

# Chapter 3

## An Assessment of the Financial Performance of Hospital Services Sub-Sector in Turkey by Ratio Analysis Method



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**Abstract** The present study made use of the sector balance sheets of “Q-861 Hospital Services Sub-Sector” for the years 2015–2020, which was recently published by the Central Bank of the Republic of Turkey (TCMB), which maintains the largest financial data on the hospital services sub-sector. The 6-year time period above was selected for the purposes of the study on the grounds that TCMB published the most up-to-date sector balance sheets for the said timeframe. The present study also aimed to investigate the financial structure of the hospitals operating in this sector in Turkey prior to the COVID-19 pandemic across the world. In general, ratio analysis, parametric, and non-parametric methods are used to measure the performance levels of hospital enterprises. The present study employed ratio analysis, a financial analysis method to assess the performance levels thereof. The financial performance of the sector was assessed in the study using 15 criteria, including liquidity, financial, activity, and profitability ratios.

**Keywords** Financial management · Financial performance · Hospital management · Turkey · Ratio analysis

### 3.1 Introduction

The increase in the world population and especially the high rates of elderly in the general population, the desire to benefit from health services, and different diseases that emerge due to altered environmental and ecological conditions have caused an ever-increasing demand for health services each day. Furthermore, along with the fact that the technologies used in diagnosis and treatment are expensive, there have been changes with regard to extent of the need for hospital services due to the COVID-19 epidemic since 2019. While the said increase in demand turned the healthcare

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services into one of the largest sectors in the world, the scarce resources in provision of services, on the other hand, increased the significance of the financial structures of hospital services. The concept of service has been systematically and technically studied since the 1700s, and the service notion is embodied in different forms in almost every field as a result of people's interaction and relations with each other (Sayım and Aydın 2011).

Healthcare service is defined as a permanent system organized in certain health-care institutions and organizations across the country with an aim to achieve objectives that vary by the needs and requests of the society with the help of different types of healthcare professionals, and thus to carry out the activities intended for preventive and curative health care of the individuals and the society (Bozkurt 2020). Whereas the healthcare services sector is a concept used to classify economic units that produce goods and services to cure, prevent, rehabilitate, and provide palliative care for patients and diseases (Gül 2020). Hospital activities, as one of the human healthcare activities classified within the scope of "human health and social service activities" in the United Nations International Standard Industrial Classification (ISIC) guide, cover all general and special hospital activities (United Nations 2008). Hospitals within the health system are service enterprises that provide society with various healthcare services and assume important tasks in the generation of a healthy society. These organizations are a part of the country's economy and constitute a large service industry (Özkan 2003).

As of 2020, there were a total of 1,534 hospitals in Turkey, of which 900 were state hospitals, in addition to 68 universities and 566 private hospitals (T.C. Sağlık Bakanlığı Sağlık Bilgi Sistemleri Genel Müdürlüğü 2021). The incentives offered by the government to the healthcare sector in recent years played an important role in the development of enterprises in this sector. In addition, thanks to the rapid merger and acquisition activities in the sector in recent years, healthcare institutions in the sector tended to generate chain enterprises (Karadeniz 2016). In this respect, the TCMB data included both general hospitals and specialized hospitals providing healthcare services. For example, the 2020 data were obtained upon consolidation of the financial statements from a total of 2,613 businesses operating in the sector. Certain numerical information about the structure of those companies in the sector is given in Table 3.1, and the balance sheet structure of the sector is given in Table 3.1.

An analysis of the tabulated financial structure of the sector in Table 3.2 indicates that the current assets of the sector have increased in the last 12 years. Nevertheless, the said increase in current assets was less compared to the increase in short-term debts between 2015 and 2020. The fact that the fixed assets have decreased over the years, albeit slightly, is indicative of the fact that the investments in fixed assets in the sectorial companies have also decreased. Notwithstanding the above, it is possible to suggest that those enterprises adopted a correct borrowing policy given the slight increase in long-term liabilities and the fact that constant capital is higher than the total percentage of fixed assets in most years. The difference was paid by short-term debts in the 2017 and 2018 periods when the said percentage distribution was

**Table 3.1** Statistical data on businesses in the sector

Scale distribution	Number of companies	Number of companies (%)	Number of employees	Number of employees (%)	Active total (%)	Equities (%)
Micro	1,995	74.8	2,586	1.31	8.4	7.5
Small	164	6.3	3,278	1.43	3.6	3.4
Medium	217	8.3	31,559	18.80	8.9	9.3
Large	277	10.6	191,165	83.62	79.1	79.8

Source TCMB Sectorial Statistics (2020)

insufficient. Nevertheless, it is a fact that the rate of current assets in these two years was lower compared to the rate of short-term debts.

In light of those statistics, the rapid increase in the number of private health institutions in recent years and the structural changes in the healthcare sector have escalated the competition in the sector and reduced the profit margins. The narrowed profit margins as a result of fierce competition inflicted major controversies on the part of private hospitals (Karadeniz 2016). As a result of those structural developments in the sector, the results of the ratio analysis method have become increasingly important with each day to analyze and interpret both the performance of the healthcare companies over years and how they compare to other companies in the sector. Accordingly, the main purpose of the present study was to assess the financial performance of the Turkish hospital services sub-sector. Therefore, the study used the ratio method to analyze the financial statements of the “Hospital Services Sub-Sector” as published by the Central Bank of the Republic of Turkey (TCMB) between the years 2015 and 2020. In the context thereof, first, the asset and resource structure of the sector was reviewed and then the liquidity, financial structure, activity, and profitability ratios of the sector were calculated.

Although not frequent use across the public and private healthcare institutions in Turkey, the United States (US) Healthcare sector started to use the ratio analysis as early as the 1940s. Today, all the US healthcare institutions employ this method in the scope of financial management (Atlı and Demir 2017).

## 3.2 Literature Review

Upon a literature review, it was seen that there were relevant studies, which investigated the financial performance of different sectors with reference to the sectorial balance sheets released by TCMB. The relevant studies in the literature investigated the tourism industry (Karadeniz et al. 2016, 2017; Koşan and Karadeniz 2014), hospitality and food services industry (Karadeniz et al. 2011, 2015a), healthcare sector (Karadeniz 2016; Aydemir 2018), energy sector (İskenderoğlu et al. 2015, 2017), food and textile industries (Öğünç 2018; Mazman İtik 2021), the construction

**Table 3.2** Percentage analysis of the hospital services balance sheet

	2009 (%)	2010 (%)	2011 (%)	2012 (%)	2013 (%)	2014 (%)	2015 (%)	2016 (%)	2017 (%)	2018 (%)	2019 (%)	2020 (%)
<b>Asset structure</b>												
Current assets	35.0	38.3	36.9	36.2	37.1	38.8	39.8	39.1	41.2	43.8	38.3	44.8
Fixed assets	65.0	61.7	63.1	63.8	62.9	61.2	60.2	60.9	58.8	56.2	61.7	55.2
<b>Liability structure</b>												
Short-term debts	29.1	31.3	32.6	35.8	35.1	37.7	37.6	39.7	42.6	46.6	37.9	40.0
Long-term debts	24.1	23.7	28.2	25.8	30.3	29.0	32.1	33.4	32.7	27.8	32.9	32.7
Equity	46.9	45.0	39.3	38.4	34.6	33.3	30.3	26.9	24.7	25.6	29.2	27.3
<b>Number of companies</b>	669	861	964	1210	1836	1797	1853	1887	2008	2302	2537	2613

Source: TCMB Sectorial Statistics (2020)

industry (Çalış 2013), forest products industry (Akyüz et al. 2015), transportation industry (Kurtlar 2021), land and sea freight transport industry (Dursun and Erol 2012; Karadeniz et al. 2015b; Deran and Erduru 2018; Doğan 2020; Beller Dikmen 2021), paper products industry (Karadeniz et al. 2021), trade sector (Şahin 2021), and manufacturing industry in general (Demirci 2017; Kazak 2018).

Whereas, relevant studies on the healthcare sector, which used the ratio analysis, generally focussed public (Saraçoğlu et al. 2012; Özer 2012; Dayı and Akdemir 2013; Ercan et al. 2013; Korkmaz and Güney 2013; Avcı 2014; Alparslan et al. 2015; Çam 2016; Gazi et al. 2016; Songur et al. 2016; Alper and Biçer 2017; Bülüç et al. 2017a; Çil Koçyiğit and Kocakoç 2019; Kakilli Acaravcı and Gazi 2019; Yiğit and Bayraktıoğlu 2020; Ekinci and Bakır 2021) and private sectors (Özgülbaş et al. 2008; Gider 2011; Akca and Somunoğlu İkinci 2014; Ardıç and Köşkeröğlu 2014; Bülüç et al. 2017b; Bıçakçı et al. 2018).

Along with the aforementioned studies, there are studies on the healthcare sector, which used the TCMB balance sheet data for the purposes of ratio analysis. The said studies included a review of factors effective in the financial performance of 797 private hospitals using ratio and trend analysis (Özgülbaş et al. 2008) and periodic reviews of the financial performance of the hospital services sub-sector in Turkey spanning 2011–2013 (Karadeniz 2016), 2013–2015 (Aydemir 2018), and 2009–2019 (Yiğit 2020) periods. The most recent study analyzed the financial statements of the sector for the period of 2012–2014 based on the DuPont financial analysis technique (Karadeniz and Koşan 2017).

### 3.3 Method and Dataset

The TCMB classifies the sectors in Turkey pursuant to the NACE (Nomenclature générale des Activités économiques dans les Communautés Européennes), a pan-European classification system, which allows statistical classification of economic activities across the European Union. The TCMB makes data from a number of companies in respective sectors available to researchers. The globally accepted International Standard Industrial Classification (ISIC) activity classification by the United Nations (UN) is taken as a basis for the intercountry comparison of domestic commercial and industrial activity data. Based on the NACE classification system, which was intended for use by the EU member states, the hospital services cover short and long-term hospital activities and the activities of specialized hospitals (Karadeniz 2016).

In the present study, ratio analysis was used to measure the performance of hospital enterprises. The first study in the literature, which aimed to measure the financial performance of hospitals using the ratio analysis, was conducted by Choate and Tanada in 1979 (Aydemir 2018). The ratio analysis in the present study employed 15 financial performance assessment criteria, including liquidity, financial, operating, and profitability financial ratios. Those financial ratios were selected among the most

frequently utilized criteria by previous studies upon literature review. The TCMB balance sheet and income statement data (Türkiye Cumhuriyeti Merkez Bankası 2020) and the codes, names, and formulas of those selected ratios as calculated using Microsoft Office Excel software are given in Table 3.3. Furthermore, the information as regards which authors used the selected criteria in previous studies is given in Table 3.4.

**Table 3.3** Criteria and formulas

<b>Liquidity ratios</b>	
Current ratio	Current assets/short-term liabilities
Liquidity (acid test) ratio	(Current assets—inventories)/short-term liabilities
Cash ratio	(Liquid assets + securities)/short-term liabilities
<b>Financial structure ratios</b>	
Total liabilities/total assets	(Total liabilities/total assets)
Short-term liabilities/total assets	Short-term liabilities/total assets
Tangible fixed assets (net)/equity ratio	(Tangible fixed assets (net)/equity)
<b>Operation rates</b>	
Receivables turnover ratio	Net sales/average commercial receivables
Asset turnover ratio	Net sales/average total assets
<b>Profitability ratios</b>	
Return on equity	Net profit (loss)/equity
Return on assets	Net profit (loss)/total assets
Operating profit margin	Operating profit (loss)/net sales
Net profit margin	Net profit/net sales

**Table 3.4** Previous studies, which used the selected criteria

Criteria	Resources used
Current ratio	47; 7; 14; 49; 8; 35; 45; 41; 32; 42; 51; 38; 55
Liquidity (acid test) ratio	47; 7; 14; 45; 49; 8; 35; 41; 32; 42; 51; 38; 55
Cash ratio	47; 7; 14; 55; 49; 45; 41; 32; 42; 51; 38
Total liabilities/total assets	47; 7; 14; 55; 38; 49; 8; 35; 45; 41; 32; 42; 51
Short-term liabilities total assets	47; 7; 14; 55; 49; 35; 41; 32; 42; 51
Tangible fixed assets (net)/equity ratio	47; 32
Receivables turnover ratio	47; 7; 14; 55; 49; 8; 41; 32; 42; 51; 38;
Asset turnover ratio	47; 7; 14; 38; 49; 45; 41; 32; 42; 51; 38
Return on equity	47; 7; 14; 55; 38; 49; 8; 35; 41; 32; 42; 51
Return on assets	7; 14; 49; 8; 35; 45; 41; 32; 42; 51; 38;
Operating profit margin	47; 7; 14; 49; 45; 41; 32; 42; 51
Net profit margin	47; 7; 14; 49; 35; 45; 8; 41; 32; 42; 51; 38

### 3.4 Results

This part of the study is spared for the ratio analysis method used for assessing the financial performance of the hospital services sub-sector (Table 3.5).

A review of the liquidity ratios, which measured the current assets of the hospital enterprises and their ability to pay their short-term debts, indicated that there was a tendency of decrease in current ratio, acid-test ratio, and cash ratio during the 2015–2018 period, which increased in 2019 and 2020 compared to the previous year. While the current ratio, provided a general measurement of the ability of enterprises to offset short-term liabilities with their current assets, it also offers important information about the sufficiency of net working capital. In the reference frame thereof, while the adequacy of net working capital decreased until 2018, there was an increase after 2018. A review of the risk of hospital enterprises as regards their ability to offset their short-term debts should include an assessment, which uses the acid-test ratio and the cash ratio combined. The acid-test ratio, which measured the current assets and short-term debts of enterprises other than their stocks, also decreased until 2018, similar to the current ratio, and increased in 2019 and 2020 compared to the previous years. The fact that the size of stocks in the balance sheet of the healthcare enterprises was relatively low compared to the manufacturing industry or commercial enterprises accounts for the close results of the current ratio and acid-test ratio in the hospital enterprises.

The cash ratio, which is another liquidity ratio that complements the current ratio and acid-test ratio, measures the ability to offset short-term liabilities using cash and cash equivalents. Accordingly, the ability of hospital enterprises to offset their short-term liabilities with liquid assets and securities decreased until 2018, as was the case with the current ratio and acid-test ratio, and thereafter increased compared to the previous year. Upon assessment of the three ratios combined, they moved in the same direction over the years. The main reason for the foregoing was that the ratio of short-term liabilities over the total resources of hospital enterprises was on an upward trend until 2018, and then decreased. The sector averages indicated that 38% of the total resources were provided by short-term liabilities in 2015, while the same rate increased to 47% in 2018. In other words, hospital enterprises financed almost half of their total assets by means of short-term borrowing in 2018. This is an extremely risky situation with regard to the ability of hospital enterprises to offset their short-term obligations. Nevertheless, the fact that the same ratio decreased to

**Table 3.5** Ratio analysis method used for assessing the financial performance of the hospital services sub-sector

Liquid ratios	2015	2016	2017	2018	2019	2020	Arithmetic mean
Current ratio	1.06	0.98	0.97	0.94	1.01	1.12	1.01
Liquidity (acid test) ratio	0.91	0.84	0.83	0.80	0.82	0.93	0.86
Cash ratio	0.21	0.13	0.16	0.11	0.17	0.25	0.17

**Table 3.6** Financial structure ratios

Financial structure ratios	2015	2016	2017	2018	2019	2020	Arithmetic average
Total liabilities/total assets	0.70	0.73	0.75	0.74	0.71	0.73	0.73
Short-term liabilities/total assets	0.38	0.40	0.43	0.47	0.38	0.40	0.41
Tangible fixed assets (net)/equity ratio	1.08	1.22	1.30	1.12	1.08	1.05	1.14

**Table 3.7** Operation ratios

Operation rates	2015	2016	2017	2018	2019	2020	Arithmetic mean
Receivables turnover ratio	4.35	4.28	4.47	4.86	5.40	5.30	4.78
Asset turnover ratio	0.79	0.76	0.74	0.76	0.86	0.83	0.79

38% in 2019 and that it was 40% in 2020, is indicative of positive developments with a view to the liquidity risk of enterprises compared to 2018 (Table 3.6).

A review of the distribution of financial resources of hospital enterprises suggested that approximately 73% of the total financing resources were ensured by means of borrowing, while 27% by equity capital. The fact that businesses finance only 27% of their total assets by equity capital, indicated that the sectorial enterprises followed a debt-based financing policy and therefore they were at a relatively higher financial risk. While the ratio of total liabilities to total resources was 73% on average during the 2015–2020 period, there was no general trend by year. The high rate of borrowing in the sector would on the one hand increase the financial risk due to borrowing, and therefore, the total risk of the enterprises, and on the other hand, it would directly affect the financing expenses and profitability of the enterprises. The increase in financing expenses would increase the degree of financial leverage of the enterprises, and as a result, the volatility in the net profit of the enterprises would increase vis-à-vis the change in the operating profit.

While the rate of short-term liabilities in total resources had a trend of increase during the 2015–2018 period, the same decreased in 2019 and 2020. The increase in short-term debts in total resources negatively affected the ability of enterprises to offset their short-term debts and had an adverse effect on the liquidity ratios, as mentioned above.

The ratio of tangible fixed assets over equity increased between 2015 and 2017 compared to the previous year, while the same decreased during the 2018–2020 period. The fact that the said ratio was above 1 in all the years within the scope of the study indicated that not all the tangible fixed asset investments could have been financed by equity. The reason is the low equity of hospital enterprises, as mentioned above (Table 3.7).



The receivables turnover ratio, which showed the average number of times that hospital businesses make over or collect their commercial receivables, tended to increase during the 2015–2020 period. In other words, the collection period of the receivables of the enterprises tended to become shorter. This is an extremely positive development for the ability of enterprises to obtain cash from their main activities. Concurrently, the same reduced the risk of commercial receivables of businesses turning out to be bad debt and positively affected their profitability. It shows that the receivables management process worked well and collection losses were low.

The asset turnover rate, which measured how effectively or efficiently the total assets of hospital enterprises were used, decreased during the 2015–2017 period, but increased after 2017. This was indicative of the fact that the efficiency of the activities of the sectorial enterprises vis-à-vis their total investments, decreased until 2017 and increased thereafter. In general, an increase in the asset turnover ratio positively affects the profitability and liquidity of the enterprises. Therefore, the years 2019 and 2020 presented a better outlook compared to the previous periods. The increase in this ratio in those years meant that the hospital units, including outpatient clinics, clinics, operating rooms, delivery rooms, intensive care, and laboratories as well as medical systems, including Magnetic Resonance Imaging (MRI), Computed Tomography (CT), and Angiography inter alia were used efficiently and effectively (Table 3.8).

A review of the profitability ratio of the equity of hospital enterprises indicated that the average return on equity was negative in 2016 and 2018, and positive in the other four years. During the six-year period in question, the return on equity was at the highest level in 2020. In the said year, the return on equity was 7.4%. In other words, the sectorial companies earned TL 7.4 net profit on average for every TL 100 of equity capital. Given that the inflation rate (Consumer Price Index—CPI) in Turkey was 14.60% in 2020, the profitability remained below the inflation rate, even in 2020, when the hospital enterprises had the highest profitability. The fact that most of the hospitals in Turkey were controlled by the public sector and were not profit-oriented accounted for this low rate.

The return on assets ratio, which indicated the net profit as the percentage of the total assets, was negative in 2016 and 2018, and positive in the other years. The reason why the return on assets and return on equity ratios were negative in 2016 and 2018 and positive in other years was that the net profit of the period was included in the share of both ratios. The reason why the return on equity ratio of the sectorial

**Table 3.8** Profitability ratios

Profitability ratios	2015	2016	2017	2018	2019	2020	Arithmetic average
Return on equity	0.007	−0.050	0.020	−0.059	0.025	0.074	0.003
Return on assets	0.002	−0.013	0.005	−0.015	0.007	0.020	0.001
Operating profit margin	0.067	0.062	0.062	0.070	0.076	0.105	0.074
Net profit margin	0.003	−0.019	0.007	−0.021	0.009	0.027	0.001

enterprises was extremely low as well as the return on assets ratio was even lower was that a significant part of the total assets of the enterprises was financed by means of borrowing and therefore the equity was low compared to the total debts.

Despite the low operating profit margin, which showed how much operating profit was obtained from the net sales of the hospital enterprises, it was positive in all the years in question. The increase in the operating profit margin was positive for the profitability of the enterprises especially in 2018, 2019 and 2020. There was a continuous increase in the operating profit margin in the sector since 2017. Upon analysis of the income statement with an aim to figure out the reasons for the said increase, the increase in net sales in the sector in those years was higher compared to the increase in operating expenses and cost of sales. The decrease in the ratio of Operating Expenses to net sales over years is the most important evidence for the foregoing.

The net profit margin of the hospital enterprises is extremely low compared to the operating profit margin. So much so that despite the operating profit margin being positive in 2016 and 2018, the net profit margin was negative. This is because of the fact that foreign exchange losses, financing expenses, and extraordinary expenses and losses in the sector were high in each period upon detailed analysis of the respective income statement items.

### **3.5 Conclusion**

The present study, which aimed to investigate hospital enterprises from a financial point of view, used the ratios produced from the financial statements of the years 2015–2020. Accordingly, the liquidity, operating efficiency, financial structure, and profitability of the enterprises were reviewed based on the average data from Hospital Services Sub-Sector.

The ability of sectorial businesses to pay their short-term debts is low. The change in short-term debts by years accounted for the change in the current ratio, acid-test ratio, and cash ratio of enterprises by year. The fact that it had a high share in the short-term total resources, put the enterprises at a relatively high liquidity risk. Healthcare enterprises may mitigate the liquidity risk by restructuring their short-term debts in the form of long-term debts.

The hospitals generally adopted a high-risk financing strategy and used equity to a lower extent. The fact that the borrowing rates were above the generally accepted standards, indicated that the sectorial enterprises were predominantly financed on a borrowing basis. As regards the use of liabilities, the rate of short-term borrowing was higher compared to long-term borrowing. Accordingly, the risk of financial distress due to the inability of the sectorial enterprises to offset their debts was very high. Therefore, sectorial enterprises strengthen their equity capital and act a little more cautiously in the use of liabilities. In the meantime, it should be noted that the use of equity above the standards was likely associated with an increase in the cost of capital.

Profitability rates are important indicators for the assessment of financial performance. In that respect, even though the other indicators of the hospitals were not at a level to suggest a financial failure, the profitability of the hospitals was not at the desired level. The sector incurred losses, especially in 2016 and 2018. The main factor that would affect the profitability of hospitals is the costs and funding expenses associated with service provision. Especially in 2018, there was an increase in those two factors combined with foreign exchange losses, which adversely affected the financial performance of the sector.

In light of the results of the present study, it can be suggested that the sector should pay attention to liquidity ratios, keep their costs under control, follow a tighter receivables collection policy, and review their borrowing strategies in order to maintain high financial performance. In addition, they should hold continuous financial analyses with an aim to increase resource efficiency. Furthermore, the fact that the profitability was low although the sector did not have poor financial indicators, is indicative of hospitals' need for professional financial managers and further insight into financial management.

The 2015–2020 period was selected as the subject of research with an aim to investigate the financial structure of the sector prior to the COVID-19 pandemic and thus contribute to the post-pandemic studies. In other words, the study aimed to contribute to the financial performance analyses based on the TCMB data intended for the assessment of hospitals' performance in the pre-pandemic, pandemic, and post-epidemic periods.

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