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What role does HRM system strength play in Italian healthcare organizations? A post COVID-19 snapshot

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Abstract

Purpose – Our study investigates the role of the Human Resources Management (HRM) system strength in supporting Italian healthcare managers during times of uncertainty and change. The perceived HRM system strength and its relationship with managers' taking charge behaviors, perceived procedural constraints, and work engagement were examined.

Design/methodology/approach – Two surveys were conducted to gather empirical data from a pooled sample of 121 healthcare managers located in hospitals across Italy. We use regression analysis to test our hypotheses.

Findings – The data show that strong HRM systems facilitate managers taking charge behaviors and work engagement. Additionally, the findings highlight the mitigating effect of a strong HRM system on procedural constraints, such as red tape, in public healthcare organizations.

Practical implications – Emphasizing the positive outcomes associated with strong HRM systems, the findings suggest that public health organizations should make efforts to put in place robust HR practices to bolster engagement and proactive behaviors among healthcare managers in times of uncertainty and change.

Originality/value – Analyzing a unique data set, the study extends the understanding of HRM system strength in the public sector, specifically in post-pandemic healthcare organizations. Overall, the study contributes to the growing literature on HRM system strength by offering novel insights into its nomological network.

Keywords HRM system strength, Taking charge, Work engagement, Red tape, Healthcare managers, COVID-19

Paper type Research paper

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Introduction

During the COVID-19 pandemic, governments and healthcare systems worldwide were confronted with significant uncertainty impacting healthcare operations, resource availability, organizational capabilities, and patient demands (Gifford *et al.*, 2023). Italy was one of the first countries after China to be heavily hit by COVID-19 outbreaks, with one-quarter of the available beds in intensive care units already occupied by early March 2020 and a staggering 20% of healthcare professionals infected (Remuzzi and Remuzzi, 2020). As hospitals were reaching almost full capacity, Italian healthcare workers had to grapple with treatment choices usually encountered in conflict and disaster zones (Catania *et al.*, 2021). Moreover, the significant regional differences in the spread of the virus implied different emergency management policies (Troisi and Alfano, 2022).

Studies on large-scale infectious disease outbreaks have shown that their impact extends beyond the healthcare workers' mental and physical health, affecting their work performance and requiring appropriate managerial responses (Goulia *et al.*, 2010). For example, such crises trigger changes in the organization, which requires managers and employees to behave proactively, keep engagement levels up, and overcome the rigidities of the organization. In such contexts, the design of the human resources management system potentially acts as an enabler for proactive, change-oriented behaviors such as taking charge (AlMunthiri *et al.*, 2023; Homberg *et al.*, 2019). As the effects of the COVID-19 pandemic produced both immediate and long-lasting consequences for healthcare organizations and workers (Burdorf *et al.*, 2020), we investigate what role the Human Resources Management (HRM) system plays in post-pandemic Italian healthcare and if it enables proactive, change-oriented behaviors and engagement among healthcare managers.

In strategic terms, HRM can be described as a combination of practices for managing employees; it is designed to enhance organizational effectiveness and, consequently, organizational performance (Boselie *et al.*, 2005). The HRM causal chain model explains the process through which HR policies affect performance (Purcell and Hutchinson, 2007; P. M. Wright and Nishii, 2008). Crucial stages in this process are the implementation of HR practices by line managers and the behaviors they generate in their employees. However, the literature on Strategic HRM (P. M. Wright and McMahan, 1992) has overlooked the work context's impact and stakeholders' perspectives, generating a limited understanding of how organizations strategically manage people (Collings *et al.*, 2021). The concept of "HRM system strength" suggests that the way HR practices are implemented influences how they are perceived and, ultimately, their impact on important individual and organizational outcomes (Bowen and Ostroff, 2004). The key assumption is that the relationships between HR practices and performance will not be effective unless the practices are made salient to employees, allowing them to collectively understand the practices and their goals (Ostroff and Bowen, 2016).

In the last decade, interest in exploring the concept of HRM system strength has been increasing. A research stream emerged that focused on its effects at the individual level, where HRM system strength showed positive associations with desirable employee attitudes and behaviors, such as knowledge sharing, innovation, performance, and lower turnover intentions (Hewett *et al.*, 2018; Sanders *et al.*, 2021; Wang *et al.*, 2020). Nonetheless, as a relatively new construct (Sanders *et al.*, 2021), empirical contributions are needed to improve our understanding of its nomological network. Thus, this study aims to contribute to the literature on HRM system strength (Bowen and Ostroff, 2004) analyzing the perceptions of Italian healthcare managers during and in the aftermath of the COVID-19 crisis, when adjustments to HR practices may be necessary to elicit the desired response.

A former study on HRM system strength in 4 Dutch hospitals showed its positive effects on employees' affective commitment to the organization (Sanders *et al.*, 2008). Other work exploring the antecedents of HRM system strength during the COVID-19 pandemic showed

that the severity of the crisis and the organizations' reputation influence university managers' inclinations in effectively sharing information (Sanders *et al.*, 2024). A study involving Italian healthcare staff at different hierarchical levels studied the individually perceived variability of HRM practices, finding that a strong HRM system strength allows for a collective proactivity climate to emerge (Dello Russo *et al.*, 2018). However, the influence of HRM system strength on healthcare managers' ability to adapt to changes and uncertainty triggered by crises, such as the COVID-19 pandemic, is yet to be uncovered. Through a pooled sample of two cross-sectional surveys containing 121 useable responses of healthcare managers from all over Italy, this study addresses the following research question: To what extent does the perceived strength of the HRM system support Italian healthcare managers in taking charge, reducing red tape and enhancing their engagement during and after the COVID-19 pandemic?

This study makes two contributions. Firstly, it expands the existing research on HRM system strengths in public sector work environments by examining its role in healthcare organizations thereby enhancing our understanding of HRM system strength's nomological network. Emphasizing the positive outcomes of having strong HRM systems in place enables healthcare organizations to design engagement-enhancing HRM interventions. Second, the analyses are based on unique empirical data obtained through collaboration with FNOPI and a training institute, which offers valuable insights from high-quality informants distributed across the Italian healthcare system. As such, they offer a looking glass on how HRM practices in healthcare organizations are perceived as a consequence of the pandemic.

Our research, despite its focus on healthcare managers' perceptions, acknowledges the complexity of HR implementation involving multiple stakeholders. We argue that each actor, ranging from organizational leaders to frontline workers, plays distinct roles in the HR implementation process. Therefore, we contend that our research findings transfer, at least partially, to other healthcare organizations but in particular also to different groups of employees. Furthermore, they can serve as a reference framework for future studies investigating the perception of HRM system strength among other stakeholders.

Theory

Human resources management system strength in public healthcare organizations

The need for well-implemented HR practices is amplified in emergencies, where otherwise fundamental HRM practices – such as training and development, recruitment, and selection and performance management – are overshadowed by HRM practices relating to employee motivation, engagement, safety, and health (Adikaram *et al.*, 2021). The HRM causal chain provides valuable insights into how changes in HR practices impact performance (Purcell and Hutchinson, 2007). It argues that an intended HR practice travels through a series of stages, all of which can alter its intended outcome. These stages consist of management-level activities: designing HRM practices (HR department) and implementing those practices (supervisors and line managers) and employee reactions to such implementations (Boselie *et al.*, 2005; Wright and Nishii, 2008). For example, employees adjust their attitudes and behaviors based on their perception of how well HR practices are implemented by their direct supervisors, which ultimately leads to the desired or undesired outcomes. Several scholars (Aktas *et al.*, 2023; Bednall *et al.*, 2022; Hauff *et al.*, 2017) have been studying how HRM system content and processes are integrated into employees' perceptions and how these perceptions influence employees' attitudes, behaviors, and performance.

Some studies showed how variations in individual perceptions of HR practices are moderated by the strength of the HRM system, outlining the relationship between higher and lower levels of interactions (Dello Russo *et al.*, 2018). However, bearing in mind that organizations, especially public hospitals, strive to optimize their human resources, they

often adopt a combination of HR practices that work together toward achieving their objectives. As expressed by Wilkinson *et al.* (2019), "The basic premise is that human resource interventions work effectively in concert, rather than as individual implementations" (p. 89). Hence, it is reasonable to assume that variations in such bundles also lead to different outcomes, or in other words, any given bundle of HR practices establishes a distinct HRM system.

To cope with the mounting demand for healthcare, hospitals have had to significantly increase their capacity, measured by the availability of hospital facilities, beds (including intensive care units), financial and human resources (Gifford *et al.*, 2023). HRM systems can serve as a buffer against these challenges. Bowen and Ostroff (2004) proposed that a strong HRM system effectively communicates the organization's intended practices to employees in a distinctive, consistent, and consensus-building manner, ultimately contributing to the desired organizational outcomes. Therefore, it is crucial to consider the perceived strength of the HRM system, as stronger HRM systems provide clear guidance to employees about what the organization considers as desired behaviors (Bowen and Ostroff, 2004; Hauff *et al.*, 2017; Ostroff and Bowen, 2016).

Building upon this notion, Luu (2019) suggests that perceptions of strong HRM systems may stimulate public employees to contribute more energy to public service. We thus argue that positively perceived HRM systems encourage line managers to engage more in activities to solve challenging situations by adopting new ways of working. Such proactive change implementation behavior is known as taking charge, conceptualized as "voluntary and constructive efforts by individual employees to effect organizationally functional change" (Morrison and Phelps, 1999, p. 403). Especially during and in the aftermath of the pandemic, healthcare organizations were forced to rethink how they operate, putting healthcare managers in the need to implement new work procedures. Hence, we hypothesize:

H1. Perceived HRM system strength is positively associated with healthcare managers taking charge behavior.

A common problem in public sector organizations is their rule-driven nature. Research has addressed this issue through the lens of procedural constraints in the form of perceived red tape (Bozeman and Feeney, 2015; Hattke *et al.*, 2018; Moynihan *et al.*, 2012). Such constraints act as an impediment to organizational performance (Blom *et al.*, 2021), positive employee attitudes (Baldwin, 1990; Scott and Pandey, 2005), and performance, driving employee behaviors (Quratulain and Khan, 2015). Van Loon (2017) provides evidence for the nuanced impact of red tape on different dimensions of public service performance. Positively perceived HRM systems have the potential to mitigate these problems through enabling work to be executed in a performance-enhancing fashion. The negative impact of red tape may be contained by organizational and managerial practices, such as HRM practices, as these factors can reduce employee perceptions of red tape (Moynihan *et al.*, 2012). Additionally, red tape might turn into green tape (DeHart-Davis *et al.*, 2015) when rule attributes are changed. Therefore, we argue that positively perceived HRM systems would lead line managers to focus on organizational effectiveness instead of being concerned about inhibiting procedural constraints. Thus, we hypothesize:

H2. Perceived HRM system strength is negatively associated with healthcare managers' perceived procedural constraints (red tape).

The COVID-19 pandemic also highlighted the crucial role healthcare managers play in supporting clinical staff and in strengthening organizational and workforce resilience (Louise Duncan, 2020). However, providing extensive support can consume physical and psychological resources and impact work engagement. Work engagement is characterized by active involvement, positive fulfillment, higher motivation, lower stress levels, and

comprises three dimensions: vigor, dedication, and absorption (Bakker and Schaufeli, 2014). A strong HRM system supports line managers by enabling them to carry out the required practices for staff motivation, effectiveness, and retention. Empirical work conducted by Chacko and Conway (2019) shows the critical role of HRM system strength, particularly of clear expectancies, in boosting daily work engagement. Therefore, we argue that positively perceived HRM systems fuel healthcare manager engagement and hypothesize:

H3. Perceived HRM system strength is positively associated with healthcare managers' work engagement.

Work motivations are an essential prerequisite for performance and an enabler for change (Wright *et al.*, 2013). Extrinsic motivation satisfies needs indirectly through tangible external rewards, whereas intrinsic motivation satisfies needs directly through the conduct of work activities (Frey *et al.*, 2013). More specifically, in public sector organizations, public service motivation (PSM), i.e. the desire to contribute to society (Perry and Wise, 1990), is seen to be an important form of motivation. While our focus here is not on different motivational facets, we simply acknowledge the role of motivations for the behavior of healthcare personnel. In particular, concerning organizational change attitudes and behaviors, the evidence supports the idea of PSM being an enabling factor in public sector service organizations (Wright *et al.*, 2013; Hassan *et al.*, 2021; Homberg *et al.*, 2019). Nonetheless, one has to acknowledge that meta-analytically derived effect sizes indicate that the effect of PSM on desired employee outcomes is rather small (Homberg *et al.*, 2015; Harari *et al.*, 2017).

Method

Research context

The Italian National Health System (I-NHS) was founded on December 23, 1978, to replace an insurance-based system. The primary goal of the reform was to grant access to the same levels of healthcare without discrimination. The I-NHS is based on a decentralized organizational structure with national, regional, and local administration. The national level is responsible for ensuring the general objectives and fundamental principles of the national health care system. Regional governments, through the regional health departments, are responsible for ensuring the delivery of a benefits package through a network of population-based health management organizations ("local health enterprises") and publicly and privately accredited hospitals.

In the early 1990s, a profound reform process imposed a substantial transformation in the governance and management of the I-NHS. In particular, Legislative Decrees Nos. 502/1992 and 517/1993 were the first steps of a progressive pro-competition reform aimed at retaining universal coverage while introducing a financing system that would secure the macro-level objectives of containing costs and promoting equity and incorporate micro-level incentives for promoting efficiency and enhancing responsiveness to consumers through competition among providers.

Furthermore, the 1992 reform introduced managerial principles into the I-NHS, particularly impacting line management positions. Occupied by physicians undertaking managerial responsibilities, these positions recognize the integration of management into areas where they previously held autonomy over general clinical decisions (Garelick and Fagin, 2005). Healthcare managers play a pivotal role as intermediaries between management and clinical priorities. It is anticipated that they encounter stress and challenges impacting their ability to maintain relationships and identity with their medical colleagues while concurrently meeting both institutional and personal management expectations (Sartirana *et al.*, 2014).

Aside from specific professional duties, nurse managers also have decision-making responsibilities and play a significant role in organizing healthcare delivery.

Data collection

For this study, we combined responses from two survey projects targeting Italy's healthcare managers. The first survey was conducted in collaboration with the researchers and the National Federation of Orders for Nursing Professions (FNOPI). The second survey was conducted as part of nationally certified advanced managerial training courses for healthcare managers offered by a university. While the surveys were not identical, they contained a large set of identical measures. In the subsequent sections, we provide details on the data collection and the survey measures.

(1) FNOPI dataset – The data collection for this study was conducted in two waves, yielding a total useable sample of 46 responses. The first wave occurred between March and July 2021, when a survey was sent to 140 nurse managers in Italian hospitals. The return rate for this wave was 23.6%, resulting in 33 useable responses. Although the sample size is relatively small, the return rate is consistent with similar surveys in organizational studies (Holtom *et al.*, 2022). The second survey wave was run between September and October 2021. Participants from the first wave were re-contacted, and a research assistant followed up by phone to collect responses. An updated contact list was obtained from FNOPI. Overall, we received 32 responses, of which 14 had also provided complete information in wave 1.

(2) Training course dataset – The survey was administered to 300 healthcare managers, and the return rate was 40%. The useable sample contains responses from 120 healthcare managers from various Italian regions, reflecting the organizational structure of the I-NHS. The sample consists of healthcare managers who completed Health Managers Advanced courses or the Master Executive Course. All participants are managers with a minimum of five years of experience, meeting the statutory prerequisites for advancement to higher managerial positions within healthcare organizations. The selection process strictly avoided any discrimination based on age or gender. The survey was conducted from August to December 2023. To collect the data, an anonymized survey link was distributed via email, accompanied by several follow-up reminders to maximize response collection.

(3) Final sample – In the final step, we combined the FNOPI and training course datasets. Combining the FNOPI and training course datasets is viable as all respondents hold management responsibilities in Italian healthcare organizations and, therefore, qualify for our study. However, the process required further cleaning, and some observations were removed due to missing values on variables relevant to the analysis. The final dataset for the subsequent analyses contains N = 121 observations (19 FNOPI/102 training data). The majority of professionals in the overall sample have more than ten years of experience (i.e. 62%), and 52% of the sample fall into the age category born between 1960 and 1969. The useable responses are distributed across 15 of 20 regions in Italy, accounting for 75% coverage of Italian regions and representing all macro-areas (North, Centre, and South).

Measures

If not otherwise indicated, variables are measured on 5-point agreement scales. All measures were translated into Italian by native speakers who are part of the research team.

HRM system strength. We used the measure of HRM system strength developed by Hauff *et al.* (2017). The scale summarizes perceptions of HR practices in organizations from the

perspective of HR directors and managers. We made minor adaptations to fit it into the hospital context. A sample item is "Employees know the HRM targets and practices." We follow the logic explicated by Hauff *et al.* (2017) that responses provided by those who are actually managing people "are usually more knowledgeable concerning these issues than employees" (p. 719). Hence, the healthcare managers targeted in our survey are quality informants on HRM system strength (Cronbach alpha of 0.84).

While the literature has produced alternative measures of HRM system strength (see, e.g. Bos-Nehles *et al.*, 2021; Hauff *et al.*, 2017), we consciously opted for the measure proposed by Hauff *et al.* (2017) as it best fits our study context. We are sampling respondents who are in managing roles supervising other employees providing direct care. Thus, we follow Hauff *et al.* (2017) in their argument that individuals in managing roles "(. . .) are usually more knowledgeable about these issues than employees (. . .)" (Hauff *et al.*, 2021, p. 719).

Taking charge. The taking charge measure consists of three items adapted from Morrison and Phelps (Morrison and Phelps, 1999). We used the version for self-reported taking charge, as suggested by Homberg *et al.* (2019). A sample item is "I try to bring about improved procedures in your workplace." The measure yielded a reliability of $\alpha = 0.91$.

Motivation. We measured intrinsic and extrinsic motivation using Gagné *et al.*'s (2010) motivation at work scale. Intrinsic motivation was measured with three items from the scale and yielded a reliability of $\alpha = 0.74$. A sample item is "I do this job because I enjoy it." The scale also contained three items for extrinsic motivation (Cronbach alpha of 0.70). A sample item is "I do this job for the paycheck."

Procedural constraints. We used the measures presented by Wright (2004) to capture bureaucracy and red tape. A sample item is "This organization seems much more concerned that I follow procedures than that I do a good job." The measure yields a Cronbach alpha of 0.69. We acknowledge that the red tape measure falls just short of the normal reliability threshold. However, the shortfall is minimal, and thus, we decided to carry it forward.

Public service motivation (PSM). We use a global measure of PSM consisting of 5 items ($\alpha = 0.79$) inspired by Kim *et al.*'s (2013) internationally validated scale. Public service motivation is particularly relevant in the hospital context as it refers to respondents' desire to serve the public and further the common good. A sample item is "I am prepared to make sacrifices for the good of society."

Engagement. We measured engagement using the items proposed for the Italian version of the Utrecht Work Engagement Scale by Balducci *et al.* (2010). The scale measures the three engagement dimensions: vigor ($\alpha = 0.87$), dedication ($\alpha = 0.78$), and absorption ($\alpha = 0.70$). The dimensions were aggregated into a summative index to generate the engagement variable.

Control variables. Measures for education level and marital status were recorded in wave 1. For the subsequent analyses, we used a dummy variable indicating high levels of education (i.e. "Ph.D.") and a dummy for married respondents.

Results

Table 1 summarizes the descriptive data from the pooled dataset.

Next, Table 2 displays the descriptive statistics, correlations, and reliabilities for the variables included in our subsequent analyses.

After verifying the reliabilities and correlations, we proceeded to test our hypotheses. Our estimation strategy is as follows: First, we run a model including the control variables (marital status, education level); we then proceed to add the motivation variables (extrinsic, intrinsic, and PSM), and finally, we add our main variable of interest, i.e. HRM system strength.

Variable	Measurement	N	%
Education	High School	11	9.09
	Diploma	1	0.83
	Bachelor	0	0.00
	Master	24	19.83
	Master Medicine	75	61.98
	Doctorate	9	7.44
	Other	1	0.83
		121	100%
Marital status	Single	24	19.83
	Married	85	70.25
	Divorced	7	5.79
	Widowed	1	0.83
	Prefer not to disclose	4	3.31
		121	100%
Tenure	Less than 1 year	12	9.92
	1–2 years	11	9.09
	3–5 years	15	12.40
	6–10 years	7	5.79
	More than 10 years	76	62.81
N total		121	100%

Table 1. Sample characteristics

Note(s): Pooled cross-section, FNOPI and Training datasets
Source(s): Authors own creation

Hypothesis 1 stipulated a positive relationship between HRM system strength and taking charge behavior. Model 3 provides full support for the hypothesis (see Table 3). Model 3 includes our main independent variable of interest (i.e. HRM system strength) and displays a positive coefficient significant at 5% level ($\beta = 0.155$; $p = 0.036$). We also note that among the motivation variables, PSM yields positive and significant associations with taking charge in both model 2 and model 3.

Hypothesis 2 proposed a negative relationship between HRM system strength and the perceived procedural constraints in the form of red tape. Our results support Hypothesis 2 (see Table 4) as the coefficient on HRM system strength is negative and significant ($\beta = -0.393$; $p = 0.001$). Similarly, results display a negative association between intrinsic motivation and red tape ($\beta = -0.290$; $p = 0.009$). We further find a significant positive association between extrinsic motivation and red tape ($\beta = 0.24$; $p = 0.009$). PSM remains not significant in all specifications.

Hypothesis 3 stipulated a positive relationship between HRM system strength and health managers' engagement. Model 6 provides support for this hypothesis (see Table 5), yielding a positive and significant coefficient on the HRM system strength variable ($\beta = 0.160$; $p = 0.012$). Considering the motivation variables, we note that this time intrinsic motivation exhibits a positive and significant association with engagement in models 5 and 6 whereas the significance of PSM disappears once HRM system strength comes into play.

Discussion

Through the empirical analysis of primary data coming from Italian healthcare managers, our study contributes to enriching the limited conceptual and theoretical literature on how public sector healthcare organizations benefit from HRM system strength as a result of having experienced the COVID-19 pandemic (Caligiuri *et al.*, 2020). We provide first evidence about the role of HRM as leverage for healthcare managers to respond and adapt to changes

Table 2.
Descriptive statistics

Variables	Mean	Std. Dev	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Taking charge	4.225	0.514	(0.91)								
(2) Red tape	2.982	0.71	−0.279*	(0.69)							
(3) Engagement	3.927	0.509	0.468*	−0.395*							
(4) HRM syst. strength	3.257	0.649	0.233*	−0.260*	0.279*	(0.84)					
(5) Intrinsic mot	3.939	0.661	0.236*	−0.248*	0.544*	0.069	(0.74)				
(6) Extrinsic mot	2.641	0.79	−0.242*	0.206*	−0.140	0.154	−0.100	(0.70)			
(7) PSM	4.385	0.463	0.352*	−0.115	0.336*	0.283*	0.230*	−0.245*	(0.79)		
(8) Marital status (1 = married)	0.702	0.459	0.180*	−0.091	0.188*	0.005	0.024	0.017	0.049		
(9) Education (1 = PhD)	0.62	0.487	−0.037	−0.007	−0.157	−0.177	−0.073	−0.052	−0.018	0.012	

Note(s): *shows significance at $p < 0.05$, N = 121, Cronbach alpha in parentheses. Engagement is a summative index constructed from vigor ($\alpha = 0.87$), dedication ($\alpha = 0.78$), and absorption ($\alpha = 0.70$)
Source(s): Authors own creation

	(1) Taking charge	(2) Taking charge	(3) Taking charge
Marital status (1 = married)	0.202*	0.186*	0.189*
	(0.101)	(0.0934)	(0.0919)
Education (1 = PhD)	−0.0417	−0.0339	−0.000883
	(0.0954)	(0.0882)	(0.0881)
Intrinsic mot		0.118	0.118
		(0.0669)	(0.0658)
Extrinsic mot		−0.108	−0.137*
		(0.0561)	(0.0567)
PSM		0.297**	0.224*
		(0.0978)	(0.102)
HRM sys. str			0.156*
			(0.0708)
Constant	4.109***	2.631***	2.502***
	(0.103)	(0.519)	(0.514)
N	121	121	121
adj. R^2	0.018	0.167	0.194
F	2.079	5.808	5.812

Note(s): Standard errors in parentheses, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$
Source(s): Authors own creation

Table 3.
HRM system strength and taking charge

	(1) Red tape	(2) Red tape	(3) Red tape
Marital status (1 = married)	−0.140	−0.136	−0.142
	(0.142)	(0.137)	(0.131)
Education (1 = PhD)	−0.00832	−0.0191	−0.0936
	(0.134)	(0.129)	(0.125)
Intrinsic mot		−0.242*	−0.241*
		(0.0980)	(0.0936)
Extrinsic mot		0.162	0.228**
		(0.0822)	(0.0807)
PSM		−0.0224	0.144
		(0.143)	(0.145)
HRM sys. str			−0.352***
			(0.101)
Constant	3.086***	3.713***	4.004***
	(0.144)	(0.762)	(0.732)
N	121	121	121
adj. R^2	−0.009	0.064	0.147
F	0.492	2.635	4.443

Note(s): Standard errors in parentheses, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$
Source(s): Authors own creation

Table 4.
HRM System strength and red tape

triggered by crises, thereby extending our knowledge on how a strong HRM system supports positive behaviors in such contexts. While managers' motivations and beliefs have been identified as antecedents to HRM system strength during the COVID-19 pandemic (Sanders *et al.*, 2024), our study analyzed the outcomes of HRM system strength on healthcare managers' responses. In particular, our results support the view that a stronger emphasis should be given to the design of HRM systems (Gifford *et al.*, 2023), as positive perceptions of

	(1) Engagement	(2) Engagement	(3) Engagement
Marital status (1 = married)	0.211*	0.187*	0.191*
	(0.0989)	(0.0811)	(0.0791)
Education (1 = PhD)	−0.166	−0.128	−0.0940
	(0.0932)	(0.0766)	(0.0758)
Intrinsic mot		0.369***	0.369***
		(0.0580)	(0.0566)
Extrinsic mot		−0.0330	−0.0633
		(0.0487)	(0.0488)
PSM		0.223**	0.146
		(0.0849)	(0.0876)
HRM sys. str			0.162**
			(0.0609)
Constant	3.882***	1.532***	1.398**
	(0.101)	(0.451)	(0.442)
N	121	121	121
adj. R^2	0.045	0.360	0.392
F	3.816	14.51	13.90

Note(s): Standard errors in parentheses, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$
Source(s): Authors own creation

Table 5. HRM system strength and engagement

HRM system strength supported Italian healthcare managers in adapting and strengthened change-relevant taking charge behaviors as well as individual engagement levels. These findings add to general discussions of innovative work behaviors in healthcare settings (Oppi *et al.*, 2019).

First, our study finds that HRM strength is positively linked to healthcare managers taking charge behaviors (hypothesis 1, supported). This finding emphasizes the support HRM system strength can generate to convince staff to accept changes and implement new work routines, which are a requirement to deal with unforeseen crisis situations and their consequences. The result underscores the effectiveness of the HRM system in place as it meets one of its primary goals: the retention and allocation of resources where they are most needed (Kilroy *et al.*, 2022). This finding supports works in other sectors that showed how HRM system strength can be a predictor of taking charge behaviors (Yan *et al.*, 2019). It also enriches the knowledge found in previous research (Dello Russo *et al.*, 2018) on HRM system strength and proactive behaviors of Italian healthcare professionals, highlighting how it positively influences healthcare managers, which plays a pivotal role in influencing employees' understandings of HR practices.

Additionally, our results also provide evidence for a positive association between PSM and taking charge, thereby aligning with previous results by Homberg *et al.* (2019). We interpret this finding as alluding to PSM's potential to fuel changes in the workplace. In our case, the healthcare context can be seen as a potent trigger for public service-motivated behaviors also geared toward the organization and not only towards the external public. Considering red tape, intrinsic motivation exhibits a negative association as expected, but surprisingly, PSM does not show any significant relationship. Intrinsic motivation is further positively and significantly associated with engagement, whereas the positive relationship between engagement and PSM vanishes as soon as HRM system strength is included in the model. This might indicate a potential substitution effect between PSM and HRM system strength concerning engagement and requires further investigation.

Secondly, the study explores the effects of HRM system strength on procedural constraints that are typical of public sector organizations, such as red tape (hypothesis 2,

supported). We found that a strong HRM system also helps reduce the perceptions of being exposed to red tape, which can slow down management crisis response and adaptation. This is the first study, to the best of our knowledge, exploring the relationship between HRM system strength and red tape, which is important in public settings where it has been proven to be a barrier to work engagement (Crawford *et al.*, 2010; DeHart-Davis, 2005; Quratulain and Khan, 2015).

Third, we found that a strong HRM system brings about a positive correlation with healthcare managers' engagement (hypothesis 3, supported). This finding aligns with the results of Shantz *et al.* (2016) found the relationship between HRM and nurses' work engagement to be strong when training, development opportunities, and participation in decision-making are ensured. Our work extends these findings to the context of Italian healthcare managers. Moreover, this result is very relevant to the crisis and post-crisis contexts, as line managers, by communicating and transmitting HR practices, are found to play a crucial role in employees' behaviors and work engagement (Chacko and Conway, 2019).

Fourth, our findings indicating proactive managers' adaptation behaviors could have been influenced by the study context, as Italy was one of the earliest countries to be heavily impacted by the COVID-19 pandemic crisis. For instance, crisis severity was found to be one of the antecedents to HRM systems during the COVID-19 pandemic (Sanders *et al.*, 2024). Additionally, our findings are aligned with the meta-analytic results of Bednall *et al.* (2022) who show a positive and significant average correlation between perceived HRM strength and employee proactive behaviors. While they do not explicitly look at taking charge, it clearly falls into the domain of proactive employee behaviors. While we acknowledge the influence of the organizational context on perceived HRM system strength, the institutional setup in which an organization operates might play a role, too. For example, different imprints of administrative traditions define individual-level value sets (Peters, 2008; Homberg and Mohrenweiser, 2023), affecting how healthcare managers interpret and process HRM signals received from the organization. In this study, we do not observe variation in administrative traditions hence we recommend future research to investigate this aspect in more detail.

Overall, the study findings extend our knowledge of the nomological network of HRM system strength by (1) confirming its relevance in crisis and post-crisis settings, where it can favor line managers positive behaviors, such as increasing taking charge and work engagement, with likely cascading effects on employees; and (2) contextualizing its positive effects in public sector settings characterized by procedural constraints, such as red-tape, by easing its burden.

Practice implications

Given the positive impact of HRM system strength on healthcare managers' responses, policymakers and public managers should design HR policies and invest resources in developing HRM systems that support proactive behaviors, thereby improving work effectiveness and productivity. A strong HRM system helps clarify expectations, interpret and share HRM messages, motivating employees to engage in proactive work behaviors (Bowen and Ostroff, 2004).

This study shows the benefits of shifting the focus from HRM content to its signaling and communication mechanisms. Public managers can benefit from understanding how employees interpret HRM individually and collectively. However, simply requesting positive attitudes and pro-social citizenship behavior from employees is not enough. Instead, the power of the HRM system can be leveraged to support employee change-oriented behaviors and engagement. This will help achieve consensus-oriented outcomes and may be

more effective in strategic planning and change implementation. While our research focuses on taking charge as a proactive change-oriented behavior, there are many other change behaviors that HRM system strength may impact, and this could be an area to explore in future research.

Moreover, healthcare organizations should carefully consider how they communicate their HR interactions and messages and create more opportunities for positive HR events through face-to-face communication with managers. According to our research, healthcare managers' perceptions are significantly associated with their expectations and level of engagement at work. Thus, public healthcare organizations could leverage engagement through the smart configuration of their HRM systems. This may include providing access to resources and support services, fostering a supportive work environment, offering training and development courses, and promoting open communication and collaboration. In this way, the HRM system acts as an enabler and helps healthcare organizations prioritize efforts to promote employee engagement and well-being, particularly among line managers who play a critical role in guiding and supporting frontline staff during crises.

Finally, healthcare organizations should adopt a culture of continuous learning and adaptation, where lessons learned from past crises inform future response efforts. This may involve conducting regular assessments of HRM practices, soliciting feedback from managers and employees, and investing in ongoing training and development initiatives to build organizational resilience. Additionally, with a view to protecting their organizations from future crises, public managers may proactively engage in crisis drills or simulations involving scenario planning, capacity building, and developing contingency plans. By providing healthcare managers with the tools and resources they need to promote employee engagement, HR departments can help to create a more positive and productive work environment for everyone.

Limitations and future research directions

The findings arising from our study need to be seen in light of the following limitations. First, we acknowledge the relatively low sample size in the FNOPI dataset. Several factors might explain the high attrition, such as time constraints, email invites not passing the firewall or other factors. We mitigate this problem by collecting more data. These efforts led to the pooled and sufficiently large dataset used for the analyses. Furthermore, the data are unique in their kind, and the return rates for both waves of data collection fall into normal bounds.

Second, our data primarily reflects healthcare managers' views and perceptions about their employing organizations. Some prefer HRM strength measurement by employees (Bos-Nehles *et al.*, 2021), but we follow Hauff *et al.* (2017) view that those in charge of others are quality informants when it comes to HRM systems. Bearing in mind that the HRM system strength is a relatively young concept, it would, nonetheless, be recommendable also to provide a voice to those affected by the HR practices implemented by healthcare managers. Therefore, future research could explore how nurses and lower-level healthcare staff perceive them.

Third, we replaced a small number of missing values with the mean of the respective variable to ensure that all analyses used the same observations. We also double-checked the regressions without mean replacement, and the results remained substantially the same.

Despite these limitations, the study highlights the role of HRM system strength on healthcare managers, opening several avenues for future research. Future works could explore the antecedents that facilitate the translation of HRM system strength into these outcomes. Future studies on HRM system strength in public sector settings should also examine how PSM interacts with it to enhance healthcare managers' commitment to organizational goals and their willingness to engage in change initiatives. Since HRM

practices can assume different configurations, we see scope for future works adopting Qualitative Comparative Analysis. Moreover, longitudinal studies could be conducted to examine the dynamic nature of HRM systems strength and its impact on organizational performance over time, particularly in response to external shocks such as pandemics or natural disasters.

Conclusions

This study enriches the nomological network of HRM system strength by shedding light on its role in facilitating Italian healthcare managers' adaptive behaviors during and after the COVID-19 pandemic. Its originality lies in investigating HRM system strength in unpredictable and changing circumstances. By confirming the positive associations between HRM system strength, healthcare managers' taking charge behaviors and work engagement, the study underscores the significance of robust HRM practices also in times of crisis. Additionally, our findings contribute to expanding our knowledge of the outcomes of HRM system strength in public sector healthcare settings, where it was found to be associated with reduced managers' perceptions of procedural constraints. As outlined above, the main practice implications include an enhanced focus on the signaling and communication features of HRM systems and the suggestion to regularly assess and invest in resources and training programs aimed at enhancing HRM system strength. Overall, the study offers insights for enhancing organizational responsiveness and adaptability in times of uncertainty and change. Leveraging HRM system strength can be interpreted as a tool helping healthcare managers to effectively lead during times of crisis.

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