

An Examination On Factors That Influence The Creation Of Economic Value Added To The Professional Teams: Focusing On Korea Baseball Organization (KBO)

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ABSTRACT

The research seeks to derive the economic value added (EVA) of 6 franchises from the Korea Baseball Organization (KBO) and concurrently investigate the revenue components contributing to EVA. EVA is regarded as one of the efficient methods on estimating or assessing corporations' actual economic benefits. For the procedure, financial statements of domestic professional baseball teams for 3 consecutive years (2016-2018), which were released to the Data Analysis Retrieval and Transfer System (DART) of the Financial Supervisory Service (FSS), were utilized. First, NOPLAT, IC, ROIC, and WACC, which refer to essential elements of estimating the EVA, were calculated respectively. Second, Pearson's correlation analysis was conducted between the EVA and the profit indicated in the income statement of the 6 teams. The results of the study are as follows: In case of Doosan, LG and SK, main business revenues showed the highest correlation with EVA, and Kiwoom and Samsung showed the highest correlation with EVA through the contributing factor of ticket sales revenue. Finally, for Lotte, advertising revenue was highly correlated with bringing EVA to the team

Keywords: Economic Value Added (EVA); Korea Baseball Organization (KBO); Financial Statement; Revenue Component

INTRODUCTION

In the period in which capital mobility and investment have been active all over the world, corporate value traditionally provides useful information to investors and creditors and contributes to making reasonable investment decisions. Generating corporate value generally occurs when revenue exceeds costs and can be achieved through maximizing shareholder's wealth (Bognarova, 2018). In addition, corporate value is considered essential to survival, and most companies focus on creating profits for stakeholders (Ahmad, Alam & Yameen, 2019; Grant, 2003). Recently, many companies around the world are focusing on creating value for businesses themselves and shareholders (Naicker, 2017). Through the evaluation of corporate value, investors and the general public can identify both the soundness and efficiency of corporations' own management and diagnose the position of them in the industry. The function of corporate valuation is increasing in importance as mergers and acquisitions (M&As) have become widespread around the world since the 1980s (Hwang & Kim, 2004). Since companies have diverse stakeholders, both internal and external, valuation techniques that can reflect the realities of a company and make decisions related to companies efficiently are attracting attention.

Recently, it is noteworthy that beyond traditional categories such as electronics, automobiles and ICT industries, the goal of maximizing corporate value is expanding into professional sports teams that create huge economic wealth. The need to evaluate professional sports teams is due to the continuous growth of the global sports industry, which currently amounts to approximately \$1.3 trillion (Plunkett, 2019) and the ongoing active mergers and acquisitions of major global professional sports teams. In particular, Middle Eastern and Asian interests that seek a variety of new

investment destinations have considered professional sports teams in Europe and North America as 'El Dorado'. In fact, major franchises of the English Premier League (EPL) have been acquired by investors in the US, the Middle East and Russia (Brown, 2007; Franck, 2010; Masari & O'Connor, 2013). For this reason, Forbes, one of America's leading economic weekly magazines, announce 'The World's Most Valuable Teams' annually (Badenhausen, 2018; Ozanian, 2018). According to the results of the survey, the value of professional sports teams worldwide is projected to continue to rise every year. In particular, 36 teams in 2017 were not in the top 50, but were worth at least \$1 billion (Badenhausen, 2017). The reason why professional sports teams emerged as economic valuation objects is because the professional sports sector is recognized as boosting the sports-related service industry and creating economic added value not limited to providing simple opportunities related to sports watching. Considering the growing global interest in professional sports teams and the astronomical income of TV broadcasting rights, the value of major professional sports teams around the world is expected to be subject to ongoing evaluation.

Traditionally, corporate valuation has been based on accounting profits, but there is a need for a method that can more accurately diagnose the state of business management. Accounting profit generally refers to the net profit shown in the income statement. However, it is difficult to clearly show the performance of a company because it can record unearned profits as profits in accordance with generally accepted accounting standards (GAAP). As a limitation of accounting profits, Seida (2003) does not adequately reflect real taxable income of firms. In addition, accounting based profit, which is generally used as performance criteria of business management, has a problem in that it does not reflect the cost of capital raised for business activities (Jung, Jung, Kim & Chung, 2004). In other words, accounting based profits represent results issued from commercial transactions, thus presenting limitations in expressing a corporation's real value. For this reason, until recently, various methods have been suggested for proper corporate value evaluation. From 1990s, many studies have been conducted to measure the efficiency of corporate value at M&A (Ivanov & Vasilchenko, 2017). In the case of professional sports teams, unlike manufacturing companies or financial institutions, they have various factors that influence valuation. For example, apart from demand and supply theory, they can sell goods or services at prices that exceed expected returns, and the number of teams is limited, so high prices may be offered when you take over the team (Turney, 2018). Damodaran (2015) pointed out that due to the business characteristics of professional sports teams, the application of accounting profits should be avoided in valuation. In other words, professional sports teams should adopt evaluation methods based on economic benefits and future expectations.

From this point of view, EVA is an indicator that can be adopted as a necessity to identify the economic reality of a team and to present a complementary valuation standard to corporate stakeholders. EVA is a universal method of measuring the true economic benefits of a company created through its business activities, estimating the net increase of shareholder's profits over time, and evaluating the results of business activities (Mouritsen, 1998; Wnuczak, 2018). It also reflects the cost of raising capital for corporate operating activities (O'Hanlon & Peasnell, 1998). This can overcome the limitations of accounting profits and measure how much the company can generate economic benefits. From this perspective, Biddle, Bowen & Wallace (1997) have tested the effectiveness of accounting earnings, EVA, residual income, and operating cash flow respectively as a measure of corporate performance. O'Byrne (1996) used EVA and accounting earnings accumulated for 10 years to compare the correlation between corporate value and return on stock price. As a result, EVA accounted for 74% of the stock price change, but the explanatory power of accounting profit was only 64%.

In spite of the usefulness of economic added value in explaining corporate value, there has been no study on EVA of professional sports teams until recently. The evaluations of professional sports teams carried out until recently were based on a team's internal profit structure (Brown, Nagel, McEvoy & Rascher, 2004; Magaz-Gonzalez, Mallo-Fernandez & Fanjul-Suarez, 2017; Miller & Washington, 2012; Popp, Deschrive, McEvoy & Deihl, 2016), issues that assume the risk of team bankruptcy or investing in players (Grow, 2014; Kedar-Levy & Bar-Eli, 2008; Lopez & Lewis, 2014), and the valuation based on cash flow of professional sports teams (Kim, Jong, Choi & Kim, 2012). In addition, there are few studies on the key factors that can increase EVA through team management. Although EVA is useful as a valuation measure, professional sports teams differ in profit structure from companies such as those involved in manufacturing or transportation. Sports organizations have diverse sources of revenue depending on their organizational forms (DeSchrive, Hambrick & Mahony, 2019). According to McKelvey (2012), merchandise available to the team generally consists of admission tickets, luxury suites sales, advertising revenue, signage, and naming right. In addition, broadcasting rights and sponsorship income are major revenue sources in the professional

sports teams. According to Plunkett (2018), in the case of network TV media contracts in North American major professional sports franchises, the National Football League (NFL) reached \$ 1.15 billion (2014-22) from individual broadcasters and the value of the Major League Baseball (MLB) broadcast rights was \$ 4 billion (2014-21). The sponsorship investment in professional sports teams has overwhelmed the arts, festivals and tourism industries (Howard & Crompton, 2004). Since professional sports teams earn profits through visitors, there is a need to set up factors that create economic added value different from those of the manufacturing, finance, and transportation sector.

Since the 2000s, Korean companies have been aiming to maximize their corporate value in accordance with economic real earnings from the trend of expanding their businesses through borrowings (Lee, 2005), The socio-economic role of professional sports teams is becoming important (Goo & Choi, 2015). However, unlike in the US or Europe, there are not enough cases to evaluate domestic professional sports teams, and regarding the potential for growth in domestic professional sports teams, the need for foreign investment is being raised simultaneously (Mou, 2016). Therefore, we propose a strategic direction to increase the economic profit of domestic professional sports team through analyzing determinants of EVA factors, focusing on the profit structure of domestic professional sports teams¹.

LITERATURE REVIEWS

Corporate performance measurement provides useful information about mergers and acquisitions and about the profitability of a company to various stakeholders. Since the estimation of corporate performance is a process of converting the performance of the company into monetary units, various valuation methods can be adopted depending on the purpose of utilization. However, among methods for converting performance forecasts into price estimates, there is no superior method until recently (Palepu, Healy & Peek, 2013). For this reason, researchers are faced with the problem of how to most clearly derive firm value (Kaplan & Norton, 1992).

Value assessments typically go through a process that is derived from forecast periods and benefits. So far, corporate valuation has been divided into cash flow discounting and value added. The former consists of a cash flow discount model and a shareholder value analysis method, and the latter results in economic profit, economic added value, market value added, and return on investment cash flow (Anita, 2015). In addition, there are dividend discount models based on corporate dividend income and share price multipliers that compare the corporate profits and stock price levels to diagnose overvalued or undervalued stocks.

Among them, EVA is accepted as an innovative method of confirming the true profit of the enterprise as an alternative to the existing valuation method (Grant, 2003). It is a concept similar to 'residual profits' that investors are interested in, and many corporate executives use it as a performance evaluation criterion of corporate internal departments (Baek, Chang & Choi, 2015). From a market-oriented point of view, EVA is considered to be effective in estimating the market value of a firm and serves to complement the limitations of accounting profits (Kim, 2012). It can also identify the cost of raising capital and the increase in corporate value created by independent operating activities. Watanabe (2013) explained that EVA is closely related to actual enterprise value. EVA is not only a simple evaluation but also a value evaluation standard that can diagnose integrated financial management, decision making, and compensation system for maximizing enterprise value (Anita, 2015). It also contributes to solving the owner-agent problem associated with cost abuse by corporate chief executive officers (CEOs), helping to make the right decisions for investment, mergers and acquisitions. In conclusion EVA can be summarized as a method that can grasp the essence of corporate management from a quantitative point of view and estimate profit exceeding enterprise operating cost

Conceptual Framework Of EVA

EVA is an indicator that reflects both the static and the dynamic situation simultaneously. It is possible to estimate the changes in corporate value through comparison of the period after creating the economic added value at a certain point (Seok, Ko & Kim, 2013). The components necessary for estimating EVA are the after-tax operating profit, the return on capital investment, and the weighted average cost of capital, and the comprehensive formula of EVA is as follows (Hawawini & Viallet, 2011; Kim, 2012).

$$\begin{aligned} EVA &= NOPLAT - (IC \times ACC) \\ &= NOPLAT - \text{Cost of Invested Capital} \\ &= IC \times (ROIC - WACC) \end{aligned}$$

- NOPLAT = Net Operating Profit after Adjusted Tax
- IC = Invested Capital
- ACC = Average Cost of Capital
- ROIC = Return on Invested Capital
- WACC = Weight Average Cost of Capital

NOPLAT

Defined as revenue minus cost of goods sold (COCS), labor cost, general expenses, interest expenses, after net increase in deferred taxes as shown in a company's income statement. This is different from net profit excluding non-operating expenses. The cost of income statement is divided into operating expenses related to direct business activities and non-operating expenses that are not related to operating activities. In order to estimate the profits generated by the company's original activities, only the costs related to the sales activities should be eliminated. Therefore, after tax operating profit is adopted as the basic profit in the process of calculating EVA.

$$NOPLAT = \text{Operating Profit} - (\text{Operating Profit} \times \text{Adjusted Corporate Tax Rate})^2$$

ROIC

ROIC means NOPLAT divided by the total capital held by the company divided by the capital used for its business activities. The invested capital (IC) is assets excluding investment assets and deferred corporate assets that are not related to operating activities in the total assets shown in balance sheet. In the liabilities account of the balance sheet, debts that do not have an obligation to pay interest, such as accounts payable, should be also excluded from calculating the sum of IC³.

$$ROIC = \frac{NOPLAT}{\text{Invested Capital}}$$

WACC

The resources financed by a company for its business activities consist of owner's equity and liabilities. WACC can be understood as the rate of return for shareholders who provided equity and creditors who provided the debt. Generally, in addition to owner's equity, firms raise external funds, i.e., debt, for business expansion or operational activities. The required rates of return on owner's equity and liabilities are calculated by weighted averaging based on the composition ratios since they reflect the capital structure of the firm (the ratio of owner's equity and liabilities).

$$WACC = \text{Required rate of Equity Capital} \times \frac{B}{B + S} + \text{Interest Rate of Borrowed Capital} \times \frac{S}{B + S}$$

- B = The Total Amount of Equity Capital on a Firm
- S = The Total Amount of Borrowed Capital on a Firm

DATA SOURCES AND ANALYSIS SPECIFICATIONS

For analysis, 10 teams belonging to the 1st division of the Korea Baseball Organization (KBO) in 2019 were selected from among the domestic professional sports teams. The 10 teams are comprised of the SK Wyverns, Doosan Bears, Kiwoom (reported in the audit sheet as 'Seoul') Heroes, LG Twins, NC Dinos, KT Wiz, Samsung Lions, Kia Tigers, Hanhwa Eagles and Lotte Giants. The analysis period is three years from 2016 to 2018. EVA reflects the dynamics of corporate value, so the value created for the past three years was adopted. In order to understand the basic financial situation of the 10 teams, we surveyed the balance sheet and income statement provided by Data Analysis, Retrieval

and Transfer System (DART) that Financial Supervisory Service (FSS) operates in Korea. As a result of review of the financial statements, 4 teams (NC, KT, Kia & Hanhwa) which have had operating losses for 3 years in a row were excluded from the analysis⁴. This implies an inefficient operation of the company's raised capital and explains the situation where it is impossible to compensate for the cost of the invested capital required from the shareholders. Therefore, in those cases, EVA estimation is meaningless. The required rate of return for shareholders to calculate the weighted average capital ratio of teams was based on the 5-year treasury bond interest rate of the Bank of Korea and the interest rate on debts was adopted from the annually contracted interest rate stated in external audit reports.

To estimate the contribution to EVA by type of revenue in detail, correlation coefficient between profit (i.g. ticket sales, rental profit, essential business income, stadium rent, advertisement revenue, sales of facilities, etc.) and economic added value of 6 teams during 3 years (2016-2018) was calculated. Pearson's correlation coefficient (PCC) was utilized for correlation analysis (Taylor, 1990). The formula was the same as <Equation 1> below.

$$\text{corr}(x, y) = \frac{\text{cov}(x,y)}{\sigma_x\sigma_y} \tag{1}$$

LIMITATIONS OF RESEARCH

Cost of equity capital, which is a necessary composition to calculate WACC is usually replaced by expected rate of return utilizing Sharpe's (1964) Capital Asset Price Model (CAPM) (Graham & Harvey, 2001)⁵. To estimate this, beta, the systematic risk which caused by the impact of the external market environment, should be also measured. Beta coefficient is a measure of how sensitive changes in stock prices are due to impacts caused by the external environment (Penman, 2003). In other words, the Beta coefficient can be estimated from companies listed on the stock market because it implies the effect on the individual stock price when the stock market changes. However, as there are no Korean domestic professional sports teams until recently listed on domestic stock market exchanges (i.e. KOSPI, KOSDAQ and KONEX), it is impossible to estimate the beta of an individual professional sports team. Therefore, the interest rate of Korean 5-year Treasury bond (KTB) of the Bank of Korea, which is a substantial risk-free rate, was applied.

RESULT

NOPLAT On 6 KBO Teams

Table 1 shows operating profits after adjusted tax of 6 teams belonging to KBO in 2019. For EVA measurements, depreciation or amortization expense for which no actual cash outflow occurred in the income statement is recognized as gain (Harrison et al., 2016; Weygandt, Kimmel & Kieso, 2018). Therefore, these should be included in the profit account when determining NOPLAT. As a result of estimating NOPLAT for each team, Kiwoom was the highest at \$17.1 million and SK was the lowest at \$2.5 million in 2016. Doosan was the highest at \$6.1 million while Lotte was the lowest at \$9.8 million in 2017. By 2018, Lotte had the highest value of \$6.6 million and Kiwoom was the lowest at \$83,000.

Table 1. The Result of NOPLAT (unit: U.S dollar)

Name of Teams	2016	2017	2018
Doosan Bears	551,455	6,146,339	1,691,931
Samsung Lions	2,857,948	-414,558	701,684
LG Twins	-253,772	615,726	4,219,118
SK Wyverns	-2,462,724	116,990	1,404,491
Kiwoom Heroes	17,092,605	1,510,641	-83,591
Lotte Giants	630,597	-9,785,150	6,608,873

Average IC By Year Of 6 KBO Teams

The invested capital for 6 teams from 2016 to 2018 could be straightened out in Table 2 below. Looking at the amount of capital injected by year, LG Twins showed the highest amount during the analysis period (2016-2018) compared to others. By year, it was \$107 million in 2016, \$109 million in 2017, and \$105 million in 2018, respectively. Among 6 teams, 3 teams (Doosan, SK & Kiwoom) have steadily experienced decreasing investment capital for 3 years.

Table 2. Average IC of 6 Teams (unit: U.S dollar)

Name of Teams	2016	2017	2018
Doosan Bears	50,201,093	51,302,727	44,140,689
Samsung Lions	18,686,737	21,694,525	22,752,930
LG Twins	105,749,000	108,186,856	107,197,385
SK Wyverns	9,185,197	10,927,662	8,946,383
Kiwoom Heroes	9,099,987	12,381,890	9,755,201
Lotte Giants	24,981,248	26,272,947	26,723,534

Calculation Result of ROIC

As exhibited in Table 2, it was confirmed the average IC by year during 2016-2018, Table 3 presents the ROICs of 6 teams. ROIC is an index that can verify the profitability of the assets invested for the team's business activities. Kiwoom accounted for 187.8%, the highest rate of return, and SK recorded -26.8% in 2016. In 2017, Kiwoom was the highest at 12.2% and Lotte had the lowest level at -37.2%. Lotte had the highest efficiency at 24.7%, while Kiwoom was the lowest at -0.9% in 2018.

Table 3. ROIC of 6 Teams (unit: percent)

Name of Teams	2016	2017	2018
Doosan Bears	1.1	12.0	3.8
Samsung Lions	15.3	-1.9	3.1
LG Twins	-0.2	0.6	3.9
SK Wyverns	-26.8	1.1	15.7
Kiwoom Heroes	187.8	12.2	-0.9
Lotte Giants	2.5	-37.2	24.7

Required Rate Of Return On Owner's Equity Per Year

KTB yields from 2016 to 2018 obtained from the Economic Statistics System (ECOS) of the Bank of Korea (2019) were shown in Table 4 below. Since the KTB yields fluctuate daily, it was impossible to calculate the average rate, so the yield announced at the end of business day for each year was adopted. The yields for 2016, 2017 and 2018 were 1.8%, 2.3% and 1.9%, respectively.

Table 4. Required Rate of Return on Owner's Equity Per Year (unit: percent)

Item	2016	2017	2018
Yield on KTB (5-year)	1.8	2.3	1.9

Interest Rate of Borrowed Capital

It can be generally determined that the annual interest rate of debts and the contracted interest rate of the obligation specified in the external audit report of each team was utilized. The data for each team from 2016 to 2018 were shown in Table 5 below. Exceptionally, for some teams that do not have interest rate disclosures in their audit reports, it was estimated using the interest expense shown in the income statement and liabilities with interest payment obligations aggregated in the balance sheet. Looking closer at the result of each team, in the case of Kiwoom, it was the highest

at 7.3% in 2018, and Samsung did not pay the cost of borrowed capital during 2016-2018 because of non-recourse management.

Table 5. Interest Rate of Borrowed Capital (unit: percent)

Name of Teams	2016	2017	2018
Doosan Bears	4.8	4.8	4.8
Samsung Lions	0.0	0.0	0.0
LG Twins	3.3	3.3	3.3
SK Wyverns	4.6	4.6	4.8
Kiwoom Heroes	6.4	6.9	7.3
Lotte Giants	3.8	3.8	3.8

Weight Average Cost of Capital

Table 6 shows the weighted average cost of capital for 6 teams. Among the 6 teams, 3 teams (Samsung, SK & Kiwoom) were in full capital erosion as of the end of 2018. In that case, since it is impossible to derive the required rate of equity return, only the interest rate of borrowed capital could be substituted for weighted average cost of capital. The team that had to bear the highest weighted average cost of capital during 2016-2018 was Kiwoom, which was 6.4% in 2016, 6.9% in 2017 and 7.3% in 2018 respectively.

Table 6. WACC (unit: percent)

Name of Teams	2016	2017	2018
Doosan Bears	4.7	4.4	4.3
Samsung Lions	0.0	0.0	0.0
LG Twins	2.2	2.5	2.2
SK Wyverns	4.6	4.6	4.6
Kiwoom Heroes	6.4	6.9	7.3
Lotte Giants	1.9	2.8	2.3

Estimation Of EVA On 6 KBO Teams

The results of EVA created by 6 teams in the period of 2016-2018 were confirmed in Table 7 below. In 2016, 3 of 6 teams represented positive values added, with Kiwoom at \$11 million, the highest. In 2017, appearing Doosan to have the highest value at \$4 million, only 2 teams generated positive value added. Finally, in 2018, 4 teams showed positive value added, which Lotte’s EVA reached over \$6 million.

Table 7. The Estimation of EVA on 6 KBO Teams (unit: U.S dollar)

Name of Teams	2016	2017	2018
Doosan Bears	-1,857,440	4,668,548	-132,422
Samsung Lions	2,541,396	-412,195	682,587
LG Twins	-2,537,976	-2,055,550	1,929,552
SK Wyverns	-2,470,818	-382,468	1,359,850
Kiwoom Heroes	11,283,984	755,295	-819,436
Lotte Giants	5,595,799	-7,619,154	6,066,242

Revenues Breakdown On 6 Teams

In order to identify the types of revenue contributing to economic added value, we analyzed the revenue announced by income statement per team from 2016 to 2018. The major profits of 6 teams consisted of ticket sales revenue, business revenue, advertising revenue, and facility rental income. Noteworthy, Doosan separately collected revenue from the rental of the ballpark, and Samsung recorded the profits earned from selling facilities installed in its new stadium (i.e. sky boxes or family zone etc.), and the amount of player trade revenue apart from other sources of profit.

Analyzing the portion that accounted for revenue for 6 teams, Doosan and Kiwoom had a massive portion of essential business revenue, while advertising revenue was identified as a major source of it for the remaining 4 teams. The results are shown in Table 8 below.

Table 8. The Structure of Revenues on 6 KBO Teams Over the 3 Years (2016-2018) (unit: U.S dollar)

Name of Teams	Year	Ticket Sales	Rental Revenue	Business Revenue	Stadium rental fee	Advertising Revenue	Sales of Facility	Subsidy	Transfer fee
Doosan Bears	2016	11,459,683	1,067,196	31,200,072	387,692	-	-	-	-
	2017	10,173,156	1,148,706	35,688,346	280,635	-	-	-	-
	2018	11,643,878	1,156,790	27,916,191	198,288	-	-	-	-
Samsung Lions	2016	7,680,647	460,396	14,622,958	-	32,175,489	3,982,172	-	1,054,000
	2017	6,464,192	539,310	15,079,569	-	31,450,085	4,010,391	-	2,093,550
	2018	6,916,688	508,181	16,551,109	-	26,013,589	3,909,275	-	-
LG Twins	2016	9,309,692	-	16,545,466	-	12,644,080	-	4,165,000	-
	2017	9,500	-	17,751,167	-	19,244,835	-	6,205,000	-
	2018	9,971,317	-	18,076,993	-	19,122,789	-	4,250,000	-
SK Wyverns	2016	6,033,355	1,472,333	6,671,977	-	22,296,639	-	-	-
	2017	6,081,250	2,085,963	7,902,912	-	23,139,128	-	-	-
	2018	6,971,876	1,656,817	10,813,744	-	28,315,479	-	-	-
Kiwoom Heroes	2016	7,323,079	-	26,276,048	-	19,619,823	-	-	-
	2017	6,508,662	-	8,858,487	-	16,490,032	-	-	-
	2018	6,033,938	-	53,851,192	-	16,311,048	-	-	-
Lotte Giants	2016	5,277,821	1,181,050	8,395,875	-	20,961,297	-	-	-
	2017	8,353,880	1,418,808	11,464,228	-	21,428,980	-	-	-
	2018	7,810,298	1,366,314	9,295,668	-	25,837,839	-	-	-

1. Ticket Sales: total revenue of admission tickets to the game for one year
 2. Rental Revenue: total revenue derived from rent of facilities (CVS, restaurant and merchandise store etc.) installed in the stadium
 3. Business Revenue: broadcasting right allocation, sponsorship, licensing merchandise etc.
 4. Stadium Rental Fee: revenue caused by rental of baseball field
 5. Advertising Revenue: revenues from stadium installed advertisement, advertising with players' uniform, and virtual advertising etc.
 6. Sales of Facility: luxury suites, family zone, private seat etc.
 7. Subsidy: grants from parent company
 8. Transfer Fee: revenue from player's transfer into other teams
- Note. Empty cells are not reported.

Correlation Analysis between Revenue Components and EVA

In order to estimate which profits earned by each team contributed more to their EVA, a correlation analysis was conducted between the team's detailed revenue and EVA that occurred over the past 3 years. Over the past 3 years, the component that made the largest contribution to economic added value in Doosan has been identified as its business revenue (.770) and its second highest was rental revenue (.644). In the case of Samsung, ticket sales revenue (1.000) contributed significantly to EVA. All of LG's business activities can be regarded as contributing to the creation of economic added value. In particular, main business revenue (.735) and advertising revenue (.570) contributed to the increase. However, the subsidy received from parent company did not contribute to accumulating its own EVA. Main business revenue (.960), Advertising revenue (.902), and ticket sales (.863) all have significantly affected EVA accumulation for SK. Advertising revenue (.997) for Kiwoom was the biggest contributor in creating EVA. The summary of correlation coefficient will be shown in Table 9.

Table 9. Correlation coefficients

Name of Teams	1	2	3	4	5	6	7
Doosan Bears	-.931	.644	.770	-.327	-	-	-
Samsung Lions	1.000	-1.000	-.367	-	.252	-.125	-
LG Twins	.466	-	.735	-	.570	-	-.379
SK Wyverns	.863	.342	.960	-	.902	-	-
Kiwoom Heroes	.968	-	-.247	-	.997	-	-
Lotte Giants	-.613	-.648	-.949	-	.450	-	-
Total	.034	-.146	.073	-.327	.136	-.125	-.379

1. Ticket Sales, 2. Rental Revenue, 3. Business Revenue, 4. Stadium Rental Fee, 5. Advertising Revenue, 6. Sales of Facility, 7. Subsidy

CONCLUSION

This research has calculated the EVA by utilizing a new valuation standard, focusing on KBO teams. According to Howard (2006), the introduction of sport finance is a relatively new phenomenon and has specific financial factors to consider but pointed out that research on sport finance needs to be expanded to various financial areas. For this reason, an attempt to estimate the EVA for teams included in KBO was undertaken. In addition, by examining the relationship between the valuation system that could replace the shortcomings of existing accounting-based profit and the profit structure of teams, it provided domestic teams with help establishing the strategic profit-seeking goal to improve their own EVAs in the future.

The basis of the results of this, is that it supports the claim that the core revenue sources determining the value of teams result from broadcasting rights, merchandise sales, and the third-party sponsorship, even if teams sought various business activities to generate profits (Evans, 2017; Fried, Deshriver & Mondello, 2013). Normally, corporations, regardless of the type of industries included, used to focus on diversifying revenues to increase their intrinsic value. However, it is also suggested that diversification of revenue brings the possibility of undermining the corporation's present value by dispersing core competencies into unprofitable business areas (Ban & Ra, 2012; Chang & Lee, 2016). Therefore, when considering the economic value creation of domestic teams as a priority, we should concentrate on expanding revenue, including broadcasting rights through increased number of spectators, development of consumer-oriented merchandise, and diversification of contracted sponsorships.

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ENDNOTES

¹ The way of operating Korean professional sports teams is not a 'Single Entity' structure (Deschriver, Hambrick & Mahony, 2019) adopted by Major League Soccer (MLS), but rather a joint venture composed of separate corporate entities. The owner of the team is a parent company, a so-called "chaebol", rather than an independent investor or private equity fund (PEF). At the beginning of the league's establishment, the Korean professional teams were founded not on the principle of economic efficiency but as part of their corporate social responsibility (CSR) that is considered mandatory to the parent company for providing leisure opportunities for the public. However, some of the teams are expected to have the possibility of future investment due to the increase of public interest in professional sport and the profitability of some teams has gradually improved.

² The adjusted corporate tax is a tax that is the result of adjusting the corporation's own estimated tax payment amount in accordance with a state's own national tax law. In this study, we used the Income Tax Expense account specified in the income statement of each team.

³ While calculating invested capital, the average amount of the beginning balance and the ending balance shown on the corporation's balance sheet should be used. If only the ending balance is used, it is highly possible that the capital injected through the year will be overaged.

⁴ The estimation of EVA is based on operating profit rather than net profit derived by reflecting non-operating income and expenses. Therefore, if operating profit is negative for the last 3 consecutive years, teams were lacking the competitiveness of main business activities and it can be interpreted that actual value added through the main business was not created.

⁵ The formula of producing expected return according to CAPM is defined as $E(r_i) = R_f + [E(r_m) - R_f] \times \beta_{im}$. In terms of the elements that make up the formula, $E(r_i)$ is the expected return of individual corporate investment R_f is the risk-free interest rate, $E(r_m)$ is the expected return of the whole market, and β_{im} is the sensitivity of the stock price fluctuation caused by impacts outside the market.