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Section III – Sports Training

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The Predictors and Determinants of Inter-Seasonal Success in a Professional Soccer Team

by
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The aims of this study were to 1) directly compare the performances of a professional soccer team over three seasons, 2) identify key variables that discriminated between a successful or unsuccessful performance, and 3) identify variables that best predicted success. ANOVA revealed that attempted and completed passes were significantly lower (both $p < 0.001$) in the most successful season (S1). Additionally, shot effectiveness was significantly less ($p < 0.001$) in their least successful season (S3) (vs S1 -11.61%; $d = 0.735$; vs S2 -12.02%; $d = 0.760$). When the match outcome was considered, they attempted significantly fewer passes when they won (-60.26; $p = 0.002$; $d = -0.729$) or drew (-44.87; $p = 0.023$; $d = -0.543$) compared to when they lost. The binary logistic regression analysis also retained passing variables. The team should attempt fewer passes, but ensure that more of these passes are completed. With away matches, the effect became more pronounced ($\beta = -0.042$, OR = 0.959, $p = 0.012$). In conclusion, the team should adopt a more direct style of play. They should move the ball into a shooting position with fewer passes and ensure that more shots are on the target.

Key words: *performance analysis, soccer, binary logistic regression, predicting success.*

Introduction

Considering that goal scoring is the main objective of soccer, Tenga et al. (2010) reported that there was a naturally low probability of scoring a goal in open match play (~1%). Despite this, further studies have reported that successful teams need to have a higher number of shots, successful passes and more possession in order to be successful (Armatas et al., 2009; Castellano et al., 2012; Obertstone, 2009). Furthermore, Szwarc (2004) and Lago-Penas et al. (2010) suggested that shot effectiveness rather than the total number of shots best discriminated a successful performance.

Contrastingly, Harrop and Nevill (2014) reported no significant differences in their univariate analysis for the number of shots and shots on the target when the team was successful versus being unsuccessful. They also completed binary logistic regression using backwards elimination in order to predict team success and found the variable "shots" remained in their analysis which suggests it may be important for predicting the team's success. Their analysis concluded that the team would be ~30% more likely to win matches if the mean number of shots could be increased by one per game. If previous studies have almost unanimously indicated that a team should attempt more shots on the goal, more shots on the target and a higher rate of shot effectiveness, what then becomes important is how the team creates the opportunities to enable these extra shots.

It has been stated that passing is the basic unit of cooperation between team mates while on the field of play (Jankovic et al., 2010) and successful passing in modern soccer has been noted as one of the crucial preconditions in becoming a successful team at the highest levels of the game (Jankovic and Leontijevic, 2006). Early

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research (Reep and Benjamin, 1968) may have inadvertently contributed to the shaping of British association soccer. Two main findings came from their study: that approximately 80% of goals resulted from a passing sequence of three passes or less and that on average a goal was scored with every 10 shots attempted. Research conducted at FIFA World Cups also tends to support these findings (Franks et al., 1990; Grehaigne, 1999). The tactical implication was that the team in possession should move the ball into a shooting position as directly as possible, with the fewest number of passes (Franks, 1996). However, Hughes and Franks (2005) stated that the early findings of Reep and Benjamin (1968) led only to a partial understanding of the phenomenon they were investigating. With a normalised data set they found that there were more shots and more goals scored per possession with longer passing sequences rather than shorter ones. Considering this, Harrop and Nevill (2014) suggested that the best tactical approach may be directly related to the skill level of the team. If the skill level of the team is insufficient to maintain meaningful possession, then a "direct" style of play may be a better tactic to adopt.

External factors have also been shown to influence the match outcome. It has previously been reported that the match venue (i.e. home or away) provides a powerful environmental constraint that may serve to influence team performance behaviours (Gama et al., 2015). It has been noted that a match location may incite adaptations to the team's playing style, but also to the decision making of individual players. This is the much reported effect of home advantage. Although the exact mechanisms for home advantage remain unknown, Courneya and Carron (1992) identified four major factors likely to affect the degree of home advantage; they were: crowd factors, familiarity factors, travel factors and rule factors. Despite this, further research has described home advantage as a multifactorial phenomenon with many unknown and unquantified facets (Legaz-Arrese et al., 2013).

It has been previously stated that as soon as multiple datasets from different teams and across different seasons are combined then the contextual information relevant to the area of investigation may be lost (Carling et al., 2013). The use of aggregated data sets from the performances of multiple teams may mask the performance factors that contribute to an individual team's success or failure (Carling et al., 2013; Taylor et al., 2008). Considering this, there appears to be a dearth of literature that utilises a data set from just one team. Jankovic et al. (2011) completed a study that analysed passing strategies of the Serbian National soccer team during their qualification sequence for the World Cup in 2010 and a more recent study (Harrop and Nevill, 2014) also aimed to identify the performance indicators that best predicted success in an English League One Soccer team. It was highlighted in their study that as it was a case study design the results may only be beneficial to the coaches of the sampled team to provide feedback and help plan training sessions. The implementation of a case study design may inhibit the applicability of the results to a wider soccer population; it may however help a coach to constitute an ideal performance profile to increase the team's chances of success (O'Donoghue, 2005). Harrop and Nevill (2014) declared that future studies should attempt to analyse data from consecutive seasons in order to better establish a performance profile for a team and potentially measure any evolution in tactics.

The purpose of the current study was to address some of these gaps in the research. It aimed to identify key performance variables that discriminated between winning, losing or drawing soccer matches for a single professional team across a number of seasons. There was consideration of the individual seasons and the prevalent variables that may have influenced the team's performance in each. It also attempted to identify the variables that would best predict future success with the objective of identifying the team's optimum playing tactics. Finally, match location was considered and the influence this may have on the outcome of the game and its interaction with team tactics.

Methods

The data from an English League One professional soccer team was used in this study; their league fixtures played across the 2012/2013, 2013/14 and 2014/2015 seasons were analysed. This consisted of 138 matches in total. The data provided by the club was collected using Prozone Matchviewer (Prozone Sports Ltd, Leeds, UK).

The study gained ethical approval in April 2015. It was deemed to be a Category U project as there were no risks to any participants. All data was analysed at the end of a complete season and was managed in accordance with the Data Protection Act (1999). It is worth noting at this point that between each season there were some changes to the squad personnel. In 2012/13 one player was added to the squad in the winter transfer window. A further 4 more players were recruited before the start of the 2013/2014 season while 7 players left during this time. Before the next season other 10 players were added to the squad while 12 players left for other clubs. Although not every player was involved in every match, it was reasonable to assume that there would be some variability in the playing style and abilities. However, this is an accepted part of professional soccer that occurrs frequently at this level. The managerial team remained unchanged for the entirety of this study so it can be assumed that there was a level of consistency in training and tactics employed.

Variables related to goal scoring (total shots, shots on the target and shot effectiveness), general offensive play (total crosses, final third entries and penalty box entries), possession retention (total passes, completed passes and passing effectiveness) and a contextual variable (match location) were selected. The variables within this study considered mainly the offensive actions within the games played while attempting to identify any interaction effects between the variables (comparing home and away).

Statistical analyses were conducted using SPSS (IBM, SPSS Statistics, Chicago, USA) with the level of significance set at <0.05. Each variable was tested for normality using the Kolmogorov-Smirnov test and the homogeneity of variance was assessed using the Levene's test. The data met the assumptions of normal distribution, thus descriptive statistics were reported and presented for the next stage of the analyses. Univariate analyses generated descriptive statistics for each season and match outcome. A post-hoc Bonferroni test highlighted where significant differences lay. The season number (S1, S2 or S3) and match outcome were used as the fixed factors and each performance variable used as the dependent variables.

Binary logistic regression model with backward elimination was utilised in the second stage of the analysis. It attempted to identify the variables that best predicted success for the given team. The effect of 7 selected variables and their influence on the match outcome were assessed. There was also consideration of the match location, season number and the effects that they may have had on the outcome. The logistic regression analysis used the binary match outcome (Win versus Draw/Loss) as the dependent variable. β values, OR's and 95% confidence intervals were reported for significant variables identified in the final steps of the model.

Shot Effectiveness (%) and Passing Effectiveness (%) were not carried forward for analysis in the BL regression model. Aldrich (1995) drew attention to the issue of using variables divided by a particular variable or total. The term "spurious" correlation was coined by Pearson (1897) to describe the correlation between ratios of absolute measurements that may be a consequence of using a combination of variables as opposed to any genuine correlation between the measurements.

Results

The variables in each season were compared using univariate analysis. Table 1 reports mean differences and significance of variables between seasons. Season 1 (S1) was the team's most successful season with the team achieving more wins, more goals, more points and a better overall league position. There was little difference between the performances in Seasons 2 (S2) and 3 (S3). One additional point was earned in S3 despite a lower final league position. Shot Effectiveness was significantly higher in S1 (p = 0.001; d = 0.735) and S2 (p = 0.001; d = 0.760) compared to S3. Contrastingly, Total Passes (p < 0.001; d = -1.109; p <0.001; d = -0.779) and Completed Passes (p < 0.001; d = -1.102; p < 0.001; d = -0.736) were significantly fewer in S1 than in S2 or S3. In addition to this, Passing Effectiveness was significantly lower (p = 0.001; d = -0.760) in S1 versus S2. Final Third Entries and Penalty Box Entries also reported significant differences with S3 having the highest values in both categories.

In contrast to Table 1, Table 2 considers the match outcome and may better inform a direct measure of success. Total Passes were found to be significantly lower when the team won (p = 0.002;

d = -0.729) or drew (*p* = 0.023; *d* = -0.543) compared to when they lost matches. Similarly, there were also significantly fewer Completed Passes when the team won (*p* = 0.007; *d* = -0.648) or drew (*p* = 0.024; *d* = -0.546) against when they lost. No other variables were found to be significant in this analysis.

Table 1

Comparison of variables between seasons. Descriptive statistics reported as mean per match. Mean difference reported with significance (*) <0.05. 95% confidence interval (lower and upper bounds) and standardised effect size reported as Cohen's d.

Variable	Season One Mean (± SD)	Season Two Mean (± SD)	Season Three Mean (± SD)
Total Shots	14.78 (4.93)	14.39 (5.58)	14.02 (5.39)
Shots on the Target	8.63 (3.68)	8.48 (4.03)	6.72 (3.59)
Shot Effectiveness (%)	58.33 (14.09)	58.74 (12.83)	46.66 (17.25)
Total Passes	288.43 (69.30)	380.87 (79.75)	354.87 (69.70)
Passes Completed	219.37 (64.28)	304.11 (75.49)	278.07 (68.97)
Passing Effectiveness (%)	75.30 (5.57)	79.32 (4.80)	77.70 (4.52)
Final Third Entries	79.24 (13.33)	80.26 (9.64)	109.33 (19.41)
Penalty Box Entries	30.17 (6.78)	35.07 (7.71)	33.07 (10.04)
Total Crosses	11.65 (4.22)	14.00 (5.59)	13.41 (6.12)

	Season No.	Mean Diff.	95% CI		*p*	*d*
			Lower	Upper		
Total Shots	1 vs 2	.39	-2.29	3.07	1.000	.074
	1 vs 3	.65	-2.05	3.35	1.000	.123
	2 vs 3	.26	-2.44	2.96	1.000	.049
Shots on the Target	1 vs 2	.15	-1.76	2.06	1.000	.039
	1 vs 3	1.85	-.07	3.77	.062	.482
	2 vs 3	1.70	-.22	3.62	.100	.443
Shot Effectiveness (%)	1 vs 2	-.408	-7.937	7.122	1.000	-.026
	1 vs 3	11.614*	4.043	19.186	.001	.735
	2 vs 3	12.022*	4.450	19.593	.001	.760
Total Passes	1 vs 2	-91.67*	-128.85	-54.49	.000	-1.109
	1 vs 3	-64.43*	-101.82	-27.05	.000	-.779
	2 vs 3	27.24	-10.14	64.63	.239	.330
Passes Completed	1 vs 2	-85.50*	-120.54	-50.46	.000	-1.102
	1 vs 3	-57.07*	-92.31	-21.84	.000	-.736
	2 vs 3	28.43	-6.81	63.66	.158	.367
Passing Effectiveness (%)	1 vs 2	-4.767*	-7.048	-1.728	.001	-.760
	1 vs 3	-2.366	-5.421	.689	.188	-.377
	2 vs 3	2.400	-.655	5.455	.177	.382
Final Third Entries	1 vs 2	-1.02	-8.48	6.43	1.000	-.050
	1 vs 3	-30.07*	-37.57	-22.58	.000	-1.488
	2 vs 3	-29.05*	-36.55	-21.55	.000	-1.437
Penalty Box Entries	1 vs 2	-4.89*	-9.07	-.71	.016	-.579
	1 vs 3	-3.14	-7.34	1.07	.218	-.371
	2 vs 3	1.75	-2.45	5.96	.941	.208
Total Crosses	1 vs 2	-2.348	-5.066	.370	.114	-.432
	1 vs 3	-1.859	-4.592	.874	.304	-.342
	2 vs 3	.489	-2.244	3.222	1.000	.089

Table 2

Comparison of variables between match outcomes. Descriptive statistics reported as mean per match Mean difference reported with significance (*) <0.05. 95% confidence interval (lower and upper bounds) and standardised effect size reported as Cohen's d.

Variable	Win (W) Mean (± SD)	Draw (D) Mean (± SD)	Loss (L) Mean (± SD)
Total Shots	15.56 (5.442)	13.80 (4.842)	14.00 (5.532)
Shots on the Target	9.00 (4.023)	7.25 (3.621)	7.73 (3.748)
Shot Effectiveness (%)	57.54 (15.785)	52.14 (14.192)	54.60 (17.478)
Total Passes	317.07 (70.502)	333.39 (90.938)	357.51 (72.371)
Passes Completed	247.71 (62.395)	258.12 (88.045)	297.78 (71.403)
Passing Effectiveness (%)	77.77 (4.434)	76.15 (5.958)	78.64 (4.852)
Final Third Entries	86.04 (18.753)	92.18 (21.739)	89.83 (19.723)
Penalty Box Entries	31.73 (7.331)	33.75 (9.493)	32.95 (8.309)
Total Crosses	12.40 (4.464)	13.43 (6.527)	13.29 (4.945)

	Outcome	Mean Diff.	95% CI		*p*	*d*
			Lower	Upper		
Total Shots	W vs D	1.82	-.80	4.43	.285	.345
	W vs L	1.48	-1.25	4.22	.570	.282
	D vs L	-.33	-3.00	2.33	1.000	-.063
Shots on the Target	W vs D	1.74	-.15	3.63	.082	.453
	W vs L	1.29	-.69	3.26	.350	.336
	D vs L	-.45	-2.38	1.47	1.000	-.117
Shot Effectiveness (%)	W vs D	5.19	-2.67	13.041	.335	.328
	W vs L	3.26	-4.944	11.457	1.000	.206
	D vs L	-1.93	-9.931	6.069	1.000	-.122
Total Passes	W vs D	-15.39	-54.92	24.14	1.000	-.186
	W vs L	-60.26*	-101.53	-18.98	.002	-.729
	D vs L	-44.87*	-85.13	-4.60	.023	-.543
Passes Completed	W vs D	-7.97	-45.36	29.42	1.000	-.101
	W vs L	-50.32*	-89.36	-11.28	.007	-.648
	D vs L	-42.35*	-80.43	-4.27	.024	-.546
Passing Effectiveness (%)	W vs D	2.486	-.603	5.575	.159	.395
	W vs L	-.173	-3.399	3.052	1.000	.027
	D vs L	-2.660	-5.806	.487	.127	.424
Final Third Entries	W vs D	-5.78	-15.84	4.29	.500	-.286
	W vs L	-4.27	-14.78	6.25	.981	-.211
	D vs L	1.51	-8.75	11.77	1.000	.075
Penalty Box Entries	W vs D	-1.91	-6.13	2.32	.828	-.226
	W vs L	-1.36	-5.77	3.05	1.000	-.162
	D vs L	.54	-3.76	4.85	1.000	.064
Total Crosses	W vs D	-1.060	-3.777	1.657	1.000	-.195
	W vs L	-.862	-3.699	1.975	1.000	-.158
	D vs L	.198	-2.569	2.965	1.000	.036

Table 3

*Binary Logistic regression for all games across all three seasons. Significance denoted by *.*

Variable	B	S.E	df	*p*	Odds Ratio	OR 95% CI	
						Lower	Upper
Shots on the Target	.117	.051	1	.021*	1.124	1.018	1.241
Total Passes	-.030	.014	1	.035*	.971	.944	.998
Passes Completed	.025	.015	1	.092	1.025	.996	1.056

Table 4

*Binary logistic regression results for all matches. Interactive effects of variables with match venue considered. Significant results denoted by *.*

Variable	**B**	**S.E**	**df**	***p***	**Odds Ratio**	**OR 95% CI**	
						Lower	**Upper**
Shots on the Target	.110	.052	1	.034*	1.116	1.008	1.236
Total Passes	-.010	.003	1	.001*	.990	.985	.996
Total Passes*Venue (A)	-.042	.017	1	.012*	.959	.928	.991
Passes Completed*Venue (A)	.052	.021	1	.014*	1.053	1.011	1.097

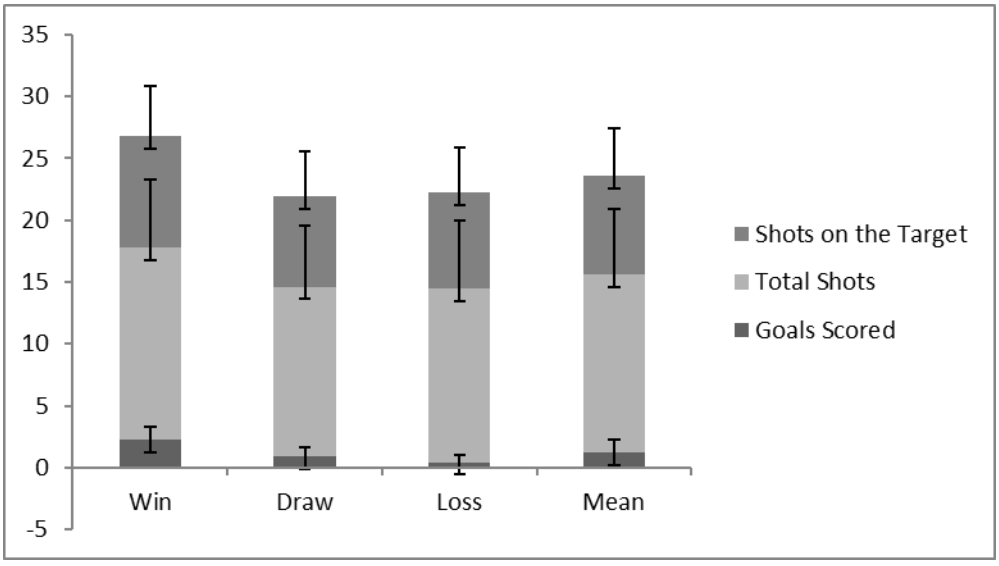

Figure 1

*Illustration of goals scored, total shots and shots on the target in each condition of match result. Error bars represent **±1** SD.*

As it could be expected, there were significant differences in the number of goals scored when the team won, drew or lost matches. Despite a lack of significance between Total Shots and Shots on the Target, there were some important differences in the number of those shots that were converted into a goal during play. When the team won matches they converted 14.4% of their Total Shots and 24.89% of their Shots on the Target compared to only 6.55% and 12.40% when they drew and 3.06% and 5.58% when they lost their matches.

Binary Logistic Regression

The data was subjected to a BL regression analysis. The results of this test are displayed in Table 3 and the variables are what remained following 7 steps via backwards elimination. The resulting classification table showed the model's ability to correctly predict 71.7% of match outcomes. Shots on the Target was deemed to be significant (p = 0.021) and the model identified that the team should have more Shots on the Target to be successful. They should also attempt fewer Total Passes (p = 0.035) in their matches, but ensure that a greater number was completed. Completed Passes variable was not deemed to be significant (p = 0.092), although it was retained in the regression analysis.

Investigation of the team's performance showed the differences in results depending upon the venue. The team had a higher win rate (36.23%) when they played at home across the three sampled seasons. Subsequently, they earned 9 more points (an average of 3 per season) when playing at home. Accordingly, the BL regression model was repeated with inclusion of the venue interaction with other variables (Table 4). Again, Shots on the Target (p = 0.034) and Total Passes (p = 0.001) were retained by the model. When the team played away from home the model suggested that the team should attempt fewer Total Passes (ß = -0.42; p = 0.012), but aim to have more Completed Passes (ß = 0.052; p = 0.014). Furthermore, when the interaction with the venue was considered, the predictive accuracy increased to 72.5% (+0.8%).

Discussion

Table 1 identified that the team attempted fewer Total Passes and had fewer Completed Passes per match in S1 than in either S2 or S3. It was also found that Passing Effectiveness was lower in S1 when compared to the other seasons. It appeared that Passing Effectiveness might not be important for overall success throughout a season, but that the sampled team would benefit from attempting fewer Total Passes and possibly fewer Completed Passes. However, a reduction in the number of Completed Passes may be a bi-product of the overall reduction in Total Passes between seasons. The results in Table 1 do not directly report success, but inform what may contribute to a more successful season.

In contrast, the secondary analysis did attempt to directly examine variables that best discriminated success. The team attempted significantly fewer Total Passes when they won (p = 0.002; d = -0.729) or drew (p = 0.023; d = -0.543) compared to when lost matches. They also had significantly more Completed Passes when they lost matches compared to when they won (p = 0.007) or drew (p = 0.024). It can be expected that a team with more completed passes will succeed, but these results tend to suggest the opposite. A possible reason that Completed Passes were deemed significant in this analysis is due to the increased volume of both Total Passes (~357) and Completed Passes (~298) when the team lost. More details become available when the Passing Effectiveness variable is also considered.

Although it was not deemed to be significant, the team had a higher percentage (78.64 ± 4.852) of Completed Passes when they lost matches compared to when they won or drew (~77%). This contradicts the findings from a previous study where Passing Effectiveness was considered a key contributor to success in soccer (Jones et al., 2004). Oberstone (2009) presented the argument that successful passing could serve two purposes: it will help a team to maintain possession of the ball and provide a potential outlet for attacking the opposition goal. It may also serve a defensive function: if the team can maintain possession through successful passing then the opposing team does not have possession and subsequently are unable to mount an attack. Harrop and Nevill (2014) also found that a sampled team, competing at a similar competitive level, could increase their chances of winning by ~24% if they could improve their mean passing effectiveness by 1% per game.

Variables related to shooting were also

found to present non-significant differences between match outcomes (Figure 1). However, there were important differences in the number of shots which were converted into a goal. The conversion percentage of both Total Shots and Shots on the Target when the team won was ~4.5 times greater than when they lost. Ruiz et al. (2015) stated that average shot conversion in professional soccer was ~10%; when the sampled team lost matches their shot conversion rate was considerably lower than 10% and, when they won it was higher. Without any significant differences in the mean number of shots, the implication is that there must be some variation in the threat that a shot poses to the opposition. The shot's location, power and type, in addition to the attacking player and goalkeeper position can all influence the outcome of a shot and may in part explain the variation in conversion. Ruiz et al. (2015) also stated that analysis of goals alone would not reflect a measure of offensive ability.

Between seasons, Shot Effectiveness was found to be significantly less (p = 0.001) in S3 than in the other two seasons. However, there were no significant differences for Total Shots or Shots on the Target between seasons. As S3 was the least successful season, an assumption was that Shot Effectiveness was important towards consistent success. Multiple studies (Lago-Penas et al., 2010; Lago-Ballesteros and Lago-Penas, 2010; Szwarc, 2004) found that Shot Effectiveness, rather than the total number of shots discriminated successful performance at an elite level. Harrop and Nevill (2014) found no significant differences for the mean number of Total Shots or Shots on the Target when a sampled team was successful or unsuccessful. In the current study, it was reasonable to assume that the mean number of Shots on the Target and Shot Effectiveness would be higher in S1 than in S2 or S3, because the team scored more goals.

There were also significantly more (p < 0.001) Final Third Entries in S3 when compared to the other two seasons. A team usually needs to be in the attacking third of the pitch in order to score goals (Bate, 1988); however, the team scored considerably fewer goals in S3 than in S1 (-15 goals). This suggests that the events which occur while the ball is in the final third of the pitch are more important than the act of simply entering it. This may be influenced by the shooting variables. It was identified that S3 had a smaller mean number of Shots on the Target per match, but it was also seen that there were fewer converted chances per final third entry. In S3, 13% of final third entries resulted in a shot and only 6% in a Shot on the Target. When this is compared to the team's most successful season, both variables are approximately 5% greater. Despite there being significantly fewer entries, the quality of the final ball or the opportunities afforded by the entry were more efficient in S1. Similarly, there were significant differences (p = 0.016; d = -0.579) when the model considered Penalty Box Entries. The significant differences lay between S1 and S2, however, it was observed that there were fewer Penalty Box Entries in S1 than either of the other seasons, although the team scored more goals. Coupled with fewer passes, it indicates that the team may have worked the ball into a shooting position more directly and shot from further away, which is a strategy supported by previous research (Franks, 1996; Harrop and Nevill, 2014).

A study by Gama et al. (2015) noted the existence of a pattern for the location of passing accuracy. The results of their testing revealed that the closer the team to the opposition's goal, the lower their rate of successfully completed passes. This theory may help to explain some of our findings; there were significantly more final third entries in S3, significantly more Total Passes and significantly fewer Total Shots. This implies that in their most unsuccessful season, the team was not as effective in the final third; they may have had more mobility going forward for an attack, but they were unable to manoeuvre the ball into a shooting position. This may be due to the volume of attempted passes; if the team has numbers committed in the final third and they subsequently turn the ball over to the opposition, they may be vulnerable to a counter-attack resulting in the concession of a goal, or ultimately the loss of the game.

The final aims of the study were to identify those variables which would best predict future success for the team. The first BL regression model (Table 3) retained Shots on the Target (p = 0.021), Total Passes (p = 0.035) and Completed Passes (p = 0.093) after 7 steps. The positive ß value (0.117) for the variable Shots on the Target indicates that the team should have a greater number of Shots on the Target to be successful.

The OR (1.124) indicates that if they can increase their mean number of shots on the target by one per game, they will increase their chances of winning by 12.4%. This supports the initial analysis where it was identified that the team had more Shots on the Target when they won. Although it was not deemed significant in this study, previous research (Castellano et al., 2012; Lago-Penas et al., 2010; Szwarc, 2004) and the retention of the variable after seven steps in the regression model suggest that it is the key to winning matches.

Variables related to passing of the ball also appear to be important. The model identified a negative ß value (-0.030) for Total Passes which confirms that the team should attempt fewer passes in order to be more successful. The OR (0.971) suggests that the probability of them winning was reduced by ~3% when the mean number of Total Passes increased by one per match. Yet, the model also retained Completed Passes with a positive ß value (0.025) suggesting that an increase of one per game would increase their probability of winning by 2.5%. Despite passing effectiveness not being carried forward into the BL regression model due to a spurious correlation, the effect that the regression model is showing reflects a similar outcome; fewer passes should be attempted and more completed in order to be successful. The team should therefore consider strategies to manage pass completion while playing in competitive matches.

By completing a second BL regression analysis (Table 4) that considers the interaction of the match location, a more comprehensive understanding may be gained. The phenomenon of home advantage appears to be evident for the sampled team; they won five more games and earnt nine more points across the three seasons when they played at home. They did however draw more games when they played away. This analysis suggests that variation in the match outcome may be attributed to variation in the team's passing and shooting statistics depending on the match location. After thirteen steps the model once again retained Shots on the Target (p = 0.034, ß = 0.110, OR = 1.116) reinforcing the idea that the team would increase their chances of winning by ~12% if they increased the mean number of shots on the target by one per match regardless of the venue.

Similarly, the model also retained the variables related to passing. However, when playing away the Total Passes effect became stronger. A negative ß value (-0.042) and OR (0.959) suggest that when playing away from home, the team was 4.1% less likely to win matches should they increase the mean number of Total Passes by one. In contrast, a positive ß value (0.052) for Completed Passes is now evident; if the team increased the mean number by one when playing away they would increase the probability of winning by 5.3% (OR = 1.053). Lago-Penas and Dellal (2010) reported that visiting teams had ~2.5% reduced possession in comparison to the home team and this implies that the away team may have fewer opportunities to create chances during the game. If completed passes are fundamental in maintaining possession, had the sampled team completed more passes when playing away, they could have increased their level of possession and their amount of goal scoring opportunities. Lago (2009) suggested that a team with a lower amount of possession may prefer to play a counter-attacking style of soccer and this seems to be true in this study.

Conclusions

This study attempted to identify performance variables important for the success of a professional soccer team. It was shown that there were significant differences from one season to the next and that in order for the team to be successful the mean number of attempted passes and completed passes were the most important variables. Furthermore, our findings suggest that the team did not have a particular style of play and that their tactics may be inconsistent from one season to the next. Although the exact reason for this is unclear, it is reasonable to assume that situational variables such as a match location, match status, personnel changes or changing opposition offer the most likely explanation.

It is also evident that the team had a higher mean number of total passes per match when they lost and in their least successful season. For them to achieve more success, they should attempt fewer passes per game meaning a more direct style of play. If the objective of playing direct is to move the ball into a shooting position as quickly as possible, then the team is also more likely to be successful if they have more

shots on the target. In fact, an increase in the number of shots on the target of one per game could increase their chances of winning by up to 12%. However, consideration should be given to the quality of the shot; greater shot conversion is required to win more matches.

Practical Implications

Although there are inconsistencies with playing style from season-to-season and from match-to-match, the results do highlight the most appropriate playing style the team should adopt in order to maximise their potential for a successful performance. These general recommendations may be adopted by the sampled team or used to inform future tactical decisions.

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