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Examining Transfer Directions in 2019-2020 Season in Turkey by Means of Social Network Analysis

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Abstract

The structural change in world football has also reflected on Turkey transfer market. In these concepts, clubs, considering their available economic possibilities, aim to realize the best transfer. In this study, the aim is to examine football player transfers conducted in 2019-2020 Super League Cemil Usta Season by measures regarding social network analysis. The studies were realized through 941 transfer data actualizing, 2019-2020 Season. During analyzing data, NodeXL Software was used. As a result of the study, 941 transfers actualized between 345 clubs in 2019-2020 Super League Cemil Usta Season.
It was identified that the clubs that purchased the most football players were Kayserispor" "Çaykurrizespor", and "Kasımpaşa" and the ones that sold the most football players were "Çaykur Rizespor" "Alanyaspor" "Fenerbahçe". It revealed that "Kayserispor" was the most important club serving as a bridge to be able to interact with the other clubs in realizing transfers in 2019 – 2020 Season.

Keywords: Football Player Transfer; Network science; transfer network

INTRODUCTION

Football, in respect of meaning it holds in 21st Century, has turned into a sector not only concerning millions of proponents but also hundreds of clubs. In local and international platform, the growth in football has also reflected on transfers. At the present time, European Football taking place in the center of global football industry comes into our face as one of the biggest economies of the world together with the change and transformation that have continued for the last ten years (11).

Clubs, for being able to become better, have become developing new procedures, forcing their economic limits (12). Good transfer shows itself not only in obtaining sportive achievement but also in alternating balances of the live transmission, match day, and commercial incomes.

In the last 20 years, in football transfers, economic dynamics were completely modified, and the amount of money spent for transfers increased incrementally (18). In 2019, world clubs realized 18.042 international transfers. This showed an increase of 9.1% compared to the previous year. This increase is also the highest rate of transfer that has been made for ten years (12).

The number of active clubs rose from 3,880 in 2018 to 4,062 in 2019. The growths are not only in the number of clubs. The number and fees of transfer reached an unprecedented level. 179 out of 211 FIFA member countries participated in the transfers of the year 2019, realizing at least one transfer. In 2019, the sum of international transfers reached US $ 7.35 billion (12).

Certainly, this growth is also seen in Turkey transfer market. While the number of in- degree

football players in 2018- 2019 transfer period actualized as 427, the number of out-degree football players, as 424, in 2019-2020 transfer period, the number of in-degree football players was 483 and the out-degree football players was 520. In 2019-2020 periods, while transfer incomes actualized as € 87,707,000, transfer expenses were €75,010,500 (21).

Literature review

In 1954, social network used by J.A. Barnes in 1954, is a structure, in which the nodes are generally considered as individuals, institutes, and organizations, and connections between them are socialized(13). When the literature of international area is examined, in many disciplines such as biology and sociology, social network analysis was used. Social network analysis based on graph theory (14) has been begun to be used in general sports research and, specifically, in transfer research (1; 17).

The studies related to social network in sports generally concentrates on team performance and match or pas analyses. In other words, this study is on examination of the relationship between pas performances of teams and their sportive achievements (10). Many studies (3; 4; 5; 6; 7; 8; 9) were carried out related to pas analysis

When the domain literature is examined, it can be said that the studies dealing with direction of transfer are limited in either international domain literature or [national] domain literature. Raffaele et al. (2018), in the study they carried out, studied the major transfer points of athletes transferred. Portugal was identified as the most transfer place for Brazil by far the most important. It was revealed that 219 football players that came from Portugal formed 19% of football players that went from Brazil to the different countries. In addition, it was identified that Chili and Mexico were the transfer points of Argentinian immigrants (19).

Liu et al. (2016), in the study they carried out, assessed the transfers of 410 professional clubs taking place in 24 Premier Legue from 2011 to 2015. According to the results of this study, it was identified that professional football was a monetary game, which a larger investment generally is needed for acquiring capable football players (16). Li et al. (2019) examined 470792 transfers between 23765 footbal clubs in 206 countries and regions from 1990 to 2016 by means of the measures regarding social network analysis (15). In addition, the different researchers assessesed the transfers by the different methods (21).

In addition, which countries are the source of transfer (22; 23), how the biggest European leagues direct the migration flows of footballers (24), comparison of country-based high and low market value transfer networks Gürsakal et al., (2020) (25).

At the same time Sevilmiş and Devecioğlu (2020) Turkey has identified 20 transfers seasonal aspects of the Professional Football League (26).

Despite the proliferation of theoretical ideas, which is one of Europe's largest league Turkey has not seen the studies that examine how to carry out the transfer of the super league. Turkey super league of this research to understand the direction of transfers in 2019-2020 season and makes his own tranfer is important to uncover the club played an intermediary in transfers. When the literature is examined, no research has been found that examines this subject within the scope of social network analysis. which is one of the two league revenues continued to grow in Europe as location, type of transfer area to investigate, Turkey has carried out research Based on the opinion will contribute to making the right transferred.

METHOD

Social network analysis is a type of analysis that examines social structures through network and graph theories. Accordingly, actors (node - node) within social structures are positioned within the structure through the relationships (edge - edge) they establish with each other.

Nodexl is a program with many functions such as extracting data from social networks such as twitter, calculating network statistics, providing network visualization. Manual data entry can be done with the Nodexl program (27)

In social network analysis, the results are presented with the measurements of the networks. Networks consist of nodes and the connections between them. In this research, nodes represent clubs and links represent transfers (13).

A transfer of football players keeps an important place in the achievements of teams. The studies on transfers of football players are highly limited. In this study, which is examined by the measures regarding social network analysis of the transfers of football players, made 2019-2020 Super League Cemil Usta Season, the study data were

drawn from www.transfermarkt.com website. The summer and winter transfers of 2019-2020 Season and those going were included in the study. 841 transfers made by 18 teams in 2019-2020 Season were also included in analyses. If the transfers were made in the same club (For example, Galatasaray makes a transfer from U19), the datum was entered as Garatasaray – Galatasaray. Analyses were made by nodeXL software.

RESULT

Assessment of the transfers made in the summer and winter months of 2019-2020 Cemil Usta Season and athletes left their clubs in terms of social network analysis was presented as follows:

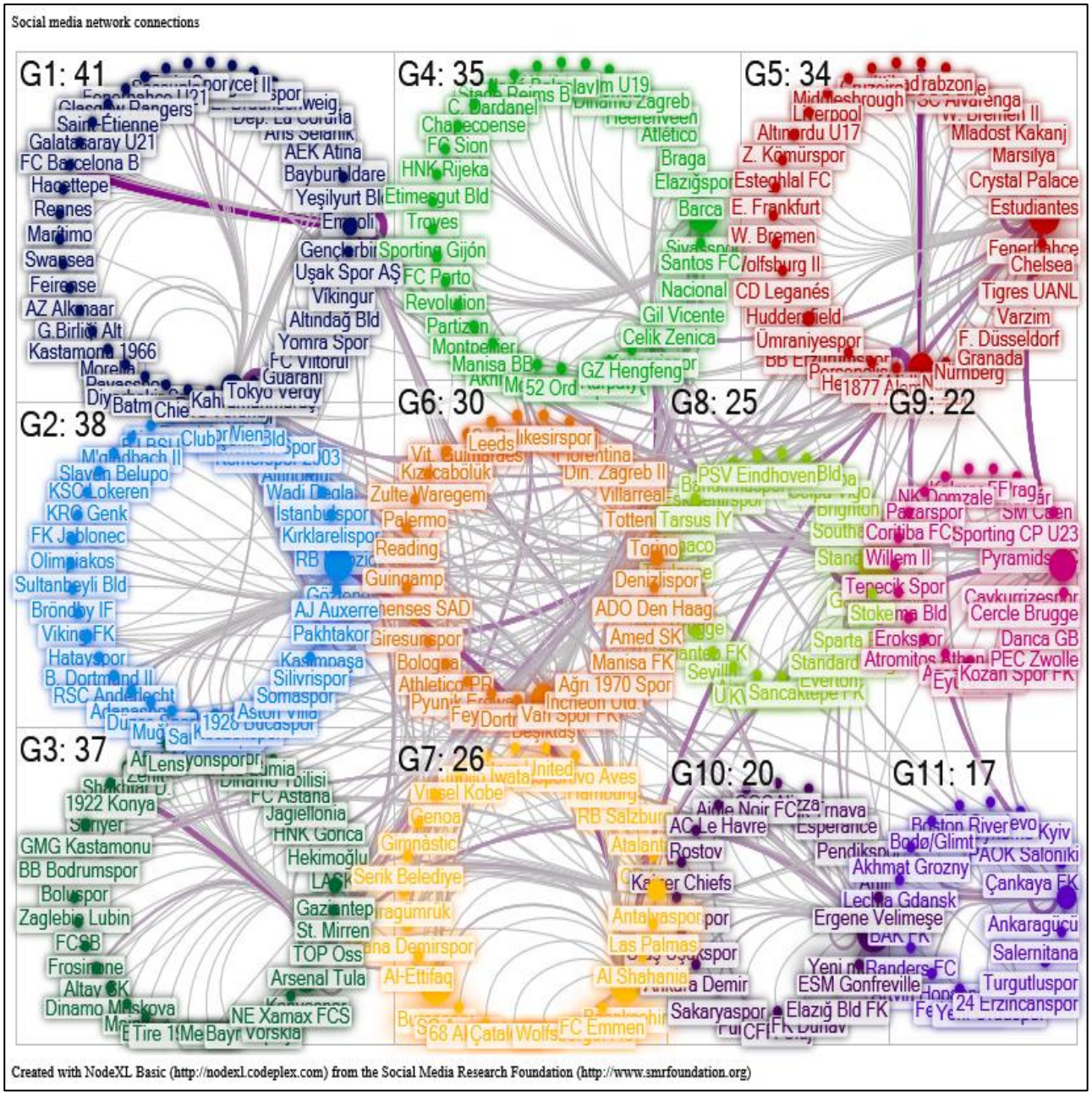

Figure 1. Turkey transfer network

When the groups formed according to clustering algorithm is examined, the transfers in the summer and winter seasons of 2019-2020 Cemil Usta Season consist of 10 different clusters. There are 325 clubs in 11 different clusters. The numbers of club in clustering are different from each other. Average Clustering Coefficient was found 0.061.

Table 1. Graph Metric	
Graph Type	Directed
Vertices	325
Unique Edges	520
Edges With Duplicates	421
Total Edges	941
Self-Loops	93
Reciprocated Vertex Pair Ratio	0,134408602
Reciprocated Edge Ratio	0,236966825
Connected Components	1
Single-Vertex Connected Components	0
Maximum Vertices in a Connected Comp.	325
Maximum Edges in a Connected Comp.	941
Maximum Geodesic Distance (Diameter)	5
Average Geodesic Distance	3,18968
Graph Density	0,006011396

Graph Metric Vertices represent clubs. In 2019-2020 Season, 325 clubs purchased and sold player. The number of unique edges was, identified as 520 and that of edges with duplicates, as 421. A total number of unique edges and edges with duplicate 941. There are 93 Self-Loops. In other words; in-club transfer was realized. Modularity value was calculated as 0.32.

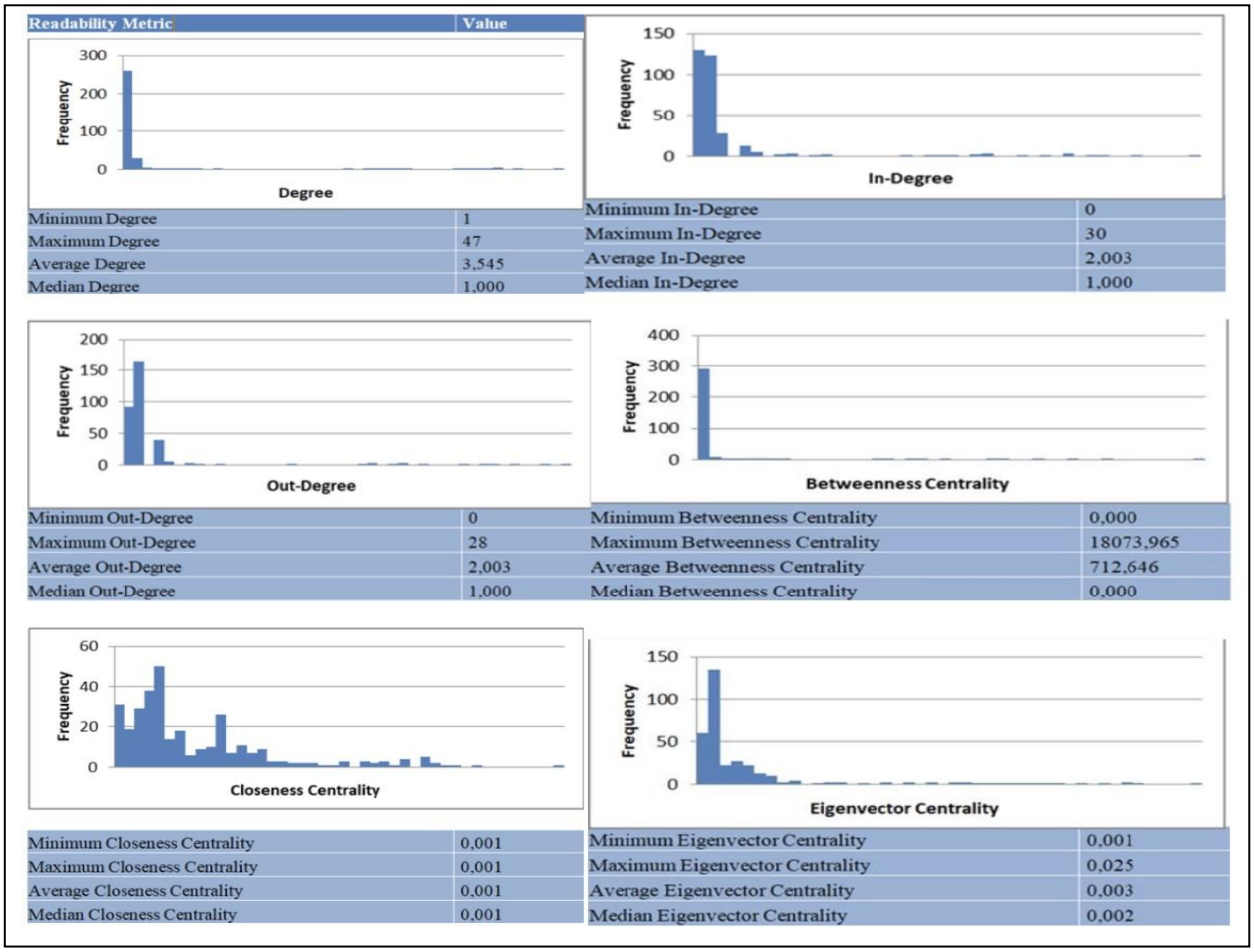

Figure 2. Centrality measures

Clustering coefficient determines how good a peak point in a graph is connected with its neighbors. Here, it can be said that clustering coefficient is a result of degree-correlation biasness (Soffer & Vazquez, 2005). While the summer and winter transfers in Cemil Usta Season form eleven different clusters, average clustering coefficient was identified as 0.061.

Table 3. In degree/out degree

In-degree		Out-Degree	
Kayserispor	30	Çaykurrizespor	28
Çaykurrizespor	27	Alanyaspor	28
Kasımpaşa	25	Fenerbahçe	27
Yeni Malatyaspor	24	Başakşehir	25
Alanyaspor	23	Trabzonspor	24
Trabzonspor	23	Gençlerbirliği	23
Gaziantep	23	Yeni Malatyaspor	22
Gençlerbirliği	21	Galatasaray	22
Fenerbahçe	20	Antalyaspor	19
Galatasaray	18	Kayserispor	18

When in-degree values are examined, in 2019-2020 season, it was identified that the clubs purchasing the most football players were "Kayserispor" "Çaykur Rizespor", and "Kasımpaşa". When the out-degree values are examined, the clubs selling the most football players are Çaykur Rizespor" "Alanyaspor", and "Fenerbahçe". When the in-degree and out-degree values are examined, it was identified that "Çaykur Rizespor" took place in two values as well.

Table 4. Betwennness centrality

1. Kayserispor	18073,965
2. Çaykur Rizespor	14926,691
3. Yeni Malatyaspor	14851,431
4. Gençlerbirliği	14751,536
5. Fenerbahçe	13688,519
6. Alanyaspor	13670,360
7. Galatasaray	12460,151
8. Kasımpaşa	11318,006
9. Trabzonspor	11302,150
10. Gaziantep	11005,125

In 2019 -2020 season, the top 10 clubs whose Betweenness centrality was the highest were shown. These clubs are the ones whose mediation role is the highest in realizing transfers. "Kayserispor" comes to our face as the most important club serving bridge to be able to interact with the other clubs in realizing transfers.

Table 5. Self loops

Self Loops	N
Trabzonspor	13
Gençlerbirliği	11
Alanyaspor	9
Galatasaray	8
Başakşehir	8
Fenerbahçe	8
Antalyaspor	8
Kasımpaşa	4
Denizlispor	4
Göztepe	3

When Self- loops values are examined, the top 10 clubs whose in-club transfer rates are the highest were shown. It was seen that the clubs, who's the number of transfer within itself were the highest, were "Trabzonspor" "Gençlerbirliği" "Alanyaspor".

DISCUSSION

In this study, Transfers of football players made in 2019-2020 Super League Cemil Usta Season were examined by the measures regarding social network analysis. In the study, the groups formed according to clustering algorithms were examined, and it emerged that the summer and winter transfers in 2019-2020 Cemil Usta Season formed eleven different clusters and that the numbers of clubs in clustering are different from each other.

It is seen that a total number of connections between clubs is 941. In the findings of the study, network density was identified as 0.0060. According to this finding, it came up that the transfers of football players made in 2019-2020 Super League Cemil Usta had a low connection and that a large part of potential network was not used.

In 2019-2020 seasons, it was identified that 325 clubs purchased and sold players and that the number of Unique Edges was 520 and the number of Edges with Duplicates 421. A total of unique and edges with duplicates is 941. It was revealed that there were 93 self-loops. In other words, in 2019-2020 seasons, 325 clubs purchased and sold athletes and it was revealed that 520 transfers were made unique and 421 transfers, edges with duplicates. In 2019 – 2020 seasons, it was revealed that a total of 941 transfers were made and that 93 of these transfers were in –club transfers.

It was also identified that Average Geodesic Distance was 3.18968. It was seen that radius of networks was far away from the point 0. It can be said that in 2019-2020 season, the passing rate of clubs to interaction to each other is slow. Modularity is a quality measure for graphical clustering (2). In our study, modularity number was identified as 0.329.

In 2019-2020 seasons, it was revealed that the clubs purchasing the most football players were Kayserispor" "Çaykurrizespor" "Kasımpaşa", while the ones selling the most football players were

"Çaykurrizespor" "Alanyaspor", and "Fenerbahçe. It was also identified that the club "Çaykurrizespor" was at the top level in purchasing and selling football player. It was identified that the most important serving bridge to be able to interact with the other clubs was "Kayserispor". In 2019-2020 seasons, athe club who's the number of transfer within itself were seen to be "Gençlerbirliği" and "Alanyaspor". In other words, these clubs are the ones the football players they need raise themselves.

CONCLUSION

The study was realized, considering the transfers in 2019-2020. The transfers in the other seasons can be included in the study. A comparison can be made between the other seasons. A comparison can be made by dividing transfer period as summer and winter. From which countries and between which countries the most transfers are made can be introduced by measures regarding networks in detail.

Given Turkey bewweenness transfer coefficients of the 2019-2020 network "Kayserispor" "Rizespor" as it has been concluded that the Anatolian teams. Turkey intermediary role in the realization of the transfer Anatolian clubs in the professional league clubs said to be the highest.

Anatolia sports clubs turkey 'is carried out in view of bridging the transfer of a professional league. At the same time, Anatolian clubs (such as Kayserispor, Çaykur Rizespor) have emerged as important actors in interacting with other clubs.

Clubs like "Trabzonspor" "Gençlerbirliği" have the highest number of transfers among themselves.

These clubs are also the clubs that use their own resources the most.

The development of football in Turkey in breeding of lower structure is possible by the use of their own players or skiing. For this reason, it is recommended to take measures against this situation and increase the incentives of local football players.

In line with this research, the following suggestions can be listed:

-Clubs can train football players from their own infrastructure.

-The rates of the teams to train and transfer players by taking advantage of their own resources are very low. Clubs should be supported in training players.

-Youth football organizations should be reconsidered.

-The direction of transfers in different countries should be explored; equity transfer of data should be compared with Turkey.

-Research results received from Turkey was more than the rate of foreign players in the Professional Football League clubs it proves that. The results of the Professional Football League players in the labor Turkey to become an international market 'is an indicator that reflects net. For this reason, foreign constraints can be reviewed in terms of the future of football in the country.

In this study, the realization of the transfer of turkey, revealing the club undertakes the role of intermediary in the realization of the transfer, in terms of Turkey's discovery that the transfer of established communication with clubs in the world which will contribute to the literature.

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