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Redesigning performance management practices to boost innovative behaviours: the moderating role of remote work

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Abstract

Purpose – Contemporary organizations face a growing need for innovation while work is becoming increasingly digitalized. In such a context, employees' innovative work behaviour (IWB) is crucial. However, little attention has been given to whether and how human resource management (HRM) practices can sustain IWB in remote work. Thus, this study aims to explore the relationship between performance management (PM) practices and employees' IWB when job is performed remotely.

Design/methodology/approach – Drawing on signalling perspective of HRM, this study applies regression analysis on data collected through an online questionnaire administered to a sample of 647 Italian employees testing the moderating role of remote work in the relationship between PM and IWB.

Findings – The findings show that result- and new-competence-based appraisal promote IWB, regardless of the extent to which work is performed remotely. In contrast, remote work nullifies the role of employee involvement in the goal setting process, as well as the influence of compensation-oriented PM and developmental performance management. Continuous feedback emerges as the key PM practice sustaining IWB among remote employees.

Research limitations/implications – This study shows that remote work represents a key boundary condition in the relationship between PM and IWB. More specifically, the findings indicate that only certain PM practices − such as result- and competence-based appraisal and continuous feedback sustain IWB when work is extensively performed remotely. However, the reliance on a convenience sample of Italian employees limits the generalizability of the findings, indicating the need for cross-national and longitudinal studies to examine these relationships across different remote and hybrid work settings.

Practical implications – The findings suggest that organizations seeking to foster employees' IWB should redesign PM systems by prioritizing results and competence development over task-based control. In remote work contexts, continuous feedback appears particularly critical. In addition, compensation-oriented PM practices do not inhibit IWB, whereas involvement of employees in goal setting becomes non-significant.

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Social implications – This study suggests that some PM practices, particularly continuous feedback, can contribute to mitigate drawbacks of remote work, like for instance social isolation and work-related stress, thus supporting more sustainable and inclusive forms of work.

Originality/value – This study advances the literature on PM and IWB by identifying remote work as a key boundary condition. It also extends existing research on remote work by showing that practices known to support remote workers' well-being − such as result-based appraisal, competence-based appraisal and continuous feedback − may likewise foster IWB, basically generating a signalling effect that encourages employees to be proactive and to generate new ideas and ways of working. In doing so, this study also provides guidelines to companies to redesign their PM systems.

Keywords Performance management, Innovative work behaviours, Signalling theory of HRM, Remote work

Paper type Research paper

1. Introduction

In today's highly competitive landscape, companies' ability to innovate is essential for maintaining a competitive advantage (e.g. Ferreira *et al.*, 2020). A key driver of innovation lies in employees' capacity to generate and implement creative ideas that enhance products, services and work processes (Anderson *et al.*, 2014). Given their in-depth knowledge of tasks and technologies, employees at all organizational levels play a crucial role in innovation (Sanders *et al.*, 2018). As a result, individual innovative work behaviours (IWB) (De Jong and Den Hartog, 2007) are increasingly recognized as critical for organizational success (Colbert *et al.*, 2016; Shanker *et al.*, 2017).

The pressure to innovate has intensified with digitalization (Huu, 2023; Tabrizi *et al.*, 2019). This latter, however, may have both positive and negative potential for employees' IWB. On the one hand, the automation of routine tasks frees up time and cognitive resources, allowing for more creativity. Additionally, the generation and availability of greater amounts of data can facilitate knowledge creation. Digitalization also provides opportunities for working remotely, having a beneficial effect on IWB − for instance, the autonomy afforded to remote workers can increase their engagement in innovative work (Huu, 2023). On the other hand, remote work may increase work-related stress, blurring work−life boundaries, and reducing the ability to disengage mentally, which is needed for creativity leading to innovation (Nöhammer and Stichlberger, 2019). Specifically, IWB may not be that easy in remote work, as employees' reliance on technology to facilitate their collaboration increases (Gibson and Gibbs, 2006). Moreover, research shows that work–home conflict and social isolation represent obstacles to the exercise of creativity when working remotely (Garlatti Costa *et al.*, 2023).

Thus, an issue that arises is how organizations can effectively sustain and nurture employees' IWB in digital, remote work contexts. In this paper, we argue that human resource management (HRM) practices, specifically performance appraisal and management, may play a key role.

In fact, in the extensive body of literature on employees' performance management, several studies have demonstrated that such practices can influence IWB (Canet-Giner *et al.*, 2020; Ghazi *et al.*, 2023; Thneibat and Sweis, 2023). Moreover, in the last decade a lively academic debate has been developed, suggesting reviewing traditional performance appraisal systems to meet more effectively the new needs posed by innovation and digitalization (Cappelli and Tavis, 2016; Pulakos *et al.*, 2015). Yet, to the best of our knowledge, extant research has so far overlooked to investigate whether and how performance management (PM) practices may affect employees' IWB when work is performed remotely.

Therefore, the aim of our study is contributing to filling this gap by exploring the role of remote work in the relationship between *performance management practices and individual innovation.*

To address this issue, we draw on the signalling perspective of HRM (Guest *et al*, 2021), suggesting that employees' PM may serve as an important signal for innovation in remote work environments. Indeed, this HRM practice may help employee who work remotely to identify individual and collective tasks, responsibilities and goals, while also suggesting the expected behaviours and results (Lamovšek *et al.*, 2025; Monzani *et al.*, 2022; Su *et al.*, 2021).

Empirically, we carried out a survey on 647 employees working in large, multinational firms located in Italy, using digital technologies to perform their job remotely. Thus, we adopted the employees' perspective of HRM which suggests that the signalling effect of HRM practices depends on the employees' perceptions (Connelly *et al.*, 2010).

Our findings show that result-based appraisal and competence-based appraisal continue to support IWB regardless of the extent of remote work. By contrast, the more work is performed remotely, the more involving employees in goal setting, compensation-oriented PM practices and developmental performance management lose their influence on IWB. Notably, continuous feedback emerges as the PM practice that most strongly sustains IWB among remote workers.

Our study offers two main contributions. Firstly, it advances research on PM practices and employees' IWB, identifying remote work as a key boundary condition of this relationship. Secondly, it enriches the literature on remote work by showing that PM practices supporting remote workers' well-being also stimulate IWB, providing initial insights into the mechanisms through which PM can contribute to generate value in remote work settings. In doing so, our study also offers managerial implications for designing PM systems for employees who perform their work remotely.

2. Performance management, remote work and innovative work behaviour

The signalling perspective of HRM (Connelly *et al.*, 2010; Guest *et al.*, 2021) suggests interpreting PM as a message that organizations send to their employees to inform them about individual responsibilities, expected results, required behaviours and competences with the aim to align employees' performance with the organizational goals (DeNisi and Sonesh, 2011; Wang *et al.*, 2020).

Accordingly, an extensive body of empirical research have demonstrated that some specific PM practices − such as, evaluating not only results but also skills and competences instead of behaviours and providing continuous feedback and development opportunities – may serve as signals that stimulate proactivity and enhance both incremental and radical forms of innovation (Bauwens *et al.*, 2023; Thneibat and Sweis, 2023; Zhao *et al.*, 2025), thus fostering IWB (Curzi *et al.*, 2019).

In the meantime, the progressive digitalization of work – and the associated spread of remote work after the COVID-19 pandemic – has animated a lively debate on whether and how traditional performance appraisal systems (Cappelli and Conyon, 2017) should be redesigned with the aim to provide clear goals and foster trust between employees and managers (Verma *et al.*, 2023). Such redesign is seen as essential for sustaining the motivation, work−life balance and well-being of remote workers as well as for reducing the negative sides of working remotely, such as the lack of social interactions (Hamouche, 2023; Mabaso and Manuel, 2024; Monzani *et al.*, 2022; O'Brady *et al.*, 2025; Procentese *et al.*, 2025; Su *et al.*, 2021).

Despite these exploratory contributions, research on PM in remote work is still in its infancy and several gaps remain. Firstly, most studies examine only a narrow subset of individual PM practices − for example, goal-setting (Costantini and Weintraub, 2022; Procentese *et al.*, 2025) or feedback modalities (Lamovšek *et al.*, 2025). Other works

consider PM systems as a whole (Hamouche, 2023; Su *et al.*, 2021) without unpacking the specific influence of their key components (Cederblom and Pemerl, 2002), such as: (i) the criteria used to define and assess performance (e.g. behaviours, results, competences) (Hill and Plimmer, 2024); (ii) the process of setting performance expectations; (iii) the format and source of performance feedback; and (iv) the overarching purpose of the PM system (e.g. rewards/compensation vs development/training).

Moreover, existing research has not yet examined how PM practices shape remote workers' IWB (Kantola *et al.*, 2025). Responding to recent calls to advance this line of inquiry (Kossek *et al.*, 2025), this study develops a set of hypotheses to investigate whether and how PM practices influence IWB in remote work contexts. To do so, it draws on the core literature on PM and IWB in traditional work settings, as well as on the emerging body of research on remote work.

2.1 Performance criteria and remote work

Extant literature identifies performance criteria − i.e. the dimensions used to evaluate employee performance (Folan and Browne, 2005) − as a first PM component with potential signalling effects for fostering IWB.

More specifically, research shows that, in contrast to traditional performance criteria, such as physical presence, worked hours or task-related behaviours, result-based appraisal that sets clear and measurable goals to achieve, tends to promote IWB by granting employees autonomy and creative latitude (Bos-Nehles *et al.*, 2017; Criscuolo *et al.*, 2013).

However, evidence on pay-for-performance schemes (i.e. MBOs) suggests that result-based appraisal systems may have neutral or even negative effects on IWB (Bos-Nehles and Veenendaal, 2019; Shipton *et al.*, 2005), as they often encourage employees to prioritize short-term outcomes over experimentation. Consequently, scholars argue that PM systems should also emphasize employees' skills, knowledge and competences − especially those developed through work processes − because these dimensions are critical for creativity and innovation (Pulakos and O'Leary, 2011; Sanders *et al.*, 2018).

This emphasis becomes even more salient in digital work contexts, where demands for creativity and innovation are increasingly prominent (Schwarzmüller *et al.*, 2018). Consistently, studies on remote workers highlight that traditional criteria – such as physical presence or individual output – are less effective due to the changed work conditions (Hamouche, 2023). Remote work requires employees to acquire new digital skills and competences (Procentese *et al.*, 2025) and to self-manage their tasks in a context characterized by project-based work and reduced social interactions (Costantini and Weintraub, 2022; Mabaso and Manuel, 2024). Moreover, in the qualitative study of remote workers by O'Brady and colleagues (2025), it was found that traditional accountability metrics (e.g. productivity) were perceived as monitoring tools, thereby inhibiting extra-role behaviours, whereas development-oriented metrics (i.e. performance criteria based on skills and competences) were viewed as more effective.

Therefore, we formulate the following hypothesis:

H1a. There is a negative relationship between result-based appraisal and IWB, and this relationship becomes more pronounced the more work is performed remotely.

H1b. There is a positive relationship between skill- and competence-based appraisal and IWB, and this relationship becomes more pronounced the more work is performed remotely.

2.2 Employee involvement in goal setting and remote work

Another PM practice that plays a crucial signalling role in promoting IWB is goal setting, defined as the process through which performance expectations are established (Locke and Latham, 2002). Research − especially within the participative leadership literature − shows that involving employees in setting performance expectations has a positive impact on IWB (de Jong and Den Hartog, 2007). For example, scholars have noted that employee participation in defining the objectives within MBO systems enhances the effectiveness of these result-based appraisal and reward mechanisms (McConkie, 1982). Similarly, competence-based PM systems can incorporate employee involvement in goal setting, reinforcing perceptions that such systems foster IWB (Curzi *et al.*, 2019).

In the context of remote work, studies indicate that allowing employees to set their own goals is particularly effective for performance outcomes, as it promotes autonomy and proactivity − i.e. behaviours that include going beyond in-role tasks and searching for new ideas or work methods (Costantini and Weintraub, 2022; Mabaso and Manuel, 2024; Monzani *et al.*, 2022). This suggests that employee involvement in goal setting may be even more effective in stimulating IWB when work is performed remotely.

Accordingly, we propose the following hypothesis:

H2. There is a positive relationship between employee involvement in goal setting and IWB, and this relationship becomes more pronounced the more work is performed remotely.

2.3 Feedback and remote work

Another PM practice with a strong signalling effect for promoting IWB is the format and source of performance feedback. In traditional performance appraisal systems, feedback is provided through formal tools and procedures, typically at fixed intervals (e.g. annual or biannual reviews). This practice has been widely debated in recent years, with critics arguing that formal, infrequent feedback is inadequate for supporting employees' learning, creativity and innovation. Accordingly, many leading corporations are replacing traditional appraisal systems with more informal and multisource feedback approaches, which are seen as better suited to fostering continuous development (Cappelli and Tavis, 2016; Pulakos *et al.*, 2015; Pulakos and O'Leary, 2011).

In remote work contexts, the literature underscores that ongoing feedback is critical for guiding and supporting remote work (Hamouche, 2023). As remote employees are physically separated from their colleagues and the workplace (Costantini and Weintraub, 2022), they face the risk of loneliness and isolation at work (Ferrarini, 2025). Accordingly, it has been found that feedback from co-workers help sustain interpersonal relationships and motivation (Mabaso and Manuel, 2024). Moreover, remote workers operate in more complex work environments that necessitate constant communication and support (Lamovšek *et al.*, 2025). Consequently, they rely more heavily on frequent feedback to achieve high levels of task performance. Moreover, continuous feedback also supports remote employees' learning − a core antecedent of IWB − as it reduces uncertainty and encourages experimentation (Bauwens *et al.*, 2023). Finally, evidence suggests that feedback enhances remote employees' sense of involvement in the evaluation process (Abu-Shanab *et al.*, 2021).

Therefore, we propose the following hypothesis:

H3. There is a positive relationship between continuous, multisource feedback and employees' IWB, and this relationship becomes more pronounced the more work is performed remotely.

2.4 Rewards and remote work

Regarding the overarching purpose of PM systems, the literature highlights that, whereas traditional performance appraisal primarily serves compensation-related objectives, PM can also have a developmental purpose (Brown *et al.*, 2018; Shalley and Perry-Smith, 2001). In this perspective, performance evaluation is used not only to allocate monetary rewards but also to support employees' personal and professional growth through training opportunities and career development. When PM practices emphasize development, employees are more likely to perceive appraisal as a mechanism designed to satisfy their basic needs for competence and autonomy, including the freedom to explore new ways of working (Gagné and Deci, 2005). Consistently, recent evidence shows that developmental appraisal positively affects innovation, with IWB acting as a mediating mechanism (Thneibat and Sweis, 2023). At the same time, it has been demonstrated that pay-for-performance schemes (i.e. MBOs) often encourage employees to prioritize short-term outcomes over experimentation, thereby discouraging risk taking and innovation (Kumar and Pillutla, 2021).

In the context of remote work, studies indicate that employees tend to be less responsive to traditional monetary incentives and more appreciative of non-monetary forms of recognition, such as training opportunities and career advancement (Moller *et al.*, 2024). Remote workers value training opportunities due to the need to develop digital and interpersonal competences for effective remote collaboration (Hamouche, 2023; Verma *et al.*, 2023). Moreover, although the lack of physical and social presence may hinder career progression, continuous professional development can enhance remote workers' performance by signalling organizational support and reinforcing their sense of value within the organization (Yarberry and Sims, 2021).

Accordingly, we formulate the following hypothesis:

H4a. There is a negative relationship between compensation-oriented performance management and employees' IWB, and this relationship becomes more pronounced the more work is performed remotely.

H4b. There is a positive relationship between developmental performance management and employees' IWB, and this relationship becomes more pronounced the more work is performed remotely.

Figure 1 summarizes our hypotheses, showing the conceptual model of our empirical research.

3. Methods

3.1 Sample and procedure

We collected data between June and July 2022 by administering an online survey to a convenience sample of 1,052 employees working in Italian private companies that were building on digital technologies to transform their business practices as well as their work processes and had adopted PM practices to assess their employees' performance. We obtained 647 usable questionnaires. All respondents declared to use digital technologies to work and 92% of them were extensive users.

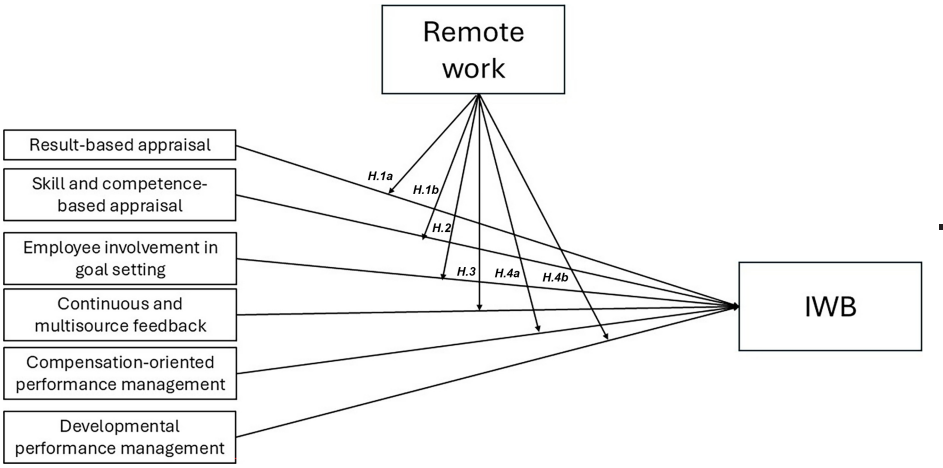

Figure 1. Conceptual model and hypotheses
Source: Authors' own work

Around 75% of respondents are male, more than 80% are over 34 years old, and approximately 70% hold a high level of education (i.e. a bachelor's degree or higher). Around 60% of respondents work in companies with more than 250 employees. Of the surveyed employees, 44% work in manufacturing firms, 53% in service businesses and the remainder in agricultural and construction companies. Almost 40% hold managerial positions, while nearly 60% are white-collar employees. Approximately 40% of respondents have an organizational tenure of more than 10 years.

3.2 Measures

The survey asked questions aimed at collecting data on IWB and PM practices. Thus, the collected data can be categorized into the following dependent, independent and moderating variables.

3.2.1 Dependent variable. IWB: it was self-assessed using the seven items adapted from the scale by de Jong and Den Hartog (2010), for instance, "*I implement new ideas at work*" or "*I introduce original solutions to problems at work*", (from 1 = never to 5 = always). Item scores were aggregated though a mean to create a single index of innovative work behaviours, alpha 0.90.

3.2.2 Independent variables. PM practices were measured using the following variables and items adapted from Curzi *et al.* (2019) and Curzi *et al.* (2020):

(1) Result-based appraisal: it was measured using three items assessing to what extent PM focuses on: (1) individual results; (2) team results or (3) company results. The items were rated on a four-point scale (from 1 = not at all to 4 = very much). The three item scores were then aggregated through a mean. Subsequently, in line with prior metrics (Tang and Patrick, 2020), the final variable was dichotomized: 0 = below the mean, 1 = above the mean.

(2) Skill- and competence-based appraisal was operationalized as follows:

- Job-related skill-based appraisal: it was assessed using two items, which captured the extent to which PM focuses on knowledge, abilities and soft skills

required by the job description. Items were rated on a four-point scale (from 1 = not at all to 4 = very much). The two item scores were then aggregated through a mean; subsequently, the final variable was dichotomized: 0 = below the mean, 1 = above the mean.

- New-competence-based appraisal: it was assessed using one item, which captured the extent to which PM focuses on the development of knowledge and skills not specifically required by the job description. The rating was on a four-point scale (from 1 = not at all to 4 = very much). The final variable was then obtained dichotomizing the item (1 = very much or to some extent, 0 = otherwise).

(3) Employee involvement in goal setting: it was assessed using one item, which captured the extent the respondent is involved in setting the expected performance he/she will be assessed for. The rating was on a four-point scale (from 1 = never to 4 = always). The variable was then dichotomized: 1 = always or often, 0 = otherwise.

(4) Continuous and multisource feedback was operationalized considering the following two variables.

- Continuous feedback: it was measured using one yes/no question which asked whether PM includes this practice (1 = yes, 0 = no).
- Multisource feedback: it was assessed using one question which asked if PM includes 360-degree feedback, i.e. the sources of performance ratings are not only managers and self-evaluation, but also colleagues, customers or subordinates. The variable was then dichotomized: 1 = the evaluation also involves input from colleagues, customers or subordinates, 0 = otherwise.

(5) Compensation-oriented PM was operationalized through the following two variables.

- Wage increases: it was assessed using one yes/no question which asked whether PM uses the output of performance appraisal to provide fixed merit raises (1 = yes, 0 = no).
- Bonuses: it was measured using one yes/no question which asked whether PM uses the output of performance appraisal to provide variable pay for performance (1 = yes, 0 = no).

(6) Developmental PM was operationalized considering the following two variables.

- Career development: it was assessed using one yes/no question which asked whether PM uses the output of performance appraisal to plan careers (1 = yes, 0 = no).
- Training opportunities: it was measured using one yes/no question which asked whether PM uses the output of performance appraisal to define and provide training to employees (1 = yes, 0 = no).

3.2.3 Moderator variable. Remote work: it was measured using two items adapted from the European Working Conditions Survey (Eurofound, 2017), i.e. "*I can work from home or from other locations outside the company premises*" and "*I use digital devices such as tablets, laptops, and smartphones to remotely access company software and applications*". The items were rated on a five-point scale (from 1 = never to 5 = always) and the Cronbach's alpha coefficient is 0.73. The two item scores were then aggregated through a mean to

capture to what extent work is performed remotely (Bertram *et al.*, 2024). The final variable was then standardized.

3.2.4 Control variables. We also controlled for employees' personal and professional characteristics (i.e. age, gender, education, job position, employment contract and organizational tenure), as well as for company characteristics (i.e. sector). We also accounted for traditional performance criteria, namely task- and time-based appraisal. More specifically, we used three items assessing to what extent the organization's PM focuses on: (1) job-related tasks; (2) physical presence at work; and (3) overtime. The items were rated on a four-point scale (from 1 = never to 4 = often). The three item scores were then aggregated through a mean; subsequently, the final variable was dichotomized (0 = below the mean, 1 = above the mean).

3.3 Data analysis

To perform the analysis, we conducted multivariate OLS regressions through SPSS version 23.

In Model 1, control variables were entered with IWB as the dependent variable. In Model 2, the above-mentioned PM practices were added as predictors of IWB, while retaining the control variables. Finally, in Model 3, the standardized moderator variable (i.e. remote work) was introduced together with its interaction terms with all independent variables.

As further robustness check, in Models 2 and 3 we also controlled for traditional performance criteria. To facilitate interpretation of the moderating effects, we conducted simple slope analyses.

Means, standard deviations and correlations of all the variables are presented in Table 1. Most variables are positively and significantly correlated.

3.4 Hypotheses testing

Table 2 shows the results of the regression analyses. The values of the VIF exclude the multicollinearity in the models.

Model 1 presents the baseline regression including only the control variables. Job position and seniority both show significant effects on employees' IWB. However, these effects become non-significant once the PM practices are introduced in Model 2.

Model 2 shows the relationship between the identified PM practices and employees' IWB, with the control variables included. The introduction of PM practices increases the explained variability in employees' IWB (Δ Adj. $R^2 = 10.6\%$). Specifically, in the employees' perception, three PM practices are positively and significantly related to employees' IWB − i.e. employee involvement in goal setting ($\beta = 0.317$; $p \leq 0.01$), new-competence-based appraisal ($\beta = 0.181$; $p \leq 0.05$) and result-based appraisal ($\beta = 0.146$; $p \leq 0.05$).

Then in Model 3, the variable remote work and its interactions with all PM practices are introduced. Firstly, we observe that, overall, IWB tends to increase the more work is performed remotely ($\beta = 0.103$; $p \leq 0.10$). Secondly, we find that remote work significantly shapes the effect of employee involvement in the goal setting process ($\beta = -0.185$; $p \leq 0.05$), continuous feedback ($\beta = 0.154$; $p \leq 0.05$), wage increases ($\beta = 0.158$; $p \leq 0.05$) and training opportunities ($\beta = -0.493$ $p \leq 0.05$) on IWB.

Figure 2 shows the simple slope analysis of interaction effects showing the moderating role that remote work has on the relationship between our independent variables and the dependent variable − i.e. employees' IWB.

The regression and moderation analyses show that *H1a* is not supported. In fact, contrary to our expectations, Model 2 shows that result-based appraisal is positively associated with

Table 1. Means, standard deviations and correlations

Variables	*N*	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
Murisource fb	647	0.264	0.441	1												
Task- and time-based appraisal	647	0.459	0.498	0.088*	1											
Result-based appraisal	647	0.635	0.481	0.032	0.105**	1										
Job-related skill-based appraisal	647	0.564	0.496	0.124**	0.341**	0.228**	1									
New-competence-based appraisal	647	0.446	0.497	0.138**	0.289**	0.209**	0.545**	1								
Employee involv. in goal setting	647	0.601	0.490	0.009	0.022	0.294**	0.252**	0.211**	1							
Continuous fb	647	0.516	0.500	0.061	0.085*	0.256**	0.247**	0.217**	0.368**	1						
Wage increases	647	0.255	0.436	0.019	0.052	0.031	0.085*	0.095*	0.013	0.112**	1					
Bonuses	647	0.602	0.489	−0.022	−0.019	0.212**	0.025	−0.027	0.190**	0.156**	0.011	1				
Career development	647	0.140	0.347	0.131**	0.047	0.057	0.131**	0.137**	0.130**	0.187**	0.141**	0.110**	1			
Training opportunities	647	0.052	0.223	0.047	0.019	0.049	0.081*	0.109**	0.093*	0.173**	0.132**	0.021	0.423**	1		
Remote work	647	0	1	0.030	−0.117**	0.171**	0.039	−0.007	0.205**	0.133**	0.039	0.171**	0.134**	0.107**	1	
IWB	647	3.69	0.69	0.006	0.026	0.215**	0.162**	0.207**	0.306**	0.179**	0.011	0.057	0.063	0.046	0.146**	1

Note(s): *Correlation is significant at the 0.05 level (two-tailed) **Correlation is significant at the 0.01 level (two-tailed)
Source(s): Authors' own work

Table 2. Results of regression analysis and interaction effects

Variables	Model 1 − IWB Unstandard β	SE	Model 2 − IWB Unstandard β	SE	Model 3 − IWB Unstandard β	SE
Middle manager	−0.093	0.103	−0.037	0.100	−0.092	0.099
White collar	−0.247**	0.103	−0.075	0.103	−0.136	0.102
Blue collar	−0.472**	0.220	−0.166	0.217	−0.048	0.222
Open-ended contract	−0.206	0.156	−0.179	0.151	−0.143	0.149
Services	−0.067	0.056	−0.015	0.054	−0.042	0.054
Other sectors	0.071	0.164	0.052	0.157	0.075	0.154
Age	0.000	0.019	0.012	0.019	0.019	0.019
Seniority	−0.044**	0.021	−0.015	0.021	−0.018	0.020
Gender_Man	−0.071	0.064	−0.049	0.062	−0.066	0.061
Education	−0.038	0.030	−0.017	0.030	−0.032	0.029
Task- and time-based appraisal			−0.044	0.057	−0.035	0.057
Result-based appraisal			0.146**	0.059	0.109*	0.059
Job-related skill-based appraisal			0.008	0.066	−0.007	0.065
New-competence-based appraisal			0.181**	0.064	0.189**	0.063
Employee involvement in goal setting			0.317***	0.061	0.305***	0.061
Continuous feedback			0.050	0.058	0.042	0.058
Multisource feedback			−0.041	0.061	−0.043	0.061
Wage increases			−0.009	0.061	−0.024	0.060
Bonuses			−0.016	0.057	−0.035	0.056
Career development			0.035	0.086	0.006	0.097
Training opportunities			−0.002	0.129	0.241	0.157
Remote work					0.103*	0.057
Remote*task- and time-based appraisal					−0.018	0.057
Remote*result-based appraisal					−0.072	0.060
Remote*job-related skill-based appraisal					−0.031	0.068
Remote*new-competence-based appraisal					0.003	0.065
Remote*employee involv. in goal setting					−0.185**	0.061
Remote*continuous fb					0.154**	0.059
Remote*multisource fb					0.025	0.059
Remote*wage increases					0.158**	0.061
Remote*bonuses					0.037	0.057
Remote*career development					−0.025	0.126
Remote*training opportunities					−0.493**	0.182
Adjust. R^2	0.015		0.107		0.148	
Δ Adj. R^2			0.106***		0.056***	
Observations	647		647		647	
F. Test (df)	0.035 (10)		0.000 (21)		0.000 (33)	
Mean VIF	1.612		1.485		2.002	

Note(s): Sig. Codes: ***0.01; **0.05; *0.10
Source(s): Authors' own work

IWB. In addition, Model 3 shows that the positive relationship does not appear to be moderated by remote work.

H1b is partially supported. As shown in Model 2, job-related skill-based appraisal does not have any effect on IWB, nor is it moderated by the extent that work is performed remotely. However, new-competence-based appraisal does increase IWB ($\beta = 0.181$; $p \leq 0.05$), but such relationship is not moderated by remote work.

We also partially confirm *H2*. In fact, Model 2 shows that the involvement of employees in goal setting enhances IWB ($\beta = 0.317$; $p \leq 0.01$). Nevertheless, Model 3 shows that the

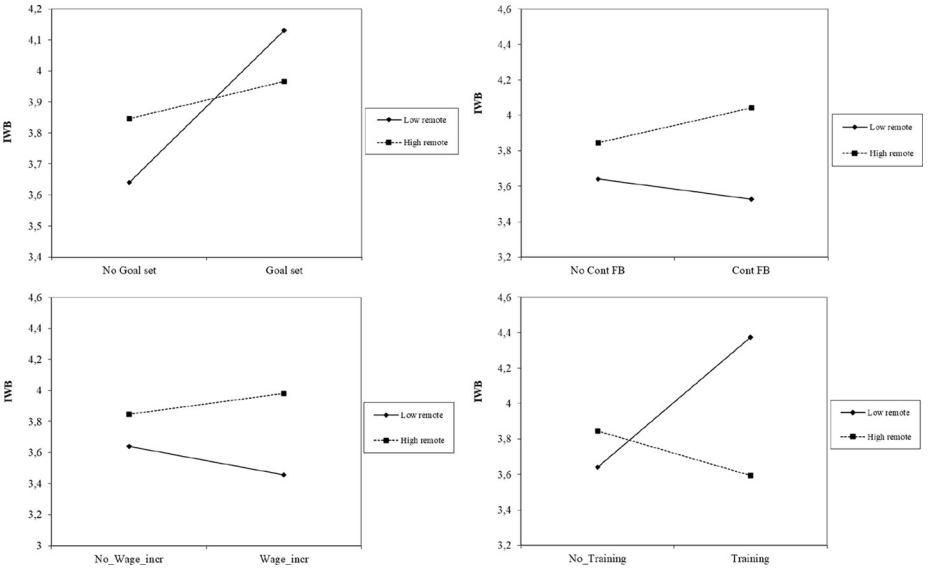

Figure 2. Simple slope analysis
Source: Authors' own work

interaction with remote work is negative ($\beta = -0.185$; $p \leq 0.05$). The simple slope analysis in Figure 2 highlights that employee involvement in goal setting significantly promotes IWB among employees who perform little or no work remotely ($\beta = 0.490$; $p \leq 0.01$), whereas it has no significant effect for employees who work remotely to a greater extent ($\beta = 0.120$; $p > 0.10$).

H3 is partially supported. On the one hand, multisource feedback neither influences IWB (Model 2), nor is it moderated by remote work (Model 3). On the other hand, continuous feedback positively affects IWB. More specifically, as shown in Figure 2, continuous feedback has a significant positive effect on IWB when work is performed remotely to a great extent ($\beta = 0.196$; $p \leq 0.05$), whereas no significant effect emerges for employees who perform little or no work remotely ($\beta = -0.112$; $p > 0.10$).

Also, *H4a* is partially supported. Notably, there is a significant interaction between wage increases based on the output of performance appraisal and remote work ($\beta = 0.158$; $p \leq 0.05$). The simple slope analysis shows that such rewards significantly reduce IWB among employees who perform little or no work remotely ($\beta = -0.182$; $p \leq 0.05$), partially confirming the negative association between such practice and IWB. However, wage increases do not have any significant association with IWB when work is performed remotely to a great extent ($\beta = 0.134$; $p > 0.10$). At the same time, we do not find any association between bonuses and IWB nor a moderating role of remote work.

Finally, even for *H4b*, we partially confirm the hypothesis. Specifically, there is a significant interaction between training opportunities within PM and remote work ($\beta = -0.493$; $p \leq 0.05$). The simple slope analysis reveals that training opportunities significantly stimulate IWB among employees who perform little or no work remotely ($\beta = 0.734$; $p \leq 0.05$). However, training opportunities do not appear to enhance IWB when work is performed remotely to a great extent ($\beta = -0.252$; $p > 0.10$). Moreover, we do not find

any association between career development and IWB, nor a moderating role of remote work.

4. Results and discussion

Grounded in the signalling perspective of HRM, this study examined the effects of PM practices on employees' IWB, with a particular focus on the moderating role of remote work. Overall, our findings partly align with existing research while also revealing counter-intuitive patterns that shed new light on whether − and how − remote work shapes the relationship between PM practices and employees' IWB.

Consistent with prior empirical evidence (Curzi *et al.*, 2019), we find that performance criteria − specifically result-based appraisal and new-competence-based appraisal − and employee involvement in goal setting are three pivotal PM practices fostering IWB. However, contrary to our expectations, the relationship between both result-and new-competence-based PM practices and IWB is not influenced by the extent to which work is carried out remotely. This finding is nonetheless consistent with existing studies showing that, in the contemporary organizational context, fostering innovation requires moving away from evaluating time spent and adherence to prescribed role behaviours. Instead, organizations should emphasize employee autonomy and proactivity, encouraging the development of new − and even extra-role − competences that can stimulate the generation of novel ideas and new ways of working. The finding that result-based appraisal supports IWB is also consistent with existing evidence − albeit still limited − suggesting that managers should pre-set specific (i.e. clear and measurable) performance goals while allowing employees discretion and creativity in how such goals are achieved (Bos-Nehles *et al.*, 2017; Criscuolo *et al.*, 2013).

Instead, remote work significantly moderates the link between employee involvement in goal setting and IWB. This relationship is positive when employees work remotely to a limited extent but becomes non-significant at higher levels of remote work. In other words, involving employees in setting goals does not translate into higher IWB among workers who perform their job predominantly remotely. A similar pattern emerges for compensation-oriented PM, specifically wage increases. When employees work extensively remotely, the negative association between performance-based wage increases and IWB disappears. This finding qualifies the widely held assumption that monetary rewards inhibit IWB by crowding out intrinsic motivation, as this pattern is clearly observed only among employees who work little or not at all remotely. Consequently, the commonly drawn implication that PM systems should prioritize a developmental rather than a compensation-oriented approach (Sanders *et al.*, 2018) appears to be called into question, at least for employees who mostly work remotely. The same kind of relationship holds for developmental PM practices: among employees who work predominantly remotely, training opportunities neither foster nor inhibit IWB. In contrast, continuous feedback stands out as the PM practice that most strongly stimulates IWB among employees who mostly work remotely. This finding resonates with recent studies showing that feedback plays a fundamental role in sustaining remote workers' performance, including extra-role behaviours (Costantini and Weintraub, 2022; O'Brady *et al.*, 2025; Verma *et al.*, 2023; Yarberry and Sims, 2021).

The above counterintuitive findings can be interpreted through the lens of signalling theory (Connelly *et al.*, 2010; Guest *et al.*, 2021). According to this perspective, employees' reactions to HR practices depend on their attention to, and interpretation of, the signals such practices convey. In this respect, employee involvement in goal setting, although potentially motivating, constitutes a relatively weak signal unless it is reinforced by continuous informal alignment − alignment that becomes more difficult to maintain in remote work arrangements.

Remote work settings lack the spontaneous micro-interactions enabled by physical proximity, which typically support ongoing negotiation of expectations between supervisors and employees. Therefore, the behavioural relevance of involvement in goal setting weakens. Conversely, while in co-located work settings everyday interactions often overshadow feedback, in remote work contexts continuous feedback becomes more visible, salient and influential. Feedback thus appears to operate as a critical substitute for training and involvement in goal setting in stimulating the emergence of IWB among remote workers. Similarly, for monetary rewards − specifically wage increases − it can be argued that the more employees work remotely, the more ambiguity they face about organizational expectations and the recognition of their efforts, due to the absence of the spontaneous, contextual cues that typically arise in co-located work settings. As a result, monetary rewards are more likely to be interpreted as informational rather than controlling; they help reduce ambiguity and signal acknowledgement, thereby avoiding the motivational crowding-out effect observed among employees who work little or not at all remotely and thus preventing any reduction in IWB.

4.1 Theoretical contribution

Drawing on the findings discussed above, the first original contribution of our study lies in showing that remote work functions as a significant boundary condition shaping the relationship between PM practices and employees' IWB. This insight not only advances existing research on PM and IWB but also opens promising avenues for future research on HRM and innovation. Specifically, we suggest that further investigations could fruitfully explore the role of remote work as a boundary condition shaping the relationship between a wider range of HRM practices and individual-level innovative outcomes.

A second contribution concerns the growing literature on remote work. While prior studies have predominantly focused on outcomes such as well-being and work–life balance, our findings extend this line of inquiry to employees' IWB. Earlier research has shown that the well-being of remote workers is enhanced by PM practices such as result- and competence-based appraisal, and continuous feedback (O'Brady *et al.*, 2025; Procentese *et al.*, 2025; Su *et al.*, 2021; Verma *et al.*, 2023). Our findings indicate that these same practices also foster IWB. Drawing on signalling theory, we suggest that such practices can enhance employees' perceptions of PM fairness, thereby strengthening the PM system and its capacity to steer behaviour in the intended direction. Practices such as result-based appraisal, the assessment of newly developed competences and continuous feedback signal both clear organizational expectations regarding desired behaviours − specifically IWB − and the organization's commitment to employees' well-being. Together, these signals motivate employees to align their actions with expected behaviours. In this way, our study provides preliminary insights into the mechanisms through which PM may create value in remote work contexts, paving the way for future research.

Furthermore, our empirical results contribute to the still ongoing academic debate on the effectiveness of traditional performance appraisal systems (Cappelli and Tavis, 2016; Pulakos and O'Leary, 2011). Specifically, we contribute to the discussion on the necessary evolution of PM as companies' need for change and agility increase (Cappelli and Tavis, 2018) and work becomes increasingly digitalized and performed remotely (Nudurupati *et al.*, 2016).

4.2 Managerial implications, limitations and future research

Our findings imply the need for companies that want to foster innovative behaviours by employees to pay attention to how performance is defined and assessed. Effective PM

systems should focus on results to be achieved rather than on job-related tasks. Indeed, concentrating on results allows for greater flexibility and autonomy in how employees accomplish their tasks, empowering them to leverage their strengths and creativity to achieve desired outcomes efficiently. Moreover, performance appraisal should assess employees' skills and knowledge, not strictly task-related, thus stimulating continuous competence development. In addition, employees should be involved in setting performance expectations. Finally, special attention should be paid to regular, ongoing communication between managers and employees (i.e. continuous feedback), especially the more the employees perform their job remotely.

The theoretical contribution and practical implications of this study should be taken into account considering its limitations, which are primarily due to the use of a convenience sample of Italian workers which limits the generalizability of our findings. It would be certainly interesting to extend the current analysis on a larger database, based on a probabilistic sample, or to reproduce the analysis among workers from other nations to allow a cross-countries comparison.

Future research could also explore alternative forms of remote and hybrid work and longitudinal designs that illuminate how signalling processes of PM or other HRM practices unfold over time, affecting IWB or other individual behaviours or innovation outcomes.

5. Concluding remarks

This study examined how PM practices shape employees' IWB, highlighting the moderating role of remote work. Building on signalling theory, our findings show that not all PM practices retain the same effectiveness when work is performed remotely. While result-based appraisal, new-competence-based appraisal and continuous feedback are central drivers of remote workers' IWB, other practices, namely employee involvement in goal setting and training opportunities lose their influence as remote work increases. These findings suggest that remote work acts as a meaningful boundary condition that reshapes how employees perceive, interpret and respond to PM signals. Taken together, our findings contribute to a deeper understanding of how PM systems can be redesigned to sustain innovative behaviours in digital, remote work contexts.

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