Unpacking Nuance among Esports Consumers: Market Partitions within Esports based on Social Media Analytics

Bradley J. Baker[1], Anthony D. Pizzo[2]

1. Temple University, Philadelphia, Pennsylvania, USA
2. La Salle University, Philadelphia, Pennsylvania, USA

Correspondence to bradley.baker@temple.edu

Abstract

Aims: The purpose of this study is to investigate the pattern of consumer relationships across popular esports titles to understand how the esports market is partitioned in terms of unique and shared social media followers across gaming titles.

Methods and results: We investigate esports market partitions based on social network analysis of over 33 million unique Twitter users who follow the official accounts for one or more of 16 leading esports titles. We find relatively low levels of co-occurrence in shared follower relationships between sport and non-sport esports titles. Higher shared follower rates are most common among titles from the same publisher, while there is minimal evidence that game genre influences audience sharing. We find evidence that esports titles with larger followings also enjoy higher rates of exclusivity (i.e., consumers who follow only that title and are not shared with other esports titles).

Conclusions: Results from the current study call into question the influence of traditional genre designations on driving esports consumer behavior. Relatively high levels of audience overlap among dissimilar titles (i.e., titles from different genres) from the same publisher indicate high consumer loyalty to a publisher, suggesting cross-promotion can be an effective audience-building strategy. The large proportion of single-title followers is consistent with a high degree of esports social media follower concentration.

Keywords: Consumer behavior; Segmentation; Brand position; Twitter; Social network analysis; Marketing

Highlights

1. Esports games with larger social media audiences benefit from greater exclusivity
2. Social media audience overlap is most prevalent among games from the same publisher
3. Game genre does not influence the magnitude of audience sharing among esports titles
4. Sport simulation games have relatively low crossover appeal with non-sport titles
5. High levels of game and publisher loyalty suggest a high degree of consumer specialization

Introduction

Esports, organized video game competitions, are a fast-growing phenomenon engaging a new generation of consumers [1, 2]. Esports fans are a part of a vibrant gaming ecosystem that includes game developers and publishers, sponsors, teams, and players, as well as leagues and events [3, 4]. Esports fans avidly consume game-related content, both in and out of the game [5], primarily on social media and streaming sites such as Twitch, Twitter, and Discord [6]. Marketers covet these fans as they are primarily from a hard-to-reach, yet desirable audience: young, affluent, and tech-savvy young adults [1].

Despite rapid growth, the esports industry is still in a nascent stage of development [7]. Managers in emerging industries, such as esports, lack standardized practices to adequately monetize their business operations [8]. In particular, the measurement of esports consumption remains imprecise and, despite recent improvement, segmentation continues to be a challenge [9]. This is problematic considering the wide variety of esports titles, with little known about the similarities and differences regarding the composition of their audiences. Improved understanding of how esports titles share consumers is highly relevant for esports organizations and brands (publishers, game developers, esports teams, event organizers), as well as the growing number of sponsors seeking the right fit for their brand among a dazzling array of esports titles [10].

The purpose of the current study is to investigate the market structure across popular esports titles. Specifically, we used a social network analysis (systematic empirical examination based on the relationships between interconnected individuals in a social structure; [11]) of the Twitter followers of 16 popular esports titles to investigate where multi-title, genre, and publisher crossover does – and does not – occur. The overall esports market includes smaller markets centered on specific esports titles, where individual gamers choose one or more titles to consume (purchase, play, spectate). As the overall market is still emerging and rapidly developing, it requires immediate attention to improve understanding of the market structure and the consumer-based interactions among competing esports titles [12]. For instance, marketers and brand managers seeking to identify the most suitable esports title for their brand have sparse empirical data on the shared and distinct followers of each title to help inform their marketing decisions [9].

Overview of Esports

Esports bring together elements from culture, technology, sport, and business [2, 13]. During the 1990s, competitive video gaming evolved in South Korea due to a strong broadband infrastructure that facilitated remote, online competitions [14]. Innovations in internet technologies lowered barriers to entry and decreased costs of esports consumption [4]. Reduced barriers to entry facilitated the global rise of esports, allowing individuals to play video games competitively on a variety of platforms (e.g., personal computers, gaming consoles, mobile devices), allowing companies to use esports to target a new generation of consumers that were otherwise hard to reach through traditional marketing campaigns [1, 6]. Thus, a wide variety of companies have embraced esports to connect their brand with esports consumers [10, 13]. These companies include both endemic brands – those businesses native to esports – and non-endemic brands – businesses whose products and services are not directly linked to gaming [1].

Esports consumers are diverse, ranging from casual viewers and players to diehard fans. Market segmentation, the process of identifying subgroups of consumers with similar wants and needs, allows firms to tailor products and marketing strategies to maximize competitive performance [15]. Similar to other leisure pursuits (e.g., movies, culture, sport and recreational activities), previous researchers have suggested that esports consumers can be segmented based on preferred game genre [16-20]. Genre represents the style of game, along with visual presentation norms and play mechanics [16, 21]; popular genres include multiplayer online battle arenas (MOBA), first-person shooters (FPS), real-time strategy (RTS), sport simulation, digital collectible card games, and battle royale games.

Social media provides an always-on platform for gamers and fans of esports titles to connect with the game and each other [22]. Esports audiences integrate social media into their consumption experience, taking advantage of interactive features that link professional players with their fans and support peer-to-peer communication among consumers [20]. Thus, it is critical for esports brands to understand their positioning within the esports social media ecosystem. Overlaps in social media audiences provide insight into how games share fans, which fans are most exclusively loyal, and which fanbases are most (dis)similar [23]. Through social network analysis of how esports consumers engage with multiple games on social media, we can better understand the esports market structure. Specifically, we focus on how the esports market is partitioned in terms of unique and shared Twitter followers across gaming titles.

Twitter follower relationships represent an appropriate source of data for social network analysis to understand mutual relationships between consumers and esports titles. Twitter announced over two billion gaming-related tweets in 2020, while gaming was the sixth most followed topic on the platform [24]. Moreover, streamers on Twitch, a leading online platform for video game streaming, use Twitter extensively to drive traffic and connect with their audience [25]. The rise of social media has fundamentally transformed relationships between brands and consumers, allowing two-way communication and information sharing [26], large-scale brand-building activities [27], and ubiquitous consumer-to-consumer interaction [28]. Consumers proactively seek out and consume content [29] and social media platforms provide a forum for multi-directional engagement between brands and consumers [26, 30]. Brand managers for esports titles can use social media to effectively connect with their players and fans, enhancing engagement and consumer evaluation [31].

Thus, we develop our research question: *How is the esports market partitioned in terms of unique and shared social media followers across gaming titles?*

In the current study, we investigate patterns in how esports games share consumers to improve understanding of the overall market structure. This includes both exclusive loyalty to a particular title and partitions within the esports market that indicate where multi-title crossover does – and does not – occur. By addressing our research question, we unpack nuances among esports consumers that are generally neglected in broad studies that examine esports collectively.

We contribute to the growing body of literature on esports in several ways. First, our results enhance knowledge of the market structure between popular esports games, laying a foundation for future research and extending the external validity of insight from other disciplines (e.g., marketing, strategic management) to esports. Second, we provide practical implications for how esports organizations and brands can most advantageously position themselves within a highly

competitive market environment. Overall, we find that esports consumers are generally loyal to multiple titles from the same video game publisher – irrespective of game genre. Moreover, sport simulation games have relatively low crossover appeal with non-sport titles, suggesting that consumers of sport simulation titles are a relatively more distinct market segment than those associated with non-sport titles.

Method

We obtained account information and complete lists of all followers for 16 Twitter accounts representing popular esports titles through Twitter's Application Programming Interface (API). Among social media, Twitter represents one of the top mediums for following esports titles, teams, and players, trailing only YouTube [32]. The esports titles were chosen based on title popularity and use in previous esports research (e.g., [16, 33]). The 16 titles include the 13 most impactful games laid out by *The Esports Observer* as of Q3 2020 [33] with the addition of three sports titles (FIFA, NBA 2K, and Madden NFL). Sport simulation games are a key esports genre [34] and the addition of these three titles was intended to ensure coverage from a variety of genres. All 16 accounts represented official accounts maintained by game developers and publishers and are designated as *verified* accounts by Twitter, indicating that they had passed a formal vetting process to confirm the identity and authenticity of account managers [35]. Access to the Twitter API and subsequent data analysis took place via custom-developed scripts written by the lead author using the *R* package *rtweet* [36]. We queried the Twitter API to generate complete follower lists for each esports title account. We subsequently calculated the proportion of each title's followers that were shared with each other title. Based on the number of shared followers, size of the audiences for each pair of titles, and total number of unique followers across all titles, we calculated the *lift* for each title. Lift represents the proportion of accounts that follow both titles divided by the product of the proportion of accounts that follow each title.

Lift provides a measure of how often two events co-occur, accounting for the relative frequency each event occurs in the overall population. It is a useful index used to understand the presence, nature, and strength of an association rule relative to a random choice targeting model [37]. The numerator represents observed co-occurrence, while the denominator represents the frequency of co-occurrence assuming statistical independence. Lift of approximately 1.0 indicates that the relationship between A and B can be explained by random chance, while lift greater than 1.0 indicates a positive relationship and lift less than 1.0 indicates a negative relationship [38]. Lift scores of approximately 1.0 indicate knowing the state of one event (i.e., whether User U follows Title A) and provides little to no information about a second event (i.e., whether User U follows Title B). Thus, we can focus on game pairs with lift either substantially below or substantially above 1.0 as meaningful, and largely ignore game pairs with lift values of approximately 1.0 [39]. Game pairs with relatively high lift scores are those where users follow both titles more often than by chance, while game pairs with relatively low lift scores are those where users are less likely to follow both titles.

Results

Data for the current study provides insight into the audiences for esports titles and genres, as well as how those audiences are shared. This includes both obvious characteristics, such as audience size, as well as more subtle features, such as which titles have the most exclusively loyal

audiences, which titles appeal to the same consumers, and which titles' follower bases have the least in common. The 16 esports titles in the current study are collectively followed by 33,210,249 unique individuals on Twitter. The vast majority (81%) of individuals in our data set followed only one of the 16 esports titles. We term such followers who are not shared with any of the other 15 accounts *exclusive followers*. Number of followers was positively correlated with follower exclusivity (i.e., proportion of exclusive followers), $r = .71$, $p = .002$, a large effect size [40]. Regressing proportion of exclusive followers on total number of followers indicates that each additional million followers was associated with a 3.5% increase in proportion of exclusive followers (95% CI: 1.49, 5.51). Table 1 presents information about the size of each title's following.

Table 1 - Esports game title Twitter account follower counts and follower exclusivity

Game Title	Publisher	Twitter Handle	Followers	Exclusive Followers	Exclusive Follower %
Fortnite	Epic	@FortniteGame	11,937,579	9,058,590	75.88%
League of Legends	Riot	@LeagueOfLegends	4,770,833	3,389,425	71.04%
Call of Duty	Activision	@CallofDuty	4,210,325	2,754,800	65.43%
FIFA	EA Sports	@EASPORTSFIFA	3,745,001	2,583,801	68.99%
Overwatch	Blizzard	@PlayOverwatch	3,365,200	1,707,598	50.74%
NBA 2K	Take2	@nba2k	3,126,931	2,076,773	66.42%
Rainbow Six	Ubisoft	@Rainbow6Game	1,965,475	869,108	44.22%
Apex Legends	Electronic Arts	@PlayApex	1,943,959	827,672	42.58%
PUBG	Bluehole	@PUBG	1,683,690	930,616	55.27%
Valorant	Riot	@PlayValorant	1,153,867	354,415	30.72%
Counter-Strike: Global Offensive	Valve	@CSGO	1,008,380	471,164	46.72%
Dota 2	Valve	@DOTA2	986,231	613,902	62.25%
Madden NFL	EA Sports	@EAMaddenNFL	846,349	456,548	53.94%
Rocket League	Psyonix	@RocketLeague	840,726	345,480	41.09%
Hearthstone	Blizzard	@PlayHearthstone	834,758	322,817	38.67%
StarCraft	Blizzard	@StarCraft	395,607	137,267	34.70%

Note. Follower lists were collected November 26, 2020 to December 1, 2020, except @EAMaddenNFL, which was collected on December 15, 2020 to correct an omission. Exclusive followers represent followers not shared with any of the other 15 accounts.

Results in Table 2 illustrate the degree of overlap in followers between pairs of games. Examining overlap between followers provides insight into which titles share consumers with which titles. The numbers in each cell represent the percentage of individuals who follow the title in the row who are also followers of the title in the column. For example, the entry in the first row and second column indicates that 2.0% of people who follow Fortnite on Twitter also follow League of Legends, whereas the entry in the second row and first column indicates that 5.1% of people who follow League of Legends also follow Fortnite. These two cells represent the same people (the

243,587 people who follow both Fortnite and League of Legends), however the proportions are different due to the different overall audience sizes of the two games.

Table 2 - Overlap in esports game title Twitter followings

Game	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Fortnite	---	2.0	6.0	4.1	4.0	3.4	3.5	5.2	3.2	2.7	1.4	0.4	0.9	2.1	0.5	0.2
2. League of Legends	5.1	---	3.0	6.4	10.8	1.8	2.8	2.5	2.2	5.7	2.5	2.5	0.4	1.2	3.5	1.5
3. Call of Duty	16.9	3.4	---	3.1	5.9	5.0	6.7	6.5	4.7	3.1	2.2	1.0	2.2	2.9	1.4	0.9
4. FIFA	13.2	8.2	3.5	---	5.8	4.9	4.0	1.9	1.6	1.0	1.5	1.7	1.0	1.4	0.3	0.2
5. Overwatch	14.2	15.3	7.3	6.5	---	3.6	8.4	7.5	5.1	5.7	3.7	3.6	1.5	3.6	8.2	4.6
6. NBA 2K	13.0	2.8	6.7	5.8	3.9	---	5.9	2.5	1.4	1.0	1.0	1.3	7.2	1.4	1.4	0.5
7. Rainbow Six	21.0	6.9	14.4	7.5	14.4	9.4	---	10.9	7.3	6.0	5.0	2.7	3.0	5.2	1.9	1.1
8. Apex Legends	31.8	6.2	14.2	3.7	13.0	4.1	11.1	---	9.0	10.8	4.1	1.4	1.6	4.8	2.1	0.9
9. PUBG	22.9	6.2	11.7	3.5	10.3	2.6	8.5	10.4	---	6.2	6.0	2.5	1.2	3.8	2.6	1.3
10. Valorant	27.5	23.5	11.3	3.3	16.7	2.6	10.2	18.2	9.0	---	12.7	2.4	0.9	5.9	3.8	1.4
11. Counter-Strike: Global Offensive	16.0	12.0	9.1	5.4	12.4	3.0	9.6	8.0	10.0	14.6	---	9.4	0.8	4.8	3.5	2.1
12. Dota 2	5.0	12.0	4.4	6.4	12.3	4.2	5.3	2.8	4.3	2.8	9.6	---	0.7	1.6	4.9	4.1
13. Madden NFL	12.9	2.3	10.9	4.5	5.9	26.4	7.0	3.7	2.3	1.2	0.9	0.8	---	2.3	0.9	0.6
14. Rocket League	29.6	6.7	14.7	6.4	14.3	5.3	12.3	11.1	7.5	8.1	5.8	1.9	2.3	---	3.6	1.6
15. Hearthstone	7.8	20.2	6.9	1.3	33.2	5.3	4.4	4.9	5.2	5.2	4.2	5.8	0.9	3.6	---	19.0
16. StarCraft	7.3	17.9	9.6	1.7	39.1	3.6	5.7	4.5	5.6	4.1	5.3	10.2	1.4	3.4	40.1	---

Note. Numbers in each cell represent the percentage of individuals who follow title X (row) who also follow title Y (column). Color-coding corresponds to magnitude of overlap in Twitter followings ranging from dark red (low) to dark green (high).

Given high heterogeneity in audience size, looking simply at shared audience or proportion of audience shared can present a distorted picture. For example, Fortnite has the largest audience, approximately 2.5 times as large as the second largest title (League of Legends). As a result, no other title can share much of Fortnite's audience (6% of Fortnite followers also follow Call of Duty, the largest overlap), while Fortnite shares a substantial portion of other games' audiences purely by benefit of having a large following (e.g., Fortnite is also followed by 32% of Apex Legends followers, 30% of Rocket League followers, and 27% of Valorant followers). Conversely, StarCraft, with the smallest audience, cannot represent a large share of the largest titles' follower bases, even with nearly perfect overlap. That is, even if all 395,607 StarCraft followers were shared with Fortnite, that would represent only 3% of Fortnite's followers. Lift measures the strength of the association between two titles, accounting for the relative size of each audience and the share of the overall study population each title represents. Results based on lift calculations for all pairs of titles are presented in Table 3.

Table 3 - Lift in esports game title Twitter followings

Game	Genre	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Median Lift
1. Fortnite	BR	---	0.14	0.47	0.37	0.39	0.36	0.59	0.88	0.64	0.76	0.45	0.14	0.36	0.82	0.22	0.20	0.39
2. League of Legends	MOBA	0.14	---	0.24	0.57	1.07	0.19	0.48	0.43	0.43	1.63	0.84	0.84	0.16	0.47	1.41	1.24	0.48
3. Call of Duty	FPS	0.47	0.24	---	0.28	0.58	0.53	1.14	1.12	0.92	0.89	0.72	0.35	0.86	1.16	0.55	0.76	0.72
4. FIFA	Sport	0.37	0.57	0.28	---	0.57	0.52	0.67	0.33	0.31	0.29	0.48	0.57	0.40	0.57	0.12	0.15	0.40
5. Overwatch	FPS	0.39	1.07	0.58	0.57	---	0.38	1.42	1.28	1.01	1.65	1.22	1.21	0.58	1.41	3.28	3.86	1.21
6. NBA 2K	Sport	0.36	0.19	0.53	0.52	0.38	---	1.00	0.43	0.27	0.28	0.32	0.45	2.81	0.56	0.57	0.38	0.43
7. Rainbow Six	FPS	0.59	0.48	1.14	0.67	1.42	1.00	---	1.87	1.44	1.73	1.63	0.90	1.18	2.07	0.75	0.96	1.14
8. Apex Legends	FPS	0.88	0.43	1.12	0.33	1.28	0.43	1.87	---	1.78	3.11	1.36	0.47	0.64	1.90	0.84	0.77	0.88
9. PUBG	BR	0.64	0.43	0.92	0.31	1.01	0.27	1.44	1.78	---	1.77	1.98	0.84	0.46	1.49	1.03	1.10	1.01
10. Valorant	FPS	0.76	1.63	0.89	0.29	1.65	0.28	1.73	3.11	1.77	---	4.19	0.81	0.33	2.33	1.49	1.17	1.49
11. Counter-Strike: Global Offensive	FPS	0.45	0.84	0.72	0.48	1.22	0.32	1.63	1.36	1.98	4.19	---	3.16	0.31	1.90	1.39	1.76	1.36
12. Dota 2	MOBA	0.14	0.84	0.35	0.57	1.21	0.45	0.90	0.47	0.84	0.81	3.16	---	0.27	0.65	1.97	3.43	0.81
13. Madden NFL	Sport	0.36	0.16	0.86	0.40	0.58	2.81	1.18	0.64	0.46	0.33	0.31	0.27	---	0.90	0.34	0.54	0.46
14. Rocket League	Sport	0.82	0.47	1.16	0.57	1.41	0.56	2.07	1.90	1.49	2.33	1.90	0.65	0.90	---	1.43	1.36	1.36
15. Hearthstone	Card	0.22	1.41	0.55	0.12	3.28	0.57	0.75	0.84	1.03	1.49	1.39	1.97	0.34	1.43	---	15.94	1.03
16. StarCraft	RTS	0.20	1.24	0.76	0.15	3.86	0.38	0.96	0.77	1.10	1.17	1.76	3.43	0.54	1.36	15.94	---	1.10

Note. BR = battle royale; MOBA = multiplayer online battle arena; FPS = first-person shooter; Card = digital collectible card game; RTS = real-time strategy; Lift represents size of shared audience relative to mutual audience sizes, where 1.0 represents statistical independence. Color-coding corresponds to magnitude of lift ranging from dark red (low) to dark green (high).

The highest lift is between Hearthstone and StarCraft (15.94). That is, the number of followers shared by Hearthstone and StarCraft is approximately 16 times what would be expected solely from how many followers each has, absent a relationship between the two titles. Other pairs with relatively high lift values include Counter-Strike: Global Offensive with Valorant (4.19), Overwatch with both StarCraft (3.86) and Hearthstone (3.28), and Dota 2 with StarCraft (3.43). The lowest lift is between FIFA and Hearthstone (0.12). Other pairs with relatively low lift values include Fortnite with Dota 2 (0.14) and League of Legends (0.14), FIFA with StarCraft (0.15), and League of Legends with Madden NFL (0.16). Overall, the lowest median lifts are associated with Fortnite (0.39), FIFA (0.40), NBA 2K (0.43), and Madden NFL (0.46), while the highest median lifts are associated with Valorant (1.49), Counter-Strike: Global Offensive (1.36), and Rocket League (1.36). These results suggest that Fortnite, FIFA, NBA 2K, and Madden NFL have the most distinct audiences, while Valorant, Counter-Strike: Global Offensive, and Rocket League share their audience with other titles to the greatest extent.

Discussion

The large proportion of single-title followers is consistent with a high degree of esports specialization among consumers. Esports require mastery of complex systems and game mechanics, typically following a steep learning curve not only for players but also spectators [41]. Successful game play requires specialization to establish technical and tactical knowledge, ability to adapt to diverse opponents and gameplay mechanics, well-developed communication skills, and trust in one's abilities [42, 43].

Titles with high levels of exclusivity (Fortnite, League of Legends, FIFA, NBA 2K, Call of Duty) represent those with minimal overlap with other esports titles. Fans who choose to follow one of these games are unlikely to also choose to follow any other esports. This may be due to divergent interests (i.e., gamers interested in a soccer simulation may be distinct from those interested in a first-person shooter) or a high degree of required specialization due to complex game mechanics that discourage extended trialing across titles. Esports titles with the highest exclusivity were also those with the largest audiences.

Partitioning is evident in the results based on lift. A clear partition exists with greater-than-expected shared consumption among the three titles from Blizzard Entertainment (Overwatch, Hearthstone, and StarCraft). Notably, this partition does *not* appear to extend to include Call of Duty, a game published by Blizzard Entertainment sister company Activision Publishing (Blizzard Entertainment and Activision Publishing are subsidiaries of Activision Blizzard). A similar publisher-specific partition appears with the two titles from Valve (Counter-Strike: Global Offensive and Dota 2). The two Riot titles (League of Legends and Valorant) share more common followers than would be expected, to a lesser degree.

Interestingly, the two EA Sports titles (FIFA and Madden NFL) share fewer followers than would be expected by the size of their respective bases, indicative of a negative crossover pattern and a lack of synergy across EA Sports titles. This could potentially be due to divergent global sport cultures, with Madden NFL being an American Football video game most popular in the US and FIFA a soccer video game with a more global following, particularly among those outside the US [44]. Previous scholars have found divergent consumer attitudes across different football codes [45]. Most members of the sport video gaming community engage primarily with one game, deliberately segregating themselves from the rest, reflecting a preference based on the simulated sport [44]. Similarly, Apex Legends, which is published by EA Sports parent company Electronic Arts, demonstrates negative crossover with both FIFA and Madden NFL.
The relatively high lift value between StarCraft and Dota 2 provides an interesting example. Despite being published by different developers, there is a clear connection between the two games based on a shared evolutionary predecessor in Blizzard Entertainment's WarCraft franchise. The StarCraft franchise represents a reimagining of WarCraft set in a futuristic, space war-based context. Meanwhile, Dota 2 is the sequel to Defense of the Ancients, a user-created modification to WarCraft III. As such, the two games may share a greater than expected share of consumers due to their common history. This is further supported by modestly elevated lift between Dota 2 and Hearthstone, another game spawned from the WarCraft evolutionary tree.

While partitions based on publisher and, to a lesser extent, game development history, are evident, the most obvious candidate as a basis for partitioning is game genre. As noted by Sjöblom et al. [46], "genre as a means of categorising videogames is more than simply common practice, it is almost unavoidable" (p. 162). Genre represents the style of game, along with visual presentation norms and play mechanics [16, 21]. Previous scholars have suggested that genre is a relevant means for segmenting esports consumers [16-20]. In contrast to much of this existing research that assumes conventional esports genres are meaningful for defining consumer segments, results from the current study do not exhibit genre-based partitions. While some intra-genre pairs have higher-than-expected consumer overlap (e.g., NBA 2K and Madden NFL), this is not generally the case. Lift between the two MOBA games (League of Legends and Dota 2) and between the two Battle Royale games (Fortnite and PUBG) were both below 1.0 (0.84 and 0.64, respectively),

indicating negative relationships. Other than the NBA 2K/Madden NFL overlap previously mentioned, the four sport simulation titles (FIFA, NBA 2K, Madden NFL, Rocket League) all have lift below 1.0 (lift values ranging from 0.40 to 0.90). Valorant, the title with the highest overall overlap with other titles, has relatively high lift with genre-mates Counter-Strike: Global Offensive (4.19) and Apex Legends (3.11), however, it also has a relatively low lift value with Call of Duty (0.89). Most of the highest lift values crossed genres (e.g., Overwatch, Hearthstone, and StarCraft represent three different genres). This raises questions about the academic or practical value of classifying esports titles based on traditional genres, a point also made by Jang and Byon [16].

Improved understanding of the existing partitions across esports titles can offer insight for both endemic and non-endemic brand managers. Endemic brands (e.g., Dell, Logitech, Microsoft, Nvidia) have broad appeal to esports consumers as products such as computer hardware are universal regardless of title(s) played. Non-endemic brands (e.g., BMW, DHL, Wendy's) seeking to enter the esports space as a means of accessing consumers can use the results of the current study to identify and prioritize potential strategic partners. Relatively strong synergy across titles from the same publisher suggests that coordination with multi-title publishers or event organizers may offer multiplicative returns. However, this pattern of sharing followers was not universal. Based on our results, a partnership with a publisher that enjoys high levels of consumer sharing (e.g., Blizzard Entertainment) may be more valuable than with a publisher that exhibits low levels of cross-title synergy (e.g., Electronic Arts). Particularly for brands non-endemic to esports, authenticity and goodwill can be both challenging and invaluable [47]. Establishing and maintaining long-standing partnerships that extend beyond a single title may be a key to sustaining relationships with esports consumers. For a game publisher, development studio, or esports event organizer, our results suggest that a narrow focus on a specific genre is not necessary for brand extensions; rather, existing followers appear amenable to broadening consumption even across disparate titles.

Limitations and Future Directions

The primary limitation in the current study is the use of Twitter follower relationships as a proxy for consumer connection to esports titles. It is reasonable to assume that Twitter is not representative of the broad population of esports consumers. Twitter is most prevalent in the United States [48], whereas esports is a world-wide phenomenon. This may bias follower totals and overlap patterns, especially as popularity of esports titles vary geographically [49]. Future research investigating a broad set of social media platforms or platforms with a larger userbase than Twitter (e.g., Facebook, YouTube, Weixin/WeChat) may offer a more representative picture of esports consumers. Individuals who follow game accounts on Twitter are self-selected as those who want to receive a stream of information about a particular game. Following an account is influenced by the quality of account management; accounts that post more often, post more useful or more entertaining content, or otherwise are relatively more attractive to Twitter users will garner larger followings. If accounts from different esports titles are managed similarly, they may attract overlapping sets of followers. Furthermore, merely following a Twitter account does not necessarily indicate that an individual engages with the content or the esports title the account represents. Following the Twitter account associated with a particular title is driven by

more than solely actions by the brand or brand manager; other actors within the esports ecosystem, such as individual esports players and teams, also play a role in promoting titles. Understanding the synergies and cross-promotional opportunities between publishers, esports players, esports teams, and esports event managers could be a fruitful area for future research.

Analysis in the current study focused on 16 esports titles. These titles were purposefully selected to represent the largest or most popular titles, reflecting those used in previous esports research (e.g., [16, 33]), and spanning a range of genres and publishers. Including additional titles may have altered specific results, although the scale of the studied accounts precludes substantial impact from any but relatively popular titles. Data collection was conducted in November and December, 2020; patterns of followership and the overlap between follower groups necessarily reflect that moment in time. As titles wax and wane in popularity, patterns in shared followers will also shift.

Finally, while the research design in the current study was well-suited to collecting and analyzing a massive quantity of data, it was less well-suited to in-depth investigation of causal relationships. While clear patterns in overlapping followers were evident, it is not possible to definitively infer the reasons why the audiences for a pair of esports games do or do not overlap. For example, it cannot be determined from our data the extent to which relatively high lift values between titles from the same publisher are attributable to consumers' expressed preference for that publisher. Especially as higher frequency of cross-promotional messaging leads to increased uptake for following multiple co-branded titles. Future research is necessary to investigate this research question. One potential approach could be applying a uses and gratification theory approach [50] to examine what motives are fulfilled by consuming different games. Previous scholars have applied this approach to genre preferences, if not yet at the title level (e.g., [46]). Longitudinal study tracking how audiences transfer or flow from one title to another could also be a fruitful area for future research.

Conclusion

The esports industry is rapidly evolving and greater insight into the market structure lays a foundation for both academia and practice. A critical aspect is understanding how esports titles share consumers. Much of the existing esports research examines the industry as a whole [47] and genre is the most common means of division when scholars adopt a more granular approach (e.g., [16]). Our research demonstrates that esports consumers are not a monolithic block and that the most relevant partitions are not where commonly assumed (i.e., traditional genre boundaries). Overlapping followers across esports titles is most evident among games from the same publisher, suggesting high levels of synergy and cross-selling are possible. By contrast, we found a lack of evidence in favor of traditional game genres explaining patterns of multi-game engagement. That is, gamers may not be interested in multiple games that share similar styles, gameplay, or context. Rather, they choose games based on the attractiveness of each particular game and publisher. This further suggests that targeting players of similar games in an attempt to poach or otherwise convert them may not be an appropriate marketing strategy. High levels of title exclusivity, especially for the most popular games, suggests a high degree of game specialization, perhaps driven by time requirements to gain mastery of complex game mechanics, tactics, and understanding. The major contribution of our study is improved understanding of the patterns present in consumer overlap between and across esports titles.

Funding

Conflicts of Interest

The authors confirm that there are no conflicts of interest to declare.

References

1. Gawrysiak, J., Burton, R., Jenny, S., & Williams, D. (2020). Using esports efficiently to enhance and extend brand perceptions–A literature review. *Physical Culture and Sport. Studies and Research*, *86*(1), 1-14.
2. Jenny, S.E., Manning, R.D., Keiper, M.C., & Olrich, T.W. (2017). Virtual(ly) athletes: where esports fit within the definition of "sport". *Quest*, *69*(1), 1-18.
3. Besombes, N. (2019). Esports ecosystem and landscape. https://medium.com/@nicolas.besombes/esports-ecosystem-and-landscape-3dbbd653dc2c
4. Macey, J., Tyrväinen, V., Pirkkalainen, H., & Hamari, J. (2020). Does esports spectating influence game consumption?. *Behaviour & Information Technology*, 1-17.
5. Brown, K.A., Billings, A.C., Murphy, B., & Puesan, L. (2018). Intersections of fandom in the age of interactive media: Esports fandom as a predictor of traditional sport fandom. *Communication & Sport, 6*, 418–435.
6. Harpstead, E., Rios, J. S., Seering, J., & Hammer, J. (2019). Toward a Twitch research toolkit: A systematic review of approaches to research on game streaming. In *Proceedings of the Annual Symposium on Computer-Human Interaction in Play*. Barcelona, Spain, 111-119.
7. Reitman, J.G., Anderson-Coto, M.J., Wu, M., Lee, J.S., & Steinkuehler, C. (2020). Esports research: A literature review. *Games and Culture*, *15*(1), 32-50.
8. Santos, F.M., & Eisenhardt, K.M. (2009). Constructing markets and shaping boundaries: Entrepreneurial power in nascent fields. *Academy of Management Journal*, *52*(4), 643-671.
9. Singer, D., & Chi, J. (2019). The keys to esports marketing: Don't get 'ganked'. *McKinsey*. https://www.mckinsey.com/industries/technology-media-and-telecommunications/our-insights/the-keys-to-esports-marketing-dont-get-ganked
10. Freitas, B.D.A., Contreras-Espinosa, R.S., & Correia, P.Á.P. (2020). Sponsoring esports to improve brand image. *Scientific Annals of Economics and Business, 67*(4), 495-515.
11. Scott, J. (1988). Social network analysis. *Sociology*, *22*(1), 109-127.
12. Grewal, R., Gupta, S., & Hamilton, R. (2020). The Journal of Marketing Research today: Spanning the domains of marketing scholarship. *Journal of Marketing Research, 57*(6) 985-998.
13. Bertschy, M., Mühlbacher, H., & Desbordes, M. (2020). Esports extension of a football brand: Stakeholder co-creation in action?. *European Sport Management Quarterly, 20*(1), 47-68.
14. Seo, Y. (2013). Electronic sports: A new marketing landscape of the experience economy. *Journal of Marketing Management*, *29*(13-14), 1542-1560.
15. Kotler, P., & Keller, K.L. (2016). *Marketing management* (15th ed.). Pearson.
16. Jang, W. W., & Byon, K. K. (2020). Antecedents of esports gameplay intention: Genre as a moderator. *Computers in Human Behavior*, *109*, 106336.
17. Jang, W.W., Byon, K.K., Baker III, T.A., & Tsuji, Y. (2020). Mediating effect of esports content live streaming in the relationship between esports recreational gameplay and esports event broadcast. *Sport, Business and Management.* DOI: 10.1108/SBM-10-2019-0087
18. Pizzo, A.D., Baker, B.J., Na, S., Lee, M.A., Kim, D., & Funk, D. C. (2018). eSport vs. sport: A comparison of spectator motives. *Sport Marketing Quarterly*, *27*(2), 108-123.
19. Rehbein, F., Staudt, A., Hanslmaier, M., & Kliem, S. (2016). Video game playing in the general adult population of Germany: Can higher gaming time of males be explained by gender specific genre preferences? *Computers in Human Behavior, 55*, 729–735.
20. Tang, T., Kucek, J., & Toepfer, S. (2020). Active within structures: Predictors of esports gameplay and spectatorship. *Communication & Sport*.

21. Apperley, T.H. (2006). Genre and game studies: Toward a critical approach to video game genres. *Simulation & Gaming, 37*, 6–23.
22. Cheung, C. M., & Lee, M. K. (2012). What drives consumers to spread electronic word of mouth in online consumer-opinion platforms. *Decision Support Systems*, 53(1), 218-225.
23. Wezerek, G., & Roeder, O. (2019). Which 2020 candidates have the most in common ... on Twitter? *FiveThirtyEight*. Retrieved from: https://fivethirtyeight.com/features/which-2020-candidates-have-the-most-in-common-on-twitter/
24. Chadha, R. (2021). Over 2 billion gaming tweets in 2020! [blog post]. *Twitter*. https://blog.twitter.com/en_us/topics/insights/2021/over-2-billion-gaming-tweets-in-2020-.html
25. Anekal, M. (2018). *Esports performing well on Twitter*. Medium. https://medium.com/tnlmedia/esports-performing-well-on-twitter-cac9efcca693
26. Kaplan, A.M. & Haenlein, M. (2010). Users of the world, unite! the challenges and opportunities of social media. *Business Horizons, 53*(1), 59-69.
27. Hollebeek, L., & Brodie, R. (2016). Non-monetary social and network value: Understanding the effects of non-paying customers in new media. *Journal of Strategic Marketing, 24*, 169-174.
28. Gensler, S., Volkner, F., Liu-Thompkins, Y., & Wiertz, C. (2013). Managing brands in the social media environment. *Journal of Interactive Marketing, 27*, 242–256.
29. Hennig-Thurau, T., Malthouse, E.C., Friege, C., Gensler, S., Lobschat, L., Rangaswamy, A. & Skiera, B. (2010). The impact of new media on customer relationships. *Journal of Interactive Marketing, 15*(9), 181-196.
30. Hanna, R., Rohm, A. and Crittenden, V.L. (2011). We're all connected: The power of the social media ecosystem. *Business Horizons, 54*(3), 265-273.
31. Naylor, R.W., Lamberton, C.P., & West, P.M. (2012). Beyond the "like" button: The impact of mere virtual presence on brand evaluations and purchase intentions in social media settings. *Journal of Marketing, 76*(6), 105-120.
32. Pike, N., & Master, S. (2017). *The esports playbook: Maximizing your investment through understanding the fans*. Nielsen. Retrieved from: https://www.nielsen.com/us/en/insights/report/2017/the-esports-playbook-maximizing-investment-through-understanding-the-fans/
33. Seck, T. (2020). Q3 2020's most impactful PC games: League of Legends' dominance remains undisputed, COVID-19 policies continue to upset the ranking. *The Esports Observer*. https://esportsobserver.com/q3-2020-impact-index/
34. Kim, Y., & Ross, S. (2015). The effect of sport video gaming on sport brand attitude, attitude strength, and the attitude-behavior relationship. *Journal of Sport Management, 29*(6), 657-671.
35. Twitter. (n.d.). About verified accounts. Twitter. Retrieved from: https://help.twitter.com/en/managing-your-account/about-twitter-verified-accounts
36. Kearney, M.W. (2019). rtweet: Collecting and analyzing Twitter data. *Journal of Open Source Software, 4*(42). 1829. doi:10.21105/joss.01829 (R package version 0.7.0)
37. Linoff, G.S., & Berry, M.J. (2011). *Data mining techniques: For marketing, sales, and customer relationship management* (3rd ed.). John Wiley & Sons.
38. Aguinis, H., Forcum, L.E., & Joo, H. (2013). Using market basket analysis in management research. *Journal of Management, 39*(7), 1799-1824.
39. Baralis, E., Cagliero, L., Cerquitelli, T., Garza, P., & Marchetti, M. (2011). CAS-Mine: Providing personalized services in context-aware applications by means of generalized rules. *Knowledge and Information Systems, 28*(2), 283-310.
40. Cohen, J. (1992). Statistical power analysis. *Current Directions in Psychological Science, 1*(3), 98-101.

41. Georgen, C. (2015). Well played & well watched: DOTA 2, spectatorship, and esports. *Well Played A Journal on Video Games, Values, and Meaning, 4*(1), 179-191.
42. Bányai, F., Griffiths, M. D., Király, O., & Demetrovics, Z. (2019). The psychology of esports: A systematic literature review. *Journal of Gambling Studies, 35*(2), 351-365.
43. Himmelstein, D., Liu, Y., & Shapiro, J. L. (2017). An exploration of mental skills among competitive league of legend players. *International Journal of Gaming and Computer-Mediated Simulations, 9*(2), 1-21.
44. Gray, V. (2018). *A breakdown of esports fan bases & communities*. Pulsar. https://www.pulsarplatform.com/blog/2018/a-breakdown-of-esports-fan-communities/
45. Kunkel, T., Funk, D., & King, C. (2014). Developing a conceptual understanding of consumer-based league brand associations. *Journal of Sport Management, 28*(1), 49-67.
46. Sjöblom, M., Törhönen, M., Hamari, J., & Macey, J. (2017). Content structure is king: An empirical study on gratifications, game genres and content type on Twitch. *Computers in Human Behavior, 73*, 161-171.
47. Huettermann, M., Trail, G.T., Pizzo, A.D., & Stallone, V. (2021). Esports sponsorship: An empirical examination of esports consumers perceptions of sponsors. *Journal of Global Sports Management*. 10.1080/24704067.2020.1846906
48. Kemp, S. (2020). *Digital 2020*. Hootsuite. Retrieved from: https://blog.hootsuite.com/social-media-users-pass-4-billion/
49. Nielsen. (2019). *Esports playbook for brands: 2019*. Nielsen. Retrieved from: https://www.nielsen.com/us/en/insights/report/2019/esports-playbook-for-brands/
50. Katz, E., Blumler, J.G., & Gurevitch, M. (1973). Uses and gratifications research. *The Public Opinion Quarterly, 37*, 509–523.