STRATEGIC ELEMENT IN HEALTH, OPERATIONAL AND FINANCIAL PERFORMANCE ASSESSMENT: EXAMPLE OF SELCUK UNIVERSITY MEDICAL FACULTY HOSPITAL

Hakkı Gokbel, Prof. Dr.
Hasan Kursat Gules, Prof. Dr.
Zeynep Ergen Isiklar, Res. Asst.
Tugba Sener, Asst. Prof.
Selcuk University, Turkey

Abstract
       Today, transferring resources to the health sector, distribution of transferred resources between health care services, use of resources and quality of provided services are very important in countries. When it became clear that the growing importance of strategic management and development of institutions are connected to provide improvements not only in a sub-unit but also in all sub-unit and in an integrated manner, researches carried out in hospitals reached holistic and administrative size. For a holistic assessment managers focused on the measurement of hospital performance.
In this study, we made the operational and financial data analysis of the Hospital of Selcuk University Faculty of Medicine that was established in 2001 and started it's activities in 2009. In this context, firstly some basic financial ratios were calculated by ratio analysis method based on the hospital's balance sheet. In the study second, medical statistics which described as operational data were analyzed. In addition some assessment and recommendations were made by comparing basic analysis results to overall Turkey. In this way, the hospital's current financial and operational performances have comparatively been evaluated.

Keywords: Performance Management in Health, Financial Performance, Ratio Analysis, Operational Performance

Introduction
       With standing out of the strategic management and a service approach creating value, maximizing the value for the patients, i.e. the

studies in the direction of obtaining   the best result with the lowest cost gain importance increasingly at the present   days. These studies are adapted   to the health sector in the form of setting the strategy and targets, revealing the existent potential, analyzing the stakeholders in the health   sector,   and calculating   the concrete   indicators   such   as effectiveness, profitability, and performance.

The subject matter   of this study, using   the actual data of Selcuk University Medical Faculty Hospital, is to measure the actual performance of the hospital via ratio analysis and make some basic evaluations. It is considered that, this study, via assessing together the financial and operational data of a health business, may assist to the health managers in their preparing the managerial strategies on the future.

Theoretical   framework: performance   in   health   institutes   and measurement of performance

Health sector gained a competitive structure in the recent years. In this process, hospitals took   serious   actions , in order   to reduce   their costs , and to increase their performance compared to their competitors (Raju and Lonial, 2002).   Due to the fact that   hospitals are complex organizations using a number of resources in presenting the various medical treatment services, establishing performance management system in hospital is more difficult compared to the other industrial branches (Chen et al. 2012).

With performance   management system, it is aimed that to help the hospitals for making plan and coordinating about what to do , to provide feedback and   feed-forward in time for the work they do and if necessary to promote   the   corrective   behaviors   (Antony and Govindarajan, 2007; cited by Conrad and Uslu, 2012).

More strict budgets and common restructuring applications led the expectations of many stakeholders   such   as patients, health employees,   and   taxpayers to rise. In this process, performance criteria became more concrete and restrictive. Today, hospitals   are   obliged   to achieve several targets. These targets can basically be put in order as providing high clinic performance, increasing   the effectiveness in restricted budgets, employing the qualified health staff, and attracting attention of patients (Minvielle et al., 2008). The   targets can also be determined as presenting a better service   in education and research, beside full treatment, care, and rehabilitation, in related to the traditional hospital function. (Tengilimoğlu and Toygar, 2013).

Performance   in   health   sector   must   be   perceived   as   a multidimensional phenomenon.   Financial perspective is only one of these

dimensions. Performance should also be evaluated in the context of effectiveness, efficiency, and equality criteria. While the concept of effectiveness expresses to rehabilitate the patients via the presentation of medical care services and the concept of efficiency expresses the use of input in the scale to produce service with the minimum cost, the concept of equality states to provide an equitable health service among humans, to eliminate the distinctions in reaching the health (Begley et al., 2004).

Potential areas, which can measure the performances in health services, can be defined as on the following (Metler and Rohner, 2009):

- Financial power of health services: income optimization, efficiency increase, waste and cost control, activity based costing
- Health services operations: Common management and measurement, cooperation opportunities, rapidity and flexibility development, business capital, and asset management.
- Developing the health employees: experience measurement, liability analysis, precautions of learning and growing, innovation, knowledge, analysis of cultural and intangible values
- Patient service and satisfaction: patient experience, participation, happiness, measurement of liability and relationship,
- Marketing of health services: branding, management of credibility and reliability, segmentation of patient –customer, patient profitability, and patient's survival value.

When the different applications are examined, it is seen that the financial performance criteria among performance measurement areas, include the points such as hospitalization days of patient, business capital, and cost of patient care hours. Among the measures of patient satisfaction, the outputs of health care as well as care in department care in house, and support care services take place. In measuring the clinical applications and outputs, access to coronary angiography, repeated applications due to acute myocardial infarction, complications, rate of one-day surgery, and application after hysterectomy are handled.   As performance criteria showing the systemic integrity, the points such as clinical information technologies, clinical data collection, intensity of using information, continuity and coordination of health care services, the other services out of hospital, and cooperation ability with the other service presenter and agencies are evaluated (Aydın et al., 2007).

In public institutes, it is more difficult to define and measure the performance, because expectations of stakeholders are heterogeneous. Despite all of these difficulties, in hospitals, especially measuring financial performance and providing the sufficient capacity is important,

because financial   capacity   is a precondition   for   the   care   of patient (Macinatia and Pessinaa, 2014).

With moving from this importance, in this study, calculated financial ratios which are related to Selcuk University Medical Faculty Hospital and operational data on hospital capacity were interpreted in integrated way.

Methodology
Study Method and Sample

The universe of study consists of all hospitals taking place in Turkey. At the same time, Selcuk University Medical Faculty Hospital is the sample area of study. The data of Selcuk University Medical Faculty Hospital were basically examined by means of the method of ratio analysis. Method of ratio analysis, in literature, is a frequently   preferred method to measure the financial performance. In this scope, data were subjected to analysis by calculating some financial, non-financial, and operational ratios.

Selcuk University Medical Faculty Hospital is a hospital basically having the medical and administrative departments. In the hospital, health services are carried out with 10 scientific branches under Basic Medical Sciences, 19 scientific branches under Internal Medical Sciences, and 13 scientific branches under Surgical Medical Sciences. In addition, for carrying out   the health services provided   in a way of   problem-free and high quality,   in hospital, 17 administrative units   have been   continuing their activities. Education Unit, Statistics Unit, and Public Relations Unit being in active   in administrative part of hospital,   with their activities, emphasize   that   presenting a   high quality service   and enabling   this service to last with the continuous improvements are extremely important for   the managers.

The financial data of hospital are the ones obtained from accounting the records such as income-expenditure table. In this study, by using the data obtained   from   accounting   records,   13 financial   ratios were calculated   such   as Working Assets, Short Termed Foreign Resources, Current Rate, Acid Test Ratio, Cash Rate, Borrowing Rate, Financing Rate, Stock Turnover, Net Operating Capital (NOC) Turnover, Asset Turnover, Debt/Income Ratio, and Short Termed Foreign Resources Income Rate. On the other hand, operational data are the ones that will be qualified as input and output for hospitals. In this study, 9 medical statistical data such as Number of Bed In Hospital, Number of Outpatient,   Number of Inpatient, Number of Surgery, Number of Discharged Patient,   Number of Hospitalization Day, Average Hospitalization Time, Bed Occupancy Rate, and Bed Turnover were Analyzed.
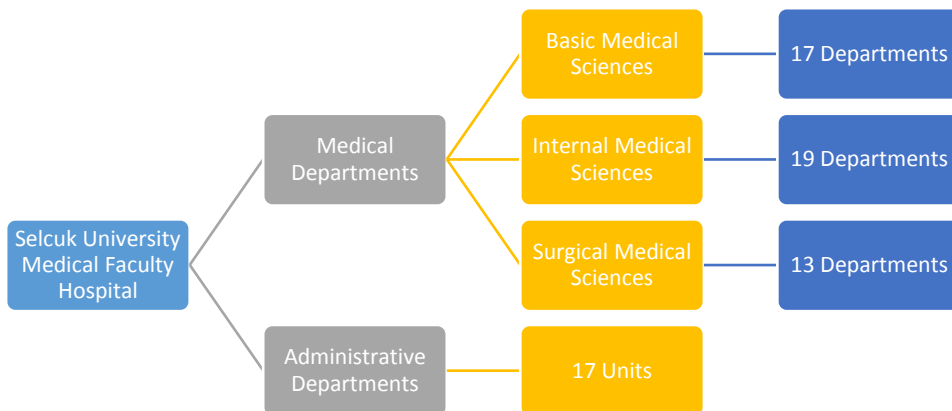
Figure 1: System Structure of Selcuk University Medical Faculty Hospital

Findings
Ratio Analysis and Its Results

According   to   the balance sheet and the income table of Selcuk University Medical Faculty Hospital, some financial   ratios and calculated via ratio analysis, are shown in Table 1.

Table 1: Ratio Analysis of S.U. Medical Faculty Hospital

Financial Ratios	Formula	General Rare	S.U. Medical Faculty Hospital,	
			2012	2013
DV_t	$(DV_t-DV_{t-1}) / DV_{t-1}$		69%	-6,48%
$KVYK_t$	$\dfrac{(KVYK_t-KVYK_{t-1})}{KVYK_{t-1}}$		46%	45,10%
Current Rate	DV / KVYK	≥ 2	0,75	0,44
Acid Test Ratio	(DV-Stocks) / KVYK	≥ 1	0,51	0,31
Cash Rate (NİŞ)	(HD+MK) / KVYK	$\geq 0,20$	0,01	0,0002
Borrowing Rate (Leverage)	$\dfrac{(KVYK+UVYK)}{Asset}$	0,50-0,60	1,31	1,48
Financing Rate	Equity / Debts	≥ 1	0	-0,24
Stock Turnover	$\dfrac{Cost\ of\ Sales}{(Stock_{t-1}+Stock_t)/2}$		It cannot be calculated due to lack of data	10,65
Receivable Turnover	$\dfrac{Net\ Sales}{Receivables}$		2,75	5,99
NOC Turnover rate	$\dfrac{Net\ Sale}{DV-KVYK}$		2,75	-3,31
Asset Turnover	Net Sale / Asset		3,63	4,12
Rate of Debt/Income			33%	46%
KVYK/Income Rate			39%	51%

According to Table 1, it is seen that the increase rate of working assets (cash + bank /+ receivable + stocks) of the year 2013 is decreased from the level of 69% to the level of -6,48% compared to the previous year. In spite of this, in the increase rate of   short termed foreign resources, between the relevant years, from the level of 46% to the level of 45.10, a regression actualized. It can be expressed that that regression not arising from   the commercial borrowing   in working assets resulted from the decreasing remainder in the other accounts.

When the delaying receivables in the middle term are considered, the realization of the share of hospital beds in the assets above the generally acceptable values as 1.48, will be able to also make effect in the negative direction on the ability to pay of the hospital its debts.

The stock turnover's speed is becomes important in terms of that it indicates at what rapidity   the business sold the service it produced. Also with NOC Turnover, in the sense of the ability of the most fundamental assets such as cash, stocks, and receivables   to be able to return to the service sale (efficiency in   some meaning),   the   consistent and valid evaluations based on the numbers   can be made. The decrease of rate in 2013 shows that the hospital should be focused on the issues of net operating capital and incomes of service sale.

That receivable turnover rises from the level of 2.75, the rate of the previous rate, to the level of 5.99 in 2013 can be evaluated as positive from the point of collecting the receivables.

For   being   able   to make   the analysis   of   efficiency and profitability, it is also necessary to calculate a healthy asset value turnover. That asset value turnover turns out above 1, can be evaluated in such a way that the assets are efficiently used. The augmentation of asset rate from 3.63 in 2012 to the level of 4.12 in 2013 gives the positive signals related to the ability to reflect the   actives (assets = cash + receivable + stock) to the incomes of service sale, the studies should be continued for this rate to be as high as possible.

As seen in Table 1, the rate of debt/income (33%) ranged below   the average of the year 2012 (42%). This rate actualized in 2013 at the level of 46%. (Above the average of the year 2012 of our country). In addition, for 2012, in ordering of the size of debt/income of university hospitals, S.U. Medical Faculty Hospital takes place the 24th order among 44 medical faculty hospitals.

Analysis of Operational Data and Its Turkey-Wide Comparison

In Table 2, there are the operational   data of S.U. Medical Faculty Hospital belonging to   the years 2012 and 2013.

Table 2: Operational   Data of S.U. Medical Faculty Hospital

Operational Data	Selcuk University Medical Faculty Hospital				2012				2013			
	2012	2013	2014[(i)]	2012-2013 Variation Rates (%)	Overall Turkey	Central Anatolia	University Hospitals	2011-2012 Turkey Variation Rate (%)	Overall Turkey	Central Anatolia	University Hospitals	2012-2013 Turkey Variation Rate (%)
Number of bed in the hospital	903	748	748	-17,17	200.072		35.150	2,86	202.031	2.521	36.056	0,98
Number of Outpatient	415.660	500.940	393.813	20,52								
Number of Inpatient	34.023	39.670	29.315	16,6	11.978.827	722.997	1.601.878	4,74	12.373.557	708.637	1.630.464	3,30
Number of Surgery	19.639	22.892	16.268	16,56	4.410.218		664.695	4,99	4.684.237		715.889	6,21
Number of Discharged Patient	33.901	39.390	28.773	16,19								
Number of Hospitalization Day	156.488	165.005	121.717	5,44	47.510.099	1.527.220	9.846.341	5,57	48.679.990	1.518.784	9.753.138	2,46
Average Hospitalization Time	6,71	6,03	5,98	-10,13	4	4,1	6,1	2,56	3,9	3,6	6	-2,50
Bed Occupancy Rate [(ii)]	47,48	60,43	90,4	27,27	65,1	60,8	76,7	-0,76	66	63,3	74,1	1,38
Bed Turnover (Patient)[(iii)]	37,68	53,03	39,19	40,74	59,9	54,7	45,6	-1,48	61,2	66,2	45,2	2,17

(i) The data of the year 2014 is the data belonging its first 9 month (January -September)
(ii) The bed occupancy rate   was calculated by   the formula of Bed Occupancy Rate=(Number of hospitalized day*100) / (365*Number of Bed)
(iii) Bed turnover   was calculated   by the formula of Bed Turnover=Number of Inpatient / Number of Bed

According to Table 2,
- between   the years 2012-2013,   the increase   rate   of inpatient actualized at the level   20.52%;
- between   the years 2012-2013, the increase   rate of outpatient ,   at the level 16.60;
- between   the years 2012-2013, the increase   rate   of number of surgery, at the level of 16.56%;
- between   the years 2012-2013, the increase   rate   of number of discharged patient at the level of 16.19%;

- between   the   years   2012-2013,   the   increase   rate   of number of hospitalization day, at the level of 5.44%;
- between the years 2012-2013, the increase rate of bed occupancy rate , at the level of 27.27%;
- between the years 2012-2013, the increase rate of bed turnovers, at the level of 40.74%;
- between the years 2012-2013, the decrease   rate of bed number in hospital,   at the level of 17.17%; and
- between   the   years 2012-2013,   the   decrease   rate   of average hospitalization time,   at the level of 10.13 %.
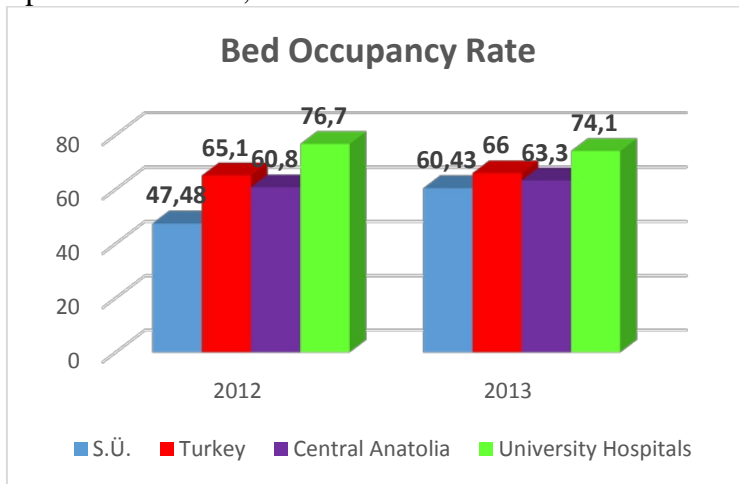

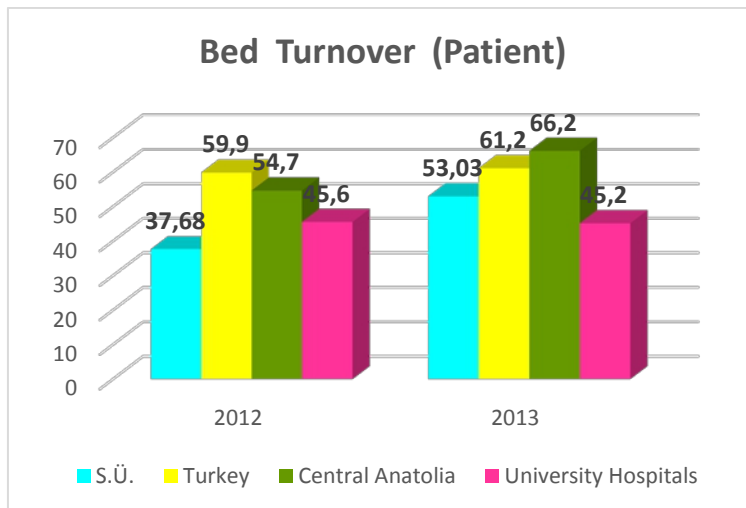Figure 2: Bed Occupancy Rates of Hospital

Figure 3: Bed Turnover of Hospital

Provided   that the operational   data   of   S.U. Medical   Faculty Hospital in Table 2, Figure 2, and Figure 3 and   their Turkey averages are comparatively examined, the following results are reached;

- In   the recent   years, in   S.U. Medical   Faculty Hospitals, the variation rate of number of inpatient and   the variation rate of number of total surgery are   higher   than the average of universities in overall Turkey. This, in respect with these years, can be the indicator of that the prefer ability of the hospital about inpatient   treatment increases . In addition, in   Turkey-wide university hospitals,   while   the   variation rate   of inpatient decreases, in Selcuk University, this rate increases.
- Average hospitalization time of S.U. Medical Faculty Hospital is higher than Turkey-wide and average of university hospitals. But, in specific to hospital, in respect with the years, for inpatients, decrease of average hospitalization time   can be an indicator of the shortness of treatment times, and improvement of treatment possibilities and treatment quality.
- Bed Occupancy Rates of S.U. Medical Faculty Hospital are lower than the   average of Turkey University Hospitals and that   of Central Anatolian Hospitals.
- Bed Turnover of S.U. Medical Faculty Hospital are lower than the average of Turkey , University Hospitals and Central Anatolian Hospitals

Table 3: Data of Academic Staff Number on S.U. Medical Faculty Hospital*

	2012	2013	2014**	2013 Vertical Analysis (%)	2014 Vertical Analysis (%)	2012-2013 Variation Rates (%)	2013-2014 Variation Rates (%)
Prof.	37	45	48	12,36	12,60	21,62	6,67
Assoc. Dr.	26	37	39	10,16	10,24	42,31	5,41
Asst. Prof. Dr.	58	54	55	14,84	14,44	-6,90	1,85
Specialist	7	17	22	4,67	5,77	142,86	29,41
Research Asst.	173	211	217	57,97	56,96	21,97	2,84
Total	301	364	381	100	100		

*For the year 2012, Health Ministry University Hospitals;: Number of specialist: 13, 544; Number of General Practitioner : 215; Number of Asst. Physician: 13,238 and for 2013,   University Hospitals: Number of Specialist: 14,.911; Number of General Practitioner :222; Number of Asst. Physician: 13,179

**The data of Year 2014 are the data belonging to the first nine month of the year

Table 3 includes the data analysis, regarding the numbers of academic staff of S.U. Medical Faculty Hospital. There is a balanced rate according to the results of analysis, in   the distribution of academic member of the hospital. In addition, as   can   be seen   from the results of commercial analysis, it can be said that the hospital has a young and dynamic physician infrastructure. This infrastructure   shows   that   the presence   of health service   providers researching,   learning, and implementing the latest technologies in the world. The data of academic staff indicates that Selcuk   University Medical School Hospital has a structure being innovative and open to change, giving importance to the research and development,   and trying to increase   the patient satisfaction as well as service quality for the health of society in the health sector .

Conclusion and discussion

When the results of ratio analysis are evaluated in integrated way, the following points   should   be considered:

- According to the data of the hospital belonging to the years of 2012-2013, it   was observed   that the bed occupancy rate increased in the rate of 27.27 %, in return to the decrease in the rate of 17.17% in the number of actual bed . This situation shows   that the hospital should go toward increasing capacity. On the other hand, the decrease in the number of bed in the hospital can also be accepted as an indicator of that the hospital will go toward specialization in time.
- The medical statistical data of hospital, cash –to-cash cycle of   the hospital should be evaluated, considering   that   the numbers of income, expenditures etc.
- The increase in the data of the hospital such as inpatient, outpatient etc. should be examined in detail in the context of income, expenditure,   and budgetary items. In addition, it is necessary to make assessments about balancing the decrease rate in the actual   number of bed and increase in the rate of bed occupancy.
- That the hospital, using   the young and dynamic academic infrastructure of the hospital, specializes and shapes its medical activities according to the main features of this infrastructure is suggested for a sustainable successful.

When the findings are taken into consideration which are obtained as a result of the study and main administrative process in today's health organizations, the following suggestions,   specific to S.U. Medical Faculty and for hospitals generally, can be developed.

- Especially efficiency and profitability analyses of hospitals, in the hospitals developed by World Health Organization that can make a performance assessment,   for developing quality, it is necessary to develop the criteria like performance assessment tool of hospitals (PATH) and implement institute –specific applications. However, with this way, in health institutes, it can be provided   the minimization of expenditures and maximization of utility   by   the efficiency and effectively.
- It is necessary   to   train   the relevant staff about the financial analysis and assessment, for the efficiency of financial resources and human resources, to form   a   training and quality culture related to the employees, adopted by the top management and become widespread on the basis of employee.
- Instead of traditional performance assessment, a sustainable assessment system should be established.   Therefore, the   studies should be carried out beyond the financial indicators which are taken as a base in the study, with the indicators based on multiple criteria. It is necessary to make rich the aspect of financial indicators explaining the past with the fundamentals in managerial accounting i.e. with an approach that can offer solution suggestions toward the future.

References:
Aydın, S. vd. (2007) Sağlıkta Performans Yönetimi, Performansa Dayalı Ek Ödeme Sistemi. Sağlıkta Dönüşüm Serisi 2 [Performance Management in Health, Performance Based Supplementary Payment System. Health Transformation Series 2] Sağlık Bakanlığı Yayınları, Ankara.
Begley, C.E. vd. (2004). Evaluating The Healthcare System Effectiveness, Efficiency and Equity, Third Edition, Health Administration Press, Chicago.
Chen, H.F., Hou, Y.H. ve Ray-E Chang, R.E. (2012) Application Of The Balanced Scorecard To An Academic Medical Center In Taiwan: The Effect Of Warning Systems On Improvement Of Hospital Performance, Journal of the Chinese Medical Association 75.
Conrad, L. ve Uslu, P.G. (2012). UK Health Sector Performance Management: Conflict, Crisis And Unintended Consequences, Accounting Forum 36.
Macinatia, M.S. ve Pessinaa, E.A. (2014). Management Accounting Use And Financial Performance In public Health-Care Organizations: Evidence From The Italian national Health Service. Health Policy (Article in Press).
Mettler, T. ve Rohner, P. (2009). Performance Management in Health Care: The Past, The Present, and The Future. Wirts chafts informatic Proceedings.

Minvielle, E. vd. (2008) Hospital Performance: Competing Or Shared Values? Health Policy 87.

Raju, P.S., Lonial, S.C. (2002), The Impact Of Service Quality And Marketing On Financial Performance In The Hospital Industry: An Empirical Examination, Journal Of Retailing And Consumer Services.

Tengilimoğlu, D. ve Toygar, Ş.A. (2013). Hastane Performansının Ölçümünde PATH Yöntemi [PATH Method in the Hospital Performance Measurement], Sosyal Güvenlik Dergisi, Cilt 3, Sayı 1.