INTELLECTUAL CAPITAL DETERMINANTS OF FOOTBALL CLUBS IN EUROPE

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Abstract

Introduction. Existing research on football economics mostly focuses on some key performance indicators' influence on the profitability of clubs. This assumption is a bit misleading in the context of football business models which deliver various benefits other than profits to its stakeholders. In this research, the opposite question was asked: what can determine the intangible value delivered by a football business? This is asked in light of the fact that most of the value created by the football industry belongs to the category of intellectual capital. ***Material and Methods.*** The study was based on the financial data of 33 European football clubs. Basic statistical analysis was carried out and regression analysis of chosen drivers influencing intellectual capital of football clubs in Europe was performed. ***Results.*** Three of the four assumed hypotheses were not confirmed: higher value of intellectual capital is correlated with higher profitability, higher values of IC efficiency (VAIC) are associated with higher levels of player value and values of IC efficiency (VAIC) are significantly associated with levels of sports performance. Just one hypothesis was confirmed that values of IC efficiency (VAIC) are significantly associated with salary efficiency (S/R). Additionally, the study revealed that there are two important factors influencing the value added intellectual coefficient (VAIC): debt and salaries. ***Conclusions.*** If we assume that VAIC is the goal of the managers, then the only two drivers which are significant for this value are salary ratio and leverage ratio. Moreover, we know that profit orientation of the football business in Europe is not the key goal in order to develop intangible values for the stakeholders.

Key words: VAIC, football, finance, sport business, intellectual capital

Introduction

Studies on business efficiency frequently ask questions about the efficiency of football clubs [1], player value, rates of return on the transfer market, or even the valuation of sports clubs themselves [2, 3]. Various authors also try to find relations between different business indicators of evaluation of effectiveness and the performance of sports clubs. One of the developing branches of these studies is the research on value, which attempts to take the factor of intellectual capital into consideration in the valuation of sports clubs [4, 5, 6].

The problem of value assessment is often meant to answer the question regarding the value of a given enterprise from the standpoint of the resources involved. The difference between the obtained value and the involved resources tends to be understood as added value [3]. In the case of the professional sports club industry, the amount of research on this topic is still lacking. Most of the studies focus on football clubs listed on the stock exchange and clubs from the English league [2, 7, 8]. Economic theories are concerned with studying value only to a limited degree, generally equating value with price [10, 11, 12, 13], consistent only with the concept of exchange value understood as a relation of exchange of goods realized by the means of money. In other words, the value of goods is manifested in the amount of monetary units which one can receive for those goods, that is to say, the price of the goods [13]. On the other hand, value can be interpreted as utility, assuming that things without any use are also without any value. This approach is characteristic of studies on resources and intangible goods found in businesses, such as image. Research literature is mainly dominated by a revenue-based approach to valuation, which stems from the

fact that the requirement of value management in a company necessitates measuring its value based on the amount of generated revenue or cash flows. A large number of revenue-based methods of value measurement results from a different view of the influence of an enterprise's functioning on its revenue. Some of the methods offered in the literature were designed in a scientific environment but do not have a practical use in valuating sports organisations, as the nature of the proposed solutions is too general, e.g. the method of Damodaran [10] and the methods found in other papers [14, 15, 16]. Measures that may be an answer to the problem of appraising values generated by such entities as sports organisations can be sought in non-classical indicators.

In the sports industry, tangible assets have a negligible importance in the market value of a club. Yet, the actual value a club has is its popularity and the commitment of its fans. Team harmony and the success of players and coaches directly affect the commitment of the fans and the real market value of the firm. The main point in which the sports industry differs from other industries is that in the sports industry, the major share of firm value consists of human capital and customer capital. In this case, measurement of the true success of football clubs can only be made possible by measuring intellectual capital. The primary elements of the football industry are the people filling positions such as managers, footballers, technical staff, etc., while established accounting methods are insufficient in measuring this hidden value [17]. Football clubs realized that intellectual capital is a real asset for the success of the clubs. High intellectual capital rates are one of the main factors displaying the profit and success of football clubs.

Though the football industry seems to be one of the most highly-dependent on human and structural capital, there is a certain gap in discovering the relationship between intellectual capital of football clubs and other business performance measures. Dobson and Goddard [18] reported on the positive relationship between financial results and sporting success. This can be explained by the fact that when a club performs well, it tends to attract more spectators and sponsors, and therefore generates more revenues. Shareef and Davey [17] revealed the positive correlation between IC investments and sports-based efficiency of English football clubs. However, previous studies were mostly concerned with the analysis of the relationship of clubs' sports-based success with their intellectual capital, and they largely involved football clubs listed on the stock exchange. Yasar, Isik and Calisir [7] published a study of the influence of the intellectual capital of Turkish football clubs on their efficiency and profitability. They revealed a positive relationship between VAIC and the profitability of football clubs listed on the stock exchange. However, the majority of the clubs are not listed on any stock exchange. Therefore, it is worth developing this research path.

Previous empirical research contributed to the intellectual capital management in sports. It revealed that larger IC investments lead to higher profitability and to the growth of the demand for club shares and, consequently, to the growth of the market value [7, 19]. It also showed that of the three components of IC, i.e. structural, human and client capital, only human and customer capitals have a significant impact on the capitalization and profitability of clubs. Therefore, in this study we also try to verify a relation between the value of football clubs (measured by values of players) and VAIC. Human capital mainly includes the talent of the players as well as the skills of the coaching staff, who together bring sporting success to the club, which later transforms into financial gain. Client capital refers to the brand and the size of the fan club of the team. Thus, the more effectively a company manages its client capital, the greater its profitability (at least in terms of football club revenues). In the majority of other studies, researchers paid special attention to the size of the company, which demonstrated a significant positive relationship with financial performance [7, 19]. Accordingly, this study should be devoted to a more detailed exploration of human capital in relation to the intellectual capital of football clubs. As long as one of the human capital measures is based on salary paid by football clubs, it is recommended that the salary to revenue ratio should be verified as one of the factors influencing IC [20].

Since the main elements of football clubs are intangibles, it is recognized that intellectual capital is a substantial asset for the success of clubs. In this study, performance analysis of football clubs will be carried out with the VAIC method. As the majority of previous researchers tried to determine what the role of VAIC and its components is in profitability, in this study we prefer to try to answer how IC measured with VAIC is dependent on other key performance indicators (KPIs). Moreover, this study focuses not only on stock exchange listed football clubs but also on clubs which are not listed.

After a review of previous research, the following hypotheses were established:

H1. Football clubs with higher values of IC efficiency (VAIC) are associated with higher levels of profitability.

H2. Football clubs with higher values of IC efficiency (VAIC) are associated with higher levels of player value.

H3. Values of IC efficiency (VAIC) are significantly associated with levels of sports performance.

H4. Values of IC efficiency (VAIC) are significantly associated with salary efficiency (S/R).

Methodology

Data selection procedure

In order to estimate the chosen indicators, careful data collection was necessary. The main criteria that each club needed to fulfil in order to be included in the sample was that they published full financial data in their annual financial statements required by the research data setting. For the chosen research, I have collected information regarding the clubs' gross income, total assets, current and non-current assets, shareholder equity, revenue, total debt and other financial data necessary to estimate the VAIC of every club. The research sample is restricted only to clubs participating in the UEFA ranking in the period of 2012-2019. This ranking lists the best sports clubs in Europe, assigning them points for sports achievements from the past 5 years. In the process of gathering financial data, it was possible to preliminarily select approximately 37 clubs with available financial data. The following verification of the data ultimately allowed me to use the data of 33 clubs in a reporting period of at least 3 years during the period of 2012-2019. The final verification of the data made it possible to collect the financial information required for VAIC calculations of 109 individual reporting periods in the given time frame (firm-year observations).

In addition, data pertaining to player value, clubs and sports achievements were gathered for the purpose of the second stage of the research. In this case, the data were gathered for 8 football seasons.

All the data were manually collected from the annual reports of each club and, furthermore, one percent of the data was trimmed in order to reduce any biases arising from the existence of significant outliers in the sample variables.

Research design

The IC of the football clubs will be estimated using the VAIC methodology developed by Pulic [21] and modified by Firer and Williams [22] and Chen et al. [23]. This method is assumed to measure the effectiveness of key resources in the enterprise. It was also used to measure the efficiency of regions in Croatia. Pulic [21] assumes that traditional accounting is based on cost control, while today it is necessary to focus on value creation and value management. Business should concentrate on the long-term growth. In order to manage value, it must be measured first. Traditional indicators of business success, such as revenue growth, cash flow, profit, market share and market leadership do not provide information about whether the company actually creates value for the shareholders/owners. The ability to create value for the company has become a new criteria of success. Moreover, the main field of investments for companies are usually intellectual resources. Tangible effects of the value creation process (profit, higher price per share) are dependent on the intangible forms of value creation (increased speed and efficiency of communication, better relationships with customers, ability to create and maintain good reputation, investment in human resources). VAIC indicator is a performance measurement that is assumed to be able to meet the requirements of modern economy, measuring the effectiveness of key resources in the enterprise. The VAIC method relies on the concept of value added as the measure of performance, relative to intellectual capital [24]. It consists of the sum of three component ratios, i.e. human capital efficiency (HCE), structural capital efficiency (SCE), which embraces both internal and relational capital ef-

ficiency, and capital employed efficiency (CEE), which includes physical and financial capital efficiency. HCE and SCE constitute intellectual capital efficiency (ICE). Therefore, in order to arrive at the final measure, the VAIC model involves the calculation of several variables and coefficients, embracing seven steps that are presented in the table below [25].

Measures of IC performance using VAIC index

Table 1. VAIC model

Steps	Variable	Formula	Variables operationalized
1	Value added (VA)	VA = OP + EC + D + A	
2	Intellectual capital (IC)	IC = EC + SC	
3	Human capital efficiency (HCE)	HCE = VA / HC	OP = operating profit
4	Structural capital efficiency (SCE)	SCE = SC / VA	EC = Employee Costs D = Depreciation A = Amortization SC = Structural
5	Intellectual capital efficiency (ICE)	ICE = HCE + SCE	Capital HC = Human Capital SC = VA – HC
6	Capital employed efficiency (CEE)	CEE = VA / CE	CE = Book value of net assets
7	Value added intellectual coefficient (VAIC™)	VAIC = ICE + CEE	

Source: Fijałkowska [25].

In order to examine the validity of the main research hypotheses, a panel regression model will be estimated including measures of profitability (gross return on assets – ROA), value of players from Transfermarkt platform (VoP) [26], points from the UEFA ranking data (UEFA), and salary to revenue ratio (S/R) as the independent variables. As it was discussed previously, the logic behind IC is based on the resource-based view of the firm which states firm resources are the main drivers for competitiveness and enhance performance and add value to the firm. This concept, according to Firer and Williams [22], considers several participants within the firm (insiders and outsiders) such as shareholders, employees, customers, creditors and the government.

The study also includes certain additional control variables that have been proven to be significant determinants of profitability. Football club size is measured as the natural logarithm of the total assets of each club (SIZE). According to Orlitzky [27] and Dimitropoulos and Tsagkanos [4], firm size is positively related to firm performance because it may lead to economies of scale in operations, greater control over external stakeholders and resources, and in the case of football clubs, larger FCs can attract better athletes and playing talents, a fact which can further increase IC. Therefore, I expect SIZE to have a positive impact on VAIC. Additionally, I control for the impact of firm leverage (LEV). Singh and Faircloth [28] documented that high leverage adversely affects future investment opportunities of firms, which in turn can lead to a negative impact on the long-term operating performance and solvency. According to Garcia-del-Barrio and Szymanski [29], European football clubs seem to be more win maximisers than profit maximisers, and are

willing to resolve on debt financing and sustain severe losses in favour of enhancing their on-field performance. Therefore, it is believed that leverage (as measured by the ratio of total debt to common equity) will have a negative relation with profitability of European football clubs. All monetary data are presented in millions of euro.

Results

Descriptive statistics were based on key performance indicators. A part of them was chosen for regression analysis. The chosen indicators are presented in Table 2. The average value of VAIC in the chosen sample is positive but we can also observe a wide range of this value, from a minimum of -483.2 to +66.2. It means that this indicator varies a lot between researched periods and between football clubs, as the coefficient of variance confirmed. The most stable variables are HCE (human capital efficiency), SIZE, S/R and UEFA points. HCE and S/R are variables related to human capital management in football clubs, and their stability in the chosen sample signifies a more stable policy of football players in comparison to other business areas.

Table 2. Descriptive Statistics

Variable	Descriptive Statistics					
	Valid N	Mean	Minimum	Maximum	Std Dev.	Coeff. of variance
VA	109	190.5	1.3	611.3	166.2	87%
EC	109	152.1	29.3	541.9	118.8	78%
SC	109	38.4	-65.1	249.2	61.8	161%
CE	109	138.0	-97.2	953.5	226.8	164%
HCE = VA / EC	109	1.1	0.0	3.2	0.5	41%
SCE = SC / VA	109	-0.3	-33.7	0.7	3.3	-955%
ICE = HCE + SCE	109	0.8	-33.7	3.9	3.5	430%
CEE = VA / CE	109	-0.6	-485.4	66.1	48.7	-8509%
VAIC	109	0.2	-483.2	66.2	48.7	20841%
ROA	109	22%	-39%	865%	121%	553%
LevRat	109	6.5	-684.8	250.4	82.7	1272%
Aturn	109	856%	7%	45269%	5845%	683%
SIZE	109	5.7	0.2	7.2	1.2	20%
S/R	109	64%	25%	297%	28%	43%
Place in league	109	3.3	1.0	17.0	3.1	92%
VoP	109	312.7	1.1	1050.0	225.5	72%
UEFA	109	18.9	0.0	72.0	12.2	64%

Source: author's own elaboration.

In the correlation matrix (Tab. 3), we can observe that most of the VAIC components are correlated with VAIC with the p value lower than 0.05, which was expected. This also does not make it possible to use these variables in a multiple regression model. Analysing VAIC correlation with variables which are not its own components, it is worth mentioning that the only strong Pearson corr with p < 0.05 is observed in relation with leverage ratio. Hence higher exposure to debt maximises VAIC as a result. This correlation was not observed by other researchers. Dimitropoulos and Koumanakos [19] noted a completely different situation but their research was limited to listed football

Table 3. Correlation matrix

Variables	VA	EC	SC	CE	HCE	SCE	ICE	CEE	VAIC	ROA	LevRat	Aturn	SIZE	S/R	Place in league	VoP	UEFA
						correlations, marked correlations are significant at p < .05000; n = 109											
VA	1.00																
EC	**0.96**	1.00															
SC	**0.84**	**0.66**	1.00														
CE	**0.65**	**0.60**	**0.59**	1.00													
HCE	**0.47**	**0.29**	**0.71**	**0.27**	1.00												
SCE	**0.19**	0.15	**0.23**	0.10	**0.36**	1.00											
ICE	**0.24**	0.18	**0.32**	0.13	**0.47**	**0.99**	1.00										
CEE	-0.15	-0.09	**-0.23**	0.02	-0.12	-0.02	-0.03	1.00									
VAIC	-0.13	-0.07	**-0.20**	0.03	-0.09	0.05	0.04	**1.00**	1.00								
ROA	0.14	0.12	0.13	**0.36**	0.04	0.03	0.03	0.00	0.00	1.00							
LevRat	**-0.19**	-0.13	**-0.27**	-0.03	-0.18	-0.16	-0.18	**0.92**	**0.91**	-0.02	1.00						
Aturn	0.17	0.16	0.15	**0.37**	0.06	0.03	0.03	0.00	0.00	**0.95**	-0.01	1.00					
SIZE	**0.49**	**0.48**	**0.38**	0.16	**0.23**	0.07	0.10	-0.05	-0.05	**-0.63**	-0.06	**-0.65**	1.00				
S/R	**-0.32**	**-0.22**	**-0.43**	**-0.19**	**-0.54**	**-0.85**	**-0.88**	0.08	0.01	-0.07	**0.21**	-0.05	-0.16	1.00			
Place in league	**-0.37**	**-0.39**	**-0.26**	**-0.26**	-0.12	0.06	0.04	-0.01	-0.01	-0.12	-0.02	-0.10	**-0.22**	0.15	1.00		
VoP	**0.80**	**0.77**	**0.66**	**0.63**	**0.30**	0.17	**0.20**	-0.14	-0.13	**0.27**	-0.18	**0.32**	**0.30**	**-0.26**	**-0.35**	1.00	
UEFA	**0.35**	**0.33**	**0.31**	**0.19**	0.10	0.18	0.19	-0.16	-0.14	0.05	**-0.23**	0.05	0.16	**-0.22**	-0.10	**0.29**	1.00

Source: author's own elaboration.

Table 4. Regression model 1

n=109	Regression Summary for Dependent Variable: VAIC R = .93094765 R2 = .86666352 Adjusted R2 = .85599660 F(8,100) = 81.248 p < 0.0000 Std Error of estimate: 18.483					
	b*	Std Err.	b	Std Err.	t(100)	p-value
Intercept			22.27	17.10	1.30	0.1959
ROA	0.02	0.12	0.93	4.63	0.20	0.8410
LevRat	**0.96**	**0.04**	**0.57**	**0.02**	**24.89**	**0.0000**
Aturn	-0.05	0.13	-0.04	0.11	-0.39	0.7009
SIZE	-0.05	0.07	-1.90	2.98	-0.64	0.5250
S/R	**-0.19**	**0.04**	**-33.19**	**6.87**	**-4.83**	**0.0000**
Place in league	0.04	0.04	0.67	0.64	1.04	0.3001
VoP	0.02	0.06	0.01	0.01	0.43	0.6690
UEFA	0.04	0.04	0.15	0.16	0.93	0.3539

Source: author's own elaboration.

Table 5. Regression model 2

N = 109	Regression Summary for Dependent Variable: VAIC, model 2 R = .92901698 R2 = .86307255 Adjusted R2 = .86048901 F(2,106) = 334.07 p < 0.0000 Std Error of estimate: 18.192					
	b*	Std Err.	b	Std Err.	t(106)	p-value
Intercept			17.71	4.47	3.96	0.0001
LevRat	0.95	0.04	0.56	0.02	25.85	0.0000
S/R	-0.19	0.04	-32.75	6.44	-5.09	0.0000

Source: author's own elaboration.

clubs and was based on a different period (2005-2010). Therefore, we can assume that the business model of football clubs has changed in the last 15 years, and when clubs are not listed on the stock exchange, their appetite for debt is probably much higher. But if we analyse simply the VA variable, it is negatively correlated with leverage debt. Another paper [30] assumed that football club executives in Europe do not set profitability as one of the key goals of this business. One of the key variables which highly determines football business [20] is S/R ratio. This ratio scored a significant correlation (p < 0.05) with almost all components of VAIC. Moreover, all the mentioned components are negatively correlated with S/R. In spite of this, the correlation

with VAIC is not significant and close to 0. The highest negative correlation is observed between S/R and ICE (intellectual capital efficiency), which means that if clubs spend more on salaries in comparison to revenue, their ICE decreases. It also partially causes a lower operational value added and definitely lower structural capital.

Following the correlation analysis, there is a risk that independent variables such as SIZE and ROA are too strongly correlated with each other, and for that reason two multiple regression models were prepared: one with the SIZE variable and one without it, as well as without any other insignificant variables.

The first regression analysis model explains the dependent variable in 87%, which is a very good level of explanation. We can also observe a high correlation level between VAIC and independent variables. The overall significance of the first model is p < 0.0000, so the model is significant.

Model 1 has only two significant independent variables: leverage ratio and salary/revenue ratio. The following step presents a model based only on these two variables. Leverage ratio was

expected to be one of the key predictors due to a strong significant correlation with VAIC (Tab. 3). However, S/R ratio does not show a strong correlation with VAIC. In the following step, a model with significant variables only was established.

The second regression analysis model explains the dependent variable in 86% and the regression estimation is significant with $p < 0.05$. The dependent variable is explained to a bit lower degree in the second model than in the first but both R2s ("R-square") are very close. Intercept value is also significant in the second model. In the second model, all of the independent variables are significant, so this model explains VAIC better.

Discussion

The first hypothesis of the study is not confirmed. The correlation between VAIC and profitability measured by ROA is close to zero, and in the first model we can observe that this variable is not significant. The results obtained by Dimitropoulos and Koumanakos [19] are a bit different. Previous research on stock exchange listed football clubs showed a significant correlation between ROA and VAIC. As it was mentioned before, the research sample in this study is different because the majority of the clubs are not listed on the stock exchange and the sample is based on a different time period. In addition, the level of explanation (R2) is much higher than in previous research. A related study was based on football clubs from the UEFA ranking (a sample of 144 units) [31] but in that paper the authors did not mention the research period and their clubs were mostly non-listed companies. Guseva and Rogova [31] presented a similar low level of correlation results with no significance, which confirms the conclusion from this study.

The second hypothesis that a higher value of VAIC is based on a higher value of football players is also rejected. The correlation between these two indicators is low and not significant. Moreover, in the first regression model there is no significant influence of the variable on VAIC. This rejection requires further explanation as to the reasons for such a situation. There is a lack of similar research, which means we cannot compare it to other studies.

The third hypothesis is also rejected, as there is no confirmation of an association between sports performance (measured by UEFA points or place in league) and VAIC. The result can be explained by the fact that football clubs are not profit orientated, as some of the previous research established [29].

The fourth hypothesis can be partially confirmed. There is no significant correlation between VAIC and salary efficiency measured by S/R but in the matrix correlations we can observe a significant correlation with most of the components of VAIC. Additionally, S/R is one of two independent variables which is significant in the second model of regression analysis of VAIC. The other variable is leverage ratio, and both of them explain the model in 86%, which is a high result. Previous research on listed companies conducted by Dimitropoulos and Koumanakos confirmed that leverage ratio is significantly correlated with VAIC [19]. There is a lack of deeper research on the relation between VAIC and S/R ratio in sports clubs but some authors previously hypothesised that salaries are one of the key drivers of intellectual capital in sport [20, 32].

Conclusion

While most of the researchers concentrated on studying the profitability of sports organisations in the context of different factors such as investment, cost management factors and debt, some of them noticed that intangible assets are one of the key factors creating value in the sports sector. However, most of them try to find an answer as to how some KPIs influence profitability, which could be a somewhat incorrect assumption in the context of football business models, which deliver different benefits to its stakeholders. In this study the opposite question was asked: what can determine the intangible value delivered by football businesses? Therefore, for this study, some of the KPIs of football clubs were chosen after a literature review, and their influence on value added intellectual coefficient as one of the key IC measures was verified. One of the conclusions from the research is that if we assume that VAIC is the goal of the managers, then the only two drivers which are significant for this value are salary ratio and leverage ratio. It means that management of debt as well as salaries are the key factors influencing intellectual capital value. Furthermore, after rejecting several hypotheses we know that profit orientation of the football business in Europe is not the key goal in order to develop intangible values for the stakeholders.

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