior is not just a cultural curiosity. It should be seen as economic force, which is generated through purchases, content consumption, social sharing, competition voting, and there is also community participation. With so many different forms of economy, it is worth noting that we should ask which kinds of fan activity can move the needle in economic way.

We examine this question using EXO as a case study. EXO can be a good test case because the group has a long career and a large international fanbase, and we can see considerable variation in their activity and sales, together with online buzz over the years, from mandatory military service

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and uneven release schedules, to media appearances. In fact, the group's 2022 reality show, which is third season on Wavve, shows how EXO could maintain visibility when music output slows [2]. In this study, we focus on EXO to see how annual sales tracked against YouTube views and Reddit activity from 2012 to 2023.

Drawing on weak tie theory, we compare fan behavior on Youtube and reddit. Granovetter's work on weak ties claim that loose social connections are what can let information travel between disconnected groups [3]. When applied to idol economy, Youtube and reddit represents two different fan network ties. Fans on youtube are more loosely connected than fans on reddit/ Wellman and Gulia [4] showed that online communities can provide real social support without physical proximity and Reddit fits this mold. It is worth noting that this platform is less about driving purchases. Instead, it can help sustain identity and memory, while the ongoing conversation is also supported.

The study has practical importance for entertainment companies. First, Understanding correlation between fan behavior and sales can assist with marketing decisions on what activities to increase sales. Next, this study could promote views on community-building and shared interest, and emotional connection rather than spending. In turn, it can support a more constructive conversation about the fan culture.

We use EXO as a case to examine how annual sales can relate to YouTube visibility and Reddit community activity, because we want to see if there is connection between commercial performance and online presence in social media. Sales can stand in for fan purchasing power. YouTube views can capture media visibility and weak-tie diffusion. Also, Reddit post counts and active user numbers can reflect community engagement. It is worth noting that this includes strong-tie support. In fact, we compare these measures against each other and this is the core work we do.

2. Literature review

2.1. Fan economy and fan power

Fan economy means how fans put their attention, feelings, efforts and money to create value around idols, and this can be seen as a special economic phenomenon worth examining. Fans do more than enjoy music. They also vote, stream, buy albums and merchandise, promote idols on social media, join crowdfunding, and take part in online communities, and these actions can raise an idol's popularity, visibility, and market value.

Previous studies show fans hold important power in the idol industry. Zhai and Wang [5] found Chinese idol fandoms use organized reporting on Weibo as a form of fan labor, and fan communities can develop hierarchical structures where fans with more digital skills guide others' unpaid work. This suggests fan power is not only emotional support, but can also become structured digital work with measurable results.

Fans also support idols through buying and promoting. Purchases are for personal use, but they also show loyalty, so buying becomes a symbolic gesture. Huang [6] argues digital culture has linked fan identity and consumption with online participation, helping explain how the market works in the digital age. Liu [7] explains China's fan economy revolves around consumer behavior and emotional motivation, while also depending on companies' business strategies, since they design products and control supply chains.

Crowdfunding is another important part of the fan economy. Fans collect money for advertising, gifts, voting, and other promotional activities, and research on Weibo-based K-pop crowdfunding

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shows trust, loyalty, and perceived value affect fans' willingness to pay [8]. This means fans spend as individuals but also act as community members.

However, the link between fan activity and economic outcomes is complex. Many studies look at only one , so the full picture is hard to see. A fan community can be active online without generating high album sales, and video views may come from casual viewers, not real buyers. This study tries to address this problem by comparing online indicators with EXO's sales.

2.2. Digital labor and participatory culture

Also, we can view fan activity as the digital labor. This idea can be linked to Jenkins [9] and his work on participatory culture. Jenkins argues that fans are not just passive consumers. In fact, they can engage in media culture by sharing content and creating meaning, and they also form communities around media texts which can serve as platforms for collective interpretation and social interaction among different fan groups who share similar interests.

Fan activity can be seen as both cultural and economic. It is cultural because the fans can support identity and belonging through their involvement and they build emotional connections with the community. It is economic because their activities can enhance visibility and sales for the content and they can bring advertising value and increase platform traffic.

Not every fan participation has the same economic impact. Some actions, like buying the albums and merchandise, can connect to purchasing behavior. Other activities, such as discussions and community building, can support the fandom in indirect way and it is hard to see the immediate economic effect. Understanding this distinction can be important for us to recognize why some online fan activities can relate to the sales while others cannot.

2.3. Weak-tie visibility networks

Weak-tie networks is an important concept in our study.Granovetter [3] argues weak ties are important. In fact, they help information flow between different social groups. Weak ties do not always have close emotional bonds and they can connect people to new information and wider audiences.

In this research, YouTube works as a weak-tie visibility network. The videos on platform can reach audiences beyond core fandom, including casual listeners and international viewers, and at the same time those people who discover content through recommendations or searches when they use platform without specific purpose.

But YouTube views should not be seen as a direct evidence that viewers are buying albums. In fact, one view is not equal to one purchase. But YouTube views can show video has high visibility and this environment can help sales to increase, especially in years with new album releases and promotions, or when there are official group activities.

2.4. Strong-tie community networks

We can see that Reddit activity reflects different type of fan engagement. In contrast to YouTube views, Reddit posts and active users relate to discussion and community participation, which means fans should write text and interact with others instead of just clicking play button. We note that fans can use Reddit to share news. Also they analyze members and connect with other fans, and it is worth noting that they can reminisce about past activities.

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This activity can be viewed as strong-tie community network. Strong-tie networks are associated with emotional support and shared identity, and we should note that there is ongoing interaction among members which can help build close relationships in community and this is important for maintaining social bonds over long time. Research on online community shows that digital communities can support real belonging and social support. In fact, people can feel they belong to the group even when they do not meet face-to-face and they can still get emotional support [4].

We should note this distinction is important. Strong-tie fan communities still play key role. Even if Reddit activity does not correlate with sales, it can support the fandom to maintain its basic function. Strong communities can preserve old memories and share important information, and they can welcome new fans and maintain emotional connections when the group activity is reduced in off-season period, which means the fandom can still keep its vitality even when there is no new content released. In the idol economy, this support may not be visible in sales figures and it is important for the long-term survival of fandoms.

2.5. Research gap and research questions

Existing studies show fans can be crucial in idol economy. However, we can see there is still a gap in understanding how different fan activities can link to sales. It is worth noting that many works discuss fan power and treat online activity as beneficial, but they do not distinguish visibility from community discussions, purchasing behavior is ignored. This should be avoided in future research.

Using EXO as a case study to examine this gap. we ask the following research questions:

RQ1: How are different kinds of fan activity related to EXO's annual sales from 2012 to 2023?

RQ2: Is YouTube visibility more strongly related to sales than Reddit community activity?

RQ3: What do changes in sales over time suggest about the effects of group activity, media exposure, and major events on fan buying power?

We examine weak-tie and strong-tie network framework. It is worth noting that YouTube views can be more related to sales than Reddit activity, because the weak-tie diffusion on video platform is expected to spread product information to large audience. YouTube can reflect broad visibility and weak-tie diffusion and Reddit can reflect stronger community support and long-term fandom maintenance.

3. Methodology

3.1. Data

We use a quantitative case study method to examine the relationship between EXO's annual sales and online fan activity from 2012 to 2023, which can help us understand the connection between fan behavior and commercial performance in idol industry. In fact, case study can focus on one specific example in detail. It should not try to represent whole industry. EXO is chosen because they have been active for many years and have a large international fan base, and they have gone through significant changes in sales, and their group activity and online visibility also changed over time.

In this study, the dependent variable is EXO's annual sales. We use sales as proxy for fan buying power, and this gives context for the fan economy which is important for understanding how fan groups generate revenue through their consumption behavior in the entertainment market. A proxy is not a perfect measure. But it can represent general concept when direct measurement is hard because sometimes the real data cannot be obtained from fans and we need to use indirect indicators to

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capture the economic activity. It is worth noting that fan buying power in this study means how fans convert their support to actual purchases.

We use YouTube views and two Reddit indicators as independent variables. Reddit data includes post count and active user count. YouTube views measure online visibility. In this study, YouTube is viewed as weak-tie visibility network because it can reach dedicated fans and also casual viewers at the same time. For Reddit we use post count and active user count. They can serve as measures of fan community activity. In fact, Reddit is viewed as stronger-tie community network because it reflects discussion and repeated participation, and there is fan interaction.

We organize data by year. In fact, each year has one value for the EXO sales, one for YouTube views, one value regarding Reddit post count, and active users are recorded. This yearly structure can allow us to compare changes in sales and the online fan activity over time.

3.2. Analysis

We do the analysis work in the RStudio. We use Pearson correlation test to examine the relationship between sales and each online metric in our dataset, and this method can show us both the strength and whether the correlation direction is positive or negative, so we can understand whether and how sales correlated with user activities on Youtube and reddit.

Next, analyze activities temporally and match key events happening in this period to understand whether fan activity and sales can be influenced by special events, for example release schedules, military service, COVID-19, and company decisions, and we check how these external factors correlate with the market trends.

The dataset covers only 12 years, so this study should be viewed as exploratory and may not prove causation. In fact, we focus on interpreting these relationships and we do not try to explain underlying mechanisms which can be complex.

By comparing YouTube visibility with Reddit community activity, and also looking at annual sales data, it is found that online attention has connection with fan discussion, and both can relate to purchasing behavior, but they are not the same thing.

3.3. Results

The scatterplots show three different patterns in relationships between sales and social media activity, and we can observe that the two Reddit-related graphs both show downward trend lines while the YouTube graph shows an upward trend line so the patterns are not the same. It is worth noting that different fan activities online can relate to sales in different ways. Reddit activity is observed to increase during some years when the sales are lower. At the same time, YouTube views appear to follow sales.

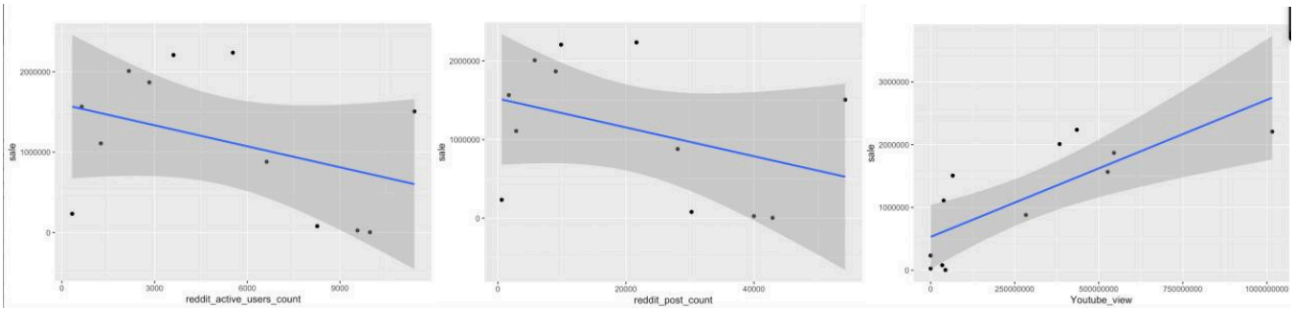

Figure 1. Three patterns in the relationships between sales and social media activity

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Table 1. Pearson correlations between sale and social media metrics

Variable	r	95% CI	p
YouTube views	.78	[.37, .94]	.003
Reddit post count	-.38	[-.78, .25]	.220
Reddit active users count	-.39	[-.79, .24]	.212

Note. N = 12 for all correlations. df = 10. CI = confidence interval.

We examine the Pearson correlation and YouTube views has positive relationship with sales, r = .78, 95% CI [.37, .94], p = .003. Also this relationship is significant because the p-value is below .05. In fact, years with higher YouTube views also can have higher sales in this dataset.

However, Reddit post count can show negative correlation with sales but it is not significant, r = -.38, 95% CI [-.78, .25], p = .220. Also, Reddit active users number can have negative relation with sales but not significant, r = -.39, 95% CI [-.79, .24], p = .212. Since both p-values are above .05 and confidence intervals include 0, we cannot conclude Reddit activity has clear relationship with sales.

The results show that YouTube views can have closer relation to sales than Reddit activity, and we can see this platform is different from fan discussion communities. YouTube views is the only social media metric with a significant relation to sales. This can indicate that visibility on large media platform is more related to commercial outcomes than fan discussion on Reddit. But this result does not mean YouTube views can cause higher sales. In fact, it only shows the two variables has strong relation in this dataset.

In fact, Reddit results show a different pattern. The post number and active user number on Reddit do not show significant relationship with the sales. So we should not use Reddit activity by itself to predict album sales. One explanation is that Reddit can be used by international fans or casual fans who enjoy discussing EXO but do not purchase albums. Also, Reddit can become more active in years when EXO releases less music or is less active as a group because fans may turn to online discussion when there is less new content, and this may contribute to lower sales.

We look at trends over time. In fact, it can help explain these results. Sales were higher in earlier years but declined after 2019. YouTube views followed a similar pattern, with higher views in earlier years and fewer views in later years. This makes YouTube pattern look more similar with sales pattern. However, Reddit post count and active user count can increase even when sales go down. It can suggest Reddit may reflect fan discussion, not purchasing behavior.

It is worth noting that year 2020 can be important. Sales were low that year, maybe because EXO was not active and did not release new album and fans had no new product to buy, so we can see that the group activity has direct impact on commercial performance in market. In fact, we can see that sales are shaped by fan interest. Also, they can depend on whether there is album or product available.

Year 2022 is also important. EXO had a reality show and fan meeting and the sales did not increase in substantial way. It is worth noting that this can suggest fans still have interest to the group even when they do not purchase albums at that time and the engagement can be maintained in principle without the purchasing behavior. In the fan economy, fans can engage with content. They watch videos and participate in online discussions but this attention does not always lead to buying behavior.

It is worth noting that sales increased in 2021. This can suggest that fans were still willing to support the group when there was clear reason. In other words, fan loyalty can remain strong and

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fans need specific release or event to turn the loyalty into purchases.

In general, the results indicate that fan activity is not a simple behavior. We find that fans can support artists in many different ways, including watching videos, posting online, discussing content, voting, buying albums, and organizing as a community. These activities can support each other. However, this does not mean they can bring real support to fan economy, and it is worth noting that YouTube views have connection with sales which can be observed in our data, while Reddit activity is not reliable to predict sales.

4. Discussion

We can see that different types of fan activity are not equally tied to EXO sales. YouTube views have a strong positive correlation with sales, while Reddit posts and active users have weak correlations. Therefore, fan activity should not be seen as one category because different platforms represent different fan networks and forms of support.

We can explain this difference through weak-tie and strong-tie networks. Granovetter's [3] theory suggests that weak ties help information spread across different social groups. In this study, YouTube can be seen as a weak-tie visibility network. Many viewers may not be involved deeply in the fandom, but their views can increase EXO's visibility and attract casual consumers. This may explain why YouTube views are more related to sales.

Reddit can be seen as a strong-tie community network. Fans use Reddit to discuss EXO, share memories, check news, and maintain emotional connections. Research on online communities shows that digital spaces can support belonging and connection [4]. Therefore, Reddit activity may show community maintenance instead of immediate purchasing behavior. Fans can continue discussing EXO during quiet periods even when there is no new album to buy.

This distinction is important for understanding the idol economy. Fan loyalty does not always become sales. Companies need to create opportunities for fans to turn interest into measurable actions, such as watching videos, buying albums, or voting. Without new products or activities, fan loyalty may remain in discussion communities.

This result can also be connected with participatory culture. Jenkins [9] points out that fans are active participants who share media, create meaning, and contribute to collective culture. EXO fans can support the group by watching videos, posting online, discussing news, voting, or buying albums. These activities all show engagement, but they have different economic implications. Some activities increase visibility, while others strengthen community ties.

Baym [10] also explains that digital platforms have changed relationships between artists and fans. Platforms can display fan support, but they also influence whether support appears through views, purchases, comments, votes, or discussions. Companies should therefore consider not only how active fans are, but also what type of activity they are doing.

This distinction can also reduce pressure in fan culture. Views, posts, votes, and sales do not always change together, so it is unfair to judge fan loyalty through one number. One fan may discuss EXO without buying albums, while another may buy albums without posting online. Both weak-tie visibility and strong-tie loyalty are important, but they work differently.

In general, YouTube and Reddit show different types of fan power. YouTube reflects weak-tie visibility and is more closely tied to sales, while Reddit reflects strong-tie support that maintains loyalty over time. Researchers and companies should analyze these activities separately and should not assume that all online engagement leads to the same economic outcome.

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5. Limitations

Our study has some limitations. We do not fully prove causal relation here. YouTube views and sales were related, but this does not mean views can cause sales to increase, and it is worth noting that both can increase in years when EXO has more official activities and better promotion, or when new releases come out. Reddit cannot cover all EXO fans. It is worth noting that this platform mainly includes international discussions and we can find that Chinese or Korean fan activity is less visible here so in principle the sample has a clear bias.

In this study, we view YouTube as weak-tie visibility network and Reddit as strong-tie community network. But we do not measure strength of individual social ties directly. It is worth noting that future work can improve this.

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