

# Analysis of Transaction Cost Theory of Magnetic Resonance Imaging (MRI) Services Provided by Outsourcing in Hospitals: A University Hospital Example

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## ABSTRACT

As in the literature, hospitals often resort to outsource within the framework of transaction cost theory in service provision, also its observed in the result of this study; hospitals are getting profit via outsourcing services and they could focus on providing their basic ability “health services.” Transaction cost theory seeks to find the most productive boundaries of the enterprise by seeking an answer to the question of whether it is more appropriate for businesses to produce goods or services themselves or buy them from the market. “Core Competence” and “outsourcing” are two important interrelated concepts in businesses. One of the areas that is the most observed in Turkey is the outsource of imaging services. With this study, MRI services performed for nine months in 2017 through outsourcing in a university hospital were examined within the framework of the transaction cost theory and it was determined that the hospital earned 511.798,18 TL profit. As in the literature, hospitals often resort to outsourcing within the framework of transaction cost theory in service provision, outsourcing services for their profit and they were also observed

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in the result of this study, where they could better focus on providing health services with core competence.

**Keywords:** Health Services, Transaction Cost Theory, Outsourcing, Profitability, Magnetic Resonance.

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## INTRODUCTION

Globalization and rapidly evolving technology make the change necessary to reach its goals such as profitability, competitiveness and sustainability. As in other sectors, the change in the health care sector causes many innovations in the hospitals. In health services; It is important to manage change and innovation, which is characterized by accidental consumption, lack of redundancy, difficulty in determining satisfaction and quality, failure to pre-test, inadequacy leading to social problems, and external benefit or harm.

Businesses need to operate their sources efficiently and economically. This is the subject of transaction cost theory. Businesses that want to compete the theory of transaction costs, to make profit, to provide social benefits and to maintain their continuity are required to follow. Theory seeks to find the most productive boundaries of the organization by seeking answers to the question of whether businesses should produce goods or services themselves or whether it is better to buy them from the market.

Two interrelated concepts in business are “basic ability” and “outsourcing”. Once the businesses have met their basic skills meticulously, they can do the remaining work through outsourcing. Outsourcing has become a widespread and indispensable part of hospitals like other businesses day by day. In hospitals in our country, cleaning services, security services, catering services, data preparation services, laboratory services and imaging services are the most outsourced areas.

In this study, magnetic resonance imaging services performed by outsourcing between 01.02.2017 - 01.10.2017 in a university hospital were examined within the framework of transaction cost theory. There is no study conducted to examine in the framework of transaction cost theory of magnetic resonance imaging services performed by outsourcing in health institutions and organizations in Turkey. Most of the studies related to the field are studies prepared by literature review only. It is aimed to complete these deficiencies in our literature with this study.

## TRANSACTION COST THEORY

The theory of transaction costs was first introduced by Ronald Coase (1937) by focusing on neo-classical economic theory. In the article named “The Nature of The Firm” published by Coase in 1937, the market and the organization (company) were discriminated and the answer was asked in the question “If the markets are active, why are there organizations?” Coase (1937) argued that while the choice between market and organization (firm) in the production of goods and services is the most important determinant of which one to choose, to lower the transaction cost to a minimum and put the transaction cost at the center of the analysis of this problem. Coase’s theory of transaction costs has been developed by Williamson (1975a); Williamson (1979b); Williamson (1981c); Williamson (1985d) by incorporating new areas and dimensions such as transaction and transaction cost definitions, market and hierarchy concepts. Both authors saw the market and the organization as alternatives; in terms of the price of the market, and the organization as regulatory instruments in terms of authority relations.

In transaction costs is the basic decision-making within the “organization” (hierarchy), or is it “on the market” to be more efficient? Transaction cost theory also seeks to answer the question whether production of goods and services will be provided by an internal organization (hierarchy) or by specialized organizations (market) from outside. While trying to identify the most productive boundaries of the organizations in this search, the efficiency of the operations within the organization is seen instead of the basic analysis level of the organization (Kalemci, 2013). This process also examines how organizations will protect themselves from shopping risks when they are in contact with other organizations.

In the process cost theory, the most fundamental element in determining the governance mechanisms is seen as productivity (Ouchi, 1980). This issue is expressed as “Make or Buy” in the transaction cost theory. Organizations should only focus on the basic competence that they do best, that they cannot be imitated in competitions, and that someone is not as successful as it is, and that there is no substitute, and should supply everything else from the outside. Thus, the organization is increasing its chances of success and growth (Tengilimoğlu, 2009).

Costs in transaction cost theory change depending upon whether the production of goods or services is opted within the organization or purchased from outside the organization. Transaction costs of goods and services production in the organization include;

- Coordination costs,
- Monitoring and follow-up of employees,
- Positioning the right people in the right place,
- The correct establishment of the organizational structure,
- The search and placement of human resources workers,
- Specialization training if business requires specialization,
- Expert operating costs arise;

Transaction costs when goods and service production are purchased from outside the organization include;

- Finding the right supplier,
- Negotiation,
- Regulation of contract,
- Monitoring costs of the supplier (Williamson, 1981).

Costs arising from contracts are subject to transaction costs when goods and service production are purchased from outside the organization. These are pre-contract transaction costs and post-contract transaction costs (Williamson, 1981). Pre-contract costs are;

- Designing a contract
- Negotiating the contract
- Considering the protection of the contract,

Post-contract transaction costs are;

• Costs that arise if the transactions depart from the previously determined boundary,

• The cost of tight negotiations arising from breaches of the border and carried out mutually vigorously to rectify,

• Initiation and execution of costs resulting from the directing of disputants to governance for settlement,

- Cover collateral-like costs to secure commitments.

As mentioned above, it is seen that there are costs in many items before and after the contract.

### **ASSUMPTIONS OF THE TRANSACTION COST THEORY:**

Behavioral and environmental assumptions of transaction cost theory exist. These are discussed in detail below.

#### **BEHAVIORAL ESTIMATES:**

- **Bounded Rationality:** Williamson (1985) states that in this hypothesis, people are limited in their ability to acquire, store, re-access and manipulate knowledge without errors due to their cognitive capacities. In other words, in Bounded Rationality, it is not possible to conclude a contract that will respond to the requests of both parties due to the cognitive deficiency of the parties.

- **Opportunism:** It is defined as “the attitude aiming at setting the behavior in the power situation so that it conforms to the interests of the people, rather than the moral rules or regular thought” (Williamson, 1985).

The parties are often assumed to be honest by economic theorists. But it is not possible to recognize the limited rationality of recognizing that the parties are not honest. Here, the mutual trust of the parties comes to mind, hence confidence, the parties are confronting each other, is important. What they do is not a loss from the actions but a wait for benefits. The theorists state that the parties need to develop opportunistic screening and protection methods for “opportunism” before and after the contract (Williamson, 1985).

#### **ENVIRONMENTAL ASSUMPTIONS:**

- **Asset Specificity:** Asset specificity assumption has a critical prescription within the contracting parties. Williamson (1975, 1985) explains the reason for this as because of the investments in the contract, the parties are in a long-term relationship. The supplier party makes contractual investments in favor of the buyer. Although contractual investments are thought to be locked only by the supplier, they make both sides dependent on the transaction so that the buyer cannot find a source to make his own investment in a short time.

- **Uncertainty:** The difficulty of estimating the situations that parties may encounter during the execution of a transaction. It is due to the difficulty of adapting contracts to changing circumstances. Inverse selection and moral collapse are two main causes.

- **Small numbers:** It is expressed for the cases where the parties are

interdependent, the parties cannot make an alternative connection, the mutual monopoly situation occurs, and the parties are defenseless. The situation of small numbers increases the opportunistic nature of the parties according to Williamson (1975).

- **Frequency:** The operation of the Parties refers to how often you perform.

Behavioral and environmental assumptions form the basis of transaction cost theory. Knowing the assumptions is important in order to understand the theory.

### **CRITICISM OF TRANSACTION COST THEORY**

Each theory has strengths and weaknesses. The following are the most discussed and criticized topics on transaction cost theory.

- Discussion of the ability of economic organizations to differentiate capacities in constructions,

- The theory explains macro-formations, but their assumptions are based on micro-formations (Kalemci, 2013),

- Neglecting the power relations of the parties (Yenidoğan, 2013),

- To reduce the cost of the focus point,

- Considering organizations in a one-sided economic perspective, neglecting social aspects,

- Ignoring the costs of organizing and integrating (Barney and Hesterly, 1996),

- Hierarchy, always relatively alternative to solving the nonconformities, relatively to the market (Sözen and Basım, 2015),

- Based on the criticisms, Williamson (1993) states that the concept of trust cannot be economic actions, that the parties in the commercial contracts are misleading and that the concept of trust can be formed within the account.

The above criticisms have led to the theory of transaction costs being the most debated theory within the economics-based organization approach.

### **OUTSOURCING**

Businesses wanted to do all the work on their own until a short time ago and had a tendency not to do business outside the enterprise. Businesses that did not perform all their business within the company in this period were to be described as powerless and incompetent. But in the 21st century, globalization

and major developments in technology have led to reforms in the business and management models of enterprises (Gözüküçük and Çelik, 2012). This has led to serious competition between private and public enterprises. In order to be able to compete, reach their goals and realize themselves, businesses tend to their basic skills, which are their own and cannot be imitated by other businesses (Koçel, 2018). Today, the vast majority of businesses are outsourcing their core activities outside of their core competencies in order to make good use of their core competencies and gain a competitive advantage (Karahan, 2009).

The concept of “outsourcing” is an abbreviation of “Outside resource using” (Bühner and Tuschke, 1994). The most common definition of outsourcing is that “businesses are not only those that are based on their own abilities and capabilities, outsourcing in order to get jobs that do not use core or basic skills from other businesses that are specialized in their field from outside the company” (Mersin, 2003, para. 5). Outsourcing was described by Lacity and Hirschheim (1993) as “the process of purchasing a goods or service previously provided within the organization.”

In the past, the first outsourcing applications started in the automotive industry in the USA. In the ongoing process, the use of the application has become widespread due to the positive effects such as cost reduction and staff saving (Cengiz, 2015). Outsourcing is becoming widespread in many sectors where both services and goods-producing enterprises are involved, and it is increasingly involved. Many different areas such as human resources management, information technology, customer service, accounting-finance, logistics-transportation, sales-marketing, food, personnel transportation, security, cleaning, car rental are used. In Turkey, staff transport, catering, cleaning and security services outsourcing sector are most commonly used (Özcan, 2015).

Despite the significant risks that may arise in the event of outsourcing failure, the business hopes to achieve many benefits through successful outsourcing (Mersin, 2005).

Outsourcing is a common practice used as a management strategy and business model in enterprises. Increasing outsourcing by businesses has made the concept of “Outsourcing” become widespread in the literature and has become a research topic for many studies (Çatı, et al., 2015).

## OUTSOURCING IN HOSPITAL BUSINESSES

The most important value people have in their lives and an indispensable element of their daily life is the concept of health. Everyone wants to be healthy, to maintain and improve their health. Individuals apply for health services to fulfill their requests. The Ministry of Health describes the definition of health services as *“the destruction of a variety of factors that harm human health and the protection of the community from the effects of these factors, the treatment of patients, the services for the rehabilitation of persons with reduced physical and mental abilities and competencies”* (Ministry of Health on the Execution of Health Services Directive, 2005). By definition, health services have the characteristics of protecting, treating, rehabilitating and improving health for the individual. Health services are provided by health institutions and institutions, and hospitals are the institutions with the largest share in this regard.

Within health systems, hospitals are the most complicated organizations. There are many professional departments and many service units in their structures and they are required to work in a multidisciplinary manner (Nazlıoğlu and Yar, 2016). Both private and public hospitals, like other businesses, want to profit, maintain their continuity and provide social benefit. They focus on the provision of health services with the basic skills to make these requests. Complementary work outside of health services can be covered by outsourcing. In hospitals, food, cleaning, security, laboratory and imaging services are the most frequently used areas of outsourcing (Ekin et al., 2012).

According to a survey conducted in 2010 by the Ministry of Health, in Turkey, for at least one service that meets the external source from the hospital was found to perform in 2001-70.8%, in 2006-88%, and in 2008-93.3%. As a result of this data, outsourcing of health services continues to increase as well as in other sectors with day by day.

## METHODS

The research is a cross-sectional study. The data obtained from the technical specifications, administrative specifications, contracts, bills and payment documents of the Magnetic Resonance Imaging (MRI) services tender in made by the service tender method for 9 months between 01.02.2017-01.10.2017 at a



university hospital which was used for the research. In order to use the data in the research, permission was obtained from the university hospital, provided that the name of the hospital was not used. In the survey, payments made to the university hospital were calculated by using the Magnetic Resonance Imaging part, which was included in the Health Practice Statement (SUT) updated by the T.C. Social Security Institution on 18.06.2016. The “Transaction Disclosures” specified in this part of the Health Practice Statement are taken into consideration in the calculations. The research covers a university hospital and is limited to MRI services. The only work to be done in this area in health institutions and organizations in Turkey are the strengths of our research.

## **FINDINGS**

Many components are coordinated in the presentation of health services. In the diagnosis and treatment processes of the hospitals, health services are provided in a coordinated manner to many areas such as outpatient services, bedside services, laboratory services, catering services, cleaning services and medical imaging services (İşçi, 2004). The main medical imaging services used in hospitals are X-ray, Ultrasounds (US), Tomography (CT), Positron Emission Tomography (PET/CT), Magnetic Resonance Imaging (MRI) and Scintigraphy. In hospitals, one of the most used medical imaging techniques is Magnetic Resonance Imaging (MRI).

MRI is the radiological imaging method with the highest soft tissue contrast resolution power. This is a radiological imaging technique that does not contain harmful ionizing radiation to the tissues used in the examination of all the soft tissues and organs in the body, especially to the nervous system. MRI devices generate images by sensing the signals that are transmitted back to the body tissues placed in a magnetic field and then echoed back to the tissues (Kaya et al., 1996).

It is used in the diagnosis of tissue curing, brain and pituitary gland tumors, vertebrae, brain and joint infections, imaging of muscle contractions in the genitals, carpal and tarsal joints, imaging of the shoulder injuries, inflammation of muscle fibers and evaluation of the masses in the soft tissue region of the body (Baert, 2009).

Major disadvantages are, it cannot be done to those with heart pleyers, who are claustrophobic (afraid of closed places), the MRI device makes too loud

sound during scanning, the patient must stand motionless for a long time during scan in the MRI device (up to 20 to 90 minutes), a small movement of any part of the body portion (such as artificial joints) in the screening area causes severe visual impairment (Yeşildağ and Oyar, 2003). Despite these disadvantages, MRI is one of the most preferred medical imaging modalities.

The Organization for Economic Cooperation and Development (OECD) in the 2017 report on Turkey in 2015 to 10.2 per 1 million persons per MRI device. Turkey ranks 23 among the OECD countries with the number of MRI machines. 144 MRI examinations are performed in every 1,000 people in Turkey. Turkey ranks first among OECD countries with the number of inspections. This data shows that there was too much MRI examination in Turkey, despite the small number of MRI equipment. A MRI device operated under suitable conditions for maximum 60-70 examinations in 24 hours. But in Turkey, this number exceeds the 100 in many health center and approaching 200 examinations per a day in some. This makes the efficiency and effectiveness of MRI examinations open to debate.

The financing structure of the health system in Turkey, health insurance (Bismarck model), public assistance (Beveridge model) show mixed features including private spending. The main funding source for this mixed structure is public financing (Mutlu and Isik, 2002). In Turkey individuals' medical expenses are only met by attendant institution is the Social Security Institution (SSI). The SSI specifies the working procedures and principles according to the legislation of Health Practice Statement (HPS).

Within the scope of the Social Security Institution Law No. 5502 and the Law No. 5510 and the General Health Insurance Transactions Act, the legislation called the Health Practice Statement (HPS), allows the government to implement, guide, price, organize and rest all the details of health-related social policies. HPS includes provisioning procedures, participation fees, surcharges, methods of providing financed health services and payment rules, principles of payment of medical supplies, invoicing and payment, arrangement of bills of health institutions and institutions, payment transactions and many other matters. Hospitals are invoicing all the services and transactions who are ill under the HPS framework within the scope of the health services presentation. SSI is paying for the services and transactions they offer to the hospitals within

the framework of the prices specified on the HPS list.

SSI is paying to hospitals, only looking at the rules in the HPS. It does not look at whether the service or process being offered is through the hospital's own resources or outsourcing. Hospitals are able to deliver services through outsourcing rather than their own resources due to low costs, inadequate staff in terms of quality or quantity, and various reasons. The university hospital in the study offers Magnetic Resonance Imaging Services outsourced.

In the HPS, the MRI Services code is 3945. The description of this service is as follows; *“Radiology is billed by a specialist physician report. Each examination under this heading shall be invoiced at most once per month for the same patient in outpatient treatment, except for emergencies in the same health care provider. On the same day, if more than one transaction is performed under this heading, all the transactions with higher transaction points will be invoiced, and 50% of each transaction will be invoiced”*. It is clear from the explanation that the SSI will not pay for the MRI service offered for the same patient more than once a month, without a radiology doctor report and in the same hospital emergency cases. It is also stated that for the same day more than one MRI service will be paid for the service with the highest score and half of the other services.

**Table 1.** Health Practice Statement (HPS) Magnetic Resonance Imaging Service Outside Score List, SSI Payment Amount and Company Payment Amount

Queue No	Code	Action Name	Explanation	Action Points	Buying from SSI (Item Price: 0,593)	Paid to Company (Item Price: 0,393)	Difference by Transaction
21.10.1910	804.180,00	MR, abdomen, low		109,61	64,99	43,07	21,92
22.10.1910	804.190,00	MR, brain		109,61	64,99	43,07	21,92
23.10.1910	804.200,00	MR, cerebrospinal fluid, current		109,61	64,99	43,07	21,92
24.10.1910	804.210,00	MR, neck		109,61	64,99	43,07	21,92
25.10.1910	804.220,00	MR, diffusion	If done in conjunction with other MR operations, 50% of the transaction score will be invoiced.	109,61	64,99	43,07	21,92

3951 (Revision: official newspaper - 24/12/2014- 29215/ 19-a matter. Force: 01/01/2015)	804.220,00	MR, diffusion		109,61	64,99	43,07	21,92
26.10.1910	804.230,00	MR, dynamic	Not invoiced with 804.270.	109,61	64,99	43,07	21,92
27.10.1910	804.240,00	MR, Joint single		109,61	64,99	43,07	21,92
3954	804.250,00	MR, extremity one sided		109,61	64,99	43,07	21,92
3955	804.260	MR, functional		109,61	64,99	43,07	21,92
3956	804.270	MR, pituitary	Not invoiced with 804.230.	109,61	64,99	43,07	21,92
3957	804.280	MR, cardiac		109,61	64,99	43,07	21,92
3958	804.281	MR T2 * cardiac		109	64,63	42,83	21,80
3959	804.290	MR, cardiac functional		109,61	64,99	43,07	21,92
3960	804.300	MR, cardiac perfusion		109,61	64,99	43,07	21,92
3961	804.310	MR, ear		109,61	64,99	43,07	21,92
3962	804.320	MR, vertebra, lumbar		109,61	64,99	43,07	21,92
3962 ( Revision: official newspaper - 05/08/2015- 29436/ 28-c matter. Force: 05/08/2015)	804.320	MR, vertebra, lumbar (printed, unprinted)		109,61	64,99	43,07	21,92
3963	804.330	MR, breast		109,61	64,99	43,07	21,92
3964	804.340	MR Angiography		109,61	64,99	43,07	21,92
3965	804.350	MR Cholangiography		109,61	64,99	43,07	21,92
3966	804.360	MR myelography		109,61	64,99	43,07	21,92
3967	804.370	MR Spectroscopy (Single voxel single echo)		103,04	61,10	40,49	20,61
3968	804.380	MR Spectroscopy (Multivoxel single echo)		109,61	64,99	43,07	21,92
3969	804.390	MR urography		109,61	64,99	43,07	21,92
3970	804.400	MR arthrography		109,61	64,99	43,07	21,92
3971	804.410	MR, other		109,61	64,99	43,07	21,92
3972	804.411	MR T2 * liver		109	64,63	42,83	21,80
3973	804.412	MR Enterocolitis		109	64,63	42,83	21,80

3974	804.413	MR, Fetal		109	64,63	42,83	21,80
3975	804.414	MR Cisternography		109	64,63	42,83	21,80
3976	804.415	MR, Diffusion Tensor Imaging, Tractography		109	64,63	42,83	21,80
3977	804.416	MR 3d Imaging		109	64,63	42,83	21,80
3978	804.420	MR, Nasopharyngeal		109,61	64,99	43,07	21,92
3979	804.430	MR, Orbital		109,61	64,99	43,076	21,92
3980	804.440	MR, Perfusion		109,61	64,99	43,07	21,92
3981	804.450	MR, Vertebra, Cervical		109,61	64,99	43,07	21,92
3982	804.460	MR, Temporomandibular joint (Single joint)	Mouth open / closed included	109,61	64,99	43,07	21,92
3983	804.470	MR, Vertebra, thoracic		109,61	64,99	43,07	21,92
3984	804.480	MR, Abdomen, Up		109,61	64,99	43,07	21,92
3985	804.490	MR, whole body metastasis screening, with movable table		109,61	64,99	43,07	21,92
3986	804.500	MR, Interventional		109,61	64,99	43,07	21,92
3987	804.510	MR, Face		109,61	64,99	43,07	21,92

Source: *Social Security Institution Health Practice Statement, 2016.*

Table 1 shows the 41 different MRI services mentioned in the HPS and the service point score list, order number, code, related statements, the prices of the transactions received from the SSI and the amount paid to the hospital, and the amount per transaction to the hospital. For the MRI services with a transaction score of 109.61, SSI receives a payment of TL 64.99, the company is paid TL 43.07 and the patient remains TL 21.92. For MRI services with a transaction score of 109, SSI receives a payment of TL 64.63, a payment of TL 42.83 to the company and TL 21.80 to the hospital.

**Table 2.** 9 Months MRI Payment Plan Schedule which Paid to the Firm

Date	Invoice Amount	VAT	Total Amount	VAT Resolution (5/10)	Stamp Duty (Per Thousand 9.48)	Minimum Wage Support Amount	Must Pay
01.02.2017	87.101,15	6.968,09	94.069,24	3.484,05	825,72	-	89.759,47
01.03.2017	112.904,11	9.032,33	121.936,44	4.516,16	1.070,33	646,02	115.703,93
01.04.2017	115.187,18	9.214,97	214.402,15	4.607,49	1.091,97	695,97	118.006,72
01.05.2017	104.116,46	8.329,32	112.445,78	4.164,66	987,02	739,26	106.554,84
01.06.2017	109.888,74	8.791,10	118.679,84	4.395,55	1.041,74	799,20	112.443,35
01.07.2017	93.131,89	7.450,55	100.582,44	3.725,28	882,89	795,87	95.178,40
01.08.2017	119.021,00	9.521,68	128.542,68	4.760,84	1.128,32	799,20	121.854,32
01.09.2017	114.885,64	9.190,85	124.076,49	4.595,43	1.089,12	719,28	117.672,66
01.10.2017	125.353,28	10.028,26	135.381,54	5.014,13	1.188,34	669,33	128.509,74
TOTAL	981.589,45	78.527,15	1.150.116,60	39.263,59	9.305,45	5.864,13	1.005.683,43

Source: *A University Hospital 2017 Year Magnetic Resonance Imaging System Service Fee for Technical Specification*

Table 2 below, the MRI services performed by a university hospital through service acquisition have a 9-month payment schedule for the company that purchased the service. Amount to be paid to the company, invoice amount, VAT, total amount, tax VAT (5/10), stamp tax (9.48 per thousand) and minimum wage support items were added to the account. The hospital carried out the minimum payment of 89,759,47 TL in February, and the highest payment in October of 128,509,74 TL. The hospital has paid a total of TL 1,005,683.43 to the company for 9 months of MRI services. It is observed that the payment made to the company in July decreased by TL 17,264.95 compared to the previous month.

Table 3 below shows the number of MRI shots, payments received from the SSI, payments made to the company, and the remaining amount to the hospital, based on the monthly MRI services performed by a university hospital. While the minimum MRI capture was in February with 2084 shots, the most MRI shots were in October with 2983 shots. Parallel to these figures, the minimum amount for the hospital was 45,479,12 TL in February while the highest amount was 65,399,36 TL in October. A total of 23,346 MRI scans were performed at the hospital for 9 months. SSI received 1,517,481.61 TL for these MRI shots and TL 1,005,683.43 was paid to the company. The hospital obtained a profit of 511.798,18 TL.

**Table 3.** Number of MRIs Taken, Receivable from SSI, Profit Table Needed to be Paid to the Company

Date	MR Number Taken	Received from SSI (Item Price:64,99873)	Need to Pay to the Company (Item Price:	
43,07673)	Profit (For One Item: 21,922)			
01.02.2017	2084	135.438,59	89.759,47	45.679,12
01.03.2017	2686	174.586,34	115.703,93	58.882,41
01.04.2017	2739	178.061,03	118.006,72	60.054,31
01.05.2017	2474	160.781,22	106.554,84	54.226,38
01.06.2017	2610	169.666,43	112.443,35	57.223,08
01.07.2017	2210	143.615,24	95.178,40	48.436,84
01.08.2017	2829	183.866,70	121.854,32	62.012,38
01.09.2017	2732	177.556,97	117.672,66	59.884,31
01.10.2017	2983	193.909,10	128.509,74	65.399,36
TOTAL	23346	1.517.481,61	1.005.683,43	511.798,18

Source: *A University Hospital 2017 Year Magnetic Resonance Imaging System Service Fee for Technical Specification*

## DISCUSSION AND RESULTS

In transaction costs is the basic decision-making within the “organization” (hierarchy), or is it “on the market” to be more efficient? This issue is expressed as “Make or Buy” in the transaction cost theory. Organizations should focus exclusively on core competence that they do best, that they cannot be imitated in competitions, and that they are not as successful as they are, and that they do not have any substitutes (Outsourcing). Thus, the organization is increasing its chances of success and growth (Tengilimoğlu, 2009). Transaction cost theory is the most debated theory in the economics-based organization approach.

Businesses are not only those that are based on their own abilities and capabilities; “outsourcing” is the process by which businesses that do not use core or core competencies receive business from other businesses specializing in their own field. Hospitals focus on the delivery of health services with basic skills and complementary work outside of health services can be met through outsourcing. Outsourcing of food, cleaning, security, laboratory and imaging services in hospitals is the most frequently used area.

In hospitals, one of the most used medical imaging techniques is Magnetic Resonance Imaging (MRI). The Organization for Economic Cooperation and Development (OECD) in the 2017 report on Turkey in 2015 to 10.2 per 1 million persons per MRI device. Turkey ranks 23 among the OECD countries with the number of MRI machines. 144 MRI examinations are performed every 1,000 people in Turkey. Turkey ranks first among OECD countries, with the number of inspections. This data shows that there was too much MRI examination in Turkey, despite the small number of MRI equipment. A MRI device operated under suitable conditions for maximum 60-70 examinations in 24 hours. But in Turkey, this number exceeds the 100 in many health center and approaching 200 examinations per a day in some. This makes the efficiency and effectiveness of MRI examinations open to debate.

Within the scope of the Social Security Institution Law No. 5502 and the Law No. 5510 and the General Health Insurance Transactions Act, the legislation called the Health Practice Statement (HPS), allows the government to implement, guide, price, organize and rest all the details of health-related social policies. Hospitals are invoicing all the services and transactions from SSI who they are ill with under the HPS framework within the scope of the health services presentation. SSI is paying for the services and transactions they offer to the hospitals within the framework of the prices specified on the HPS list.

SSI, without a radiology physician report, and in the same hospital, except for emergency cases, the same patient will not be paid more than once a month for the MRI service offered. It is also stated that for the same day more than one MRI service will be paid for the service with the highest score and half of the other services.

For the MRI services with a transaction score of 109.61 in the HPS, SSI receives a payment of TL 64.99, the company is paid TL 43.07 and the patient remains TL 21.92. For MRI services with a transaction score of 109, SSI receives a payment of TL 64.63, a payment of TL 42.83 to the company and TL 21.80 to the hospital.

The hospital has paid a total of TL 1,005,683.43 to the company for 9 months of MRI services. A total of 23,346 MRI scans were performed at the hospital for 9 months. SSI received 1,517,481.61 TL for these MRI shots and TL 1,005,683.43



was paid to the company. There is 511.798,18 TL left to the hospital.

As a result, hospitals often resort to outsourcing in the provision of health services within the framework of transaction cost theory, gain profits from outsourcing services, and can better focus on provision of health services with core competencies. Longer duration and inclusion of more than one hospital is recommended for future research in this area.

## REFERENCES

- Baert, A.; Knauth M.; Sartor K. (2009). *MRI of the Lung*. Berlin: Springer-Verlag, Heidelberg.
- Barney, J.; Hesterly, W. (1996). Organizational economics: Understanding the relationship between organizations and economic analysis. *In Handbook of Organization Studies* S. Clegg, C. Hardy, & W. Nord., (Eds.) 115-147, London: Sage.
- Bühner R.; Tuschke, A. (1994). Outsourcing, *Die Betriebswirtschaft*, S. 57 (1), 20-30; Quinn, J.B., Hilmer, F.G., Strategic Outsourcing, *Sloan Management Review*. 3-55.
- Cengiz, S. (2015). *Dış Kaynaklardan Yararlanma*. 7, Bartın: Published Online.
- Coase, R. (1937). The Nature of the Firm. 386-405, *Economica*.
- Çatı, K., Çömlekçi, İ., Zengin, E. (2015). Dış Kaynak Kullanımının İşletme Finansal Performansına Etkisi: Düzce İli İmalat Sanayisinde KOBİ Yöneticileri Üzerinde bir Araştırma. *KMÜ Sosyal ve Ekonomik Araştırmalar Dergisi*. 17(28) 56-67.
- Ekin, A.; Yanık, A.; Kiyak, M. (2012). Bir Eğitim ve Araştırma Hastanesinde Dışardan Satın Alınan Hizmetlerin Ekonomik Değerlendirmesi. *Hacettepe Sağlık İdaresi Dergisi*. 15(1) 1-23.
- Gözüküçük, M.; Çelik Y. (2012). Sağlık Bakanlığı Hastanelerinde Dışarıdan Sağlık Hizmeti Alımı: Karşılaşılan Sorunlar ve Çözüm Önerileri. *Hacettepe Sağlık İdaresi Dergisi*. 15 (2) 1-25.
- İşçi, E. (2004). *Hastanelerin Yönetiminde Dış Kaynak Kullanımının Önemi ve İstanbul İlinde bir Uygulama*. (Yüksek Lisans Tezi) Marmara Üniversitesi Sosyal Bilimler Enstitüsü Yönetim Organizasyon Bilim Dalı, İstanbul. 12.
- Kalemcı, R. A. (2013). İşlem Maliyeti Kuramının Temel Varsayımlarında Güvenin Yeri Tartışması. *İş Ahlakı Dergisi*. 6 (2) 55-83.
- Karahan, A. (2009). Dış Kaynak Kullanımının Verimlilik Üzerine Etkisi (Hastane Yöneticileri Üzerine Bir Araştırma). *Balıkesir Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*. 12 (21) 185-199.
- Kaya, T.; Adapınar B.; Özkan, R. (1997). *Temel Radyoloji Tekniği*. İstanbul: Nobel Yayın Dağıtım. 397-414.
- Koçel, T. (2018). *İşletme Yöneticiliği*. (17. Baskı (No: 3668) İstanbul: Beta Basım Yayın. 397-400.
- Lacity, M.C.; Hirschheim, R. (1993). The Information Systems Outsourcing Bandwagon. *Sloan management Review*. 35 (1) 73-85.
- Mersin, D. (2005). *Dış Kaynak Kullanımını (outsourcing) Ortaya Çıkaran Gelişmeler*. Retrieved from: 21.03.2018 <http://outsourcingturkiye.blogspot.com/2005/12/D-Kaynak-Kullanmn-Outsourcingi> [Online].
- Mersin, D. (2003). *Outsourcing Türkiye*. Retrieved from: 16.04.2018 <http://outsourcingturkiye>.

blogspot.com [Online].

Mutlu, A.; Işık, A. (2002). *Sağlık Ekonomisi ve Politikaları*. İstanbul: Marmara Üniversitesi Maliye Araştırma ve Uygulama Merkezi. Yayın No:14. 94-95.

Nazhoğlu B.; Yar, C.E. (2016). Hastane İşletmelerinde Dış Kaynak Kullanımı – Maliyet İlişkisi: Literatür Taraması. *Uluslararası Sağlık Yönetimi ve Stratejileri Araştırma Dergisi*. 2(3) 71-80.

OECD (2017), Magnetic Resonance Imaging (MRI) Units, OECD Library [Online early access]. Published Online: December 27, 2017. DOI: 10.1787 / 1a72e7d1-en.

Ouchi, W.G. (1980). Markets, Bureaucracies and Clans. *Administrative Science Quarterly*, 25 129-141.

Özcan, İ. (2015). Dış kaynak kullanımına (outsourcing) genel bakış. *Kırklareli Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 4. s. 68.

Sözen, C. H.; Basım, N. H. (2015). *Örgüt Kuramları* (3. Baskı) İstanbul: Beta Basım Yayın 119-148.

Ministry of Health on the Execution of Health Services Directive (2005 February). Retrieved from: 12.04.2018 [http://www.ttb.org.tr/mevzuat/index.php?option=com\\_content&id=240](http://www.ttb.org.tr/mevzuat/index.php?option=com_content&id=240), para. 4.

Social Security Institution Health Practice Statement (SUT). (2016 June). Published Online. Retrieved from: 12.04.2018

Tengilimoğlu, D., Işık O., Akbolat, M. (2009). *Sağlık işletmeleri yönetimi* (2. Basım). İstanbul: Nobel Yayınları. 261-294.

Yenidoğan, T. G. (2013). Yeni Kurumsal İktisat Geleneğinde İşlem Maliyeti Teorisinin Rolü ve Son Gelişmeler. *Business and Economics Research Journal*. 4 (2) 109-134.

Yeşildağ, A.; Oyar, O. (2003). *Manyetik Rezonans Görüntüleme Fizikî*. Ankara: Tisamat Basım. 315-319.

Williamson, O. E. (1975). *Markets and Hierarchies: Analysis and Antitrust Implications*. New York: Free Press. 229-255.

Williamson, O. E. (1979). Transaction-cost Economics: The Governance of Contractual Relations. *Journal of Law and Economics*. 233-261.

Williamson, O. E. (1981). The Economics of Organizations: The Transaction Cost Approach. *American Journal of Sociology*. 548-577.

Williamson, O. E. (1985). *The Economic Institutions of Capitalism*. New York: Free Press. 365-378.

Williamson, O. E. (1993). Calculativeness, Trust and Economic Organization. *Journal of Law and Economics*. 453-486.

Williamson, O. E. (1998). Transaction-cost Economics: How it Works; Where it is Headed. *Economist*. 23-58.