

The impact of board gender diversity on healthcare financial performance during Covid-19: Evidence from Italian Healthcare Organizations

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Abstract

Over the past few decades, European institutions and policymakers have promoted gender diversity in management and strategic leadership roles.

Prior literature has highlighted the importance of board gender diversity; nevertheless, previous studies have mainly focused on the private gender sector, while the public sector – particularly the healthcare sector – remains under-investigated.

Hence, to fill this gap, the present paper aims to examine the impact of board gender diversity on Italian public health outcomes during the COVID-19 pandemic to address the calls for more excellent representation of women in leadership roles.

The research methodology uses an OLS linear regression model to examine the relationship between the number of women in top positions in Italian Healthcare Organizations (roles of general, administrative, and health managers) and their financial and non-financial performance.

Results show that women's involvement in governance positively impacts the performance of Italian healthcare organisations, while no significant association has emerged regarding non-financial performance.

This study could represent a starting point for implementing measures that focus on the health sector. The sector has been experiencing a severe crisis for years and, therefore, needs innovative strategies for its relaunch.

Keywords: Board Gender Diversity, Public Healthcare Organizations, Financial Performance, Non-financial Performance, Italy, COVID-19.

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1. Introduction

The present study aims to analyse the issue of gender diversity in Italian healthcare organisations by investigating the relationship between gender diversity – understood as the presence of women in the three top governance figures of healthcare organisations – and financial and non-financial performance.

The healthcare sector needs creative approaches and methods to deal with its changing and unstable environment, especially in light of the recent COVID-19 pandemic (Vrontis et al., 2022; Fissi and Grazzini, 2021). The board and the managerial leaders of Healthcare Organisations (HCOs) represent the main actors that can reduce this uncertainty and adequately manage the organisation's relations with its external environment (Reguera-Alvarado et al., 2017). In fact, according to a broader definition of Corporate Governance, HCOs' board of directors must balance the need to maintain adequate financial performance with the primary objective of their community's well-being (De Regge and Eeckloo, 2020).

Within these premises, gender diversity played a relevant role among the various aspects relevant to this purpose. Given its importance as the central governance mechanism (Uyar et al., 2020), gender balance on boards of directors is widely promoted by various national and international regulatory provisions and recommendations. Moreover, it represents one of the primary objectives of the 2030 Agenda for Sustainable Development of all United Nations member countries. The presence of women in top management and governance roles of HCOs would be desirable because the dynamic and inclusive leadership and the diversity of knowledge and skills ensured by the presence of women in the HCOs' governing boards may represent a leading factor in improving financial (Reguera-Alvarado et al., 2017).

The literature emphasises the importance of gender diversity on company boards, highlighting how their presence positively influences social responsibility and economic performance. However, previous studies have mainly focused on the private sector, while only a few studies analysed this relationship in the public sector (Naranjo-Gil et al., 2008; Abor, 2017; Saporito et al., 2019; Büchner et al., 2014; Tartaglia-Polcini et al., 2021; Naciti et al., 2021; Arena et al., 2019; Sicoli et al., 2021; Aversano et al., 2023).

Therefore, the present paper addresses the call for more excellent representation of women in leadership roles by exploring the impact of gender diversity on public HCOs' outcomes during the COVID-19 pandemic.

To this aim, the study focuses on 150 Italian public HCOs. The research methodology is based on an OLS regression model to test the association between the presence of women in top positions (role of general, administrative,

and health manager) in Italian HCOs and their financial and non-financial performance.

Our results show that although women are underrepresented in the strategic management of Italian public HCOs, their involvement in governance positions positively affects HCOs' financial performance. On the other hand, no significant association has emerged between women's presence at governance positions and HCOs' non-financial performance.

The paper presents several novelties. First, unlike the previous studies, which mainly focused on a single dimension of performance (financial or non-financial), this paper aims to extend our knowledge of the role that gender diversity in HCOs' governance mechanisms plays in driving both financial and non-financial performance.

The second novelty of the paper is that the analysis has been carried out in the context of the COVID-19 pandemic. The third novelty is that this is the first study to use the Compensation Mobility Index as a proxy for financial performance.

This article contributes to the existing academic literature on corporate governance, providing empirical insight into the beneficial effects of board diversity in an under-explored context such as healthcare.

The results could also have practical and theoretical implications. This research could help standard-setters and practitioners identify performance indicators and governance dimensions. Academics could also benefit from this research, which can be used as a reference for developing similar analyses in private HCOs or different geographical contexts.

The present study is structured as follows: the first section presents the literature review about performance measurement and board gender diversity in the healthcare sector; the second section illustrates the research hypothesis; the third outlines the research context; the fourth section describes the data set and the research method, while the remaining sections discuss the findings and conclusions.

2. Literature review

2.1 Performance management in the Healthcare sector

In recent decades, several European countries have undergone a modernisation process in their public administration (PA) sector, changing how they operate and organise their systems (Vinci et al., 2022). In the New Public Management wave (Hood, 1995), private-inspired theoretical principles and

operational tools were introduced to lead a process of “corporatisation” of PA. The aim is to make the PA more responsive to citizens’ needs, making it leaner and more competitive. Within the public sector, HCOs have also been involved in a profound process of change as a response to the more pressing need for performance monitoring and measurement as well as to the intense environmental, economic, political, and social pressures (Tartaglia-Polcini et al., 2021; Pavan et al., 2019).

The need to guarantee high levels of performance and respond to stakeholders’ expectations about the delivery of high-quality services are the main motivations behind HCOs’ transformation process (Cavicchi and Vagnoni, 2017). HCOs have to be transparent and accountable to their stakeholders, and in particular to taxpayers and the government (Purbey et al., 2007), for the performances achieved and the use of public resources (Andrades-Peña et al., 2021; Pavan et al., 2019). Accordingly, HCOs must appropriately balance the need to maintain adequate levels of economic-financial performance with the primary objective of caring for their patients’ healthcare (De Regge and Eeckloo, 2020). As a result, HCOs have begun to emphasise the efficiency and effectiveness of public service delivery and the increased need for performance measurement (Cifalinò and Vendramini, 2015; Capalbo et al., 2023).

More recently, with the COVID-19 pandemic, there has been a growing need for performance measurement systems in the healthcare sector (Betto et al., 2022). Following these circumstances, many researchers have become increasingly interested in the role of Performance Measurement Systems (PMS) in the healthcare sector (Capalbo et al., 2023).

It should be emphasised that applying a PMS and interpreting the results must consider the peculiarities of healthcare organisations’ management. For example, Chang (2006) studied the responses of local health authorities to the performance measures indicated by the central government. His research has shown that health authority managers perceive the indicators chosen by central governments as a top-down control mechanism, unable to capture the factors that influence local performance.

In light of these difficulties, the study of Cifalinò and Vendramini (2015) evidenced that Italian local health units still use performance measures little. Also, Giuffrida’s (2000) study discovered that local healthcare organisations were less effective than other HCOs.

Although several studies have focused on the predominant use of economic-financial indicators to measure corporate performance, it is worth pointing out that HCOs’ performance is characterised by a multidimensional profile. Thus, several studies on PMS in the healthcare sector highlighted the

need for a multidimensional perspective that goes beyond the traditional financial measures and challenges the complexity of HCOs (e.g., Handler et al., 2001; Purbey et al., 2007; Yang et al., 2009; Nuti et al., 2013., Yuen et al., 2012; Vrontis et al., 2022; Aversano et al., 2024).

In Italy, some authors have recognised health mobility as a financial HCO performance metric that is relevant to evaluating the quality of HCOs (Posteraro, 2017; Gigio et al., 2018; Porcu, 2007; Cinquini et al., 2005; Cinelli et al., 2021).

Posteraro (2017) analysed the causes and effects of health mobility in Italy. He concludes that most patients' movements between regions are related to hospitalisations carried out to obtain better service than those within the region of residence, where these are also available but are considered not sufficiently reliable. The effect is economic since it raises their need to compensate for the costs incurred for services rendered to citizens in different regional areas other than those receiving per capita regional funding. Gigio et al. (2018) compared the mobility of patients in various Italian regions in 2014, concluding that passive mobility tends to reflect, above all, the lower quality, actual or perceived, of the respective health systems. Porcu et al. (2007) presented a method of analysing Sardinia's active and passive extra-regional health mobility in 2001-2004. The analysis has shown that health mobility is linked to efficiency indicators. Cinquini et al. (2005) analysed the HCOs' performance in the Tuscan region in the year 2004, using the compensation index – which expresses the attraction or the drain of resources as a percentage of total production costs – as economic performance indicator. Lastly, Cinelli et al. (2021) evaluated Italian regional mobility for the year 2019 using different variables. The authors recognised health mobility among the leading indicators of managerial effectiveness.

2.2 Corporate Governance and Gender Diversity in Healthcare Organizations

Corporate Governance is a critical driver of accountability and transparency in the healthcare sector. Managers who control the organisations are accountable to those who contribute resources and to all stakeholders, such as employees, suppliers, customers and the community (Brennan, 2021).

In recent years, HCOs have faced pressing challenges. The months of the COVID-19 pandemic, especially in the acute phases of increased infections and hospitalisation, were and still are periods of intense and absolute management responsibility (Longo and Ricci, 2020). In particular, the urgency has imposed fast and autonomous choices by HCOs' strategic governance

(Longo and Ricci, 2020). Within these premises, board gender diversity has become a lever to improve organisations' performance by enhancing problem-solving abilities and internal process efficiency (Büchner et al., 2014; Rainero et al., 2019; Lu and Herremans, 2019).

Various national and international regulatory provisions and recommendations widely promote gender balance on the board of directors. The increasing proliferation of gender-oriented reforms has effectively facilitated women's involvement in the managerial positions of PSOs (Borgonovi and Catuogno, 2021).

In 2020, the European Commission launched a new strategy for the next five years based on the Sustainability Goal 5, "Gender Equality," set out in the 2030 Agenda for Sustainable Development adopted by the United Nations (UN, 2015), highlighting the need for the growth of the "pink quotas" in all positions of responsibility both in the political and economic field (EC, 2020).

Accordingly, in the document "A Union of Equality: Gender Equality Strategy 2020-2025" (EC, 2020), the European Commission restates that inclusion and diversity are essential elements to create innovative approaches aimed at improving all companies' performance, generally contributing to the growth of the European economic system (EU, 2020). The European Commission also urged the European Parliament and all Member States to adopt measures that increase the gender balance in all management and leadership positions (EC, 2020).

Also, the literature emphasises the importance of gender diversity in healthcare leadership positions, highlighting how their presence can represent a crucial success factor for productivity, innovation, and overall performance (Fusco et al., 2021; Paoloni et al., 2021; El Chaarani and Raimi, 2022).

Some authors underline the importance of women in governmental positions (task forces, legislation of public expenditures) for managing the COVID-19 pandemic (Van Daalen et al., 2020; Leung et al., 2020; Martínez-Córdoba et al., 2021).

Van Daalen et al. (2020) provided quantitative data on task forces organised to prevent, monitor, and mitigate COVID-19 and found that, in global health governance, collective efforts in policymaking continue to overlook opportunities to create inclusive and comprehensive decision-making. The COVID-19 pandemic response needs the inclusion of diverse perspectives, experiences, and expertise in global health leadership. Leung et al. (2020) analysed the impact of gender equity on public health outcomes using the COVID-19 pandemic as its research setting. The results show that gender equity and the proportion of women in the legislature on public health expenditure significantly impact the number of diagnosed and critical cases, thus confirming the

importance of women's role in managing public health outcomes. Lastly, Martínez-Córdoba et al. (2021) analysed the effect of female leadership on decision-making during the pandemic. Findings show that the qualities of women who show temperance and moderation in government actions when facing risky situations may be the cause of more efficient management. In fact, during the management of the pandemic, countries led by women are more efficient than those led by men. (Martínez-Córdoba et al., 2021).

3. Theoretical Background

Despite the lack of a single model that can explain the impact of women in management positions on corporate performance (Tartaglia-Polcini et al., 2021), the *Resource Dependence Theory* (RDT) is widely considered to be an appropriate theoretical reference for explaining the relationship between HCOs' board gender diversity and their performance (Pfeffer and Salancik, 2003; Abor, 2017; Reguera-Alvarado et al., 2017; Uyar et al., 2020; Tartaglia-Polcini et al., 2021).

The RDT defines an organisation as an actor operating within an open system with which it interacts to acquire and exchange resources that it needs to create value for its stakeholders (Pfeffer and Salancik, 2003). However, this relationship creates uncertainty and dependence between the organisation and the external environment in which it operates and draws the necessary human, strategic, and financial resources to survive (Pfeffer and Salancik, 2003). According to the RDT, the board and the managerial leaders of the organisation represent the main actors able to reduce this uncertainty and adequately govern the relations with the external environment to obtain a continuous flow of resources (Reguera-Alvarado et al., 2017; Aversano et al., 2023).

There are usually a variety of backgrounds and expertise represented on hospital boards (Abor, 2017), and each director or manager has unique characteristics and skills. Therefore, increasing gender diversity – by appointing a more significant number of women to the board – allows the company to grow and make the general stock of knowledge, skills, expertise, and professional skills available more heterogeneous (Lu and Herremans, 2019; Uyar et al., 2020).

Thus, according to this theoretical perspective, the increase in gender diversity on the board and in top management positions is a fundamental driver for obtaining the critical resources for the survival and success of the organisation and, consequently, for the achievement of superior performance (Reguera-Alvarado et al., 2017).

Following this theoretical perspective, several studies empirically investigated the relationship between the presence of women on HCOs' boards or top management positions (e.g., Chief Executive Officer – CEO) and their financial and non-financial performance (Naranjo-Gil et al., 2008; Abor, 2017; Saporito et al., 2019; Büchner et al., 2014; Tartaglia-Polcini et al., 2021; Naciti et al., 2021; Arena et al., 2019; Sicoli et al., 2021).

Naranjo-Gil et al. (2008) showed how, in Spanish public hospitals, heterogeneity in the composition of top corporate management fosters strategic change and higher level of performance. Abor's (2017) study – conducted on a sample of 100 Ghanaian hospitals – also highlighted the need to increase the presence of women in governance and management leadership positions of healthcare organisations to achieve higher performance levels. On the other hand, the study by Saporito et al. (2019) highlighted the benefits and effectiveness of women's transformational leadership in the healthcare sector. Furthermore, it shows that this leadership style is presumed to harbour economic and non-economic benefits (i.e., the effectiveness of health care delivery).

In Germany, Büchner et al. (2014) highlighted how the gender diversity of HCOs' government affects the effectiveness of the strategies implemented and reflection on financial performance, measured as ROI.

Tartaglia-Polcini et al. (2021) analysed the association between the presence of women in top positions and financial performance in the context of Italian HCOs. Their findings show that a more expansive presence of women in managerial positions positively impacts financial performance, measured as ROA. Naciti et al. (2021) investigated the relationship between gender diversity and Italian HCOs' financial performance. The evidence showed a significant relationship between gender diversity and economic-financial performance, measured as the “solvency index,” a measure of an organisation's ability to meet short-range obligations. Sicoli et al. (2021) conducted a study on a sample of a group of 39 Italian HCOs to assess whether the presence of women on the boards of directors affects company performance. The results suggest that the presence of women is positively related to the performance index, measured as ROE.

El Chaarani and Raimi (2022) conducted a cross-sectional survey employing a model to predict multivariate causal relationships between diversity, entrepreneurial innovation, and performance of the Lebanese healthcare sector during the COVID-19 pandemic. The results show that gender diversity is a crucial success factor for workforce performance, as it can increase both process and organisational innovation and improve organisational performance and patient satisfaction.

Differently, Arena et al. (2019) conducted a study on a sample of 102

HCOs in 2015, examining the possible association between the presence of women in top management teams and financial and non-financial performance. The study highlighted a negative relationship between gender diversity and the non-financial performance of HCOs, while no significant association has emerged about financial performance.

Lastly, Vrontis et al. (2022) analysed 48 Lebanese HCOs during the COVID-19 pandemic. Their study reveals that dynamic managerial innovative practices positively impact competitive advantage and non-financial performance.

Accordingly, based on the above arguments, this study aims to contribute to the existing literature by answering the following research question:

RQ: Does board gender diversity affect healthcare organisations' financial and non-financial performance?

To answer the research question, the following hypotheses have been posed:

H1: Board gender diversity of HCO positively affects HCO's financial performance.

H2: Board gender diversity of HCO negatively affects HCO's non-financial performance.

This study focuses on a sample of Italian public HCOs. The Italian National Health System (INHS) was considered an appropriate research context to be investigated as, in recent years, it has been affected by several NPM-based reforms that have resulted in a redesign of the internal governance mechanisms of public HCOs (Vinci et al., 2022) and have promoted HCOs' strategic management as a crucial actor in decision-making system (Manes-Rossi et al., 2020)

The following section illustrates the structure and the peculiarity of the Italian National Health System.

4. Setting the context: The Italian National Healthcare System

As a result of the NPM movement in the 1990s, the Italian National Healthcare Service (INHS) has been transformed by regionalisation, managerialism, and quasi-markets (Anessi-Pessina and Cantù, 2017).

Regionalisation led the INHS to be organised into two levels: (i) the na-

tional government; and (ii) 20 regional governments (including two autonomous provinces). The national government is responsible for the definition of the “essential level of care” (Livelli Essenziali di Assistenza, LEA) and the distribution of tax revenues destined for the public funding of HCOs (Manes-Rossi et al., 2020). The regional governments are given significant autonomy and responsibility as they define the health policies at the regional level and are responsible for monitoring the quality of health services provided at the local level by healthcare organisations (Anessi-Pessina and Cantù, 2017). The growing need to verify the correctness of the management of health resources has led to the introduction of the model of Fiscal Federalism (Law 133/99), which requires the regional governments to finance their health service directly with their taxes (Villa, 2011).

As HCOs are financed in proportion to the volume of services produced, they have become more accountable for their services and their ability to improve the care experience by keeping the per capita costs of health low (Gartner and Lemaire, 2022). In this context, a phenomenon that often increases costs without changing the quality of care is health mobility (Zuccatelli, 2012). Health mobility is a right of citizens who can turn to any HCO, without territorial constraints, to seek an answer to their health needs (Posteraro, 2018; Porcu, 2007).

In Italy, the phenomenon of health mobility is constantly increasing. It is an indirect indicator of the quality of the INHS, and it has significant consequences (economically, financially, and socially) (Posteraro, 2018). From a financial point of view, every patient who receives care from an HCO in a region different from his area of residence generates an income for the destination HCO and a cost of the same amount for the HCO of origin, leading the region of residence to pay the service to the one who takes care of the patient (Anessi-Pessina et al.; 2012, Posteraro, 2018).

Since the d.lgs. 502/92, and, later, with d.lgs. 229/99, the compensation of health mobility has been an essential element in recognising the compelling attractiveness of the best-performing regions and measuring the production capacity of individual HCOs (Brenna and Spandonaro, 2015). It is considered one of the indicators of managerial efficacy; therefore, it can be used to assess the quality of health services offered by different structures or regions, considering the mobility choices of patients as a proxy of the reputation of the same (Cinelli et al., 2021). The service’s functioning and operability on the territory are strongly conditioned by the quality of health policies and governance processes defined at the regional level (Villa, 2011).

From a structural point of view, the INHS includes the following HCOs: Local Health Authorities (LHAs), Hospital Enterprises (HEs), University

Hospitals (UHs), University Hospitals integrated into INHS (UHIs), National Hospitals for Scientific Research (NHSRs), and National Hospitals for Scientific Research Foundations (NHSRFs).

Italian HCOs' strategic management involves three different positions as defined by the Italian Law 502/92: *General Manager* (GM), the *Chief Executive Officer* (CEO), and the *Chief Health Officer* (CHO) (Anessi-Pessina and Cantù, 2017; Nicolò et al., 2022). Each of these directors has specific tasks and competencies. The GM is responsible for the general performance of HCOs and the relations with external stakeholders. The CEO is responsible for all administrative procedures and supervises the operational tasks assigned to subordinate managers (Manes-Rossi et al., 2020; Naciti et al., 2021). Lastly, the CHO is a health professional responsible for the procedures related to health protocols (Manes-Rossi et al., 2020; Naciti et al., 2021).

In Italy, HCOs include

5. Research Methodology

In this section, we describe the sample, the data collection, and the empirical model employed in this study.

5.1 Sample Selection, data sources, and data collection

The list of Italian public HCOs was extracted from the open data section of the Italian Ministry of Health website¹. As a result, a database containing data about the Italian public HCOs up to 2021 has been created. The initial sample comprised 200 Italian Public HCOs: 99 LHAs, 53 HEs, 17 UHs, 9 UHIs, 18 NHSRs, and 4 NHSRFs.

The following phase consisted of collecting governance, board gender diversity, financial and non-financial performance data necessary to test the hypotheses. First, governance information (General Manager, Chief Executive Officer, Chief Health Officer) and information about Localisation, Type, Size, and Age were gathered from the official websites of the sampled HCOs. Second, data about financial and non-financial performance were retrieved from the official financial statements based on accrual accounting published

¹ Source: <https://www.dati.salute.gov.it/dati/elencoDataset.jsp?menu=dati>, accessed on June 2022.

by HCOs on their websites in a specific section called “Transparent Administration” (“Amministrazione Trasparente”).

The data collection refers to 2021 because it is the last year that allowed us to capture the highest number of observations. As a result of this phase, 50 HCOs were erased from the initial sample because of the unavailability of financial data. Accordingly, the final sample comprises 150 units: 80 LHAs, 39 HEs, 13 UHs, 6 UHIs, 9 NHSRs, and 3 NHSRFs (see table 1).

Table 1 – Sample description

Italian Public HCOs	Code	Number	%
Local Health Authority	LHA	80	53%
Hospital Enterprise	HE	39	26%
National Hospital for Scientific Research	NHSR	9	6%
National Hospital for Scientific Research’s Foundation	NHSRF	3	2%
University Hospital	UH	13	9%
University Hospital Integrated into INHs	UHI	6	4%
Total		150	100%

Source: author’s elaboration

5.2 Empirical Models

Two OLS regression models were estimated to assess the extent to which the selected explanatory variables affect the financial and non-financial performance of the sample of 150 Italian public HCOs.

In addition, the effect of three control variables likely to influence HCOs’ performance has been tested to enhance the regression model’s accuracy and minimise biases.

Financial performance = $\beta_0 + \beta_1$ (GM) + β_2 (CEO) + β_3 (CHO) + β_4 (Localisation) + β_5 (Type) + β_5 (Size) + β_6 (Age) + ϵ_i .

Non-financial performance = $\beta_0 + \beta_1$ (GM) + β_2 (CEO) + β_3 (CHO) + β_4 (Localisation) + β_5 (Type) + β_5 (Size) + β_6 (Age) + ϵ_i .

- β_0 is the constant, and ϵ_i is the error or disturbance terms of HCOs.

The Compensation Mobility Index was used as a proxy of financial performance. The compensation mobility index was constructed as a ratio obtained by dividing the balance of active and passive mobility – related to the

hospital, outpatient, and rehabilitation activities – and the total cost of production and expresses the attraction or drain of resources in terms of percentage of total production costs. The ratio considers both mobility in regional compensation and invoicing directly between healthcare companies (Cinquini et al., 2005).

The Compensation Mobility Index is a representative financial indicator of the HCOs' efficiency and effectiveness. Accordingly, this index has been used by Cinquini et al. (2005) as the proxy of the HCOs' financial performance, allowing them to examine the degree of achievement of the management economic equilibrium.

The investment in Staff training was used as a proxy for non-financial performance. Research focusing on implementing the balanced scorecard in HCOs (Voelker et al., 2001; Gurd and Gao, 2007; Betto et al., 2022) indicates that staff training is a typical non-financial indicator included in the learning and growth perspective.

The three independent variables (β_1 – β_3) represent the proxy of Gender diversity. Gender diversity in top governance positions was measured by three distinct binary variables (Tartaglia Polcini et al., 2021; Nicolò et al., 2022). Therefore, to consider the peculiarities and relevance of the governance structure of Italian HCOs, we evaluated the women's representation in each of them by using three variables:

- GM = General Manager. This variable is dichotomous and takes the value (1) if a woman holds the position of General Manager and (0) otherwise.
- CEO = Chief Executive Officer. This variable is dichotomous and takes a value of (1) if a woman holds the position of Chief Executive Officer and (0) otherwise.
- CHO = Chief Health Officer. This variable is dichotomous and takes the value (1) if a woman holds the Chief Health Officer position and (0) otherwise.

Furthermore, the proxies of the control variables (β_4 – β_6) are the following:

- Localisation was proxied by a dichotomous variable equal to (1) if the HCO is in the South of Italy and (0) if not (Pizzi et al., 2021; Nicolò et al., 2022).
- Type was computed by a binary variable equal to (1) if the HCO is an LHA and (0) otherwise.
- Size was measured as the natural logarithm of the number of hospital beds (Andrades-Pena et al., 2020; Arena et al., 2021).
- Age was measured as the natural logarithm of the difference between 2021 and the year of the foundation of each HCO (Shahzad et al., 2019., Tartaglia Polcini et al., 2021).

6. Findings

6.1 Descriptive statistics and correlation analysis

Table 2 shows the results of descriptive statistics for the independent variables, outlining minimum, maximum, and mean values, as well as the standard deviation.

Table 2 – Descriptive statistics

Continuous variables	Minimum	Maximum	Mean	Std. Deviation
Compensation	-11.180	6.921	0.116	1.213
Mobility Index				
Training	0	1083321022	7554868.66	88428070.97
Size	102	9415	894.74	987.422
Age	1	94	17.31	16.64
Dummy variables	YES		NO	
	No.	%	No.	%
General Manager	34	23%	116	77%
Chief Executive Officer	59	39%	91	61%
Chief Health Officer	57	38%	93	62%
Localisation	41	27%	109	73%
Type	80	53%	70	47%

Source: author's elaboration

As shown in Table 2, the proportion of women employed in the three governance positions analysed is low. For example, only 23% of general managers, 39% of chief executive officers, and 38% of chief health officers are women. Thus, women are underrepresented in the strategic management of Italian public health companies.

Moreover, while the Size variable varies from a minimum of 102 to a maximum of 9415, presenting an average value of 894.74, the Age has an average of 18.313, with a minimum of 2 and a maximum of 95. Regarding the Localisation and the Type variables, findings indicate that 27% of the HCOs are in the south of Italy, and 53% are LHAs.

Table 3 and Table 4 present the Pearson correlation matrix for the dependent and independent variables. All the correlation values are below the critical threshold of 0.8, indicating no severe multicollinearity problems (Farrar and Glauber, 1967).

Table 3 – Correlation Analysis (Financial performance)

	1	2	3	4	5	6	7	8
Compensation Mobility Index	1	-,001	,147	-,135	-,248**	-,144	-,050	-,030
General Manager		1	,020	,068	,028	-,153	-,106	-,029
Chief Executive Officer			1	-,152	-,013	-,096	-,137	-,049
Chief Health Officer				1	-,011	-,141	-,004	,046
Type					1	-,056	,043	-,176*
Localisation						1	-,174*	,314**
Size							1	-,152
Age								1

Notes: * $p < 0.05$; ** $p < 0.01$ (two-tailed)

Source: author's elaboration

Table 4 – Correlation Analysis (Non-financial performance)

	1	2	3	4	5	6	7	8
Training	1	-,044	,101	-,064	,077	-,051	-,002	-,104
General Manager		1	,020	,068	,028	-,153	-,106	-,029
Chief Executive Officer			1	-,152	-,013	-,096	-,137	-,049
Chief Health Officer				1	-,011	-,141	-,004	,046
Type					1	-,056	,043	-,176*
Localisation						1	-,174*	,314**
Size							1	-,152
Age								1

Notes: * $p < 0.05$; ** $p < 0.01$ (two-tailed)

6.2 Regression model

Table 5 shows the results of the first OLS regression model. The regression model assumptions were tested for heteroskedasticity (white test) (Mertens, 2017). The white test provided p-values that were not significant, thus eliminating heteroskedasticity problems.

The regression model is statistically significant (p -value < 0.01) with an adjusted R2 value of 0.08.

Table 5 – Regression Analysis (Financial performance)

	<i>Coefficient</i>	<i>Std.Error</i>	<i>T-statistic</i>	<i>p-value</i>	<i>Sig</i>
const	1,31212	0,786784	1,668	0,0976	*
General Manager	-0,0575442	0,116122	-0,4955	0,6210	
Chief Executive Officer	0,236298	0,136938	1,726	0,0866	*
Chief Health Officer	-0,365307	0,251209	-1,454	0,1481	
Type	-0,626336	0,204850	-3,058	0,0027	***
Localisation	-0,483343	0,357474	-1,352	0,1785	
Size	-0,0934718	0,0977292	-0,9564	0,3405	
Age	-0,0259604	0,0860396	-0,3017	0,7633	
Mean dep. variable	0,118655	Std dev. Dep. Variable	1,213428		
Sum of squared residuals	191,4635	Regression std error	1,161178		
R ²	0,127286	Adjusted R ²	0,084265		
F (7, 71)	3,786454	P-value(F)	0,000850		

Notes: The asterisks indicate statistical significance at the following levels: *10%; **5%; ***1%

White test: T statistic: LM = 34.812; p-value = $p(\chi^2(30) > 34.812) = 0.249539$ (no heteroskedasticity)

Source: author's elaboration

The findings show that the Chief Executive Officer is the only variable that statistically (at a 10% level) significantly impacts financial performance. On the other hand, the Chief Health Officer and the General Manager do not affect financial performance. Therefore, our hypothesis is only partially confirmed.

Financial performance is also negatively and statistically correlated with HCOs' type. This result pinpoints that LHAs perform worse economically than other types of HCOs.

Table 6 shows the results of the OLS regression model tested for non-financial performance. The regression model assumptions were tested for heteroskedasticity (white test) (Mertens, 2017). The white test provided p-values that were not significant, thus eliminating heteroskedasticity problems. The regression model is not statistically significant (p-value > 0.05).

According to the results, the variables *General Manager*, *Chief Executive Officer*, and *Chief Health Officer* do not significantly impact HCOs' non-financial performance. Thus, our second hypothesis has to be rejected.

Table 6 – Regression Analysis (Non-financial performance)

	<i>Coefficient</i>	<i>Std.Error</i>	<i>T-statistic</i>	<i>p-value</i>	<i>Sig</i>
const	3,47737e+07	3,97696e+07	0,8744	0,3834	
General Manager	-1,11809e+07	1,16050e+07	-0,9634	0,3370	
Chief Executive Officer	1,56532e+07	1,58652e+07	0,9866	0,3255	
Chief Health Officer	-8,51127e+06	8,85122e+06	-0,9616	0,3379	
Type	1,12650e+07	1,14191e+07	0,9865	0,3256	
Localisation	-6,29814e+06	6,59940e+06	-0,9544	0,3415	
Size	-1,78662e+06	2,98142e+06	-0,5993	0,5500	
Age	-8,19908e+06	8,46599e+06	-0,9685	0,3345	
Mean dep. Variable	7554869	Std dev. Dep. Variable	88428071		
Sum of square residuals	1,13e+18	Regression std error	89258764		
R ²	0,028990	Adjusted R ²	-0,018876		
F(7, 142)	0,145540	P-value(F)	0,994280		

*Notes: The asterisks indicate statistical significance at the following levels: *10%; **5%; ***1%*

White test: T statistic: LM = 15.1653; p-value = $p(\chi^2(30) > 15.1653) = 0.988771$ (no heteroskedasticity)

7. Discussion

In line with prior literature (Naranjo-Gil et al., 2008; Abor, 2017; Saporito et al., 2019; Buchner et al., 2014; Tartaglia-Polcini et al., 2021; Naciti et al., 2021), the results of our study suggest that greater female involvement in the governance of HCOs’ leads to a more remarkable ability to achieve good financial performance.

During COVID-19, the INHS has been governed by an organisational culture that is “mission-driven,” guided by a sense of urgency for institutional purposes’ achievement, for which new and fast decisional processes are activated (Longo and Ricci, 2020; Vinci et al., 2022).

In the acute stages of the pandemic, the CEO often had to decide very soon and alone in conditions of objective stress and operational overload (Longo and Ricci, 2020; Fissi and Grazzini, 2021). Our empirical results show that women CEOs have shown courage, decision-making power, and substantial foresight in their choices despite uncertain information frameworks in perpetual change (Longo and Ricci, 2020), improving, as a consequence, organisational financial performance.

Additionally, in line with the Resource Dependence Theory, the women on the board have managed the uncertain environment derived from COVID-19 by balancing the primary objective of their community's well-being with the need for adequate financial performance.

Unlike the positive correlation with board gender diversity, financial performance is negatively and statistically correlated with the type variable. This result pinpoints that LHAs perform inferior to other HCOs in economic-financial terms. This result is in line with the studies of Cifalinò and Vendramini (2015), Chang (2006), and Giuffrida et al. (2000).

The negative relation between LHAs and financial performance can be justified by the assumption that in LHAs, there is little use of performance measures (Cifalinò and Vendramini, 2015). This can be explained by the results of Chang (2006), whose study shows that LHA managers perceive the performance indicators chosen by central governments as a top-down control mechanism. Also, in his research, Giuffrida (2000) found LHAs less efficient than other HCOs.

As we can see from the results, LHAs are less attractive and have an inferior compensation mobility index.

Regarding non-financial information, the study shows that women in the positions of General Manager, Chief Executive Officer, and Chief Health Officer do not affect HCOs' non-financial performance.

During the COVID-19 pandemic, managers focused more on financial performance than on other aspects, such as investing in staff training.

8. Conclusions

In recent years, gender diversity has assumed ever greater importance, prompting institutions and policymakers from all over the world to issue regulatory measures and recommendations – both supranational (European Union) and national (see the examples of Norway, Italy, Belgium, and France) – to reduce the glass ceiling that for many years has separated women from both economic and political roles of responsibility.

The debate on the potential of gender diversity has also matured rapidly among academics who have brought to light numerous empirical studies to test the impact of women's presence in governance or the leading positions of managerial responsibility on the financial performance of public and private organisations. However, the attention of the latter has been mainly dedicated to the private company sector, while that of public companies – despite the im-

portance that women can assume in overcoming the resistance to change typical of such companies and favoring the adoption of optics oriented towards an extended performance concept – has been neglected for a long time.

Starting from these premises, the present study has tried to fill this gap, contributing to the existing literature through the empirical analysis of the potential relationship between the presence of women in the governance of a sample of 150 organisations belonging to the Italian public healthcare sector and the financial and non-financial performance, assuming the theoretical perspective of the RDT.

These results highlight how the presence of female CEOs of Italian public HCOs may positively influence their financial performance. In contrast, gender diversity in the corporate governance of Italian public HCOs does not affect their non-financial performance. Thus, considering our results, our analysis supports the expectation that, in the healthcare sector, women's involvement in governance has a positive effect on the HCO's financial performance.

From the point of view of the practical implications, this study follows the same path as policymakers and regulators who have been working for years to promote gender equality at an economic and political level. Our study can be a starting point for implementing measures that focus on the public sector, particularly the health sector, which has been experiencing a severe crisis for years and needs innovative strategies for its relaunch.

Therefore, this study wants to stimulate the sector operators to effectively include women in the leadership positions of the Italian public HCOs, allowing the production of the various effects demonstrated by previous studies.

However, this study is not free from limitations that may represent starting points for future research. First of all, the study was conducted over a single year. Future studies could expand the analysis over several years by verifying - through a longitudinal study - the impact of board gender diversity on the performance of healthcare organisations. Secondly, the analysis is limited to a sample of HCOs belonging to the Italian healthcare sector. Future research could compare European countries while considering the existing differences in the theoretical, social, and economic background. Thirdly, this study uses the compensation mobility index and investment in staff training as a proxy of performance; future studies could use different indicators as a proxy of performance.

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