Original Article

Scoring first relevance in knockout promotion to Spanish LaLiga Smartbank

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ABSTRACT

The aim of the present study was to examine the effect´s relevance of scoring first in knockout promotion to the Spanish Liga Smartbank and succeeding´s probability in the knockout round according to contextual parameters. The sample consisted in all knockout rounds not ending scoreless (n = 199) played in the knockout promotion to Spanish Liga Smartbank between 2004/2005 to 2018/2019 season. Data were examined by descriptive analysis, chi-square tests and binary logistic regressions. Results shown statistically significant values when scoring first and moving through to the next qualifying round (χ^2 [1 df] = 32.37; *p* < .001). Teams opening knockout round as a home team and scoring first, move through to the next round 61.7% of times while teams opening knockout round as an away team and scoring first, move through to the next round 79.4% of the times (Total OR = 6.19). Moreover, significant results were found relative to the importance of gaining advantage in first-leg match and scoring first in the second-leg match. This information could be useful for coaches and performance analysts, being applicable to competition in order to prevent the opposite team from scoring a goal and to find tactical options that allow your team getting ahead on the scoreboard.
Keywords: Football; Scoring first; Knockout; Semi-professional; Promotion; Odds ratio.

Cite this article as:
Olvera-Rojas, M., Femia-Marzo, P., & Castillo-Rodríguez, A. (2021). Scoring first relevance in knockout promotion to Spanish LaLiga Smartbank. *Journal of Human Sport and Exercise*, *in press*. doi:https://doi.org/10.14198/jhse.2023.181.02

INTRODUCTION

In a low-scoring sport such as football and a continuous decline of goals scored through the matches due to players´ physical condition improvements (Castillo-Rodríguez et al., 2020) and the tactical approach embraced by coaches when the score is advantageous (Castellano et al., 2010), has revealed that scoring first´s relevance is capital (Anderson & Sally, 2013; Castellano-Paulis et al., 2009). In this way, the first goal scored in a match is an excellent predictor of its final score, teams´ style of play modification and variation in players' psychological state (Castellano-Paulis et al., 2009; Buldu et al., 2019). Furthermore, Courneya (1990) and Jones (2009) found that scoring first in the match may generate a positive psychological state that makes winning more probable and additionally, a greater engagement from the crowd when the match is played at home. In contrast, conceding a goal may trigger a negative psychological response weakening players´ confidence and a decrease in group cohesion leading to a poor performance (Bar-Eli et al., 2006).

Different studies have proven that there is a positive association between scoring first and winning the match. Lago-Peñas et al., (2016) conducted a study in which they analyse scoring first effect in the five major European leagues (Spain, England, Italy, Germany and France) and it showed values from 60 to 78 % of winning rate when scoring first. García-Rubio et al., (2017) found significant evidence between scoring first and winning the match in UEFA Champions League, regardless of matches being played in competition or knockout stage. In World Cup and UEFA Euro, it has been proven that values range between 65-70 % (Castellano et al., 2009; Martínez & González-García, 2019).

Furthermore, Fernández-Navarro et al., (2018) showed that teams receiving a goal decreased direct play and possession maintenance in his own pitch in favour of possession maintenance in opposite´s pitch and a higher number of crossing into the opposite´s area. In contrast, scoring first team changed their style of play into a direct one and underpinned by counterattack. However, there is no scientific evidence related to the knockout promotion to LaLiga Smartbank and the effect that could cause scoring first in the knockout round when the team has the possibility of promoting. Furthermore, this lack of evidence has broadened to semi-professional competitions in which, because of its importance, the formulated hypothesis is that despise the phase of the knockout round, the team scoring first will have more probability of promotion. The magnitude of moving through those knockout rounds and promote will directly influence the club´s economy (Alcolea-Díaz & García-Santamaría, 2019; Carreras & García, 2018; Matesanz et al., 2018) or the newcomer game level that players face in a professional competition (Dellal et al., 2011). Therefore, the aim of the present study is to examine the effect´s relevance of scoring first in knockout promotion to the Spanish Liga Smartbank and succeeding´s probability in the knockout round according to contextual parameters.

MATERIAL AND METHODS

Participants and procedure
The sample consisted in all knockout rounds played between 2004/05 and 2018/2019 season (n = 199) in LaLiga Smartbank promotion stage. Knockout rounds ending scoreless were not included. The team better qualified at the end of the season had the advantage of playing the second leg match of the knockout round at home as long as they faced a worse qualified team. If the quality of the teams was similar, the location was randomly chosen. Data was obtained from the websites of www.resultados-futbol.com.

Measures
The dependent variable was the ending score of the knockout round. This is divided into two categories; the team playing first-leg match at home moving through or the team playing first-leg match away moving

through. Seven independent variables and modifications of themselves were used for studying their associations with the ending score of the knockout round (Table 1).

Table 1. Description, definition and categories of the independent variables.

Variable	Definition	Categories
Year	Period in which the knockout rounds take place.	1. 2004/05 – 2008/09. Promotion´s layout with semi-final and final. 2. 2009/10 – 2018/19. Promotion´s layout with champions, quarter finals, semi-final and final.
Stage	Knockout´s round phase.	1. Champions. Winning the knockout round will imply the promotion and the loser team will move to the semi-final. 2. Quarter-finals. Winning the knockout round will result in moving to the semi-final. 3. Semi-final. Winning the knockout round will result in moving to the final. 4. Final. Winning the knockout round will imply the promotion.
Quality of opposition	Ranking position of the teams at the end of the season.	1. 1vs1. Champions knockout round. 2. 2vs1. Second against first. 3. 2vs2. Second against second. 4. 3vs1. Third against first. 5. 3vs2. Third against second. 6. 3vs3. Third against third. 7. 4vs1. Fourth against first. 8. 4vs2. Fourth against second. 9. 4vs3. Fourth against third.
First goal scored of the knockout round	Team scoring the first goal of the knockout round	1. The team playing first-leg match at home. Team beginning the knockout round at home. 2. The team playing first-leg match away. Team beginning the knockout round away.
First goal scored in the first-leg match	Team scoring the first goal in the first-leg match	1. The team playing first-leg match at home. Team beginning the knockout round at home. 2. The team playing first-leg match away. Team beginning the knockout round away. 3. None. There is not any goal in the match.
Status before playing the second-leg match	Temporary advantage before playing the second-leg match.	1. The team playing first-leg match at home. Team beginning the knockout round at home has an advantage after the first-leg match in the knockout round. 2. The team playing first-leg match away. Team beginning the knockout round at home has an advantage after the first-leg match in the knockout round. 3. Draw. Match ending 0-0 with no advantage for any team.
First goal scored in the second-leg match	Team scoring the first goal in the second-leg match	1. The team playing first-leg match at home. Team beginning the knockout round at home. 2. The team playing first-leg match away. Team beginning the knockout round away. 3. None. There is not any goal in the match.

Statistical analysis

For statistical treatment of the data the programme SPSS-IBM version 23 was used. A descriptive summary of the previous variables was carried out in order to know the sample characteristics. For all analysis, α was set at .05 for statistical significance. Independence of variables were contrast through chi square test and two binary logistic regression models were used for (one for the team playing first-leg match at home and another for the team playing first-leg match away) examining the effect of the contextual parameters on the ending score of the knockout round, following the next model (Hosmer & Lemeshow, 2000):

$$\text{Logit (ES)} = \beta_0 + \beta_1 * FGK + \beta_2 * FGL + \beta_3 * SB + \beta_4 * FGS + \varepsilon$$

Where the dependent variable is ES = ending score of the knockout round, independent or dummy variables, FGK = first goal scored in the knockout round; FGL = first goal scored in the first-leg match; SB = status before playing the second-leg match; FGS = first goal scored in the second-leg match and ε = random component.

RESULTS

Table 2 shows the descriptive measures of all promotion knockout rounds played. When the team playing first-leg match at home score the first goal, it moves through to the next round 61.7 % of times while scoring first as an away team in the first-leg match increase the probability to 79.4 %. Not scoring first as the team playing first-leg match at home decrease the probability of moving through to the next round to 20.7% and 38.3% for away teams in the first-leg match not scoring first. The results show that teams with better ranking at the end of the season have a greater percentage of moving through to the next round when they score first regardless of the stage in which the knockout round is played. Scoring first in the final knockout round has a superior relevance because the probability of promote goes up to 81.6%.

Table 2. Descriptive measures of the sample.

Variable	Team playing first-leg match at home n (%)	Team playing first-leg match away n (%)	Global n (%)
Scoring first in the knockout round and moving through	107 (61.7)	92 (79.4)	199 (69.8)
Not scoring first in the knockout round and moving through	92 (20.7)	107 (38.3)	199 (30.2)
Scoring first in the knockout round and moving through classified by the stage.			
Quarter-finals	37 (56.8)	28 (89.3)	65 (70.8)
Semi-final	36 (52.8)	38 (73.7)	74 (63.5)
Final	21 (81.0)	17 (82.4)	38 (81.6)
Champions	13 (69.2)	9 (66.7)	22 (68.2)
Scoring first in the knockout round and moving through classified by the promotion´s layout			
Semi-final - final layout	22 (59.1)	25 (72.0)	47 (66.0)
Champions - quarter finals – semi-final - final layout	85 (62.4)	67 (82.1)	152 (71.1)
Scoring first in the knockout round and moving through classified by the quality of opposition			
1vs1	13 (69.2)	9 (66.7)	22 (68.2)

2vs1	7 (71.4)	4 (100.0)	11 (81.8)
2vs2	8 (75.0)	5 (40.0)	13 (61.5)
3vs1	10 (70.0)	8 (87.5)	18 (77.7)
3vs2	13 (53.8)	15 (73.3)	28 (64.3)
3vs3	12 (66.7)	9 (100.0)	21 (81.0)
4vs1	15 (46.67)	16 (75.0)	31 (61.3)
4vs2	27 (55.6)	21 (81.0)	48 (66.67)
4vs3	2 (100.0)	5 (100.0)	7 (100.0)

Table 3 shows the χ^2 test's results and its association measure. The probability of scoring first in the knockout round and moving through to the next round is 6.19 times higher than scoring first and not moving through to the next round. On the final stage, the probability of scoring first and promote to LaLiga Smartbank is 19.83 times higher than scoring first and not promote.

The results elucidate that scoring first for moving through to the next round have a larger importance in the champions - quarter finals - semi-final - final layout. Scoring first in a 3vs3 knockout round has an advantage 3.25 times higher for moving through the next round.

Table 3. Chi square results and effect size.

Variable	n	χ^2 (p) (df = 1)	OR (CI95%)
Scoring first in the knockout round and moving through**	199	32.37 (<.001)	6.19 (3.27-11.70)
Scoring first in the knockout round and moving through classified by the stage.			
Quarter-finals**	65	12.60 (<.001)	10.94 (2.80-43.73)
Semi-final*	74	4.38* (.036)	3.13 (1.18-8.29)
Final**	38	12.67 (<.001)	19.83 (3.79-103.86)
Champions	22	1.51 (.220)	4.50 (0.73-27.74)
Scoring first in the knockout round and moving through classified by the promotion´s layout			
Semi-final - final layout	47	3.44 (.064)	3.71 (1.01-12.56)
Champions - quarter finals - semi-final - final layout **	152	28.45 (<.001)	7.59 (3.54-16.28)
Scoring first in the knockout round and moving through classified by the quality of opposition			
1vs1	22	1.51 (.220)	4.5 (0.73-27.74)
2vs1	11	2.75 (.097)	3.0 (0.97-9.30)
2vs2	13	0.00 (1.000)	2.0 (0.18-22.06)
3vs1*	18	3.85 (.050)	16.33 (1.35-197.77)
3vs2	28	1.17 (.280)	3.21 (0.66-15.59)
3vs3*	21	7.07 (.008)	3.25 (1.44-7.35)
4vs1	31	0.78 (.376)	2.63 (0.57-12.00)
4vs2*	48	5.15 (.023)	5.31 (1.41-20.04)
4vs3	7	2.96 (.085)	
4vs4	0		

Note. χ^2 = Chi square statistical; OR = Odds ratio; CI = Confidence interval. * = p < .05. ** = p < .001.

The adjustment of the binary logistic regression models are shown in tables 4 and 5. The results obtained reveal that 49 and 52 % of the observed variation in the ending score is explained by the independent variables respectively. Regression coefficients are given with their standard error:

Home→ E[Logit(p)] = –2.58(0.41) + 1.49(0.81)FGK –0.94(0.85)FGL + 2.67(0.51)SB + 2.19(0.46)FGS

Away → E[Logit(p)] = –2.67(0.50) + 1.78(0.55)FGK – 1.16(0.70)FGL + 2.91(0.51)SB + 2.47(0.46)FGS

As it can be observed in tables 4 and 5, B values were positive for the first goal scored in the knockout round, the status before playing the second-leg match and the first goal scored in the second-leg match of the knockout round. When the home or away team in the first-leg match score the first goal of the knockout round, it gains an advantage in the first-leg match and score the first goal in the second-leg match, the probability of moving through to the next round substantially increase. Hypothesis tests of both models are statistically significant (team playing first-leg match at home: χ^2 (4 df) = 90.95; p < .001; Team playing first-leg match away: χ^2 (4 df) = 96.55; p < .001) and they correctly classified 78 and 79 % of the cases respectively. The results show that gaining advantage in the first-leg match (home: OR = 14.42; Away: OR = 18.30) and scoring first in the second-leg match (home: OR = 8.90; Away: OR = 11.76) are the independent variables that increase most the probability of moving through to the next round. The effect of scoring first in the first-leg match is not statistically significant.

Table 4. Effect of scoring first in the knockout round, scoring first in the first-leg match, status before playing the second-leg match and scoring first in the second-leg match for teams playing first-leg match at home.

Variable	B (SE)	χ^2(p) (df = 4)	OR (CI95%)
Constant	-2.58 (0.41)	40.17 (<.001)	0.076
FGK	1.49 (0.81)	3.42 (.270)	4.43 (0.91-21.44)
FGL	-0.94 (0.85)	1.21 (.065)	0.39 (0.07-2.08)
SB**	2.67 (0.51)	27.49 (<.001)	14.42 (5.32-39.12)
FGS**	2.19 (0.46)	22.62 (<.001)	8.90 (3.62-21.90)
R^2 Nagelkerke	0.49		

*Note. B = Coefficients; SE = Standard error; χ^2 = Chi square statistical; OR = Odds ratio; CI = Confidence interval; R^2 = R^2 de Nagelkerke. * = p < .05. ** = p < .001.*

Table 5. Effect of scoring first in the knockout round, scoring first in the first-leg match, status before playing the second-leg match and scoring first in the second-leg match for teams playing first-leg match away.

Variable	B (SE)	χ^2(p) (df = 4)	OR (CI95%)
Constant	-2.67 (0.50)	28.80 (<.001)	0.07
FGK*	1.78 (0.55)	10.26 (.001)	5.90 (2.00-17.47)
FGL	-1.16 (0.70)	2.81 (.094)	0.31 (0.08-1.22)
SB**	2.91 (0.51)	26.06 (<.001)	18.30 (6.00-55.85)
FGS**	2.47 (0.46)	23.15 (<.001)	11.76 (4.31-32.10)
R^2	0.52		

*Note. B = Coefficients; SE = Standard error; χ^2 = Chi square statistical; OR = Odds ratio; CI = Confidence interval; R^2 = R^2 de Nagelkerke. * = p < .05. ** = p < .001.*

DISCUSSION

The aim of the present study was to examine the effect´s relevance of scoring first in knockout promotion to the Spanish Liga Smartbank and succeeding´s probability in the knockout round according to contextual parameters. First of all, the present findings support the evidence of the scoring first´s importance of moving through to the next knockout round. In particular, values of moving through to the next knockout round after scoring the first goal ranged from 61.7 % to 79.4 %. These results are in concordance with the mean values obtained in the five major leagues (Spain, Germany, Italy, France and England) when scoring first and winning the match, ranging from 62.3 % to 78.1 % (Lago-Peñas et al., 2016). Furthermore, these results are similar to those found in World Cups and UEFA Euro Cups which fluctuated between 65 and 71 % respectively (Castellano-Paulis et al., 2009; Martínez & González-García, 2019).

Secondly, the first goal scored in the second-leg match was one of the strongest predictors in the binary logistic regression, being statistically significant for both teams (home or away). In a low scoring sport such as soccer in which around 70 % of matches end with three goals or less (Anderson & Sally, 2013), scoring first suppose a major advantage for winning the match. These results support the hypothesis of Courneya (1990) and Jones (2009), thus scoring first could create a positive psychological momentum making the winning more probable. Moreover, the quality of the teams modifies the probability of winning the match after scoring first. The quality of opposition has been previously studied in soccer (García-Rubio et al., 2015; Lago, 2009). In the present study, the quality gap is remarkable and it is emphasized with the advantage of playing the second-leg match at the home of the best teams ranked. In this sense, the disadvantage is even worse for the teams with poorest ranking (Page & Page, 2007). The teams with higher ranking begin the knockout round as an away team and when they score first, the probability of moving through to the next round increase till 79.4 %. For instance, when a first ranked team face a team of minor quality, the percentage of moving through to the next round raise till 87.5 % after scoring the first goal.

However, the importance of the first-leg match cannot be underestimated by a statistically non-significant result. Lidor et al., (2010) argued that in the first-leg match, teams try to reach their peak of maximal performance while in the second-leg match they are goal-oriented. Page and Page (2007) support the idea that teams in the first-leg match, look for gaining advantage in the knockout round and their aim in the second-leg match is moving through to the next round. In this way, a beneficial ending score in the first-leg match with a favourable advantage for the second-leg match increase from 14 to 18 times (OR) the probability of moving through to the next round regarding to not have obtained any advantage.

Promotion´s achievement will directly impact the club´s economy and it will contribute to boost local and regional economy (Carreras & García, 2018; Conejo et al., 2007). For example, in Córdoba (South of Spain), its team promoted to the maximum category of Spanish soccer league during 2014/2015 season, the sectors that benefited most of the economical activity´s increase were tourism and transport, also power supply, gas, water, food and drink production (Amador et al., 2017).

Concerning the limitations of the study, further research should include different classical metrics (number of shots, number of corners or number of saves to name a few) and advanced (probability of scoring a goal (xG) or subjective quality of the teams (estimated value in euros), for instance) to determine their influence with the ending score of the knockout round. Additionally, the present results should be verified with different knockout state-wide promotions (First Division promotion [*Liga Santander*] or Second Division B promotion), European level knockout promotions and continental level.

CONCLUSIONS

In conclusion, the current research has confirmed the importance of scoring first to progress in the knockout promotion rounds to *LaLiga Smartbank* and promote. Furthermore, it has been proven the positive association between gaining advantage in the first-leg match and moving through to the next round. This information could be useful for coaches and performance analysts, being applicable to training as well as competition in the establishment of different goals. Preventing the opposite team from scoring a goal, while finding tactical options that allow your team getting ahead on the scoreboard, are the key factors that coaches are looking forward to always have the best probability of winning by their side.

AUTHOR CONTRIBUTIONS

MOR, PFM, and ACR conceived and designed the experiments; MOR and ACR performed the experiments; MOR and PFM analysed the data; MOR, PFM, and ACR wrote the paper and approve the final submission.

SUPPORTING AGENCIES

No funding agencies were reported by the authors.

DISCLOSURE STATEMENT

No potential conflict of interest was reported by the authors.

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