

A Study on FIFA Partner Adidas of 2022 Qatar World Cup Using Big Data Analysis

Kyung-Won Byun *

**Assistant Professor, Department of graduate school of business Administration, Dankook University, Korea
changewon125@ dankook.ac.kr*

Abstract

The purpose of this study is to analyze the big data of Adidas brand participating in the Qatar World Cup in 2022 as a FIFA partner to understand useful information, semantic connection and context from unstructured data. Therefore, this study collected big data generated during the World Cup from Adidas participating in sponsorship as a FIFA partner for the 2022 Qatar World Cup and collected data from major portal sites to understand its meaning. According to text mining analysis, 'Adidas' was used the most 3,340 times based on the frequency of keyword appearance, followed by 'World Cup', 'Qatar World Cup', 'Soccer', 'Lionel Messi', 'Qatar', 'FIFA', 'Korea', and 'Uniform'. In addition, the TF-IDF rankings were 'Qatar World Cup', 'Soccer', 'Lionel Messi', 'World Cup', 'Uniform', 'Qatar', 'FIFA', 'Ronaldo', 'Korea', and 'Nike'. As a result of semantic network analysis and CONCOR analysis, four groups were formed. First, Cluster A named it 'Qatar World Cup Sponsor' as words such as 'Adidas', 'Nike', 'Qatar World Cup', 'Sponsor', 'Sponsor Company', 'Marketing', 'Nation', 'Launch', 'Official', 'Commemoration' and 'National Team' were formed into groups. Second, B Cluster named it 'Group stage' as words such as 'Qatar', 'Uruguay', 'FIFA' and 'group stage' were formed into groups. Third, C Cluster named it 'Winning' as words such as 'World Cup Winning', 'Champion', 'France', 'Argentina', 'Lionel Messi', 'Advertising' and 'Photograph' formed a group. Fourth, D Cluster named it 'Official Ball' as words such as 'Official Ball', 'World Cup Official Ball', 'Soccer Ball', 'All Times', 'Al Rihla', 'Public', 'Technology' was formed into groups.

Keywords: *Big data, Adidas, World Cup, Sports sponsorship, Text mining, Semantic Network, CONCOR Analysis*

1. Introduction

One of the purposes of a company's participation in sports sponsorship is to improve and strengthen the image of the company by associating its products and services with sporting events such as the Olympics and the World Cup, which have a positive image.[1] The global scale of sports sponsorship has declined over the past three years due to the impact of the COVID-19 pandemic. However, with the recent recovery of daily life and growing interest in e-sports centered on the younger generation, it is judged that the sports sponsorship

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Corresponding Author: changewon125@dankook.ac.kr

Tel: +82-31-8005-3444, Fax: +82-31-8021-7137

Assistant Professor, Department of Graduate School of Business Administration, Dankook University, Korea

market will also increase. According to data from Statista, a German professional statistics company, the size of the global sports sponsorship market is estimated at about \$57 billion in 2020, and is estimated to increase to about \$89.6 billion in 2027 [2].

In this status of global sports sponsorship, the World Cup, a soccer festival for people around the world every four years, comes as an effective communication platform for global companies that want to enter the global market or strengthen their reputation as a top brand worldwide. For the 2022 Qatar World Cup, a total of seven top-rated FIFA partners organized by FIFA are Adidas, Coca-Cola, Wanda Group, Hyundai Kia Motors, Qatar Airways, Qatar Energy, and Visa Card companies [3]. They pay more than \$80 million a year.

Adidas, a global sportswear brand, has been participating in the World Cup Sports Sponsorship program for the longest time since 1970 as an official partner. It is marketing as an official sponsor for all competitions organized by FIFA, and provides World Cup certified soccer balls to the competition every time. However, ambush marketing, which is not an official sponsor but a general company wants to receive the same benefits as a sponsor, is threatening the development of not only the World Cup but also the Olympics and various sports events [4]. Therefore, measurement of the exact effect of sponsoring sports events by official sponsors is considered very important for the development of sports sponsorship. In this situation, this study aims to collect big data generated from online articles, blogs, and cafes during the World Cup for Adidas participating in the 2023 Qatar World Cup as a FIFA partner, and to provide basic data for sports sponsorship research and strategy establishment through semantic network analysis and CONCOR analysis on keywords, issues, meanings, connections and contexts that people are interested in during the World Cup.

2. Research method

2.1. Analysis target and data collection

This study selected social data such as news, blogs, and cafes appearing on Naver and Google as collection channels. Textom was used for data collection, and 'World Cup + Adidas' was used as a search word for data search. The data collection period is from November 13, 2022 to December 24, 2022. This includes one week before the 2022 World Cup and one week after the closing. The collected data are 1483 Naver blogs, 325 Naver news, 628 Naver cafe posts and 503 Google news. Keyword extraction was limited to 60 in consideration of the frequency of appearance. The analysis data information is shown in <Table 1>.

Table 1. Analyze data information

Item	Content
Collection period	Naver (news, cafes, blogs), Google (news)
Collection channel	November 13, 2022 – December 24, 2022
Search word(60item)	'World Cup + Adidas
Collection tools / Analysis tool	TEXTOM / Ucinet 6.0, NetDraw

2.2. Investigation tools and data processing

In this study, data collection and analysis were conducted using the social matrix program TEXTOM. The data refinement process for the collected data was carried out as shown in <Table 2>. Text mining was performed on the refined data to analyze keyword frequency, TF-IDF. In addition, to understand the context of the relevance between the extracted keywords, the semantic connection structure and connection centrality between words were analyzed using Ucinet6, a network software program. Network visualization and

CONCOR analysis were performed using NetDraw function.

Table 2. Example of data cleaning

Keyword	Cleaning
Messi, Lionel Messi	Lionel Messi
Cola, Coca-Cola, Coke	Coca-Cola
Al Rihla, AIRihla, Rihla Ball	Al Rihla
Postposition / Meaningless words and numbers	Deletion

3. Results

3.1. Keyword frequency, TF-IDF results through text mining

Text mining is the extraction of meaningful information and knowledge from large-scale text data based on natural language processing technology [5].

In this study, the TF(term frequency), TF-IDF(term frequency-inverse document frequency) were analyzed through text mining. TF means the number of appearances of a word in a document, and TF-IDF is the multiplication of the keyword frequency(TF) and the reciprocal of the document frequency(IDF), indicating how important a word is in a specific document.

According to text mining analysis, Adidas was used the most 3,340 times based on the frequency of keyword appearance, followed by World Cup(2292), Qatar World Cup(1136), Soccer(745), Lionel Messi(552), Qatar(428), FIFA(412), Korea(3795), and Uniform(3795). In addition, the TF-IDF rankings were Qatar World Cup(1299.36), Soccer(1246.00), Lionel Messi(1221.32), World Cup(1080.57), Uniform(971.85), Qatar (922.05), FIFA(910.26), Ronaldo(877.46), Korea(837.36), and Nike(836.31).

Table 3. Text Mining Analysis Results

No	Keyword	Frequency	TF-IDF	No	Keyword	Frequency	TF-IDF
1	Adidas	3340	312.8065794	31	Sponsor company	128	412.9918553
2	World Cup	2292	1080.573615	32	Commemoration	128	422.2210769
3	Qatar World Cup	1136	1299.358803	33	Cheering	119	395.9177717
4	Soccer	745	1245.998904	34	Contest	116	419.3077718
5	Lionel Messi	552	1221.316132	35	Sale	116	385.9366514
6	Qatar	428	922.0488906	36	Winning	111	380.5231199
7	FIFA	412	910.2644014	37	Champion	111	384.1234355
8	Korea	379	837.3548741	38	Purchase	110	373.6392021
9	Uniform	379	971.8542468	39	Shoes	108	373.7417211
10	Nike	365	836.3093119	40	Sponsor	108	360.363817
11	Ronaldo	312	877.4612179	41	National team	107	359.1252215
12	Official ball	277	753.2066468	42	Uruguay	104	380.01006
13	Game	255	651.6093019	43	Speed	103	361.0688565
14	Argentina	242	654.264627	44	Technology	100	369.4764879
15	Son Heung Min	237	674.8496834	45	Japan	97	338.9271358
16	Al Rihla	236	687.9837054	46	Public figure	94	340.9968041
17	Player	234	624.341505	47	France	94	344.732395

18	Official ball	229	622.6870835	48	Size	93	330.3909063
19	Product	214	617.1406178	49	Public	93	322.8607835
20	Official	197	549.5605472	50	People	92	341.2051031
21	Germany	173	536.9741027	51	Marketing	92	319.3891621
22	Advertising	168	529.3931046	52	Nation	89	319.4569883
23	Sports	168	510.2087869	53	Season	87	309.0753639
24	Information	165	482.0598734	54	Group stage	86	306.5652105
25	Production	156	465.0357521	55	Coca-Cola	86	316.5635539
26	Brand	148	460.5195518	56	Review	86	323.9395005
27	Photograph	147	455.1463502	57	Event	86	318.9525964
28	Soccer ball	143	470.3698672	58	Support	86	314.239088
29	Launch	142	448.6130232	59	Advance	86	333.4294335
30	Sponsor company	133	420.1798034	60	Cheering match	85	303.0004988

3.2. Semantic network analysis

Text mining analysis was performed to convert the analyzed 60 keywords into a matrix, and semantic network analysis and visualization were performed through Ucinet6 program. The key words according to the frequency of occurrence may be overrepresented or underestimated due to the low frequency of occurrence even though they are important keywords. For this purpose, degree centrality, closeness centrality and betweenness centrality were analyzed.

First, degree centrality appeared in the order of Adidas, World Cup, Qatar World Cup, Soccer and Lionel Messi. Next, closeness centrality and betweenness centrality were higher in the order of Adidas, World Cup, Qatar World Cup, soccer, Qatar, Korea and games. The main keywords analyzed through the three centrality analyses are Adidas, World Cup, Qatar World Cup, Qatar, Soccer, Lionel Messi, and Korea.

In addition, the network between related keywords is visualized using NetDraw using the frequency matrix, which is a simultaneous frequency matrix, and the concentric circle represents the size and frequency of occurrence according to the main keyword, and the thickness of the line represents the frequency of occurrence of both keywords at the same time. As a result, it is shown in Figure 1.

Table 4. Centrality Analysis Results

NO	Keyword	Degree	Closeness	Betweenness	NO	Keyword	Degree	Closeness	Betweenness
1	Adidas	0.104	1	0.476	31	Commemoration	0.006	0.881	0.228
2	World Cup	0.070	1	0.476	32	Cheering	0.005	0.894	0.314
3	Qatar World Cup	0.043	1	0.476	33	Contest	0.005	0.922	0.402
4	Soccer	0.028	1	0.476	34	Sale	0.005	0.868	0.277
5	Lionel Messi	0.021	0.967	0.417	35	Winning	0.005	0.831	0.147
6	Qatar	0.018	1	0.476	36	Champion	0.005	0.843	0.214
7	FIFA	0.018	0.952	0.392	37	Purchase	0.004	0.843	0.221
8	Korea	0.015	1	0.476	38	Shoes	0.003	0.766	0.139
9	Uniform	0.016	0.908	0.263	39	Sponsor	0.005	0.881	0.243
10	Nike	0.013	0.967	0.405	40	National team	0.005	0.908	0.313

11	Ronaldo	0.011	0.797	0.135	41	Uruguay	0.004	0.843	0.242
12	Official ball	0.012	0.881	0.249	42	Speed	0.004	0.711	0.066
13	Game	0.010	1	0.476	43	Technology	0.005	0.711	0.048
14	Argentina	0.010	0.967	0.398	44	Japan	0.004	0.819	0.137
15	SonHeungMin	0.010	0.952	0.39	45	Public figure	0.005	0.738	0.076
16	Al Rihla	0.0110	0.831	0.19	46	France	0.004	0.831	0.21
17	Player	0.009	0.967	0.414	47	Size	0.003	0.756	0.097
18	Official ball	0.011	0.922	0.346	48	Public	0.004	0.766	0.16
19	Product	0.008	0.922	0.331	49	People	0.003	0.819	0.211
20	Official	0.009	0.967	0.399	50	Marketing	0.004	0.787	0.119
21	Germany	0.007	0.922	0.321	51	Nation	0.004	0.937	0.368
22	Advertising	0.006	0.843	0.243	52	Season	0.003	0.831	0.163
23	Sports	0.007	0.937	0.344	53	Group stage	0.004	0.776	0.142
24	Information	0.006	0.881	0.305	54	Coca-Cola	0.004	0.72	0.027
25	Production	0.007	0.952	0.411	55	Review	0.003	0.766	0.136
26	Brand	0.006	0.922	0.294	56	Event	0.003	0.831	0.224
27	Photograph	0.005	0.967	0.426	57	Support	0.004	0.797	0.089
28	Soccer ball	0.005	0.868	0.282	58	Advance	0.003	0.843	0.187
29	Launch	0.005	0.797	0.173	59	Cheering match	0.003	0.711	0.07
30	Sponsor Co.	0.007	0.831	0.152	60	All time	0.004	0.868	0.248

3.3. CONCOR analysis

Recently, structural equivalence analysis is used to identify the similarities of key keywords in the network and analyze them in clusters [6]. In the connection relation of the nodes included in the network, the nodes having the connection relation of the structurally same position have the structural equivalence, and the similarity is high and can be represented as one cluster. Among these structural isometry methods, there is a CONCOR (convergence of iteration correlation) analysis that generates similar clusters based on the correlation between key keywords [7-8].

CONCOR analysis was conducted after constructing semantic network focusing on the top 60 keywords, and it is necessary to reduce each keyword to a small number of clusters through an appropriate number of classification criteria. At this time, the criteria for determining the number of clusters were determined in four clusters by referring to the dendrogram, which is a data that expresses the process of forming clusters by each keyword in a tree-type graph. As a result of semantic network analysis and CONCOR analysis, four groups were formed.

First, Cluster A named it 'Qatar World Cup Sponsor' as words such as Adidas, Nike, Qatar World Cup, Sponsor, Sponsor Company, Marketing, Nation, Launch, Official, Commemoration and National Team were formed into groups. Second, B Cluster named it 'Group stage' as words such as Qatar, Uruguay, FIFA and Group stage were formed into groups. Third, C Cluster named it 'Winning' as words such as World Cup Winning, Champion, France, Argentina, Lionel Messi, Advertising and Photograph formed a group. Fourth, D Cluster named it 'Official Ball' as words such as Official Ball, World Cup Official Ball, Soccer Ball, All Times, Al Rihla, Public, Technology was formed into groups.

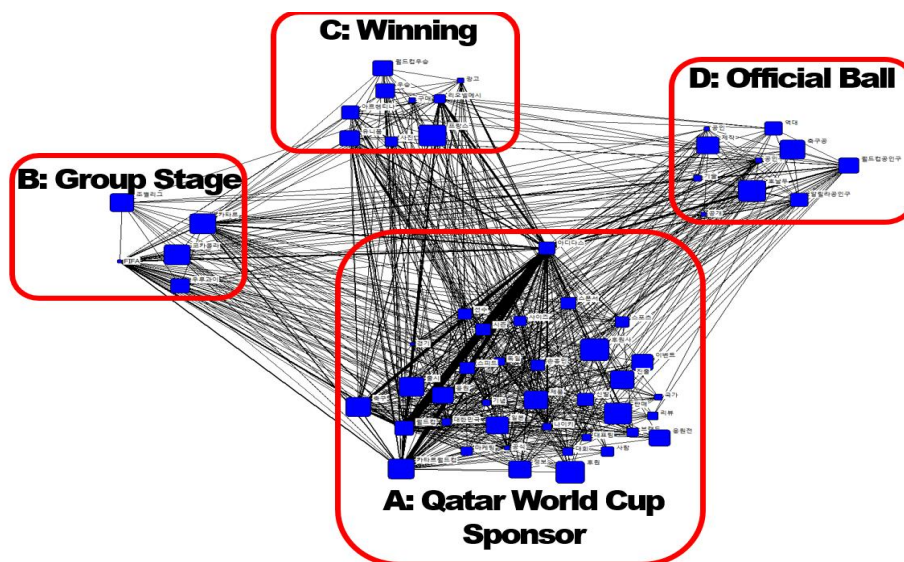


Figure 2. CONCOR analysis results of semantic network

4. Conclusion

Field staff are showing difficulties and skeptical responses to the measurement of sponsorship effects [9]. Accordingly, big data analysis that can secure and analyze structured and unstructured data has recently been increasing in academia and practice. Therefore, this study collected big data generated during the World Cup from Adidas participating in sponsorship as a FIFA partner for the 2022 Qatar World Cup and collected data from major portal sites to understand its meaning.

Data were collected from November 13, 2022 to December 24, 2022, including a week before and after the World Cup. The collected data were analyzed using Textom and Ucinet6.0. First, TF analysis and TF-IDF survey were conducted through text mining, and the relationship between the collected keywords was analyzed based on the centrality. In addition, a cluster between keywords with similarities was derived through CONCOR analysis. The conclusions drawn based on the analysis results are as follows.

First, the keywords that are frequent in the collected data are Adidas, World Cup, Qatar World Cup, Soccer, Lionel Messi, Qatar, FIFA, and Korea. High frequency keywords related to the Adidas brand were Uniform, Shoes, Al Rihla official ball, and Nike appeared a lot as rival companies. In addition, Adidas-sponsored countries such as Argentina and Germany and France, the finalist, are showing high frequency of appearances. Looking at the frequency of appearance, it was found that Adidas has a high interest in the official ball of the competition, which is announced every competition. Therefore, it is judged that providing promotions more actively can improve the sponsorship effect

Second, three types of centrality (degree, closeness, betweenness) were identified through semantic network analysis. Considering this comprehensively, Adidas, World Cup and Qatar World Cup show strong centrality. Also, Lionel Messi is showing strong centrality as a player who participated in the 2022 Qatar World Cup.

Along with Lionel Messi, Ronaldo and Son Heung-min are showing high centrality as soccer players. In the follow-up study, it is judged that more meaningful results can be presented if the sensitivity to positivity and negation is analyzed through sentimental analysis of players who show strong centrality.

Third, as a result of the CONCOR analysis, it was clustered into 'Qatar World Cup Sponsor', 'Group stage', 'Winning', and competition 'Official Ball'. First of all, keywords related to related products, countries, and

sponsors were clustered around Adidas in the ‘Qatar World Cup Sponsor’. Through this, it can be seen that participation in adidas sponsorship is receiving issues and attention from the public.

In addition, in the case of the ‘Group stage’, the Korean national team's desire to pass the group stage is strongly working, and the ‘Winning’ next is a cluster of superstars Lionel Messi centered on Argentina and France on the final, the finale of the World Cup. As such, Lionel Messi is the most popular player through the 2022 World Cup, which is considered a positive form. Therefore, it is expected that the endorsement using Lionel Messi will be strengthened.

Finally, the issue of ‘Al Rihla’, the official ball of the 2022 World Cup, was clustered. Adidas has produced official official ball every World Cup. It is showing the convergence of technology according to the times, which makes the public interested. Accordingly, it is necessary to strengthen global promotions tailored to the characteristics of each country and region.

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References

- [1] H. I. Kwon and M. H. Choi, “Image transfer based on exposure sequence and time gap between exposures in sport sponsorship: Testing of primacy and recency effects,” *Korean Journal of Sport Science*, Vol. 30. No. 2, pp. 318-331. 2019. DOI: 10.24985/kjss.2019.30.2.318
- [2] Statista. “Global Sports Sponsorship Market Size,” 2021. Retrieved August 08, 2020, from <https://www.statista.com/statistics/269784/revenue-from-sports-sponsorship-worldwide-by-region/>
- [3] Namuwiki, “2022 FIFA World Cup Qatar,” Retrieved January 30, 2023, from <https://namu.wiki/w/2022%20FIFA%20%EC%9B%94%EB%93%9C%EC%BB%B5%20%EC%B9%B4%ED%83%80%EB%A5%B4#s-11>
- [4] Wipnews, “Ambush marketing that infringes intellectual property rights, let's open our eyes wide,” Retrieved January 30, 2023, from <https://www.wip-news.com/news/articleView.html?idxno=11005>
- [5] A. Hotho, A. Nurnberger, and G. Paaß, “A brief survey of text mining,” *LDV Forum*, Vol. 20. No. 1, pp. 19–62. 2005.
- [6] C. H. Lee, K. H. Kang, Y. H. Kim, H. N.Lim, J. H. Ku, and K. H. Kim, “A Study on the Factors of Well-aging through Big Data Analysis: Focusing on Newspaper Articles,” *Journal of the Korea Academia-Industrial cooperation Society*, Vol. 22. No. 5, pp. 354-360. 2021. DOI: <https://doi.org/10.5762/KAIS.2021.22.5.354>
- [7] W. G. Kang, E. S. Ko, H. R. Lee, and J. Kim. “A Study of the Consumer Major Perception of Packaging Using Big Data Analysis: Focusing on Text Mining and Semantic Network Analysis,” *Journal of the Korea Convergence Society*, Vol. 9, No. 4, pp. 15–22, 2018. DOI: <https://doi.org/10.15207/JKCS.2018.9.4.015>
- [8] K. H. Han, “An Analysis of Consumers’ Opinion on Fashion Influencer using Big Data”, *Journal of Digital Contents Society*, Vol. 20, No. 11, pp. 2283-2290, 2019. DOI: <https://doi.org/10.9728/dcs.2019.20.11.2283>
- [9] J. M. Kim, S. B. Park, and H. S. Lee, “A Meta Analysis of the Effectiveness of Sports Sponsorship: Focusing on Major Theories and Consumer Responses,” *The Korean Journal of Advertising*, Vol. 32, No. 3, pp. 147-176, 2021. DOI: <https://www.earticle.net/Article/A393177>