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An Analysis of the Management Performance of Real Estate Development Company- Focusing on real estate development company in Seoul

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Abstract

This study focused on management performance analysis and productivity analysis on real estate development companies in Seoul among real estate development companies. Input variables were analyzed for efficiency and productivity through DEA through total asset, labor costs and non-current asset output variables through sales and net profit. By doing so, the government wanted to enhance the management efficiency of a real estate development company by analyzing its management performance.

Keywords: *Real Estate Development Company, DEA, Productivity Index, Efficiency, Productivity*[1]

1. Introduction

Real estate development refers to the act of creating land through construction work or transformation, building, water supply, remodeling, or repurposing of buildings[2]. Real estate development companies had existed in the past, but after the 1997 financial crisis, they began to appear rapidly in the 2000s with a boom in the real estate market and implemented development projects, and as the 'Act on Management and Promotion of Real Estate Development' was enacted in 2007, they were allowed to carry out real estate development projects under the name of developers[11]." However, when the real estate market is fluctuating due to changes in real estate policies such as the June 19 real estate measures, the August 2 real estate measures and the September 13 real estate comprehensive measures[1], real estate development companies that use business processes based on short-term judgment, and business judgment that rely on timing or sensitization, are showing the need for a flexible management strategy away from the existing measures[3].

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Accordingly, it is intended to present the management strategy of the real estate development company by identifying the factors that cause the change in productivity through productivity analysis and how much change in the size of the change is made.

2. Theoretical background

2.1. DEA

DEA, which has been widely used since it was first published in 1978, is an analysis method that evaluates efficiency based on the results of input/output variables based on the Linear Planning Act[5]. An analysis of an entity's performance is also an important area in the use of DEA. A company's performance may easily gauge its short-term performance with profitability[4], but its long-term competitiveness is guaranteed when it achieves its growth and stability at the same time. In this regard, it is used in various ways in assessing and analyzing the management efficiency of manufacturers, financial companies and public institutions. As in this paper, based on variables extracted from the management evaluation index, it is used in many analyses as it can be utilized in the management performance analysis of enterprises.(Kim Min-seop 2011)

Equation. 1

$$Max_{u,v} \sum_{k=1}^{s} v_k \, y_{kp}$$

$$s.t \sum_{j=1}^{m} u_j \, x_{jp} = 1$$

$$\sum_{k=1}^{s} u_k \, y_{ki} - \sum_{j=1}^{m} u_j \, x_{ji} \leq 0, \forall i$$

$$u_j \geq \varepsilon, v_k \geq e, \forall j, k$$

where y_{ki}refers to the amount of output element k that the DMU generates, x_{ji} to the amount of input j used by DMU I, $v_k$to the weight imposed on the output k, u_j to the weight imposed on the input component j, and ε to the nonarchimedian infinity. In order to obtain a reference group, which is a collection of efficient DMUs, in the above expression, a double-parameter must be introduced and the margin variable s^-, s^+must be introduced. Here's what I'm going to do.

Equation. 2

$$min_{\theta,\pi} \theta - \varepsilon(s^- + s^+)$$

$$s.t \sum_{i=1}^{n} \pi_i \, x_{ji} - \theta x_{jp} + s_j^- = 0, \forall j$$

$$\sum_{i=1}^{n} \pi_i \, y_{ki} - y_{kp} - s_k^+ = 0, \forall k$$

$$\pi_i, s_j^-, s_k^+ \geq 0 \forall i, j, k$$

2.2. Pre-Study Review

Since there was no prior study that analyzed only the management performance of the real estate development company, it was classified as DEA.

Prior studies related to efficiency and productivity evaluation using DEA are as follows. As of December 31, 2010[10], It was analyzed 57 local builders listed on the stock market and KOSDAQ market for evaluation of their management efficiency. Park Jae-yeon [7] conducted an analysis using the management performance evaluation of 19 public corporations over a three-year period. Kim Bo-ram (2014) conducted a comparative analysis of the financial structure after classifying venture companies and small businesses, and selected 118 companies for analysis. Shin Young-kyun [12] used a total of 13 bank data from seven commercial banks and six local banks from 2007 to 2013 and conducted an analysis using the Financial Information Statistics System of the Financial Supervisory Service. After reviewing the DEA's prior research[9][13] the total number of assets, employees and capital were selected as inputs, and the calculation variables were selected to utilize sales and operating profit[8].

Based on the thesis that conducted the preceding study, the government selected total assets, labor costs and non-current assets as input variables and selected to utilize sales and net profit for output variables, and the efficiency and productivity analysis of Seoul-based real estate development companies with capital of less than 1 billion won using the 2018 disclosure data of the Financial Supervisory Service's electronic disclosure system is conducted to enhance the management performance of real estate development companies[6].

3. Research model and analysis

3.1. Research model

In this paper, enterprises selected as targets for productivity analysis for management performance analysis were selected as samples through the following process.

(1) Sampling of real estate development companies registered in 5,908 real estate development business as of 2019

(2) Check 3,574 development companies with less than 1 billion capital

(3) Among them, 324 real estate development companies were selected for the Seoul area only.

(4) Final selection of 46 places that collected data on audit reports for 2018 through the electronic disclosure system of the Financial Supervisory Service

In order to analyze the performance of the real estate development company, total assets, labor cost, and non - current asset variables were used as input variables, and sales and net income were used as the calculation variables.

Table 1. Input - output variable

Input variable	Output variable
Total assets	Take
Labor costs	Net Income
Non-current assets	

3.2. Analysis procedure

The input variables and the output variables of the sample firms selected for productivity analysis are shown

Table 2. Input variables of target sample (Unit: KRW)

DMU	Input variable			Output variable	
	Total assets	Labor costs	Non-current assets	Take	Net Income
1	8,439,684,631	286,276,000	4,159,439,703	15,476,179,163	458,223,809
2	32,535,828,815	1,565,452,540	13,746,249,700	69,388,952,065	98,960,000
3	25,557,453,407	277,510,850	20,432,058	57,304,518,543	13,509,220,833
4	32,838,089,644	1,407,166,720	14,378,507,693	24,424,801,488	3,141,981,501
5	21,495,359,625	844,577,125	18,432,830,403	4,384,113,848	-3,892,710,059
6	78,854,670,834	1,604,600,060	57,927,101,664	14,039,487,106	841,329,848
7	10,523,412,641	340,078,327	2,466,969,724	5,542,268,671	-2,043,077,457
8	59,529,195,683	3,770,620,022	33,875,137,504	71,049,931,107	-1,328,821,668
9	25,816,013,876	1,920,350,137	13,135,478,841	13,559,758,417	4,590,987,939
10	109,073,253,397	349,476,820	950,492,136	87,815,009,105	12,089,725,257
11	15,476,078,465	618,324,025	6,443,312,069	3,784,690,000	-975,082,315
12	49,020,752,996	425,203,600	6,936,056,731	50,644,885,495	3,810,523,337
13	18,585,026,161	1,419,836,112	5,342,285,779	25,017,657,449	852,358,980
14	17,063,747,451	2,377,247,075	14,102,630,566	14,474,222,597	68,047,726
15	18,290,676,248	865,620,000	1,516,652,735	8,445,160	-1,068,267,851
16	161,982,416,110	1,465,500,460	102,683,341,497	4,010,164,984	7,646,830,021
17	19,563,140,823	681,702,339	164,111,650	10,353,969,981	1,245,547,947
18	51,230,309,859	358,668,764	13,597,935,031	352,828,369	-11,549,146,603
19	120,610,153,831	191,095,709	2,923,777,948	23,686,858,096	-8,516,903,467
20	149,595,411,790	179,538,595	144,874,975,324	1,144,387,480	392,956,179
21	185,540,179,268	971,788,719	32,399,558,478	118,210,745,802	9,762,619,550
22	34,401,433,422	1,478,663,703	9,832,928,004	53,689,370,178	192,647,115
23	50,679,997,081	431,070,430	3,233,900,924	59,362,602,727	7,635,003,463
24	2,195,969,110,328	5,891,511,286	506,692,355,605	1,381,959,092,165	266,035,936,615

25	59,137,941,461	1,760,636,034	2,618,508,828	85,283,246,229	3,516,803,578
26	5,488,898,079	138,000,000	3,076,052,061	132,000,000	-536,123,497
27	21,922,074,460	608,005,160	274,381,343	32,559,688,430	1,280,603,615
28	26,365,664,484	183,317,950	211,120,744	2,547,882,160	-1,986,679,229
29	47,756,735,908	977,051,210	29,084,011,677	6,315,258,858	-2,021,216,768
30	146,412,746,576	1,182,916,310	3,275,042,764	35,313,296,276	-10,878,306,241
31	49,397,131,905	125,731,427	45,517,932,917	6,874,582,961	8,120,182,168
32	56,350,354,947	1,617,692,332	8,810,442,709	148,549,978,938	6,188,888,997
33	28,274,683,222	1,332,417,982	13,867,162,960	24,528,821,577	1,535,622,292
34	34,504,581,614	17,824,965,770	24,347,100,170	29,072,198,805	2,490,916,639
35	22,054,173,223	1,911,716,260	8,269,310,605	27,942,550,125	4,144,523,340
36	16,551,665,519	1,132,811,175	5,732,872,378	9,792,727,046	2,730,746,383
37	29,619,030,859	437,438,934	8,077,561,057	26,403,662,517	1,783,668,940
38	173,636,377,446	634,689,520	730,656,559	6,558,000,000	-13,552,250,268
39	43,612,143,245	352,107,534	9,283,187,128	16,964,112,643	-5,605,901,155
40	54,401,837,931	872,083,515	4,483,522,168	16,968,507,859	-3,070,731,576
41	31,433,611,396	532,281,080	316,859,286	63,034,683,846	10,000,826,928
42	18,205,433,964	427,147,265	333,648,412	6,715,616,022	134,871,527
43	42,032,541,583	2,487,643,174	21,649,932,321	10,297,197,236	486,214,842
44	145,649,883,433	3,084,099,900	3,474,305,204	255,426,431,459	17,044,608,895
45	7,917,635,322	239,400,000	47,930,000	34,606,110,800	8,629,634,183
46	26,816,464,657	150,607,663	22,765,797,710	973,551,117	46,706,250

In the sample, DEA analysis program was used to analyze the efficiency and productivity of the real estate development company, and meaningful results were obtained.

4. Conclusion

This study analyzed the efficiency and productivity of 46 real estate development companies in Seoul using DEA analysis. The total assets, labor costs, and non - current assets were selected

as input variables for a clear analysis of management performance. The variables used are sales and net income. Efficiency and productivity analysis were attempted, but they have limitations in that they do not take into account clearer criteria for sample collection. In order to maximize the management efficiency of the real estate development company through the analysis of the management performance, it is necessary to conduct further research to derive a more usable research result.

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