Investigation of the Causes of Hormozgan and Yazd Football Teams' Lack of Promotion to Premier League and Providing Solutions Using Fuzzy (FMEA and Topsis) Techniques

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Abstract: Among all sports, football is as all the existing evidence shows the most popular sport in the world. There are various reasons for the success or failure of a football team in a tournament, some being inside the playground while some others are out of the playground, playing an important part in the success or failure of teams. In this study, a new method for the use ofthe "Failure mode and effect analysis" technique with a fuzzy approach has been provided to investigate the causes of failure of Yazd and Hormozgan provinces' football teams. For this purpose, after finding the reasons for the failure of these two provinces' football teams, we designed a questionnaire and assessed them using the priority criterion after distributing them among experts from the two provinces and gathering information from them. Finally, we identified the most determining and decisive errors based on rank and in order to eliminate or improve them by help of experts' views and use of fuzzy TOPSIS technique, we provided solutions including "having a major sponsor or strong supporter, "privatization of clubs", "visual coverage of the team's games", "providing the sponsor's position in the country, visual show case and public attention areas", "connection with football schools and talent finding and having strong base teams"and "choosing the best using the traditional and modern methods (according to the statistical studies and standard tests measuring their ability) (according to statistical studies and the standard tests measuring ability).

Key words: Football, failure analysis and its effects, fuzzy topsis, Hormozgan Province, Yazd Province

INTRODUCTION

Sports refers to activities or physical skills done on the basis of a set of agreed rules for recreational purposes, or for competition, personal happiness, achievement of proficiency, skills or a combination of these goals. There are art and structural realities showing the Chinese to have been dealing with sports and activities since 4000 BC.

Football is a team sport, in which two groups of eleven players play against each other with the aim of insert the ball into the opponent's goal. Today, most people consider it the world's most popular sport among all sports and it is sometimes referred to as the football industry. Beyond the economic profits which have caused it to be referred to as the football industry, its artistic aspects and the artistic playing of football players who are sometimes called magicians flabbergast any aesthetic person and add to the popularity of this game day by day (Raili and Williams 2005). Although, there is no exact informationas toits original real roots, but it is said that a kind of this game was played before Christ was born. In Iran, football has been played sporadically, since 1299 in the margins of Tehran and Football Promotion and

Development Society was established in 1921 which took over the responsibility of holding the football games. It was in 1946 that Iranian Football Federation was established and a year later it became a member of FIFA. Football League has been held in Iran under five headings: Regional League, Persepolis League, Qods League, Premier League and Azadegan League. The number of teams and the way the matches were held has undergone changes many times: from 8 teams in the first round up to 24 teams in Season 73 and the changes in the way the games were held included changes from concentrated matches into one-group and then two-group matches (Mohammadnabi, 2005) and currently, the number of teams in the Premier League is 16 teams. Teams compete in order to attend the Premier League of Azadegan and after each team plays two games (home and visitor) against each of the other teams, the first, second directly advance to the Premier League of matches and the third team plays two games (home and visitor) against the fourteenth team of the Premier League and the winner will advance to the premier League.

The failure of some teams, including the teams of the two provinces of Hormozgan and Yazd which led to their absence in Premier League prompted us to analyze the

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failure modes or the reasons for their failure.There are many ways to analyze failure modes but an effective method for this purpose should not only simple but it should also be proportionate to the nature, activities, processes, culture and other aspects of the system (Ebrahimzadeh *et al.*, 2011). The failure modes analysis used in this study has a history of >50 year and it was first developed and used in the United States Army in 1949 (Scipioni *et al.*, 2002). As this method is an active method and is so profitable for the sectors where it is used, this new technology has grown rapidly in all branches of science, so that it is currently used not only in different industries but also in different sectors such as banking, human resources, health care and service sectors. Besides, its implementation requires no complex statistics; rather itneeds enough time and manpower and needs to be based on team work. Failure analysis and its effects provides a framework to analyze the causes and effects of the potential failures of products or services (Chin *et al.*, 2008).

For the literature review, we reviewed articles relating to Failure Analysis and its effects but because of the nature of subject, the research were mostly case studies in which the FMEA had simply been used as a way to prioritize the failure modes.Two of such case studies is "Evaluation of the Reliability of Electric Energy Supplier in the New Generation of Cars (electric cars)" and "Development and Implementation of Preventive-Maintenance Practices in Nigerian Industries" and two studies concentrating on determining the prioritization method and using two different methods for prioritization of failure modes are "Failure Mode and Effects Analysis Using Fuzzy Method and Grey Theory" and "A New Approach for prioritization of Failure Modes in Design FMEA using ANOVA.

Considerable efforts have been made in the literature of failure analysis and its effects in order to overcome the existing short comings of calculations based on the traditional risk priority number (Wang *et al.*, 2009). Since, in the real world, decisions are often based on quantitative and qualitative data and the accuracy of information is a key point to be considered in the success of the method of failure analysis and its effects, thus researchers have found it necessary to have uncertain information or in other words, fuzzy numbers in the model. In this study, ambiguity in the experts' views and our enthusiasm for a more realistic description of the failure causes prompt us to use fuzzy concepts, thereby regulating our method based on the fuzzy approach. Studies on failure analysis and its effects based on Fuzzy Approach use experts who describe the risk factors using fuzzy linguistic terms. The linguistic variables used for evaluating three risk factors rates 10 point scales (1-10) of

the factors of failure analysis and its effects just as the traditional analysis (Kutlu and Ekmekcioglu, 2012). Two researche presented about failure analysis and its effects using Fuzzy approach are "Application of Fuzzy Logic for Improving the Calculation of Failure Risk and FMEA Prioritization Capability" and " The Use of Fuzzy Logic with Failure Analysis and its Effects for Overcoming the Weaknesses of Traditional FMEA in Evaluating Failure Risk in Marine Industry".

It is also worth noting that various works have been written in the service and manufacturing sectors using FMEA method (Ebrahimipour *et al.*, 2010). However, no research has been done on this issue using analysis of failure modes and its effects, thereby the necessity to perform this study on football in Iran using the analysis of failure modes and its effects. Thus, a simple, easily understandable and applicable method has been used in this research to analyze failure and detect the problems and shortcomings with the teams, ending it with offering some strategies using fuzzy multi-criteria decision-making (Fuzzy TOPSIS) technique and determining the most important solutions for removing the problems.

MATERIALS AND METHODS

This is an applied research and a survey in terms of research method. The steps taken for this research include studying the literature (to find about the causes of the failure of the football teams), conducting interviews with experts so, as to correct the research measures and confirm the validity and the causes (the causes being examined from four dimensions: severity: How did the problem affect the team's failure? influence and impact: To what extent can the team solve the problem internally? Ease: How easily can the problem be solved with regard to the existing and needed facilities and equipment? and Occurrence: How long has the team suffered from this problem?.

Sampling and Questionnaire completion: The population includes all officials and experts of football in Yazd and Hormozgan Provinces including: professors of physical education in the physical education faculties of the two provinces, the footballers of the football teams of the two provinces at different levels the coaches and supervisors of the clubs in the two provinces, the managers and football board members of the two provinces involved in the planning and management of football in Yazd and Hormozgan Provinces as well as football experts and pioneers in Yazd and Hormozgan Provinces. It is notable that convenient sampling method has been used due to the researchers' lack of access to all of the statistical community. And the questionnaires were completed and

then returned to the researchers after holding meetings with 30 people from each province and presenting some explanation about the importance and necessity of the research subject and the type of the questionnaire. After we collected the research findings, we calculated the value of RPN and extracted the most important causes of failure based on it. Then, based on the output of the previous stage, we collected strategies using some experts and scholars' views and after we designed the questionnaire and they were completed by the sample, we analyzed the information obtained using Fuzzy TOPSIS Technique and eventually extracted the most important strategies.

RESULTS

After the experts completed the questionnaires, the fuzzy data of each one of the questionnaires were separately rated and RPN value was calculated for each of the causes. After calculating the risk priority number of the, we defuzzied their values and then ranked the causes based on the definite causes obtained and then did the final ranking based on the mean rank method. Table 1 shows the causes of failure and promotion of Yazd and Hormozgan football teams to the Premier League based on RPN and severityof causes.

Failures with higher RPN are very effective in the team's failure, so these failures need to be prioritized so that they can help achieve success. Since, severity is the most important criterion, the causes of failure have also been rated on this basis.

We have used Pareto's law in this research in order to detect the most significant and most vulnerable failures and according to Pareto's law, 20% of the most important factors cause 80% of failures and the most important causes of failure as presented in Table 1.

In Hormozgan Province, based on RPN criterion, the most important causes of failure of the football team are as follow: financial problems, inadequate player selection at the beginning of the season, the team's lacking an appropriate coaching team¡ lack of financial sponsors and lacking good players to play in different parts of the playground. In Yazd Province, based on RPN criterion, the most important causes of failure of the football team are as follow: lack of financial sponsors, the ref referees' mistakes during the season, bad luck in the games, financial problems and lack of good players for different parts of the playground. The results show that based on this criterion, the problems of the two provinces are the same in the case of financial problems, lack of financial sponsors and lack of good players for different parts of the playground.

Detecting the most critical failures in terms of the risk index and priority criteria can be used in different areas of planning and in accordance with the different policies of organizations. Accordingly, the most important failure based on severity degree and Paretos law are present in Table 2.

In Hormozgan Province, based on the severity degree criterion, the most important causes of failure of the football team include: lack of an appropriate coaching team, financial problems, lacking good players to play in different parts of the playground, lack of specialized people in the management sector and lack of financial sponsors. In Yazd Province, based on the severity degree criterion, the most important causes of failure of the football team include: financial problems, the club's lacking a relationship with the schools of the province for talent finding, lack of financial sponsors, lack of a psychologist beside the team and lacking good players to play in different parts of the playground. The results show that the causes of failure of the football teams of Yazd and Hormozgan Provinces for advancement to the Premier league in terms of the risk priority number and severity degree are the same including lack of financial sponsors, financial problems and lacking good players to play in different parts of the playground (Table 3).

After determining the most important causes of failure using a field study and preparing a questionnaire by experts' views, we elicited from these experts some strategies Solutions to remove the causes of failure from the perspective of the experts and after preparing the questionnaires, we analyze them using fuzzy TOPSIS technique and then ranked them. It is also noteworthy that the strategies were used to help remove the financial problems, attract sponsors and select good players.

Strategies for removing the financial problems: After analyzing the questionnaire data using fuzzy TOPSIS technique, we used Pareto's law in order to determine the most important strategies for the financial problems. The results of analysis in Table 4 show that 20% of the most important factors that help solve 80% of the problems regarding financial problems are as follows:

- Having great sponsors and strong supporters
- Privatization of the clubs
- Strategies for attracting sponsors

After analyzing the questionnaire data using fuzzy TOPSIS technique, we used Pareto's law in order to determine the most important strategies for attracting

Table 1: Ranking the causes of failure of Yazd and Hormozgan provinces

	RPN		Severity	
Causes of failures	Yazd's rank	Hormozgan's rank	Yazd's rank	Hormozgan's rank
Lack of specialized people in the club management	10	8	8	4
Financial problems	4	1	1	2
Lacking an appropriate coaching team	6	3	15	1
The referees' bad mistakes throughout the season's games	2	10	13	26
Inadequate team making at the beginning of the season	7	2	9	8
Marginalizing the team by journalists, reporters	26	21	25	24
Lack of playground and adequate equipment for the players to exercise during the season	21	14	2	26
The players' mental and psychological problems during the season	20	23	23	17
The province officials' not supporting their football team	17	12	6	21
Lacking good players to play in different parts of the playground	5	5	4	3
Lack of team technique to use in the playground	15	6	11	10
Lack of a psychologist beside the team	16	22	5	16
Lack of a good policy to attract fans	9	18	7	18
Not employing native players and coaches	22	24	21	19
Lack of financial sponsors	1	4	2	5
People's reluctance to support their province's team	14	9	12	14
The club's lacking a relationship with the schools of the province for talent finding	11	26	3	23
Lack of media support for the football team	8	17	10	20
Lack of sufficient support for the coach and not giving him an opportunity during the games	25	11	2	69
Employing popular but unmotivated players	13	20	16	11
Not retaining the young and highly-motivated players	12	19	17	13
Not holding adequate pre-season and during-season camps	23	13	24	7
Not holding preparatory pre-seasons games	24	16	14	12
Bad luck during the games	3	15	20	25
Lacking a proper league at the province level	19	7	19	15
Ignoring and not consulting the highly experienced in the field in the province	18	25	18	22

Table 2: Ranking the strategies used for removing the financial problems regardless of the dimension

Strategies	Relative closeness	Relative closeness (%)	Relative closeness cumulative (%)
Having great sponsors and supporters	0.69098	13.3152	13.315
Privatization of clubs	0.64978	12.5213	25.836
Televising the games either directly (live) or indirectly	0.62481	12.0401	37.876
Raising players and changing them into great players and then selling them	0.60927	11.7406	49.617
	11.6524	61.269	0.60469
Building sport shops throughout the country by the clubs	0.54858	10.5711	71.841
Selling the sport goods with the club's logo on them	0.51709	9.96431	81.805
Participation in the large executive projects and gaining revenues in this way	0.50724	9.7745	91.579
The existence of copyright in the country for the products of the club	0.43698	8.42059	1

Table 3: Ranking the strategies used for attracting sponsors regardless of dimension

Relative closeness cumulative percentage	Relative closeness percentage	Relative closeness	Strategies
Visual coverage of the team's games	0.60708	13.9844	13.984
Providing the sponsor's position in the country, visual showcase and public attention areas	0.56879	13.1024	27.087
The use of billboards in stadiums and promotions on clothes	0.55373	12.75543	9.842
Holding matches by name of the sponsors	0.5492	12.6511	52.493
Increasing the number of spectators and fans	0.54753	12.6126	65.106
Building a relationship management system with fans in the club	0.5064	11.6652	76.771
Increasing the marketing level of the sport	0.506	11.656	88.427
Raising the social and athletic position of the club	0.5024	11.573	100

sponsors. The results of analysis in Table 4 show that 20% of the most important factors that help solve 80% of the problems regarding sponsor attraction are as follows:

- Visual coverage of the team's games
- Video coverage of the team's matches
- Providing sponsor position in country, showcases visual and public attention
- Providing the sponsor's position in the country, Visual showcase and public attention areas

Appropriate player selection strategies: After analyzing the questionnaire data using fuzzy TOPSIS technique, we used Pareto's law in order to determine the most important strategies for the player selection problem. The results of analysis in Table 4 show that 20% of the most important factors that help solve 80% of the problems regarding player selection are as follows: connection with football schools and talent finding and having strong base teams Connection with football and talent-finding schools and having strong base teams Selecting the best players on

Table 4: Ranking the values of appropriate player selection strategies regardless of dimension

Relative closeness cumulative percentage	Relative closeness percentage	Relative closeness	Strategies
connection with football schools and talent finding and having strong base teams	0.58579	16.3409	16.341
Choosing the best using the traditional and modern methods (according to			
The statistical studies and standard tests measuring their ability)	0.56879	15.8667	32.208
Selecting based on general and special criteria, the arrangement system of the			
Team and the selection of the team based on the team's quality and arrangement	0.55373	15.4466	47.654
Using experienced players in different internal and external leagues	0.5492	15.3202	62.975
Using laboratories for players to register their technical, personal and social problems	0.47418	13.2275	76.202
Following a TIPS- (technique, intelligence, personality, speed) based talent finding system	0.44789	12.4941	88.696
Attention to the managers' and coaches' strategic and short-term plans	0.40522	11.3038	100

the basis of traditional and modern methods (according to statistical studies and the standard tests of ability) choosing the best using the traditional and modern methods (according to the statistical studies and standard tests measuring their ability).

DISCUSSION

There are many factors that affect thesuccess or failure of a team during a season of games. The data analysis shows that the causes of failure according to the two criteria of risk priority number and degree of severity in Hormozgan Province are common in the case of financial problems, lack of financial sponsor, lack of coaching team and lack of good players in different parts of the playground and considering these two criteria, they have been common in Yazd Province in the case of financial problems, lack of financial sponsor and lack of good players in different parts of the playground. This comparison shows that experts, managers and other people involved in the football of these two provinces should regard these as the most important causes of failure and the officials of the provinces and the clubs managers should seek to remove the problems in order to succeed and achieve their goals.

If we want to compare the causes of failure of the football teams of Yazd and Hormozgan Provinces based on the two criteria of risk priority number and severity degree according to Pareto's law, we will notice that there are some common factors in the causes of failure such as financial problems, lack of financial supporters and lack of good players at different parts of the playground, thereby coming to the conclusion that these factors are the most important causes of failure of the football teams of some provinces and these provinces' not having a team in the Football Premier League. Besides, if we examine the football leagues of some European or even Asian countries, we will notice that there are no such problems in those countries, indicating the importance of these reasons and their high impact in the football teams' failure

and necessitating the football officials' paving the way for solving these problems via adequate and long-term planning. It eventually needs be mentioned that this information can form the basis of planning for improving the status of the two provinces' football teams and help them achieve their goals which is promotion to the football Premier League in the coming years.

CONCLUSION

At the end, after doing the field study and preparing the questionnaire with the experts' view, we extracted some strategies for solving the problems that led to these teams' failure from the perspective of these experts and analyzed them using Fuzzy TOPSIS Technique, detecting the following strategies or solutions as the most important strategies: I the dimension "removing the financial problems": having great sponsors and strong supporters and privatization of clubs in the dimension "sponsor attraction": visual coverage of the teams' games and providing the sponsor's position in the country, visual show case and public attention areas and in the dimension "adequate player selection": connection with football schools and talent finding and having basic strong teams and selecting the best based on traditional and modern methods (according to statistical studies and standard tests measuring ability).

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