

T.C.
BAŞKENT UNIVERSITY
FACULTY OF SOCIAL SCIENCES INSTITUTE
HEALTHCARE MANAGEMENT GRADUATE PROGRAM

**EFFECTS ON PHYSICIAN PERFORMANCE ON HOSPITAL
FINANCIAL PERFORMANCE**

GRADUATE THESIS

BY
Emine YALÇIN ÖZCAN

ADVISER
Prof. Dr. Şahin KAVUNCUBAŞI

ANKARA - 2009

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ACCEPTANCE AND APPROVAL

The study named as The Costs and Effects of the Premium System Based on Performance to the Hospitals and their Financial Structures prepared by Emine YALÇIN ÖZCAN has been accepted as a Master Thesis by the jury members below.

Acceptance Date: 15/07/2009

(Title of the Jury Members, Name-Surname and Institution):

Signature

Jury Member :

Jury Member :

Jury Member :

Approval

I confirmed that the signatures above belong the jury members above.

...../...../20....

Prof. Dr. Doğan TUNCER
Institute Director

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ÖZET

Performans bir amacı gerçekleştirme aşamasıdır. Performans bir grubun veya bireyin ulaştığı noktayı gösterir. Performans bir kurumun bağlı olduğu hem nitel hem nicel ölçümlerin toplamıdır. Bu nedenle, kurum birey performansından direk olarak etkilenmektedir.

Hastanelerde temel amaç sağlık hizmetlerini yüksek kalitede ve en düşük maliyette sunabilmektir. Bu nedenle, bu amaca ulaşmak için yada farklı bir deyişle yüksek kaliteyi düşük maliyetle yapabilmek için hekim performansı ve finansal performans başarılı bir şekilde sürdürmelidir.

Bu çalışmanın amacı, Sağlık Bakanlığına bağlı hastanelerde, fiziksel performans ve hekim performansı arasındaki farkı araştırmaktır. Çalışmanın diğer amacı, performans, performans değerlendirme, sağlık kurumlarında performans değerlendirme kavramlarını araştırmak ve finansal performansı tanımlayarak, nasıl ölçüldüğünü, ölçümde kullanılan ölçüm tekniklerini açıklamak. Ayrıca, hastanelerde hekim performansının önemini açıklayarak, nasıl ölçüldüğünü, ölçümde kullanılan ölçüm tekniklerini, hekim performansını değerlendirmede kullanılan kriterleri açıklayarak, nasıl performans değerlendir süreci geliştirileceğini belirtmektir.

Bu amaca ulaşmak için, Sağlık Bakanlığı Hastaneleri 2008 verileri kullanılmıştır. Hekim performansı ve finansal performansını ölçmek için Veri Zarflama Analizi (Data Envelopment Analysis) kullanılmıştır. Hekim performansı ve finansal performansın ölçerek elde edilen veriler uygun istatistiksel yöntemlerle analiz edilmiştir.

Çalışmanın sonunda, finansal göstergelerin finansal performansı etkilediği ortaya çıkmıştır. Fakat, hekim performansı ve finansal performans arasında istatistiksel olarak anlamlı bir fark bulunamamıştır.

Anahtar Kelimeler: Hekim Performansı, Hekim Performansı Performans Değerlendirme kavramlarının tanımı, Finansal Performans ve Finansal Performans Oranları.

ABSTRACT

Performance is materialization degree of an aim. Performance shows where an organization or individual reach for their aim. Performance is the total measurement that includes both qualitative and quantitative contributions to the organizations which they are connected to. Therefore, the organization is directly effected by the individual performance.

The main purpose of the hospitals is to serve for people with the highest quality but the lowest cost. Therefore; in order to reach this aim or in other word to provide the highest quality with the lowest cost, hospitals should maintain physicians performance and financial performance successfully.

The purpose of the study is to search for relationship between physician performance, and financial performance in the Ministry of Health hospitals. Other purposes of the study is to define the issue of performance and performance assessment, and performance assessment in healthcare managements, to explain what the financial performance is , how it is measured, what the measures of the financial performance are, and to explain the importance of physician performance in the hospitals, how it is measured and what the methods used in the assessment of the physician performance are, what the criteria are in the assessment of the physician performance, and to point out how to develop a performance assessment process.

In order to reach these purposes, years of 2008 of the Ministry of Health Hospitals are used in this study. Data Envelopment Analysis (DEA) was used in measuring the physician and financial performance. The data obtained by measuring the physician and financial performance of hospitals were analyzed by the appropriate statistical methods.

As a result of this study, it pointed out that the financial indicators affect the financial performance. However, there was found no meaningful relationship statistically between physician performance and financial performance.

Key Words: Physician Performance, The definition of Performance and Performance Assessment, Financial Performance, and Financial Performance Ratios.

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CHAPTER I

INTRODUCTION

Payment represents by far the most important and controversial issue in the employment relationship, and is of equal interest to the employer, employee and the government.

According to the employer, payment is important because it is a significant part of his costs, and it is increasingly important to his employees' performance and to competitiveness, and affects his ability to recruit and retain a labour force of quality. According to the employee, payment is important because it is essential to his standard of living and is a measure of the value of his services or performance. According to the government, payment is important because it affects aspects of macro-economic stability such as employment, inflation, purchasing power and socio-economic development in general (Silva, 1998).

As it is seen above, payment is very important for the citizens of a country (employee, employer and the government). It is the same important in the healthcare managements, that is why there are a lot of discussions on the payments system of the healthcare managements, and that is why new methodologies like Pay for Performance are come out.

Pay for Performance is a methodology where financial incentives are given for healthcare providers for the provision of high quality patient care. Pay for Performance has been produced to regulate the financial incentives for providing high quality care (Bunce, 2007).

Performance-based incentive payment program that creates a single statewide program, based on common standards. Incentive payments were funded by a hospital's financial guarantee that was matched by employers. A two-step incentive allocation methodology differentiates adequate and superior performance. The incentive model is

sufficiently flexible to accommodate different settings and evolving performance standards (Dolinar and Leininger, 2005).

In Turkey, a new rule with the law of 5471 was accepted in 2006. According to the new law, to increase the motivation of the employers working in the healthcare managements connected with the Ministry of the Health of Turkey, Performance Based Premium System was put into practice. (Çetin and Sağlam 2007: 57).

Related with it, in the study Financial Performance and the Measurement of Financial Performance are going to be discussed, the costs of the hospitals are going to be analyzed, and the effects of it to the healthcare managements' structures are going to be pointed out.

The ability to use a hospital's financial resources effectively and efficiently depend on good financial management and systematic analysis of the financial situation. Financial analysis helps to eliminate the probability of bankruptcy and to develop a long-range view by providing information on the financial development of the hospital across time. It also help credit value (Özgülbaş and Kısa, 2006).

CHAPTER II

PHYSICIAN PERFORMANCE

The role of human factor in healthcare managements is indispensable. Recently, the way to be successful and maintain the success is to keep the pace with the changes and have a dynamic structure. The healthcare managements that do not ignore this fact, have accepted that human factor is inevitable to be more productive. Therefore, one of the main problems the healthcare managements come to face to face is to determine the performances of the employees. In healthcare management, one of the main factors effecting the effectiveness of healthcare management directly, is physician performance. The main reason of it can be explained as in the following. The first reason is that the physician performance effects the satisfaction of patient more than anything in the healthcare managements. The second is the more the quantity of a physician's care towards his patients increase the more the average cost increase.

The aim of the study is by defining the issue of performance, and the performance assessment, to search for the importance of the performance in healthcare managements, the criteria and methods used in evaluating physician performance.

2.1. The Definition of Performance

Performance is the total measurement that includes both qualitative and quantitative contributions to the organizations which they are connected to. Therefore, the organization is directly effected by the individual performance (Bayram, 2006).

Another definition as in the following;

Performance is materialization degree of an aim. Performance shows where an organization or individual reach for their aim. So it can be said that performance is a function between what an individual should and what he has done (Argon, 2004).

2.2. Performance Assessment in Healthcare Management

Performance evaluation is a necessary and useful process because it provides annual feedback to the healthcare managements about the work effectiveness of an employee. The performance assessment should be a fair and balanced assessment of an employee's performance. Performance assessment make a manager's work easy as in the following situations; employee movement within the organization through promotion, transfer, separation, disciplines of employees when necessary, compensation and benefits, administration, employee assistance and career counseling, providing for the health and safety of employees. (Rakich, Facha, and et all, 1985).

Flood explains the aims of physician performance assessment in his article as in the following;

1. To identify personal aims to measure individual physicians' performance and practice aims to use for strategic planning,
2. To motivate physicians and to make them deal with the changes
3. To unify the group through a shared experience.

Performance assessments have a lot of advantages, some of them are as in the following;

4. It determines if individual work results are consistent with the expectations.
5. It is a systematic way of collecting information and evaluating if the employees are performing as expected and if it not so it searches the reasons of it.
6. It identifies high, and unsatisfactory performers, and searches for the reasons of the unsatisfactory performers. If it is because of lack of technical job skills or experiences or because of a management problem.
7. It provides feedback both employee and supervisor.
8. It provides information both for employees and managers.
9. It identifies potential and desirable employee movement within the organization (Rakich, Facha, and et all, 1985).

2.3. Developing a Performance Assessment Process

Developing a performance assessment process is one of the most complex and important issues in healthcare managements because through it you will make it easy to understand how the performance of a physician is, what the problems are, etc. In addition to this, doing so helps a healthcare manager to understand different physicians' attitudes towards work and it also reveals the different work styles of the physicians'. It makes the healthcare manager look from the physicians' perspectives while criticizing. It makes the healthcare managers understand the goal of a physician (C.Flood, 1998).

There are criteria in developing a successful assessment some of which are as in the following;

- Any assessment should involve well-defined and written performance standards.
- Those performance standards should include a clear job description and define what the expectations are like.
- It should have sufficient tools to give the feedback to the healthcare managers (Queen, 1995) .
- It should include external sources like surveys which measure the patients satisfaction. Those surveys may have got different types and change according to the performance criteria. Even though there may be different types of surveys, they have to express the results in a clear and understandable way (Sims and Spierer, 1994).
- Physicians' performance should be assessed from different perspectives such as; their relationships with patients and medical colleagues. The aim is to indicate the different functions of physicians (Hall and others, 1999).

2.4. Differences between the Traditional and Modern Performance Assessment in Healthcare Managements

According to the traditional performance assessment an annual review is entailed by a healthcare manager. The healthcare manager uses an assessment tool to rate individual performance in relation to a job description or other performance expectations. It is a kind of annually review. Since it is something not very objective and is not sufficient to evaluate the physicians' performance from different perspectives. It causes a lot of problems. Some of which are as in the following;

Since first-hand observations are impossible because it is almost impossible for a healthcare manager to observe a physician routinely, the healthcare managers have to rely on the second-hand information which may include a lot of residency because supervisors don't routinely observe physician-patient encounters. A supervisor would have to rely on second-hand information, which may include a number of complaints by patients or staff, which will not allow the healthcare manager to assess the physician objectively.

Another problem coming up with the traditional performance assessment is its not being specific, which does not form the basis of measuring on a physician's performance (C. Flood, 1998).

Whereas the traditional assessment approaches, in the new performance assessment approaches the continuous quality improvement is vital that makes it more reliable and effective than the traditional approaches (Macdonald A, 1996).

So performance assessment becomes a collaborative effort among the healthcare managers. It enables them to establish standards, to define goals more clearly and solve the problems that interfere with achieving those goals. As a result, since there is standardization it is more practical and reliable than the traditional assessment approaches (C. Flood, 1998).

2.5. Performance Assessment Methods in Healthcare Managements

They are a lot of different approaches to performance assessment such as; rating scale, person to person comparison, check-list and critical incident method but the most commonly used approach is rating scale method. The scale has got two sections. One of them specifies personal traits and behaviors such as attitude, dependability, and judgment. The other specifies job dimension attributes such as quantity and the quality of the work. For each scale there is a scoring mechanism using single descriptive adjectives like adequate, excellent (Rakich, Facha, and et all, 1985).

2.6. The Problems with the Performance Assessment in Healthcare Management

Even though, apparently everything seems okay with performance assessment. There are some problems. One of the main problem is that since the issues such as excellent, good, average or poor have not a stable meaning, the manager is faced with a lot of problems while completing them. Another problem the manager is faced is his assessment of an employee may be more critical than one another's ((Rakich, Facha, and et all, 1985).

2.7. The Background of the Measurement of the Physician Performance

Measuring or evaluating the physician performance has been a kind of concern of the healthcare managements. Therefore; both the private and public sector have searched for the scientific and non-scientific methods in measurement of a physician' performance. The first attempt in the physician quality movement from private organizations like Blue Cross California and Kaiser Permanente. The organizations coordinated a number of physician groups and possessed the necessary tools to collect and compare quality among the groups. Besides, there were attempts from HMO publications such as *New York Magazine's* list of " Best Doctors" and *Consumer Reports*. In addition to this, there were websites which aimed to measure the physician performance (Carter, 2004).

2.8. The Criteria in the Assessment of Physician Performance

- Tools should be developed to routinely evaluate and assist all physicians.
- The focus firstly should be on practice quality and related educational process rather than a search for bad apples.
- Physicians' performance should be assess from several dimensions including with the relationships with patients and medical colleagues to reflect the different functions of the physicians.
- The process should be conducted for medical profession.
- The data about individual physicians must be reliable (Hall, Violato, and et all, 1999).
- Measures should be meaningful and reflect he different aspects of the physicians' clinical activities.
- Measures and methodology should be transparent and valid.
- Measures should be based on national standards (Consumer- Purchaser)

CHAPTER III

THE METHODS USED IN THE MEASUREMENT OF THE PHYSICIAN PERFORMANCE

Recently, the attention for the measurement of physician performance has gotten the much importance. Therefore, there has been a huge amount of rise in the measurement of physician performance and the studies about increasing the healthcare quality. Micklitsch, in his book *Physician Performance Management: Tool for Survival and Success* explain the aim of the measurement of physician performance by saying that the physician performance is a kind of bridge between the healthcare management and the physician's individual performance. The more the physician's performance is high, the more healthcare managements reach their aim. Therefore, a lot of methods have been developed. Some of them are given below.

3.1. Assessment of Physician's Yourself

Physicians assess their own performance in the context of their duties which they are responsible for. It carries qualitative features such as;

- The quality of the service
- Patient satisfaction
- Informing the patients
- Right diagnosis and medical treatment
- The reliability of the medical registrations

Table 1 shows the physician self assessment rating scale.

Table 1. Physician Self Assessment Rating Scale (ABIM)

	Poor	Fair	Good	Very good	Excellent	Unable to evaluate
Telling your patients everything; being truthful, and frank. Not keeping things from them that they should know	1	2	3	4	5	#
Greeting your patients warmly, calling them however they want, being friendly and kind never rude	1	2	3	4	5	#
Treating your patients like they are on the same level with you never talk down to them	1	2	3	4	5	#
Let your patients telling their problems, and listen very carefully, ask thoughtful questions and do not interrupt them	1	2	3	4	5	#
Showing interest in your patients, not acting bored or ignored what they are saying	1	2	3	4	5	#
Warning your patients during the physical exam about what you are going to do and why	1	2	3	4	5	#
Discuss the options with your patients, ask their opinions and take care their answers	1	2	3	4	5	#
Encourage your patients to ask questions and answer them clearly	1	2	3	4	5	#
Explain what your patients need to know about their	1	2	3	4	5	#
Use the words that your patients can understand while explaining their problems and treatments	1	2	3	4	5	#

3.2. Assessment of Physicians' by Patients

Even though patients do not have all knowledge about the physicians and their proficiencies, they have some idea about them. So, patients assess physicians' sensitiveness, kindness, respectfulness, and how carefully they listen to them and consider. Generally, this method becomes successful in assess in the physicians' performance. To get more reliable results, less there should be 30 or more patients who assess the physician.

Table 2 shows the assessment of physicians by patients

Table 2. Assessment of Physicians by Patients

	Poor	Fair	Good	Very good	Excellent	Unable to evaluate
Discussing options with you; asking your opinion, offering choices and let you help decide what to do; asking what you think before telling you what to do.	1	2	3	4	5	#
Encouraging you to ask questions; answering them clearly; never avoiding your questions or lecturing you.	1	2	3	4	5	#
Explaining what you need to know about your problems, how and why they occurred, and what to expect next	1	2	3	4	5	#
Using words you can understand when explaining your problems and treatment; explaining any technical medical terms in plain language	1	2	3	4	5	#

3.3. Peer Review Assessment

Since performance is very important for anyone in their work and it is the case that people are accounted for their performance, there is an interest in evaluating anyone's

performance. Therefore; it is the case in healthcare managements to evaluate physicians' performance. There has come out a lot of ways to evaluate a physician's performance, one of which is to make a physician evaluate the other whose is his peer, which is called peer review assessment. That is; according to the this technique, physicians are only assessed by the other physicians who have the same proficiencies. There should be less ten physicians who are going to assess a physician. Since patients have not enough knowledge on physicians' clinical performances or adequateness, making patients evaluate physicians performance is not sufficient and reliable. Therefore; the friends of physicians are made to comment on their peers(Violate and others, 1997).

Because of the difficulties the hospitals facing, teamwork is compulsory (Kavuncubaşı, 2000). In assessment of a physician's performance by his peer can be done in three ways as it is in the following;

3.3.1. Professional Associate Rating

It is a kind of form made of a number of questions about the physicians'. It includes a scale rating fellow physicians on a range of parameters that is based on American Board International Medicine recommendations including competence, communication skills and humanistic qualities. The board uses the professional associate rating as a part of its continuous professional development program (American Board of International Medicine, 2004). The program has three parts such as; self evaluation is made of patient and peer assessment module which includes the peer ratings, patients' ratings, self ratings and a plan on quality improvement, a secure examination and verification of credentials.

3.3.2. Peer Assessment Questionnaire

It is a kind of question form that uses a rating scale including clinical competency, professional management, humanistic communication, and psychosocial management(Fidler and the others, 1999).

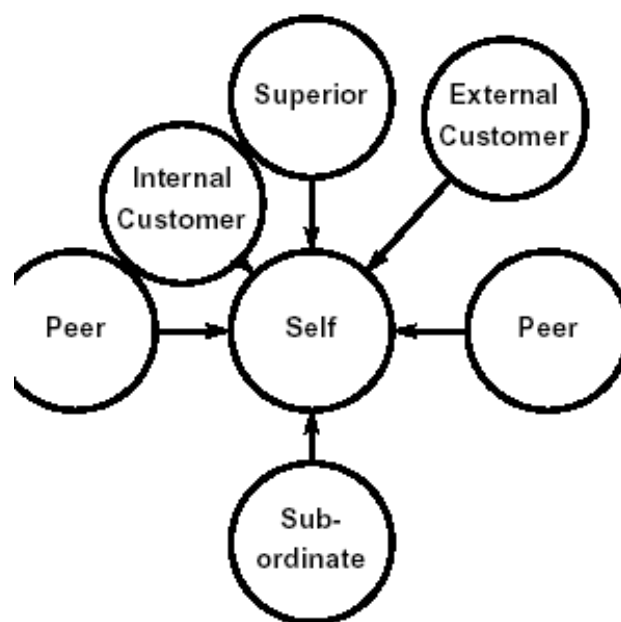
3.3.3. Peer Review Evaluation Form

This form is also a kind of scale for rating that includes technical skills like investigating, examining, and obtaining history, it also includes interpersonal skills like, empathy, compassion, and demonstrating integrity (Thomas and the others, 1999).

3.4. 360 Degree Assessment

Typically performance assessment has been limited to the feedback process between healthcare manager and physicians. However, recently team work has been more common so not only the healthcare manager's views is important while evaluating a physician performance but also the people's opinion with whom a physician is in a relationship directly or indirectly is important. It is a kind of multiple- input approach that is called 360 Degree Assessment (360 Degree Assessment: An Overview).

360 degree assessment is a powerful method for the physicians to improve, and develop their interpersonal skills. In the method, a physician is assessed by several people such as ; his/her boss, self, peer, direct reports, and customers about his/her performance. Unlike, the traditional performance assessments, it is more objective and nor one-sided (Smith). The following chart shows simply how it is done.



The circle consists of supervisors, peers, subordinates, customers, and one's itself. However it is not always necessary to have all of them because according to the organizational culture, it may be changed (360 Degree Assessment: An Overview).

Table 3 shows the details that 360degree form includes.

Table 3. 360 Degree Form

Employee: _____ Date: _____ 360° Evaluation Form
 Evaluator: _____ In what capacity do you work with this person? _____

Management Competency	Referring to ANY of the 11 competencies to the left, list 3 areas of strength and 3 areas for growth. Reference the specific competencies in your response. You may continue on additional blank sheets as necessary.
1. Inclusiveness Promotes cooperation, fairness and equity; shows respect for people and their differences; works to understand perspectives of others; demonstrates empathy; brings out the best in others	<i>3 areas of strength:</i>
2. Managing people Coaches, evaluates, develops, inspires people; sets expectations, recognizes achievements, manages conflict, aligns performance goals with university goals, provides feedback, group leadership; delegates	
3. Stewardship and managing resources Demonstrates accountability and sound judgment in managing university resources in open and effective manner, appropriate understanding of confidentiality, university values; adheres to policies, procedures, and safety guidelines	
4. Problem solving Identifies problems, involves others in seeking solutions, conducts appropriate analyses, searches for best solutions; responds quickly to new challenges	
5. Decision making Makes clear, consistent, transparent decisions; acts with integrity in all decision making; distinguishes relevant from irrelevant information and makes timely decisions	
6. Strategic planning and organizing Understands big picture and aligns priorities with broader goals, measures outcomes, uses feedback to redirect as needed, evaluates alternatives, solutions oriented, seeks alternatives and broad input; can see connections within complex issues	<i>3 areas for growth:</i>
7. Communication Connects with peers, subordinates and customers, actively listens, clearly and effectively shares information, demonstrates effective oral and written communication skills, negotiates effectively	
8. Quality improvement Strives for efficient, effective, high quality performance in self and the unit; delivers timely and accurate results; resilient when responding to situations that are not going well; takes initiative to make improvements	

<p>9. Leadership Motivates others, accepts responsibility; demonstrates high level of political acumen; develops trust and credibility; expects honest and ethical behavior of self and others</p>	
<p>10. Teamwork Encourages cooperation and collaboration; builds effective teams; works in partnership with others; is flexible</p>	
<p>11. Service focus Values the importance of delivering high quality, innovative service to internal and external clients; understands the needs of the client; customer service focus; shares accountability for results provided</p>	

3.5. Quality Performance Measures and Measurement

The methods for measurement and evaluation of quality has got three part :

Structural measures: It describes the characteristics of individual physicians, the organization and structure of the care system, and the demographics of patients

Process measures, It is the ways in which physicians, interact with patients, including the assessments, treatments, and procedures they provide

Outcome measures, It describes changes in the patient's health status, including quality of life (Sinniot and Roski, eds., 2005).

3.6. Cost -Efficiency Measures and Measurements

There are a lot of definitions of economic efficiency and all of them the ratio of outputs and inputs. Since a physician is confronted with different diagnostic and treatment options, physicians have got a big role in the cost-effectiveness of the healthcare managements.

CHAPTER IV

FINANCIAL PERFORMANCE

4.1. Financial Performance

Financial performance is an evaluation of a business' financial position, security of its investments and risk. Financial performance measures are used while evaluating the past, while giving decisions about the future investments and finance (Tuncer, 2008).

The common point in the hospitals' whose financial performance is high is that their costs being minimized, their being determined, and their high ratios in healthcare market

In the measurement of a business's financial performance, the main financial charts, financial report analyses and supplementary financial charts are analyzed. The first step in using financial charts in measuring financial performance is to organize the charts according to the analyses, the second step is to develop standards about the position of the financial position and performance of the business, and the last and third step is to give a decision on financial performance by interpreting the data (Tuncer, 2008).

Financial performance ultimately defines how well a company is performing but not necessarily why it is performing that way (Özgülbaş and Koyuncugil, 2006).

4.1.1. Financial Performance in Hospitals

Healthcare is very wide and fragmented industry that mainly relies on man power, capital, and technology (Bhat and Jain, 2006) . Therefore it is very hard to control costs and generate revenues in healthcare sector. So financial performance plays a very important role in healthcare. The primary role of finance in hospitals, as in all businesses, is to plan for, acquire, and utilize resources to maximize the efficiency and value of the enterprise.

Financial performance may be defined as in the following:

Financial performance is the financial position of enterprises and investments and risk assessment of the security. Financial performance metrics is used to evaluate the past for the future investment and financing decisions, resource use and in the evaluation of managerial performance. To understand the financial performance, a hospital's financial success should be measured. For a hospital to be considered to be successful in financial terms, production resources must be brought together in the right proportions. These resources can be explained as assets, materials, equipment, fixtures, buildings and products or services that are required for the production of production factor (Finansal Performans).

In financial performance the main issue is the surplus of the hospital's generates and profit. The reason why surplus is important for hospitals is because it remains hospitals sustainable. The profitability of hospitals can be measured in to ways; one is through the surplus of the surplus generated, and the second is through the return of capital invested (Bhat and Jain, 2006).

4.2. Financial Performance Measurement

A financial performance measurement system provides a healthcare management with a set of tools and metrics to understand its own financial situation. A healthcare manager can use financial performance measurement to make better business decision in a number of areas such as; business profitability, pricing, budgeting, cost accounting, capital purchasing, and strategic planning.

Since healthcare management is a large business, it is very important to monitor the financial position of the healthcare business. One of the main problem that healthcare managers come face to face is how to measure their financial problems. Even though there are a lot of measures to measure financial performance, what is important is a manager's awareness about what he/she is looking for exactly.

Debates are continuously going on about the financial performance of the healthcare industry. Like in any others sectors, profit is very important for the healthcare sector as well. That is, if a business wants to survive and be successful, it is crucial for it to

cover the replacement costs of its assets. It is valid for healthcare business as well. For instance; a piece of medical equipment that cost \$100,000 five years ago and now costs \$250,000. So it must be financed with an additional \$150,000. As it is seen in the example measuring financial performance of a hospital and awareness of healthcare manger's about their profits and costs is very important in terms of hospitals' performance. Otherwise if it does not recover its replacement cost, it is ultimately financing itself toward bankruptcy (Cleverly and Harvey, 1992).

4.3. Financial Performance Measures

Measuring financial performance in healthcare managements is very important in terms of hospitals' profitability and costs. Financial performance measures were used as the dependent variables to capture the operational performance of the hospital (Burke and the others, 2008).

Table 4 shows the main measures used in financial performance (“Financial Performance: How Do I Measure It?”).

Table 4. Descriptive Measures of Financial Position and Performance Financial Description

	Measure	Interpretation
Total Assets	The market value of all financial and capital resources owned by the business as reflected on the year-end balance sheet.	The size of the business' financial resources.
Total Liabilities	The value of total debt obligations at year-end as reflected on the balance sheet.	The financial claims of lenders,input, suppliers and the others on the business.
Owner's Equity	The value of the healthcare manager's financial claims on total assets as determined by subtracting total liabilities from total assets.	The healthcare manager's financial stake in the business his or her financial claim to the business.
Gross Revenues	The total value of products produced by the business on an accrual basis (i.e., whether sold for cash or held in inventory) as reflected on principal the income statement.	The income from sources available annually to cover expenses, loan payments, income taxes, expansion, etc.

Total Expenses	The total of fixed and variable expenses incurred during the year as measured by the accrual income statement.	The total costs incurred in producing the revenue this year.
Net Healthcare Income	The net income available on an accrual basis after fixed and variable expenses have been deducted.	In order to make financial progress, net income must exceed the healthcare manager's withdrawals from the business.

In fact there are a number of financial performance measures, no single measure of financial performance is adequate for evaluation of a hospital's financial performance. Instead, evaluation of several financial measures may be more useful. Therefore; the overall performance and position of the business should be evaluated based on a set of criteria that includes liquidity, solvency, profitability, financial efficiency, and repayment capacity. Each of this measures measures financial performance of hospitals' financial performance from different perspectives.

Liquidity shows the ability of the business to meet the financial obligations when the time comes. Thanks to liquidity , timely payments of debt could be managed without distributing the normal situation of the business

Solvency measures the ability of the hospitals to pay all of their debts whether the assets of the business are sold.

Profitability indicates the level of income produced by hospitals and it is measured in terms of rates of return produced by labor, management, and hospital's capital.

Financial efficiency the degree of efficiency with which labor, management, and capital are used in the business. Efficiency indicates the relationship between inputs and outputs and can be measured in physical or financial terms.

Repayment capacity measures the ability of the business to repay existing debt commitments

Each of these criteria plays an important role in the analysis of financial performance of hospitals (Love, 2009).

4.3.1 Liquidity

4.3.1.1. Definition of Liquidity

Liquidity is the ability to generate cash to meet cash demands as they occur during the year and to provide for unanticipated events such as; events producing economic losses, or new investment opportunities. For the hospitals' usual expenses such as debts, capital items, expenses, and debt payments, cash is needed (Love, 2009).

Liquidity helps healthcare managers whether they can meet their obligations over the short run or not. For instance; high liquidity levels indicate that they can meet their current obligations. There are a number of ratios to monitor liquidity (Evans,2009).

4.3.1.2. Why Measure Liquidity

The level of liquidity in a hospital is very important for hospital's investment because increased liquidity enables a hospital a lot of advantages, some of which are as in the followings;

- it enables the hospital a lot of funds available to finance hospital's investment
- it makes easier to access those funds
- it causes the costs of those funds are reduced

So the more liquid a hospital has, the more lucrative it will be. Consequently, it may be said that since liquidity enables a lot of advantages for hospitals, it is very important how to measure liquidity (Holl and Winn, 2009)

4.3.2. Liquidity Ratios

Liquidity ratio shows a hospital's ability to repay short-term debts out of its total cash. The liquidity ratio is gotten by dividing the total cash by short-term borrowings. It shows the number of times short-term liabilities are covered by cash. If the value is greater than 1.00, it means fully covered.

The formula is the following:

= cash & equivalents / creditors, short (“Liquidity Ratio”).

Common liquidity ratios include the current ratio, the quick ratio (acid test) and the cash ratio.

4.3.2.1. Current Ratio

The current ratio is a test of a hospital's financial strength. Current ratio, shows a company's ability to repay short-term debts out of its total current assets. It calculates how many dollars in assets are likely to be converted to cash within one year in order to pay debts that come due during the same year. The current ratio can be founded by dividing the total current assets by the total current liabilities. For example, if a company has \$10 million in current assets and \$5 million in current liabilities, the current ratio would be 2 ($10/5 = 2$) (“ Analyzing a Balance Sheet”).

The formula is as follows:

= (stocks + debtors + cash & equivalents + current assets, other) / creditors, short (“ Current ratio”).

Current ratio's validity varies by industry. Generally the more liquid the current assets, the smaller the current ratio can be without cause for concern. For most of the companies, 1.5 is an acceptable current ratio. As the number approaches or falls below 1 (which means the company has a negative working capital), it should be needed to take a close look at the business and make sure there are no liquidity issues. (“ Current ratio”).

The current ratio is used to evaluate liquidity through the relationship between current hospital assets and current hospital liabilities. What current ratio means can be explained as in the followings;

- The current ratio is a measure of the hospital's liquidity; it reflects its ability to cover its short-term debts.

- It is identified as a performance indicator in the Hospital Annual Planning Submissions (HAPS).
- This indicator is calculated by current assets/current liabilities
- The current ratio should be between 1.0 and 2.0, indicating that the hospital is demonstrating sound financial management.
- If the current ratio is too high, it suggests under-investment. Conversely, if it is too low, there may be financial difficulty (“ What do we mean by Current Ratio?”).

4.3.2.2. Quick Ratio (Acid Test)

Quick ratio (also known as Acid Test) shows a company's ability to repay short-term debts out of its most liquid assets. It is an indicator of a company's short-term liquidity. The quick ratio measures a company's ability to meet its short-term obligations with its most liquid assets. The higher the quick ratio, the better the position of the company (“ Quick ratio”).

The formula is as follows:

= (debtors + cash & equivalents + current assets, other) / creditors, short (“Quick ratio (Acid Test)”)

The current assets used in the quick ratio are cash, accounts receivable, and notes receivable (“ Financial Ratios”).

4.3.2.3. Cash Ratio

The cash ratio is an indication of the firm's ability to pay off its current liabilities if for some reason immediate payment were demanded. The cash ratio is the most conservative liquid ratio. This is due to the fact that inventory and accounts receivable are left out of the equation. Since these two accounts are a large part of many companies, this

ratio should not be used in determining company value, but simply as one factor in determining liquidity (“Cash Ratio”).

It only looks at the most liquid short-term assets of the company. The short-term assets are those which can be most easily used to pay off current debts. The cash ratio is seldom used in financial reporting in the fundamental analysis of a company. It is not realistic to maintain high levels of cash assets to cover current liabilities. The cash ratio is the most conservative liquidity ratio. It excludes all current assets except the most liquid: cash and cash equivalents (“Financial Ratios”).

The formula is the following:

$$= [\text{cash \& equivalents} / (\text{current assets, other} + \text{stocks} + \text{debtors} + \text{cash \& equivalents})] * 100$$

4.3.2. Solvency

Solvency ratios show the ability of an organization to pay the annual interest and principal organization obligations on its long term debt. Therefore, the company can remain solvent and avoid bankruptcy. Solvency ratios measure the ability of an organization if it has enough sources to meet its long term debts (Baker and Baker, 2006).

The formula is the following;

$$\text{Solvency Ratio} = \text{Total Assets} / \text{Total Liabilities}$$

and

$$\text{Solvency Ratio} = \text{Net Worth (Total Capital or Equity)} / \text{Total Liabilities}$$

Solvency ratios give information about an organization financing its assets and how it is able for an organization to take on new debts.

4.3.3. Profitability Ratios

It is difficult for hospitals to measure profitability because many of the dividends are difficult to measure and value (Souba and Wilmore, 2000). Furthermore, it is also difficult to evaluate and quantify performance measures such as health care outcome, quality of services, effectiveness, efficiency, and output. Previous studies have used hospital profitability as a proxy measure for managerial performance. Even when using hospital profitability in this manner, there has been no consensus as to which measures should be used, because previous studies have used several different profitability measures, it is difficult to interpret and compare the results of these analyses (Choi and Lee, 2008).

Profitability ratios are a class of financial metrics that are used to assess a business's ability to generate earnings as compared to its expenses and other relevant costs incurred during a specific period of time (“Profitability Ratios”). Profitability ratios are used to assess a business' ability to generate earnings as compared to expenses over a specified time period (Lope, 2009). Some examples of profitability ratios are profit margin, return on assets and return on equity. The purposes of profitability ratios can briefly summarized as the following;

- “Indicate the firm’s ability to generate revenues in excess of expenses
- Measure the firm’s ability to create value and show how: competitive position is translated to profit margins; efficiency produces cost advantages; profit exceeds capital charges
- Signal the firm’s ability to compensate shareholders for risk (Knight and Bertoneche, 2001).”
- To measure profitability, there are several measures explained in the followings;

4.3.3.1. Profit Margin

The profit margin measures how profitable the firm has been with respect to sales.

The formula is the following (Knight and Bertoneche, 2001).

$$\text{Profit margin} = \text{Net Income} / \text{Revenues}$$

4.3.3.2. Gross Margin

The gross margin reflects the firm's pricing policy and shows profit margin on sales over and above the direct cost .

The formula is the following (Knight and Bertoneche, 2001).

$$\text{Gross margin} = \text{Gross margin} / \text{Revenues}$$

4.3.3.3. Return on Assets (ROA)

Return on assets helps companies to examine both the level of and the trend in the company's operating profits as a percentage of total assets .

The formula is the following (Knight and Bertoneche, 2001).

$$\text{Return on assets (ROA)} = \text{earnings before interest after tax (EBIAT)} / \text{Total assets.}$$

4.3.3.4. Return on Investment (ROI)

Return on investment (ROI) is S used to evaluate the efficiency of an investment or to compare the efficiency of a number of different investments

The formula is the following ;

$$\text{Return on investment} = \text{Net income} / \text{Total assets}$$

4.3.3.5. Cash Flow Return on Assets (RonA)

The Cash Return on Assets measures the Cash Flow from Operating Activities in relation to Total Assets. Cash Return on Assets basically shows how well (or how poorly) the company is generating cash from its asset investments. Similar to Return on Total Assets, the company hopes to generate as much revenue as possible from its assets (“Cash Return on Assets”).

The formula is the following ;

$$\text{Cash Return on Assets} = \text{Cash Flow from Operating Activities} / \text{Total Assets}$$

4.3.3.6. Return on Equity (ROE)

Return on equity measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested (“Return on equity”).

The formula is the following ;

$$\text{Return on equity(ROE)} = \text{Net income} / \text{Shareholder's Equity}$$

Table 5 shows some of the profitability measures (Choi and Lee, 2008).

Table 5. Profitability Measures

Measure	Name	Definition
Pretax return on assets	PROA	Operating revenues (operating expenses)/total assets 100
After-tax return on assets	AROA	Net profit/total assets 100
Basic earning power	BEP	Net profit/equity 100
Pretax operating margin	POM	(Operating revenues operating expenses)/operating revenues 100
Pretax operating margin	AOM	Net profit/operating revenues 100

According to the some studies, the hospitals' profitability is affected by four main factors which are organizational, financial, operational, and market factors. Those factors are measured in different ways. For instance; organizational factors are measured by ownership, teaching status, hospital size, and years in operation. Financial factors are measured by the debt ratio, current ratio, fixed ratio, total assets turnover, and inventories turnover. The operational factors are measured by the average length of stay, bed occupancy rate, daily adjusted inpatient days per specialist, average charge per adjusted inpatient day, labor expenses per adjusted inpatient day, and administrative expenses per adjusted inpatient day. Finally, market factors are measured by location of hospital, outpatient admissions, and new outpatient visits. Table 2 shows the factors affecting profitability (Choi and Lee, 2008).

Table 6. Profitability Factors

Factors	Variables	Name	Definition
Organizational factors	Ownership Teaching Hospital's Size	OWN TEACH SIZE PERI	Not-for-profit hospitals = 0, for-profit hospitals = 1 Teaching hospitals = 0, others = 1 Operating beds Fiscal years year of establishment
Financial factors	Debt Ratio Current Ratio Fixed Ratio Total assets turnover Inventories turnover	DEBT CURT FIXED ATURN ITURN	Total liabilities/total assets 100 Current assets / current liabilities 100 Fixed assets/equity 100 Gross operating revenues/total assets (times) Gross operating revenues/inventories (times)
Operational factors	Average length of stay Bed occupancy rate Daily adjusted inpatient days per specialty doctor Average charge per adjusted inpatient day Labor expenses per adjusted inpatient day Administrative expenses per adjusted inpatient day	STAY OCCU SPEC CHAR PCOST ACOST	Total length of stay/total inpatient days Daily average inpatients/average operating beds 100 (adjusted number of patients/365)/ number of specialty doctors (Inpatient revenue + outpatient revenue)/ adjusted number of patients Salaries / adjusted inpatient days (1,000 won) Administrative expenses/adjusted inpatient days (1,000 won)
Market factors	Location Hospital competition Admissions of outpatients New outpatient visits	LOCA COM AOUT NOUT	Metropolitans (0), others = 1 Herfindahl index Inpatients/total outpatient visits 100 total number of inpatients/total outpatient visits 100 Total number of initial outpatient visits/ total outpatient visits 100

4.3.4. Financial Efficiency Ratios

Financial efficiency ratios are used for assessing how effectively capital is employed with the firm. The main point is more the scale of business generated off the capital than the profitability directly (Knight and Bertoneche, 2001).

4.3.4.1. Asset Turnover

The asset turnover ratio's aim is to calculate a business's efficiency. It measures how effectively the assets are being worked to generate business as reflected in revenues (Knight and Bertoneche, 2001).

The formula is the following ;

$$\text{Asset turnover} = \text{Revenues} / \text{Total assets}$$

4.3.4.2. Day's Sales in Receivables (DSR)

Day's sales in receivables make a comparison between the receivables and sales. The aim in doing so is to estimate efficiently payments are received from customers. The lower the 'day's sales in receivables' the faster cash is collected and the lower the receivables are relative to sales. It can be calculated in two different ways (Knight and Bertoneche, 2001).

First, calculate the average revenues per day by dividing revenues by 365.

$$\text{Average revenues per day} = \text{Revenues} / 365$$

Second, divide receivables by average revenue per day. As a result you get an estimate of the average length of time each customer takes to pay, which reflects the efficiency of managing an important component of working capital.

$$\text{Day's sales in receivables} = \text{Trade receivables} / \text{Average revenues per day}$$

4.3.4.3. Inventory Days

The day's inventory ratio is an important check on the effectiveness of inventory management. It measures the average number of day's capital tied up in inventory. Just like DSR, it can be calculated in two different ways (Knight and Bertoneche, 2001).

First, calculate the average cost of sales per day by dividing cost of sales by 365

Average cost of sales per day = Cost of sales /365

Second, divide inventory by the average cost of sales per day. The result is an estimate of the average length of time that capital is tied up in inventory. This reflects management effectiveness in managing working capital.

Inventory days = Inventories / Average cost of sales per day

4.3.5. Repayment Capacity

Repayment capacity measures the ability of the business to repay existing debt commitments

CHAPTER V

MATERIALS AND METHODS

5.1. The Purpose of the Study

The purpose of the study is to search how physician performance and financial performance and to make out how they effect hospitals' effectiveness and financial structure. In the light of this, the following issues are going to be discussed.

- Definition of performance
- Performance evaluation
- Physician performance
- Physician's measurement methods
- Financial performance
- Financial Ratios
- Analysis of 529 hospitals' data

5.2. The Problem Sentence of the Study

The problem sentence of the study is if there a relationship between the physician performance and financial performance of the hospitals. In other word, if physician performance affects the financial performance of the hospitals.

5.3. The Universe and Sample of the Study

The Ministry Hospitals which have revolving funds were generated the universe of the study. In the study sample was not used. However all the hospitals whose data were appropriate for the analyze were included in the research.

In the light of this, 429 hospitals serving in the year of 2008 were included in the study, but the study was implemented in 328 hospitals whose search data were appropriate for the analyze.

5.4. Hypothesis

To testify the problem sentence of the study, the developed hypothesis is put in an order in the following.

- There is a meaningful relationship between physician performance and financial performance in the hospitals having revolving funds.
- There is a meaningful relationship between the physician performance and financial performance indicators in the hospitals having revolving funds.
- There is a meaningful relationship between financial performance and financial performance indicators in the hospitals having revolving funds.

5.5. Tools in Data Gathering

The data used for measuring physician performance were gotten from the General Directorate of the Ministry of Health Treatment Services.

To measure the financial performance of the hospitals, financial statement and income statement were needed. Therefore, in order to put financial statement and income statement in an order according to the rules of Turkish Accounting Standards, the needed data were taken from the Directorate of Ministry of Health Development Strategy.

5.6. The Analysis of Data

In the study, to measure the hospital performance which reflects the physician performance, Data Envelopment Analysis (DEA) was used. However, in order to measure

financial performance, Hospital Viability Index was used.

5.6.1. Data Envelopment Analysis (DEA)

Data Envelopment Analysis (DEA) is a relatively new “data oriented” approach for evaluating the performance of a set of peer entities called Decision Making Units (DMUs) which convert multiple inputs into multiple outputs. The definition of a DMU is generic and flexible. Recent years have seen a great variety of applications of DEA for use in evaluating the performances of many different kinds of entities engaged in many different activities in many different contexts in many different countries. These DEA applications have used DMUs of various forms to evaluate the performance of entities, such as hospitals. Because it requires very few assumptions, DEA has also opened up possibilities for use in cases which have been resistant to other approaches because of the complex (often unknown) nature of the relations between the multiple inputs and multiple outputs involved in DMUs. (Cooper, Lawrence, and Zhu, 1990).

Data envelopment analysis derives from the world of engineering and regression analysis from statistics. Thus, DEA does not account for measurement error, as do the parametric methods. As a deterministic/optimization approach, however, DEA is unique in its ability to compute efficiency scores based on the relationships between multiple inputs and outputs. It draws its strength from optimization and thus provides an ideal solution for assessing performance of complex organizations (such as clusters) and creating benchmarks. (Sexton, 1982).

5.6.1.1. Ratio Form of DEA

In this form the ratio of outputs to inputs is used to measure the relative efficiency of the DMU $j = DMU_o$ to be evaluated relative to the ratios of all of the $j = 1, 2, \dots, n$ DMU j . It can be interpreted as the reduction of the multiple-output /multiple-input situation (for each DMU) to that of a single ‘virtual’ output and ‘virtual’ input. For a particular DMU the ratio of this single virtual output to single virtual input provides a measure of efficiency that is a function of the multipliers.

5.6.2. Hospital Viability Index

Hospital Viability Index (HVI) developed by Carruana and Kudder was used to measure financial performance of the hospitals. HVI is an index, which provides realistic assessment for financial performance on basis of all aspects of financial performance, which reflects whole financial state of a hospital, instead of using every financial ratio separately to measure financial performance of a hospital. As it can be seen from the Table 1, HVI is an index which comprises Capital Structure Ratio (CSR), Operation Ratio (OR) and Current Ratio (CR) (L. Narine et al., 1996).

$$\text{HVI} = [4(\text{CSR}) * (\text{OR})^4] / \text{CR}$$

CHAPTER VI

EVIDENCES AND DISCUSSIONS

The evidence part of the study is generated by three parts. The first part consists the evidences about the relationship between physician performance and financial performance. The second part consists the evidences about if the financial indicators affects financial performance. The last part consists the evidence about the relationship between the financial indicators and physician performance.

Table 7. Hospital Performance According to the Physician Performance

Physician Performance	Number	%
Efficient	35	10.67
Inefficient	293	89.32
Total	328	100

¹

10.67% (35 Hospitals) of the hospitals were efficient, whereas 89.32 % (293 Hospitals) of the hospitals were inefficient in terms of physician performance

¹ The percentage of lines.

Table 8. Dispersal of the Hospitals According to Financial Performance

Financial Performance	Number	%
Low	208	63.41
High	120	36.58
Total	328	100

63.41 % (208 Hospitals) of the hospitals have low financial performance, whereas 36.58 % (120 Hospitals) of the hospitals have high financial performance.

6.1. The Relationship between Physician Performance and Financial Performance

Table 9. The Relationship between Physician Performance and Financial Performance

PERFORMANCE CIRCUMSTANCE		FINANCIAL PERFORMANCE				
		LOW		HIGH		TOTAL
PHYSICIAN PERFORMANCE		Number	%	Number	%	
	Inefficient	186	63,48	107	36,52	293
	Efficient	22	62,85	13	37,15	35
	TOTAL	208	63,41	120	36,58	328

The relationship between the physician performance and financial performance in 2008 of the hospitals within the scope of research are given in table 9. When the table is analyzed, it is obviously seen that 63.48 % (186 hospitals) of the hospitals have the low financial performance and were also inefficient. 62.85% (22) of hospitals were efficient

but have low financial performance. 36, 52 % (107 hospitals) of the hospitals were inefficient but high financial performance. 37.15 % (13 hospitals) were efficient and high financial performance.

In table 9. the relationship between physician performance and financial performance in 2008 of the hospitals within the scope of research was analyzed by using T-Test. A meaningful relationship between physician performance and financial performance was not found statistically. Physician performance does not affect the hospitals' financial performance. As a consequence, the first hypothesis was not supported with the results of the analyses.

6.2 The effects of Financial Indicators on Financial Performance

Table 10. The effects of Financial Indicators on Financial Performance

si	low financial performance			high financial performance			t	sig.
	N	Mean	Std. Deviation	N	Mean	Std. Deviation		
Liquidity Ratio	209	0,39	0,54	120	0,09	0,17	5,916	p<0,05
Short Term Recievables+ Other!	209	0,70	0,11	120	0,68	0,12	1,953	p<0,05
Leverage Ra)	209	0,23	0,09	120	0,47	0,17	-16,671	p<0,05
Asit-Test Ratio	209	3,23	1,47	120	1,36	0,84	12,801	p<0,05
Gross Sales Profit / Net Sales	209	0,52	0,08	120	0,40	0,14	10,369	p<0,05
Current Ratio	209	4,08	1,65	120	1,86	0,94	13,502	p<0,05
Current Assets / Total Assets	204	0,80	0,10	117	0,77	0,15	2,763	p<0,05
Fixed Assets / (short-term trade	204	1,02	0,77	117	0,60	0,56	5,209	p<0,05
Fixed Assets / equities	204	0,26	0,14	117	0,29	1,62	-0,276	p>0,05
Operating Expenses / Net Sales	209	0,41	0,04	120	0,40	0,04	0,174	p>0,05
Operating Profit / Net Sales Am	209	0,11	0,07	120	-0,01	0,14	10,269	p<0,05
Tangible Fixed Assets / Equities	204	0,24	0,14	117	0,27	1,61	-0,237	p>0,05
Maddi Duran Varlıklar (Net) / Va	204	0,18	0,10	117	0,22	0,15	-2,795	p<0,05
Tangible Fixed Assets / Total As	209	0,00	0,23	120	-0,17	0,27	6,008	p<0,05
Net Profit / Net Sales	209	0,01	0,10	120	-0,08	0,18	5,579	p<0,05
Net sales / (Current Assets / Shc	204	4,19	4,26	117	7,18	14,35	-2,779	p<0,05
Net Sales / (Short Term Receival	204	3,86	0,91	117	4,69	1,92	-5,245	p<0,05
Net Sales / Current Assets (Wo	204	-0,02	0,28	117	-0,29	0,43	6,768	p<0,05
Net Sales / Fixed Assets (Fixed	205	13,95	37,12	117	15,95	35,24	-0,475	p>0,05
Equities / Total Assets	209	0,77	0,09	120	0,53	0,17	16,671	p<0,05
Cost of Sales / Net Sales	209	0,48	0,08	120	0,60	0,14	-10,369	p<0,05

In table 10, the occasion of effects of financial indicators' affects on financial performance was analyzed. In the analyze of the effects of financial indicators on financial performance, Student T Test was applied to find the related variables between the hospitals with low and high financial performance. As a result of the test, as it is seen clearly on the table that all variables affect the financial performance.

The cash ratio is 0.09 in the hospitals with high financial performance, whereas it is 0.39 in the hospitals with low financial performance. The ratio of short-term trade receivables and other short-term receivables to current assets is 0.68 in the hospitals with high financial performance, whereas it is 0.70 in the hospitals with low financial performance. The leverage ratio is 0.47 in the hospitals with high financial performance, whereas it is 0.23 in the hospitals with low financial performance. The assist test ratio is 1,36 in the hospitals with high financial performance, whereas it is 3.23 in the hospitals with low financial performance. The gross profit margin is 0.40 in the hospitals with high financial performance, whereas it is 0.52 in the hospitals with low financial performance. The current ratio is 1.86 in the hospitals with high financial performance, whereas it is 4.08 in the hospitals with low financial performance. The ratio of current assets to total assets is 0.77 in the hospitals with high financial performance, whereas it is 0.80 in the hospitals with low financial performance. The ratio of fixed assets to permanent capital is 0,60 in the hospitals with high financial performance, whereas it is 1.02 in the hospitals with low financial performance. The ratio of fixed assets to equity capital is 0.29 in the hospitals with high financial performance, whereas it is 0.26 in the hospitals with low financial performance. The ratio of operating expenses to net sales is 0.40 in the hospitals with high financial performance, whereas it is 0.41 in the hospitals with low financial performance. The ratio of operating profit to net sales amount is -0.01 in the hospitals with high financial performance, whereas it is 0.11 in the hospitals with low financial performance. The ratio of tangible fixed assets to equity capital is 0.27 in the hospitals with high financial performance, whereas it is 0.24 in the hospitals with low financial performance. The ratio of tangible fixed assets to total assets is 0.22 in the hospitals with high financial performance, whereas it is 0.18 in the hospitals with low financial performance. The ratio of net profit to total assets is -0.17 in the hospitals with high financial performance, whereas it is 0.00 in the hospitals with low financial performance. the ratio of net profit to net sales -0.08 in the hospitals with high financial performance,

whereas it is 0.01 in the hospitals with low financial performance. The ratio of net working capital turnover is 7.18 in the hospitals with high financial performance, whereas it is 4.19 in the hospitals with low financial performance. The ratio of receivables to current assets is 4.69 in the hospitals with high financial performance, whereas it is 3.86 in the hospitals with low financial performance. The ratio of working capital turnover – 0.29 in the hospitals with high financial performance, whereas it is -0.02 in the hospitals with low financial performance. The ratio of tangible fixed assets turnover is 15.95 in the hospitals with high financial performance, whereas it is 13.95 in the hospitals with low financial performance. The ratio of equity capital to total assets is 0.53 in the hospitals with high financial performance, whereas it is 0.77 in the hospitals with low financial performance. The ratio of cost of sales to net sales 0.60 in the hospitals with high financial performance, whereas it is 0.48 in the hospitals with low financial performance. As a consequence, the third hypothesis was supported with the results of the analyses.

6.3 The relationship between Financial Indicators and Physician Performance

Table 11. The relationship between Financial Indicators and Physician Performance

	Inefficient hospitals			efficient hospitals			t	
	N	Mean	Std. Deviation	N	Mean	Std. Deviation		
Current Assets/ Current Liabilities (Current Ratio)	293	3,21	1,75	35	3,74	2,06	-0,07	P>0,05
Cash+Marketable Sec.+ Acc. Rec./ Current Liab.Liquidity Ratio)	293	0,28	0,48	35	0,29	0,39	-0,50	P>0,05
(short-term trade receivables+ Long term foreign liabilities) / Total Assets	293	0,69	0,11	35	0,70	0,10	0,94	P>0,05
(Short term foreign liabilities+ Long term foreign liabilities)/ Total Assets (Leverage Ratio)	293	0,32	0,17	35	0,29	0,16	-1,54	P>0,05
[Current Assets / Short term foreign liabilities (Asit-Test Ratio)	293	2,50	1,53	35	2,94	1,77	-0,51	P>0,05
Gross Sales Profit / Net Sales	293	0,47	0,12	35	0,48	0,13	-1,65	P>0,05
Current Assets / Total Assets	285	0,79	0,12	35	0,82	0,15	-1,52	P>0,05

Fixed Assets / (short-term trade liabilities + Long term foreign liabilities)	285	0,86	0,70	35	0,89	0,92	-0,25	P>0,05
Fixed Assets / equities	285	0,27	1,04	35	0,27	0,28	0,00	P>0,05
Operating Expenses / Net Sales	293	0,40	0,04	35	0,41	0,05	-0,66	P>0,05
Operating Profit / Net Sales Amount	293	0,07	0,12	35	0,07	0,13	-0,27	P>0,05
Tangible Fixed Assets / Equities	285	0,25	1,03	35	0,24	0,29	0,05	P>0,05
Tangible Fixed Assets / Total Assets	285	0,20	0,12	35	0,16	0,15	1,80	P>0,05
Net Profit / Total Assets	293	-0,06	0,24	35	-0,06	0,34	-0,04	P>0,05
Net Profit / Net Sales	293	-0,03	0,14	35	-0,01	0,13	-0,62	P>0,05
Net sales / (Current Assets / Short term foreign liabilities (Net Working Capital Turnover)	285	5,16	9,59	35	6,26	7,87	-0,65	P>0,05
Net Sales / (Short Term Receivables + Long Term Trade Receivables) (receivables turnover)	285	4,17	1,46	35	4,04	1,05	0,51	P>0,05
Net Sales / Current Assets (Working capital Turnover)	285	-0,12	0,36	35	-0,10	0,39	-0,26	P>0,05
Net Sales / Tangible Fixed Assets (Fixed Assets Turnover Rate)	286	14,66	38,43	35	14,96	11,38	-0,05	P>0,05
Equities / Total Assets	293	0,68	0,17	35	0,71	0,16	-0,94	P>0,05
Cost of Sales / Net Sales	293	0,53	0,12	35	0,52	0,13	0,51	P>0,05

In table 11. The relationship between financial indicators and physician performance were analyzed. In the analyze of the effects of financial indicators on physician performance, Student T test was applied. As a result of the test, as it is seen clearly in the table , there is no statistically relationship between variables.

The current ratio is 3.74 in the hospitals with high physician performance, whereas it is 3. 21 in the hospitals with low physician performance. The assist test ratio is 2.94 in the hospitals with high physician performance, whereas it is 2.50 in the hospitals with low physician performance. The cash ratio is 0.29 in the hospitals with high physician performance, whereas it is 0.28 in the hospitals with low physician performance. The ratio of receivables to current assets is 0.70 in the hospitals with high physician performance, whereas it is 0.69 in the hospitals with low physician performance. The ratio of current

assets to total assets is 0.82 in the hospitals with high physician performance, whereas it is 0.79 in the hospitals with low physician performance. The ratio of tangible fixed assets to total assets is 0.16 in the hospitals with high physician performance, whereas it is 0.20 in the hospitals with low physician performance. The ratio of net working capital turnover is 6.26 in the hospitals with high physician performance, whereas it is 5.16 in the hospitals with low physician performance. The ratio of working capital turnover is -0.10 in the hospitals with high physician performance, whereas it is -0.12 in the hospitals with low physician performance. The ratio of tangible fixed assets turnover is 14.96 in the hospitals with high physician performance, whereas it is 14.66 in the hospitals with low physician performance. The ratio of receivables 4.04 in the hospitals with high physician performance, whereas it is 4,17 in the hospitals with low physician performance. The leverage ratio is 0.29 in the hospitals with high physician performance, whereas it is 0.32 in the hospitals with low physician performance. The ratio of fixed assets to permanent capital is 0.89 in the hospitals with high physician performance, whereas it is 0,86 in the hospitals with low physician performance. The ratio of fixed assets to equity capital is 0.27 in the hospitals with high physician performance, whereas it is 0.27 in the hospitals with low physician performance. The ratio of equity capital to total assets is 0.71 in the hospitals with high physician performance, whereas it is 0.68 in the hospitals with low physician performance. The ratio of tangible fixed assets to equity capital is 0.24 in the hospitals with high physician performance, whereas it is 0.25 in the hospitals with low physician performance. The ratio of operating expenses to net sales is 0.41 in the hospitals with high physician performance, whereas it is 0.40 in the hospitals with low physician performance. the ratio of operating profit to net sales 0.07 in the hospitals with high physician performance, whereas it is -0.06 in the hospitals with low physician performance. the ratio of net profit to total assets is -0.06 in the hospitals with high physician performance, whereas it is 0.68 in the hospitals with low physician performance. The ratio of net profit margin is -0.01 in the hospitals with high physician performance, whereas it is -0.03 in the hospitals with low physician performance. The ratio of cost of sales to net sales is 0.52 in the hospitals with high physician performance, whereas it is 0.53 in the hospitals with low physician performance. The gross profit margin is 0.48 in the hospitals with high physician performance, whereas it is 0.47 in the hospitals with low physician performance. As a consequence, the second hypothesis of the study was not supported with the results of the analyses.

CHAPTER VII

CONSLUSIONS AND SUGGESSTIONS

7.1. Conclusions

In the study, the main is to measure financial performance and physician performance of Ministry of Health Hospitals having revolving funds and to find out if there is any relationship between physician performance and financial performance. In addition to this, to search for the hospitals having efficient and inefficient performance, to determine the relationships of financial performance and physician performance with financial indicators. In the study, Data Envelopment Analysis (DEA) was used to measure physician performance and Hospital Viability Index (HIV) was used to measure financial performance. The consequences gotten from this study are like in the followings.

1. 10.67 % (35 Hospitals) of the hospitals were efficient , whereas 89.32 % (293 Hospitals) of the hospitals were inefficient in terms of physician performance.

2. 63.41 % (208 Hospitals) of the hospitals have low financial performance, whereas 36. 58 % (120 Hospitals) of the hospitals have high financial performance.

3. The relationship between physician performance and financial performance in 2008 of the hospitals within the scope of research is analyzed by using T- Test. A meaningful relationship between physician performance and financial performance is not found statistically. Physician performance does not affect the hospitals' financial performance. As a consequence, the first hypothesis was not supported with the results of the analyses.

4. In the analyze of the effects of financial indicators on financial performance, Student T test was applied to find the related variables between the hospitals with low and high financial performance. As a result of the test, it was found out that all variables affect the financial performance. That is; there is a relationship between financial indicators and

financial performance. As a consequence, the third hypothesis was supported with the results of the analyses.

5. The relationship between financial indicators and physician performance were analyzed. In the analyze of the effects of financial indicators on physician performance, Student T test was applied. As a result of the test, it was found out that there is no statistically relationship between variables. That is; there is no relationship between financial indicators and financial performance. As a consequence, the second hypothesis of the study was not supported with the results of the analyses.

6. To measure the relationship between physician performance and financial performance Data Envelopment Analysis (DEA) and Hospital Viability Index (HIV) were used. The results taken from those analyses were transferred to SPSS program and the analyses related with hypothesis were gotten.

7.2. Suggestions

According to the evidences of the study, to increase financial performance and physician performance of the hospitals. The following suggestions were developed.

1. The number of hospitals which have efficient physician performance were to low in 2008 year. Therefore, Ministry of Health should develop some programs to increase physician performance.

2. In order to assess physician performance generally quantitative measures are used. Therefore, it will be better if qualitative measure are used as well.

3. Since, performance assessment should be comprehensive, the external factors should be taken into account while assessing physician performance.

4. As a result of the study, it was found out that financial indicators only affect financial performance. Therefore; to increase the number of the hospitals having high financial performance, new strategies should be implemented to increase financial variables.

5. To increase financial performance, market share should be expanded and financing strategies should be developed.

6. It is highly likely that financial performance of bad performer hospitals may improve if they follow such financial policies and strategies, which are implemented by good performer hospitals and which are significantly different in statistical terms compared to those of bad performer hospital.

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