

## **An Analysis of the Management of a Tertiary General Hospital (2011 to 2013)**

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### **Abstract**

**Purpose.** To efficiently manage hospitals, this study aims to analyze the general characteristics, common-type balance sheet, common-type profit and loss statement and financial ratio of a tertiary general hospital and use the results as basic data for future hospital development by comprehending causes for problems and analyzing hospital management.

**Methods.** By using information about a tertiary general hospital, located in A Metropolitan City, provided through Alio ([www.alio.go.kr](http://www.alio.go.kr)), a public organization information provider, Health Insurance Review & Assessment Service, and Ministry of Health and Welfare, this study used data during 3 years(2011 to 2013) by analyzing the general characteristics, common-type balance sheet, common-type profit and loss statement, industrial mean ratio and financial ratio of hospitals.

**Results.** This study came to the following conclusions through the general characteristics, common-type balance sheet, common-type profit and loss statement, industrial mean ratio, financial ratio, circular chart and ROI by analyzing the data from 2011 to 2013.

**Conclusions.** Overall, A Tertiary General Hospital showed an increase in fixed cost due to the construction of J Hospital and even in the size of capital and assets. It also showed an increase in medical profit, but the increase of its medical cost was higher, resulting in a financial loss. Especially, this hospital showed a slight decrease in net profit, featuring a reduction in inventory turnover. When the management of A Tertiary General Hospital was predicted based on such features, this hospital is expected to improve its profit structure through the opening of J Hospital, and it is necessary for this hospital to increase and sustain the turnover rate of inventories accumulated by managing them better.

**Key Words:** Common-type balance sheet, Common-type profit and loss statement, Financial ratio analysis, Hospital management analysis

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## 1. Introduction

Hospitals are non-profit and public organizations in general. However, they have different management environment medical policies, health insurance institutions, medical consumers, and competition superior levels. External environments are difficult for a hospital management to control, but since internal environments can be controlled to some degree, hospital should try to change their internal environments for the better through rationalized management for their survivals<sup>1,2)</sup>. Therefore, they are more required to improve the efficiency of management. As their external environments including the control of medical fees get worse, more hospitals fail to efficiently use and analyze information needed to comprehend their actual states of management and seek direction of management improvement. As a result, they are less likely to experience management improvement as much as expected, and the reasons can be summarized as follows; Firstly, the management system is not rationally operated for hospitals to properly cope with changing external environments. Secondly, information needed for important decisions and reasonable management is not systematically utilized. Thirdly, since most of the hospital management members are doctors, they are limited to using expertise in management. Fourthly, even administration managers do not have many chances to get systematically trained about hospital management. Thus, this study intends to investigate how hospital management members and administration managers should collect and classify hospital information systematically and how they should analyze and assess the information.

## 2. Methods

### 2.1. Research Subjects

As a general hospital representing A Area, A Tertiary General Hospital was opened in 1910 and has 970 sick beds at present in 2014. However, its management system is not operated rationally enough to cope with changing external environments properly, and information it needed to make important decisions or perform rational administration, has not been used systematically. Besides, since most of the hospital management members are doctors, they are limited to using expertise in management, and even administration managers do not have many chances to get systematically trained about hospital management. Thus, this study intends to investigate how hospital management members and administration managers should collect and classify hospital information systematically and how they should analyze and assess the information. Particularly, by analyzing financial streams and problems based on hospital information from 2011 to 2013, provided through Alio([www.alio.go.kr](http://www.alio.go.kr))<sup>3)</sup>, a public organization information provider, Health Insurance Review & Assessment Service, and Ministry of Health and Welfare, this study intends to contribute the advancement of hospitals. The financial status change was obtained through a three-year common-type balance sheet and common-type profit and loss statement. A pie chart was used to analyze the trend of change. The mean and standard deviation of the three year data were obtained and the Z value was calculated from this.

## 2.2 The Purpose of this study

To manage hospitals more efficiently, hospital management members and administration managers should know how to collect and classify hospital information systematically and analyze and assess the information. Thus, this study was to provide basic data for these processes.

The below shows the concrete purposes of this study.

1. To find out the general characteristics of a tertiary general hospital
2. To find out the common-type balance sheet of a tertiary general hospital
3. To find out the common-type profit and loss statement of a tertiary general hospital
4. To analyze the industrial mean ratio of a tertiary general hospital
5. To analyze the financial ratio of a tertiary general hospital

## 3. Results

As seen in Table 1, the number of doctors is 542 out of all the hospital workers in 39 medical departments of this hospital, and there are 662 nurses in the third nursing grade. This hospital has 627,626 outpatients and 322,662 inpatients treated on average for the past three years.

As seen in the common-type balance sheet of Table. 2, A Tertiary General Hospital showed a constant reduction in current assets and a constant increase in fixed assets. It seemed because of the opening of J Hospital that required lots of expenses for human and material resources. As an increase in fixed assets cause a high fixed rate, it is necessary to establish proper management strategies. In conclusion, due to the opening of J Hospital, A University Hospital showed an increase in fixed expenses, while having more capital and assets in size.

On the premise of medical profits as 100% in the common-type profit and loss statement

Table 1. Actual States of Medical Facilities and Staffs (Unit: bed and person)

Characteristics	Category	No.
No. of sick-beds		970
Doctor	Concurrent	151
	Clinical	62
	Full-time	46
	Resident	283
	sub total	542
Common	Health Administration	107
	Nursing	662
	Drug	31
	Health Care	168
	Others	47
	sub total	1015
Hospital Administration		264

(Common positions include inspection, nutrition, facility technique, engineering, computing, special service and research)

Table 2. Common-type Balance Sheet

(Unit: %)

Account Title	2011	2012	2013
<b>Assets</b>			
<b>I. Current assets</b>	<b>39.01</b>	<b>35.67</b>	<b>28.53</b>
(1) Quick assets	38.21	34.55	27.25
(Government subsidies)	0.00	0.00	0.00
1. Cash & cash equivalents	3.71	5.81	9.23
2. Short-term financial instruments	19.05	14.75	9.24
3. Medical accounts receivable	11.84	11.58	8.13
(Allowance for bad debts)	-0.44	-0.29	-0.28
4. Short-term loans	0.01	0.01	0.00
5. Accounts receivable	0.82	0.70	0.66
6. Accrued income	0.42	0.36	0.10
7. Advance payments	2.68	1.47	0.02
8. Prepaid expenses	0.02	0.03	0.03
9. Prepaid dues	0.11	0.13	0.12
10. Branch accounting	0.00	0.00	0.00
11. Other quick assets	0.01	0.01	0.00
(2) Inventory assets	0.80	1.12	1.29
1. Medicines	0.59	0.88	0.95
2. Treatment materials	0.16	0.18	0.28
3. Food materials	0.00	0.00	0.00
4. Stored goods	0.04	0.04	0.03
5. Additional medical supplies	0.00	0.00	0.00
6. Other inventory assets	0.02	0.02	0.02
<b>II. Fixed assets</b>	<b>60.99</b>	<b>64.33</b>	<b>71.47</b>
(Government subsidies)	0.00	0.00	0.00
(1) Investment assets	0.06	0.05	0.29
1. Investment securities	0.01	0.00	0.00
2. deposits	0.05	0.05	0.24
3. Other investment assets	0.00	0.00	0.05
(2) Tangible assets	49.09	47.62	54.72
(Government subsidies)	0.00	0.00	0.00
1. Land	2.25	2.20	2.11
2. Building	29.68	29.31	39.88
(Accumulated amount of depreciation)	-4.75	-5.36	-5.89
3. Building attached facilities	0.98	0.92	2.07
(Accumulated amount of depreciation)	-0.36	-0.37	-0.41
4. Structures	1.84	1.79	1.83
(Accumulated amount of depreciation)	-0.34	-0.38	-0.41
5. Machinery	3.34	3.71	3.91
(Accumulated amount of depreciation)	-2.76	-3.01	-3.24
6. Delivery equipment or vehicles	0.16	0.16	0.16
(Accumulated amount of depreciation)	-0.11	-0.13	-0.13
7. Computing facilities	4.23	3.37	3.48
(Accumulated amount of depreciation)	-3.64	-2.89	-2.76
8. Financial lease assets	21.99	21.99	22.57
(Accumulated amount of depreciation)	-17.66	-19.12	-19.01
9. Medical apparatus	28.11	29.76	32.81
• Medical instruments	26.57	28.21	31.07
(Accumulated amount of depreciation)	-21.15	-23.01	-24.64
• Medical furniture	1.54	1.55	1.74

(Accumulated amount of depreciation)	-1.35	-1.37	-1.39
10. Tools and equipment	3.14	3.59	3.80
(Accumulated amount of depreciation)	-2.72	-2.79	-2.91
11. Assets under construction	5.56	5.95	0.38
12. Other tangible assets	3.63	4.98	4.76
(Accumulated amount of depreciation)	-0.98	-1.65	-2.27
(3) Intangible assets	11.84	16.66	16.46
1. Patent rights	0.00	0.00	0.00
2. Utility model rights	0.00	0.00	0.00
3. Trademark rights	0.00	0.00	0.00
3. Development expenses	0.47	0.30	0.23
4. Other intangible assets	0.10	0.10	0.34
5. Usable & profitable donation assets	11.28	16.26	15.88
<b>A total of assets</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>
<b>Liabilities</b>			
<b>I. Current liabilities</b>	<b>22.22</b>	<b>24.00</b>	<b>23.00</b>
1. Purchase liabilities	14.70	15.00	14.00
2. Accounts payable	1.94	2.00	2.00
3. Advances received	0.10	0.00	0.00
4. Deposits received	0.36	0.00	0.00
5. Accrued expenses	2.27	4.00	4.00
6. Current long-term liabilities	2.76	3.00	2.00
7. Unearned revenues	0.00	0.00	0.00
8. Deposits received	0.02	0.00	0.00
9. Other current liabilities	0.06	0.00	0.00
<b>II. Fixed liabilities</b>	<b>47.92</b>	<b>45.00</b>	<b>45.00</b>
1. Long-term loans	1.74	1.00	1.00
2. Financial lease accounts payable	4.73	3.00	4.00
3. Retirement payment allowance	24.83	26.00	30.00
(Retirement insurance deposits)	0.00	0.00	0.00
(Money converted from national pension to retirement allowance)	-0.17	0.00	0.00
4. Reserve funds for essential business	16.01	5.00	0.00
5. Reserve funds for medical development	0.79	10.00	11.00
<b>A total of liabilities</b>	<b>70.14</b>	<b>69.00</b>	<b>69.00</b>
<b>Capital</b>			
<b>I. Endowments</b>	<b>45.33</b>	<b>48.00</b>	<b>50.00</b>
1. Corporate endowments	8.40	8.00	8.00
2. Other endowments	36.93	39.00	42.00
• Contributions	0.00	0.00	0.00
• Subsidies	0.00	0.00	0.00
<b>II. Surplus</b>	<b>-15.47</b>	<b>-17.00</b>	<b>-18.00</b>
1. Surplus at the beginning of a period	-15.68	-16.00	-16.00
	0.00	0.00	0.00
2. Current net income	0.03	0.00	-2.00
3. Reserves for the rationalization of enterprises	0.18	0.00	0.00
4. Capital adjustment	0.00	0.00	0.00
• Inter-office capital transaction	0.00	0.00	0.00
<b>A total of capital funds</b>	<b>29.86</b>	<b>31.00</b>	<b>31.00</b>
<b>A total of liabilities and capital funds</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

Source: (www.alio.go.kr)3),(www.hira.or.kr)4),(www.mw.go.kr)5).

of Table 3, medical expenses increased much more than medical profits, and due to the opening of J Hospital, there was an increase in personnel, material and management expenses.

Since the increase of medical expenses was larger than that of medical profits, medical gains kept decreasing. On the contrary, non-medical profits increased a little. Since the increased non-medical profits did not have great effect on the entire profit structure, the current net profits constantly decreased.

As a result of analyzing the liquidity ratio used to assess the stability of a financial structure, it was found that there was a reduction in the current ratio and quick ratio of this hospital as of 2013. As a result, the net operating capital composition ratio decreased as well as the medical defensive period. Compared to the past, the stability of this hospital's financial structure became weaker as of 2013. However, the fixed assets to long-term capital ratio, which shows an ability of operating equity, increased up to 93% as of 2013, which indicates limitations to operating fixed assets with fixed liabilities. That is, when there is an increase in fixed assets, the hospital may have to borrow more debts for management. All the earning ratios in the profitability ratio were minus, further increasing the range of losses. Except the net profit increase rate, all the items of growth ratio were positive, showing a little growth, but the net profit increase rate was greatly reduced in 2012, and it even changed to a decrease in 2013. In other words, A University Hospital constantly showed an increase in medical profits, but the increased medical expenses were larger than the increased medical profits, leading to a constant reduction in net profits. When the net profits keeps decreasing, it may bring up a critical crisis to the hospital at last.

As a result of analyzing the financial ratios of this hospital as seen in Table 5, it was found that the current, quick and debt ratios were decreasing, but the fixed assets to

long-term capital ratio out of the leverage ratio was constantly increasing, which shows that it is necessary to properly manage the equity and fixed liabilities. In the growth ratio, the net profit ratio on total assets and the net profit ratio on medical profits both decreased. The increased in the inventory asset turnover ratio attributed to purchasing instruments and materials due to the opening of J Hospital affiliated with A University.

In the ROI analysis of Fig. 2, ROA (Return on Assets) was reduced by 1.63%, compared to the previous year, and the total asset turnover ratio was sustained to a similar degree, from 1.09 to 1.12. The biggest reason why ROA greatly dropped was because of a constant reduction in the return on medical profits. As analyzed earlier, the medical profits increased every year, but the increase was smaller than that of medical expenses, so its net profit changed to net losses in 2012, constantly leading to accumulated losses. The return on equity of A University Hospital was -7.06% in 2013, which was 5.78% less than that in 2012. The reason why the return on equity was reduced is because the return on medical profits constantly decreased, but the total asset turnover ratio and the debt ratio were sustained in almost the same level. The total asset turnover ratio was 1.12 times, which was about 1 cycle, which shows a relatively stable management. Besides, compared to the size of medical profits created, investments were stably made into assets. However, as examined earlier, the weight of fixed assets became heavier out of all the assets, and it caused a reduction in the financial liquidity. The ROI analysis showed that the medical expenses were larger than the medical profits, further increasing more losses than profits. As a result, the return on equity was constantly

Table 3. Common-type Profit and Loss Statement

(Unit: %)

Account Title	2011	2012	2013
I. Medical profits	100.00	100.00	100.00
1. Medical profits	100.00	100.00	100.00
• Inpatient profits	62.73	61.91	61.64
• Outpatient profits	36.03	36.82	37.25
• Other medical profits	1.24	1.26	1.11
2. Medical profit adjustment	0.00	0.00	0.00
II. Medical expenses	102.13	103.36	105.50
1. Personnel expenses	36.59	38.07	40.13
• Wages	15.28	16.13	16.83
• Sundry allowances	16.58	16.96	17.69
• Retirement allowances	4.73	4.97	5.60
2. Material costs	38.88	38.58	38.28
• Pharmaceutical costs	17.25	17.06	17.38
• Treatment material expenses	20.98	20.87	20.26
• Food material expenses	0.65	0.65	0.64
3. Management costs	23.89	23.64	24.00
• Welfare benefits	4.61	4.56	4.87
• Travel & transportation expenses	0.07	0.05	0.04
• Communication expenses	0.18	0.20	0.21
• Utility expenses	1.06	1.15	1.26
• Taxes and public imposts	0.10	0.11	0.19
• Insurance expenses	0.07	0.08	0.10
• Environment management costs	0.91	0.91	0.89
• Rent expenses	0.05	0.06	0.07
• Payment commission	0.54	0.55	0.70
• Repair costs	0.74	0.73	0.63
• Vehicle maintenance costs	0.04	0.04	0.04
• Education & training expenses	0.40	0.42	0.33
• Book & printing expenses	0.14	0.14	0.14
• Business operating expenses	0.35	0.33	0.33
• Event expenses	0.17	0.12	0.12
• Fuel expenses	0.65	0.64	0.65
• Medical social work expenses	0.10	0.10	0.09
• Expenses for supplies	0.56	0.64	0.67
• Research expenses	1.36	1.38	1.33
• Depreciation costs	6.92	6.98	6.60
• Depreciation costs of intangible assets	0.55	0.53	0.66
• Advertising & promotion expenses	0.18	0.11	0.12
• Bad debt expenses	0.00	0.00	0.01
• Clothing & bedding expenses	0.38	0.45	0.45
• Outsourcing expenses	3.53	3.00	3.16
• Delivery & storage fees	0.01	0.04	0.00
• Research & analysis expenses	0.00	0.00	0.00
• Prize expenses	0.02	0.03	0.02
• Department supply expenses	0.13	0.16	0.20
• Other expenses	0.09	0.12	0.11
4. Selective treatment expenses	2.78	3.07	3.09
• Selective treatment allowance	1.55	1.81	1.94
• Selective treatment research expenses	0.56	0.54	0.57
• Other selective treatment-related expenses	0.67	0.73	0.58
• Treatment department support expenses	0.00	0.00	0.00

III. Medical benefits	-2.13	-3.36	-5.50
IV. Non-medical benefits	7.30	7.34	8.03
1. Extra profits	0.36	0.33	0.32
• Funeral profits	0.08	0.07	0.07
• Funeral article profits	0.03	0.03	0.03
• Funeral restaurant profits	0.17	0.16	0.15
• Funeral stall profits	0.04	0.04	0.04
Other funeral profits	0.02	0.02	0.02
• Other profits incidental to medical services	0.01	0.01	0.01
2. Interest profits	0.81	0.77	0.47
3. Rent profits	0.04	0.04	0.05
4. Foreign exchange profits	0.00	0.00	0.00
5. Reversal of allowance for bad debts	0.00	0.11	0.00
6. Donation profits	1.95	2.55	2.59
• National subsidies	1.86	2.35	2.42
• Donation profits	0.09	0.20	0.17
7. Parking lot profits	0.14	0.13	0.12
8. Gains on disposal of tangible assets	0.01	0.00	0.00
9. Sundry profits	2.08	0.76	0.42
• Dormitory profits	0.00	0.00	0.00
• Other sundry profits	2.08	0.76	0.42
• Staff restaurant profits	0.00	0.00	0.00
10. Reversal of reserve funds for medical development	0.66	1.28	2.62
11. Gains on prior period error corrections	0.01	0.04	0.09
12. Other profits	1.25	1.33	1.34
V. Non-medical expenses	5.07	4.21	4.30
1. Additional non-medical expenses	0.15	0.14	0.13
• Funeral article expenses	0.02	0.02	0.02
• Funeral restaurant material expenses	0.10	0.09	0.09
• Funeral food expenses	0.00	0.00	0.00
• Funeral stall article expenses	0.03	0.03	0.03
• Other funeral material expenses	0.00	0.00	0.00
• Other additional medical expenses	0.00	0.00	0.00
2. Interest expenses	0.41	0.35	0.24
3. Donations	0.06	0.13	0.06
4. Losses on disposal of tangible assets	0.00	0.01	0.00
5. Losses on disposal of intangible assets	0.00	0.00	0.00
6. Full reverse funds for essential business	1.55	0.00	0.00
7. Sundry losses	0.00	0.00	0.00
• Losses on reduction of medical costs	0.00	0.00	0.00
• Dielectric research center-related expenses	0.00	0.00	0.00
8. Outsourcing research expenses	0.82	0.81	1.01
9. Losses on prior period error corrections	0.06	0.19	0.05
10. Expenses for other projects	2.01	2.57	2.80
11. Losses on foreign currency transaction	0.00	0.00	0.00
VI. Ordinary profits	0.10	-0.23	-1.76
VII. Special profits	0.00	0.00	0.00
• Additional special profits	0.00	0.00	0.00
VIII. Special losses	0.07	0.12	0.22
• Additional special losses	0.07	0.12	0.22
IX. Corporate tax and so on	0.00	0.00	0.00
X. Current net profits	0.03	-0.35	-1.98

Source: (www.alio.go.kr)<sup>3)</sup>, (www.hira.or.kr)<sup>4)</sup>, (www.mw.go.kr)<sup>5)</sup>.



Table 4. Analysis of Industry Mean Ratios (Unit: %)

Financial Ratio	2011	2012	2013
I. Liquidity ratio			
Current ratio (%)	175.62%	150.90%	122.98%
Quick ratio (%)	172.01%	146.17%	117.44%
Net working capital structure ratio (%)	16.80%	12.03%	5.33%
Medical expense defensive period (days)	134.03	116.36	89.92
II. Leverage ratio			
Debt ratio (%)	234.89%	222.22%	218.29%
BIS ratio (%)	29.86%	31.03%	31.42%
Interest coverage ratio (times)	1.24	0.35	(6.38)
Fixed asset ratio (%)	204.24%	207.29%	227.47%
Fixed assets to long-term capital ratio (%)	78.40%	84.25%	93.06%
III. Profitability ratio			
Medical profit ratio on medical revenue (%)	-2.13%	-3.36%	-5.50%
Net profit ratio on medical revenue (%)	0.03%	-0.35%	-1.98%
Medical profit ratio on total assets (%)	-2.33%	-3.78%	-6.15%
Net profit ratio on total assets (%)	0.03%	-0.40%	-2.22%
Net profit ratio of equity (%)	0.10%	-1.28%	-7.06%
IV. Growth ratio			
Ratio of increased inpatient profits	6.66%	4.07%	2.94%
Ratio of increased outpatient profits	3.69%	7.79%	4.59%
Ratio of increased medical profits	5.47%	5.45%	3.39%
Ratio of increased total assets	6.36%	2.49%	3.95%
Ratio of increased net profits	-24.79%	-1436.77%	
Rate of reduced net profits			481.14%
V. Activity Ratio			
Total asset turnover ratio (times)	1.09	1.12	1.12
Tangible asset turnover ratio (times)	2.23	2.36	2.04
Medical unpaid account turnover ratio (times)	9.23	9.71	13.75
Payable account turnover ratio (times)	7.43	7.63	7.87
Inventory asset turnover ratio (times)	136.27	100.64	87.01
VI. Productivity ratio			
Added value ratio	43.36%	44.57%	45.00%
Total asset investment efficiency	158.71%	161.50%	160.20%
Added value per employee (1,000 won)	102,366,362	110,953,003	115,822,045
(Added value)	186,409,145,434	202,045,419,024	210,911,944,504

Source: (www.alio.go.kr)<sup>3)</sup>, (www.hira.or.kr)<sup>4)</sup>, (www.mw.go.kr)<sup>5)</sup>.

decreasing due to a reduction in the return on medical profits.

#### 4. Considerations

To analyze the management of a hospital, we use balance sheets, profit and loss statements, patient treatment records, medical profits, human resources by position, facility use records, and common states in general<sup>3-7)</sup>.

The significance of analyzing the management of a hospital lies in analyzing the management competency and financial states based on extensive financial data including past, present and future plans, and such managerial statics as patient treatment records, and verifying the causes in order to provide useful management information to all the parties interested including CEOs<sup>3-7)</sup>. When reviewing previous studies on the correlation between the publicity

Table 5. An Analysis of Financial Ratios

(Unit: %)

		Average (%)	Standard Deviation (%)	z value		
				2011	2012	2013
Liquidity Ratio	Current ratio	149.83	21.50	1.20	0.05	-1.25
	Quick ratio	145.21	22.29	1.20	0.04	-1.25
Leverage Ratio	Debt ratio	225.13	7.08	1.38	-0.41	-0.97
	Fixed assets to long-term capital ratio	85.23	6.02	-1.13	-0.16	1.30
Profitability Ratio	Return on assets	-4.09	1.57	1.11	0.20	-1.31
	Return on medical profits	-0.77	0.87	0.91	0.48	-1.39
Growth Ratio	Total asset increase ratio	4.26	1.60	1.31	-1.11	-0.20
	Medical profit increase ratio	4.77	0.97	0.72	0.70	-1.41
Activity Ratio	Inventory asset turnover ratio	107.97	2077.07	1.36	-0.35	-1.01
	Total asset turnover ratio	1.11	1.37	-1.39	0.91	0.48
Productivity Ratio	Ratio of value added to total liabilities and net worth	160.14	1.14	-1.25	1.20	0.06
	Added value ratio	44.31	0.69	-1.37	0.38	0.99

Source: (www.alio.go.kr)<sup>3</sup>, (www.hira.or.kr)<sup>4</sup>, (www.mw.go.kr)<sup>5</sup>.

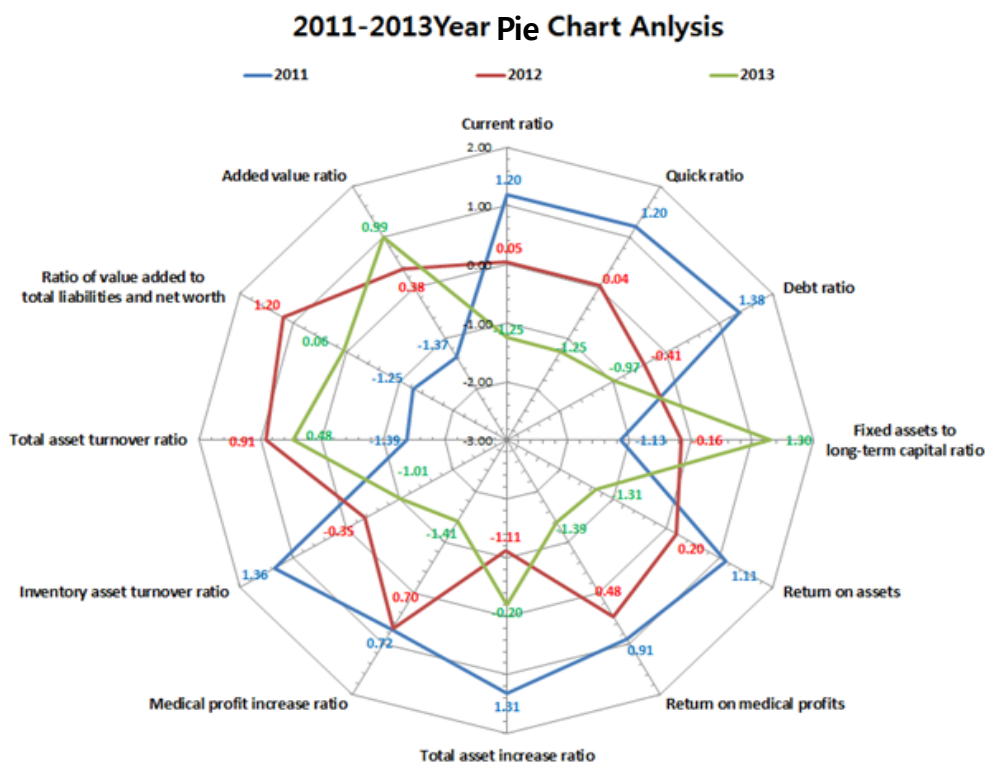


Figure 1. 2011-2013 Year Pie Chart Analysis

and profitability of national university hospitals, however, this study had difficulty explaining the analysis results because they

were not standardized with differences in every measurement index<sup>8)</sup>.

Firstly, when it comes to the general

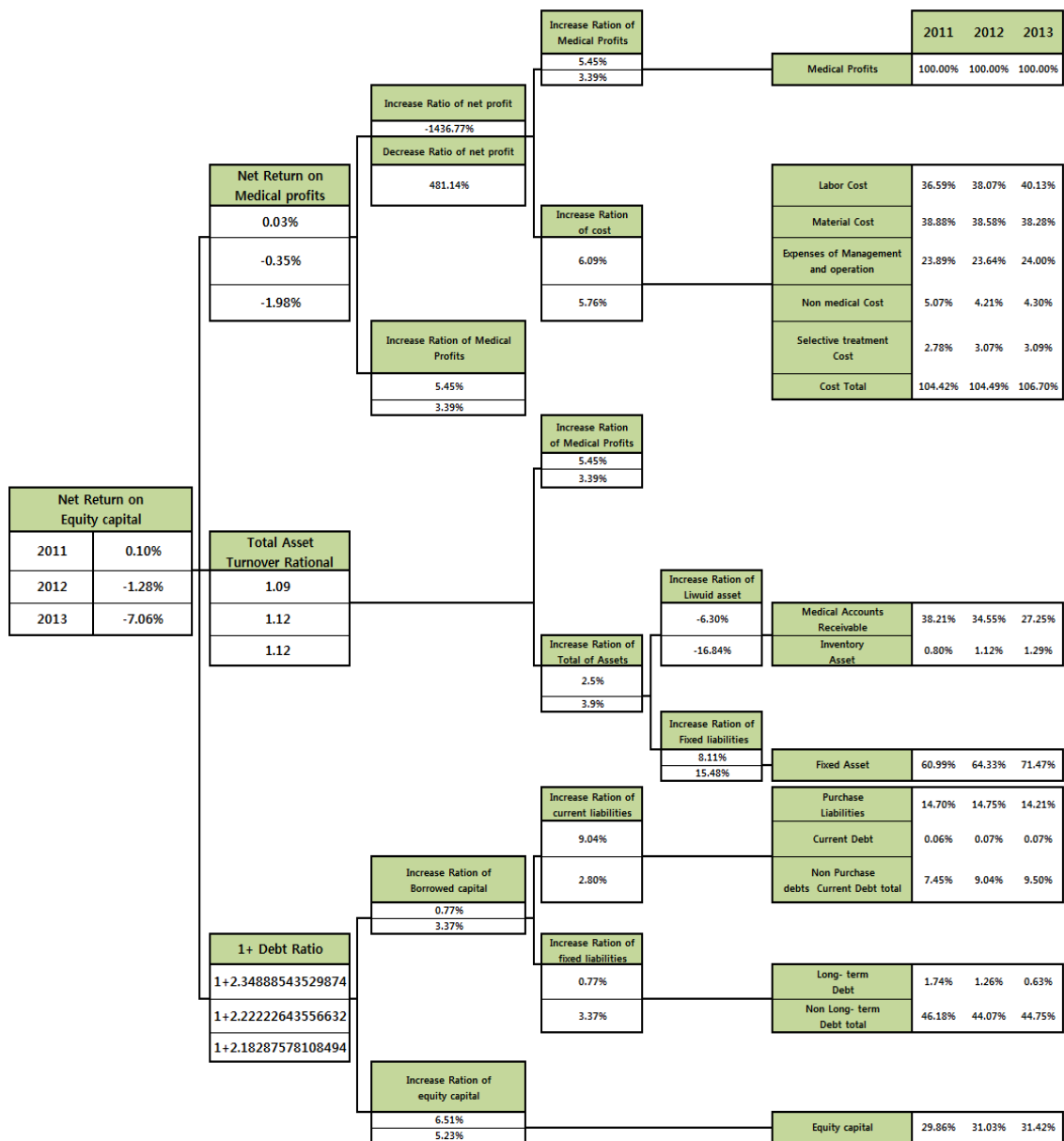


Figure 2. ROI Analysis

characteristics of this tertiary general hospital, there were 542 doctors out of all the medical workers, and they were treating 627,626 outpatients and 322,662 inpatients on average for the past 3 years, with the help of 662 nurses in the third nursing grade in 39 medical treatment departments. The biggest difference with other hospitals was in the number of nurses depending on the nursing grade<sup>9,10</sup>.

Secondly, this study analyzed the

common-type balance sheet of this tertiary general hospital. The ration of current assets was constantly decreasing, but that of fixed assets was constantly increasing. It seemed because of the opening of J Hospital in 2013 which required more facility, personnel and instrument expenses. Besides, a reduction in assets under construction attributed to the opening of J Hospital in 2013 as well. A great increase in the fixed assets causes a higher

fixed ratio, so it is necessary to establish proper management strategies. Due to an increase in the personnel expenses, the financial structure of this hospital, such as the equity ratio, was still vulnerable, compared to other industries, and medical prime costs such as personnel expenses were gradually increasing as well<sup>11)</sup>. In general, despite an increase in the medical fee (by 1.6% on Jan. 1, 2011, 2.20% on Jan. 1, 2012, and 2.36% on Jan. 1, 2013) and an partial increase in medical profits, all the hospitals showed a reduction in total profits, compared to the previous year<sup>4,6)</sup>. Almost all the hospitals in Korea depend on medical profits through patient treatments, but because of the governmental control on medical fees, regulations on the medical service industry and the intensified competition with more hospitals, they have more difficulty carrying out proper management<sup>8)</sup>. Particularly, A University Hospital spent more fixed expenses due to the opening of J Hospital, while having more capital and assets in size.

Thirdly, on the premise of medical profits as 100% in the common-type profit and loss statement of Table 3, medical expenses increased much more than medical profits, and due to the opening of J Hospital, there was an increase in personnel, material and management expenses. Since the increase of medical expenses was larger than that of medical profits, medical gains kept decreasing. On the contrary, non-medical profits increased a little. Since the increased non-medical profits did not have great effect on the entire profit structure<sup>12,13)</sup>, the current net profits constantly decreased. Yang Jong-hyun et al.'s research on the management performance of hospitals from 2008 to 2010 shows annual change for the past three years in medical profits, medical

expenses, non-medical profits, non-medical expenses, current net profits, inpatient allowance ratio, outpatient allowance ratio, medical profit ratio on medical profits, return ratio on medical profits, and ordinary profits on medical profits. The current net profits of this hospital seems similar to those of every national university hospital<sup>8,14)</sup>.

Fourthly, when it comes to the industry average ratios of this hospital, as a result of analyzing the liquidity ratio used to assess the stability of a financial structure<sup>13-15)</sup>, it was found that there was a reduction in the current ratio and quick ratio of this hospital as of 2013. As a result, the net operating capital composition ratio decreased as well as the medical defensive period. Compared to the past, the stability of this hospital's financial structure became weaker as of 2013. However, the fixed assets to long-term capital ratio, which shows an ability of operating equity, increased up to 93% as of 2013, which indicates limitations to operating fixed assets with fixed liabilities. That is, when there is an increase in fixed assets, the hospital may have to borrow more debts for management. All the earning ratios in the profitability ratio were minus, further increasing the range of losses. Except the net profit increase rate, all the items of growth ratio were positive, showing a little growth, but the net profit increase rate was greatly reduced in 2012, and it even changed to a decrease in 2013. A University Hospital constantly showed an increase in medical profits, but the increased medical expenses were larger than the increased medical profits, leading to a constant reduction in net profits. In other words, the medical profits increased, but the inventory asset turnover ratio decreased to the contrary. It may indicate an increase in the inventory assets this

hospital has. Possessing excessive inventory assets means funds being tied up, which may be invested into other projects, so it is necessary to sustain inventory to a proper degree.

Lastly, as a result of analyzing the financial ratios of this hospital, it was found that the current, quick and debt ratios were decreasing, but the fixed assets to long-term capital ratio out of the leverage ratio was constantly increasing, which shows that it is necessary to properly manage the equity and fixed liabilities<sup>13-16</sup>. In the growth ratio, the net profit ratio on total assets and the net profit ratio on medical profits both decreased. The increase in the inventory asset turnover ratio attributed to purchasing instruments and materials due to the opening of J Hospital affiliated with A University.

Overall, due to the opening of J Hospital affiliated with A University, the fixed expenses increased, and the capital and assets were expanded in size. There was an increase in medical profits, but the increased medical profits were larger than the increase medical expenses. The loss of profits was reduced especially in the net profits, resulting in a reduction in the inventory asset turnover ratio. Based on such features, A University Hospital was expected to improve its profit structure through the opening of J Hospital, and it seems necessary for this hospital to increase and sustain the turnover rate of accumulated inventory assets in a proper level, by managing inventory assets efficiently. Since this study has limits to objectifying these ratios only by using the cash flow chart and official data, a further study should be conducted to supplement the results of this study.

## 5. Conclusions

The results of analyzing the management of a tertiary general hospital (2011 to 2013) as below.

Firstly, as a result of analyzing the general characteristics of this hospital, and it was found that there were 542 doctors out of all the medical staffs, and they were treating 627,626 outpatients and 322,662 inpatients with the help of 662 nurses in the third nursing grade in 39 treatment departments.

Secondly, as a result of analyzing the common-type balance sheet of this hospital, it was found that the current asset ratio decreased, but the fixed asset ratio constantly increased. It seemed because of the opening of J Hospital that required more facility, personnel and instrument expenses. On the other hand, due to the opening of J Hospital in 2013, there was a reduction in assets under construction, resulting in an increase in fixed expenses and more capital and assets in size.

Thirdly, on the premise of medical profits as 100% in the common-type profit and loss statement of Table 3, medical expenses increased much more than medical profits, and due to the opening of J Hospital, there was an increase in personnel, material and management expenses. Besides, since the increased medical expenses were larger than the increased medical profits, the medical gains kept constantly decreasing. On the contrary, there was a little increase in the non-medical profits.

Fourthly, in the industry average ratios of this tertiary general hospital, there were reductions in the current and quick ratios, which are used to assess the stability of a financial structure, leading to a reduction in the current assets and an increase in the fixed

assets. As a result, there were reductions in the net operating capital and composition ratio as well as the medical defensive period, inventory asset turnover ratio and even the stability of its financial structure.

Lastly, as a result of analyzing the financial ratios of this hospital, it was found that the current, quick and debt ratios were decreasing, but the fixed assets to long-term capital ratio out of the leverage ratio was constantly increasing. The increase in the inventory asset turnover ratio attributed to purchasing instruments and materials due to the opening of J Hospital affiliated with A University.

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