

Quality of performance metrics, informal peer monitoring and goal commitment

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Abstract

We examine whether the quality of performance metrics affects informal peer monitoring and, in turn, goal commitment. By fostering performance-oriented behaviours, performance metrics drive managers to involve themselves in learning and improvement efforts, building a fertile atmosphere for informal peer monitoring. We argue that the quality of performance metrics is positively associated with direct peer monitoring and negatively linked to indirect peer monitoring. Subsequently, we postulate that direct (indirect) peer monitoring is positively (negatively) associated with goal commitment. We use partial least squares (PLS) to analyse survey data from store managers in a large retail firm. Results provide overall support for our hypotheses.

Key words: Performance metrics; Informal peer monitoring; Goal commitment; Management control; Gossip; Praise

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1. Introduction

In this paper we provide a comprehensive analysis of the relation between the quality of performance metrics, peer monitoring and goal commitment. Performance metrics quality includes properties such as evaluation and rewards, clarity, attainability, controllability, precision, prioritised objectives and cooperation. Prior work provides broad support for the determinant effect of the employee's perception of performance metrics quality on the importance attributed to goal attainment (Webb, 2004; Locke and Latham, 2006; Merchant and Van der Stede, 2012; Aranda *et al.*, 2014). Further evidence suggests that the quality of performance metrics motivates behavioural responses, reducing uncertainties about expected behaviours and outcomes and directing employees' attention. Organisations attempt to integrate formal controls, such as performance metrics, with other informal controls¹ in order to improve employees' motivation towards the achievement of strategic objectives (e.g., Jørgensen and Messner, 2009; Frow *et al.*, 2010; Kennedy and Widener, 2019). Since informal control can also influence performance, acting as effective control tools, management (principals) can purposefully shape it (De Jong *et al.*, 2014; Cardinal *et al.*, 2017; Gackstatter *et al.*, 2019).

Peer monitoring² is a form of informal control that occurs when employees at the same hierarchical level exert lateral control, scrutinising and examining their peers without the use of formal control to enforce compliance (Loughry, 2010). Peers often have a better understanding of colleagues' work-related issues than supervisors as they commonly closely observe each other's behaviours. Peer monitoring, as a way of informal control, is important for at least two main reasons: (i) it reduces the cost of control by decreasing conflict and distrust of management, and (ii) it increases organisational effectiveness by enhancing coordination, agreement and learning (Loughry and Tosi, 2008). As a consequence, since informal controls are difficult for other organisations to imitate, they are also potential sources of competitive advantage (Turner and Makhija, 2006).

¹Informal controls are social- or people-based mechanisms used to share information, in turn shaping trust, dependence and cooperation (Stouthuysen *et al.*, 2017). Contrary to formal controls, informal controls are unwritten, unofficial and uncoded (Kreutzer *et al.*, 2016).

²Peer monitoring is also referred to as mutual monitoring (Towry, 2003), horizontal surveillance (Widener *et al.*, 2008) and horizontal monitoring (Sedatole *et al.*, 2016).

Previous management and organisational psychology literatures have identified two different forms of peer monitoring, namely direct and indirect peer monitoring. On the one hand, direct peer monitoring involves noticing peers' results and behaviours and responding directly and openly to them. That is, managers examine each other's actions and their achievements or failures and openly discuss how work gets done (Lye *et al.*, 2021; Walter *et al.*, 2021). Direct peer monitoring also comprises the discussion of how peers do their job, praising peers whose performance is above expectations and correcting underperforming peers. On the other hand, indirect peer monitoring entails behaviours like gossip (i.e., reputational information sharing) and ostracism (i.e., social exclusion), creating an unpleasant work environment and undermining trust and morale in groups (Wu *et al.*, 2018). Although some research has been carried out on peer monitoring in the accounting (Towry, 2003; Widener *et al.*, 2008) and economic (Jones and Kato, 1995) literatures, very little is known about the extent to which formal controls may contribute to shaping peer monitoring. Understanding the organisational effects of peer monitoring is important because it has the potential to reduce the undesirable and dysfunctional behaviours which are at the core of many agency problems (Loughry, 2002). Moreover, from a management control perspective, it has long been recognised that organisations are constantly searching for practices or systems that ensure managers look past their self-interests to focus on the organisational goals and, consequently, to increase goal commitment (Cardinal *et al.*, 2017).

First, we argue that performance metrics create incentives for managers to informally monitor their peers. The intuition behind this postulation is that managers, pressured by performance metrics, focus attention on how to do their work and how to improve processes, thereby acting as a mechanism for informal peer monitoring (hereafter peer monitoring). That is to say, performance metrics, by stimulating task-oriented and performance-oriented behaviours, push managers to involve themselves in learning and improvement efforts, creating a fertile atmosphere for direct peer monitoring. At the same time, performance metrics quality also breaks the potential 'status quo' of indirect peer monitoring. Overall, we posit that the quality of performance metrics is positively associated with direct peer monitoring, and negatively associated with indirect peer monitoring.

Second, we postulate that direct (indirect) peer monitoring is positively (negatively) associated with goal commitment,³ defined as the determination to reach a goal (Locke *et al.*, 1988). Prior accounting literature focuses on the effects of peer monitoring as a mechanism to mitigate the free-rider problem by

³There is a strand of literature that focuses on performance metrics as internal mechanisms that affect goal commitment that, in turn, influences other variables such as employee performance or satisfaction at work (Wentzel, 2002; Berry *et al.*, 2009). In addition, a number of studies shows that goal commitment has prominent positive effects on performance (Klein *et al.*, 1999).

aligning workers' behaviour with organisational interests (Barron and Gjerde, 1997; Towry, 2003; Widener *et al.*, 2008; Sedatole *et al.*, 2016). In addition, some research in the management and organisational psychology literatures finds that, in contrast to direct peer monitoring, indirect peer monitoring is a behaviour that may not be in the best interest of organisations, and consequently, it should be rejected rather than encouraged (O'Reilly *et al.*, 2015; Li *et al.*, 2019). Our study provides a more comprehensive picture of the drivers of peer monitoring, both direct and indirect, and its motivational consequences (e.g., goal commitment). Such research is of significance not only because peer monitoring is a widespread form of control (Loughry, 2010), but also because its combined effect with formal controls constitutes the core of management control theory, playing a pivotal motivational role in managers' work attitudes and behaviours (Kreutzer *et al.*, 2016; Mohd Sanusi *et al.*, 2018).

Our paper relies on a quantitative survey research design. The sample consists of salaried store managers of the Brazilian division of one of the largest retail companies in the world. Analogous to other retail organisations, this division promotes frequent performance evaluation meetings, open disclosure of performance metrics reports to store managers, and frequent publication and distribution of internal performance league tables, which list, rank and define benchmarks and targets (Ogbonna and Wilkinson, 2003) among all its more than 350 wholly-owned stores. In this organisation, store managers have the same compensation package, which is based on the achievement of individual and divisional performance metrics (both financial and non-financial).

Overall, the results provide support for our theoretical model. We find a positive (negative) association between the quality of performance metrics and direct (indirect) peer monitoring. Also, we find that direct (indirect) peer monitoring is positively (negatively) associated with goal commitment. We run several additional analyses to (i) observe the effect of store performance in our model and (ii) examine decision speed as an additional outcome of peer monitoring. The first additional analysis is motivated by prior work on the peers' response to co-workers' performance indicating that the behavioural and motivational consequences of peer monitoring are shaped by the performance of peers (LePine and Van Dyne, 2001; Jackson and LePine, 2003). The second analysis draws on past literature, which finds that fast decisions might be a reflection of past processes, evaluations, perceptions of freedom of action or even business settings (Isenberg, 1986; Baum and Wally, 2003), thus suggesting peers might play a role in decision speed.

The contribution of this study is threefold. First, this study adds to both the management control and the organisational design bodies of literature, by shedding more light on the effectiveness of horizontal control (Widener *et al.*, 2008; Kreutzer *et al.*, 2016). Previous research in this area concentrates on self-managed work teams (Román, 2009; De Jong *et al.*, 2014), where team identity (Towry, 2003) and team member dependence (Sedatole *et al.*, 2016) are high,

and contexts include direct team rewards (Pizzini, 2010). Our sample of store managers in charge of independent profit centres allows us to extend previous research by demonstrating the important motivational effect of the peer monitoring of groups of individuals acting in contexts with low team member dependence and no direct team reward but competing for resources. Second, the study explicitly recognises the potential role of formal control (e.g., quality of performance metrics) on informal control (e.g., peer monitoring) and their motivational implications, contributing to a better understanding of the control systems from a broader perspective (Tucker, 2019). Specifically, results explain alternative control patterns scarcely captured by existing research findings. In this regard, we provide evidence that the design of horizontal controls cannot be separated from the horizontal surveillance of peer monitoring, thereby responding to recent calls to increase our understanding of the interrelationships between formal and informal controls (Cardinal *et al.*, 2017; Gackstatter *et al.*, 2019). Third, peer monitoring is an informal horizontal type of control that has been treated mainly as a single undifferentiated phenomenon in the accounting literature (e.g., Widener *et al.*, 2008; Kennedy and Widener, 2019). In this sense, our contribution is also based on the discrimination of direct and indirect peer monitoring. We identify distinct consequences of peer monitoring on goal commitment derived from its direct and indirect nature.

Even though peer monitoring is exercised by co-workers, our results show that managers have an important role in providing the conditions for peer monitoring to occur and enhancing its motivational effects. This reveals important practical implications of how managers can influence employees' willingness to give direct feedback and engage in potentially difficult conversations with co-workers and avoid alternative means (i.e., through gossip and ostracism). We show that the use of performance metrics can create a feedback-rich environment, stimulating employees to directly discuss how peers do their job, praise peers whose performance is above expectations, and to note those who make mistakes. However, only well-designed performance metrics function as incentive mechanisms for employees' engagement in direct peer monitoring, with lower quality performance metrics leading to indirect peer monitoring.

2. Theoretical background

2.1. The quality of performance metrics and its behavioural consequences

Extant prior work examines the motivational effects of performance metrics on organisational participants (e.g., Marginson and Ogden, 2005; Moers, 2005; Sponem and Lambert, 2016; Endrikat *et al.*, 2020; Uddin *et al.*, 2020). This prior literature provides broad support for the determinant effect of the employee's perception of performance metrics quality, expressed in terms of its

design properties (Kenis, 1979; Gibbs *et al.*, 2009; Merchant and Van der Stede, 2012; Groen *et al.*, 2017), on employees' self-efficacy, and the importance they attribute to goal attainment (Locke and Latham, 2006). Performance metrics quality includes properties such as evaluation and rewards, clarity, attainability, controllability, precision, prioritised objectives and cooperation.

First, metrics that are perceived to be of higher quality and consequently motivate individuals are employed for performance evaluation and compensations (Giovannoni and Quarchioni, 2019). In a standard incentive plan, an extrinsic monetary compensation is provided if the achievement of goals reaches a pre-established minimum hurdle. Compensation levels off at a capped maximum performance (Jensen, 2003). Performance metrics that are associated with such rewards usually motivate direction, duration and intensity efforts (Dekker *et al.*, 2012). A second property that is perceived to better qualify metrics is clarity. The clarity of performance metrics refers to the extent to which metrics are well specified and clearly understood by those who are responsible for meeting them (Kenis, 1979). Whereas ambiguous metrics can lead to confusion, anxiety and the dissatisfaction of employees, clear metrics give employees a strong understanding of the expected behaviours and results, increasing motivation and effort (Marginson and Ogden, 2005). Third, performance metrics perceived to be of higher quality include an attainable goal. Empirical evidence indicates that difficult but attainable goals have positive effects on performance (Locke and Latham, 2006). While easily attainable goals fail to challenge organisational participants, unattainable targets lead to feelings of frustration and failure (Kenis, 1979; Aranda *et al.*, 2014). Fourth, high-quality performance metrics are controllable. Controllable metrics are perceived as fair and stimulate behaviours that are congruent with the achievement of those. Controllability refers to the perceptions of whether the causes of performance are due to factors that are directly under a person's control (Donovan and Williams, 2003). A fifth property is precision. The goal-setting literature describes an adequate metric as one that is able to provide the best estimate of the future performance of an individual (organisation) on a dimension that accurately reflects the individual's (organisation's) performance potential (Dekker *et al.*, 2012). Sixth, metrics perceived to be of higher quality distinguish few consistent objectives that provide a sense of priority to employees (Goold and Quinn, 1990). Finally, high-performance metrics quality stimulates the cooperation of organisational participants towards the achievement of common objectives. Prior research found that the use of cooperative metrics within groups facilitates team problem solving and learning (Tjosvold *et al.*, 2004), as it engages employees in a more open-minded discussion in conflict situations (Poon *et al.*, 2001). Overall, the quality of the performance metrics stimulates behavioural responses by reducing uncertainties about expected behaviours and outcomes, and directing employees' attention.

2.2. Peer monitoring and its motivational function

Peer monitoring is a prevalent type of informal control that can be articulated in various ways depending on its purpose, formality, context or organisational participants. In this paper, we focus specifically on the motivational function of peer monitoring, which involves peers monitoring each other (bidirectional) to a greater or lesser extent (asymmetric), without the use of formal means to enforce compliance (informal) nor formally reporting to supervisors (horizontal), and that encourages behaviour consistent with organisational goals (congruent) (Towry, 2003; Loughry and Tosi, 2008; Sedatole *et al.*, 2016). Therefore, peer monitoring occurs when individuals at the same level exert lateral control over their peers through social pressure (Loughry, 2010) oriented to conform to agreed-upon rules (De Jong and Dirks, 2012; Sedatole *et al.*, 2016).

The consequence of peer monitoring on goal commitment is still an open question in the literature and the prior empirical evidence is mixed (Stewart *et al.*, 2012; De Jong *et al.*, 2014; Walter *et al.*, 2021). On one hand, prior work argues that peer monitoring could reduce task response time, increasing workload and, also, curbing creative approaches to problems. Hence, peer monitoring could lead to hostile relations, creating an unpleasant work environment. On the other hand, peer control is associated with more autonomy and empowerment, also enabling peers to detect dishonest behaviours, reducing free-riding and providing more opportunities to influence each other (Walter *et al.*, 2021). Peer monitoring influences goal commitment by conveying normative information, persuading, highlighting role models or generating competition (Latham and Locke, 1991). Moreover, peer monitoring also increases goal commitment by increasing learning in how peers perform specific tasks. In this vein, Malina and Selto (2001) suggest that the motivational effects of formal controls could be extended through an informal mechanism that facilitates feedback, dialogue and participation (e.g., 'do your best'). We hope to shed light on this relationship by analysing both direct and indirect peer monitoring.

Direct peer monitoring involves noticing peers' behaviour and/or results and responding directly and openly to them. This response can come in different forms, such as discussing how peers do their job, praising peers whose performance is above expectations and correcting peers who make mistakes. These practices have been associated with increased commitment, closer social relations, improved psychological attachment and loyalty to one another, and enhanced pride for being part of the group (Hsu *et al.*, 2017). Even though direct peer monitoring is exercised by co-workers, studies show that managers play an important role in providing the conditions for peer monitoring to occur and enhancing its motivational effects (Chua *et al.*, 2012).

Contrary to direct peer monitoring, indirect peer monitoring occurs when the recipient of the monitoring is not physically present (Loughry and Tosi, 2008).

This informal control takes different forms, such as gossip (i.e., reputational information sharing) and ostracism (i.e., social exclusion). It appears as an act of rejection and distancing, easily confounded with mistreatment, rather than an act in which peers take responsibility for their interactions with co-workers. The benefits of indirect peer monitoring as a horizontal control mechanism come at a cost of unintended harmful and corrosive effects to organisational practices, such as creating a negative social climate, an unpleasant work environment and undermining trust and morale in groups (Wu *et al.*, 2018). Several studies in the management and organisational psychology literature have recognised that indirect peer monitoring is a behaviour that is not in an organisation's interests and, consequently, it should be rejected rather than encouraged (O'Reilly *et al.*, 2015; Li *et al.*, 2019).

Although direct and indirect peer monitoring are two dimensions of peer monitoring that can occur simultaneously in the organisation, their attributes show clear-cut differences. Loughry and Tosi (2008) observe that direct peer monitoring creates a close link between co-workers' behaviour and the consequences of peer interaction, while indirect peer monitoring does not explicitly link peers' actions with the consequences of monitoring and interactions. Moreover, the choice of adopting direct or indirect peer monitoring is not without tension, as managers who engage in direct peer monitoring may feel rejected if their attempts to offer guidance are ineffective. Indirect peer monitoring, however, eludes these potential risks, by expressing dissatisfaction without directly challenging anyone (Loughry and Tosi, 2008). Thus, indirect peer monitoring is the behaviour to challenge since it is a 'comfortable' alternative to executing horizontal control.

Drawing on different perspectives, peer monitoring has been treated mainly as a single undifferentiated phenomenon in the accounting literature (e.g., Widener *et al.*, 2008). In this sense, our study introduces the different dimensions of peer monitoring, discerning between direct and indirect peer monitoring.

2.3. Peer monitoring and formal control

Prior empirical evidence suggests that firms try to integrate both formal and informal management controls to increase employees' motivation for the attainment of strategic targets (e.g., Frow *et al.*, 2010; Gackstatter *et al.*, 2019; Kennedy and Widener, 2019). This prior work shows that the motivational effects resulting from the combination of formal and informal mechanisms of control shape the effects of managers' perception of goals on their commitment (Cardinal *et al.*, 2004; Kreutzer *et al.*, 2016). Hence, peer monitoring could be a mechanism that explains the motivational effectiveness of formal management controls (Jensen, 2003; Chan *et al.*, 2014). Previous accounting research based on an agency perspective accounts for the positive motivational contributions of the combined effects of peer monitoring and formal controls (Sedatole *et al.*,

2016). According to this literature, peer monitoring and formal controls are effective and complementary control mechanisms to reduce free-riding and increase individual effort in teams when team members are dependent on peers (Towry, 2003). Walter *et al.* (2021) point out that combining formal and informal controls provides additional information for decision-makers and discourages opportunistic behaviours.

An alternative stream of literature argues that the complementarity between peer monitoring and formal goal-based controls should not be presumed (Stouthuysen *et al.*, 2017). Thus, following Walter *et al.* (2021), an equally plausible alternative is that prior work overlooks managerial control, serving as an antecedent of peer monitoring (Kirsch *et al.*, 2010; De Jong *et al.*, 2014; Walter *et al.*, 2021). While peer monitoring is carried out by firm members, formal control systems can influence it (Lange, 2008) by delegating control responsibilities, fostering peer control opportunities and streamlining work patterns (De Jong *et al.*, 2014). Peer monitoring could be an outcome of formal control, and firm members, in the subsequent stage, take part in and also maintain control of it once it is in place (De Jong *et al.*, 2014).

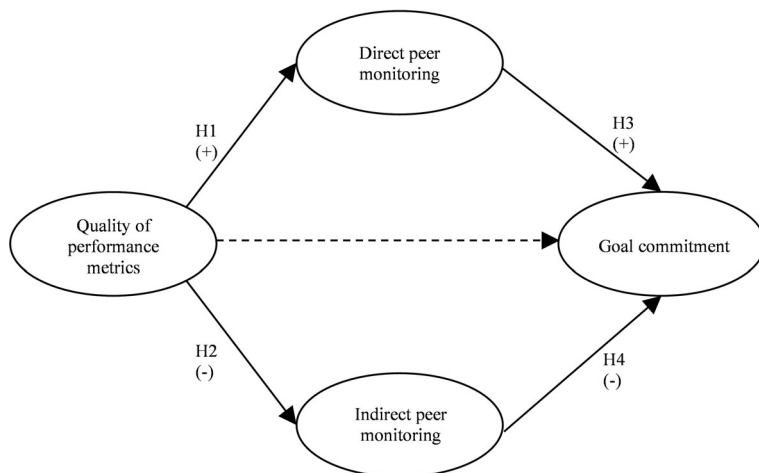
Overall, although prior research offers avenues for a better understanding of the effects of combinations of peer monitoring and formal control, there is still a lack of knowledge on the nature of the relationship (Walter *et al.*, 2021). Furthermore, the traditional unidimensional approach to peer monitoring as an effective mechanism of control (e.g., Widener *et al.*, 2008) does not allow a full contemplation of the potential distinct effects of different dimensions of peer monitoring: direct and indirect.

3. Hypotheses development

In this section, we develop hypotheses to explain the role of performance metrics quality in shaping peer monitoring, and the effects of both different forms of peer monitoring on goal commitment. Figure 1 summarises the hypotheses development.

3.1. Quality of performance metrics and peer monitoring

The 'ability of accounting to convert human performance into a set of calculations helps make individual performance more visible' (Ezzamel and Willmott, 1998, p. 99). Specifically, performance metrics record and communicate the degree to which each individual achieves the objectives. Past research indicates that the intensity of peer monitoring depends on the availability of information about peers' efforts and outputs against pre-set standards (Román, 2009; Arnold and Tafkov, 2019; Griffith *et al.*, 2020). The availability of performance metrics enables peers to evaluate and verify peers' actions, detect dishonest behaviours, reduce free-riding and provide more opportunities to influence each other (Towry, 2003). It also induces individuals to monitor



Solid lines show hypothesized links, while the dashed line shows non-hypothesized link.

Figure 1 Theoretical model.

because they can compare the features of one individual against another (Ezzamel and Willmott, 1998), and it allows the development of ranks based on peer performance, thus favouring competition (Malina and Selto, 2004). Therefore, performance metrics play a role in producing an account of the manager's value, ranking and position, which creates the need for monitoring and performance comparison (Cooper, 2015).

We extend this previous knowledge by suggesting that the type of peer monitoring is influenced by the quality of the information available, i.e., the quality of performance metrics. Co-workers may exert lateral control, scrutinising and examining their peers through direct and indirect peer monitoring. While it is widely assumed among managers that direct peer monitoring may be beneficial for the organisation, indirect peer monitoring is viewed as a more 'comfortable' position to exert control. The threat of feeling rejected if the attempts at direct guidance are ineffective, the reluctance to engage in the difficult face-to-face conversations and the complexity inherent to a performance evaluation process are reasons, among others, that preclude direct peer monitoring (Globis, 2016).⁴ Indirect peer monitoring, however, eludes these potential risks, exerting peer control without directly challenging anyone (Loughry and Tosi, 2008).

⁴Evidence provided by Globis (2016) in a survey of over 500 managers showed that 75 percent believed difficult conversations and feedback were a part of their role; however, 95 percent were concerned about damaging the self-esteem of others, over 90 percent were concerned about causing upset and more than half claimed that they lacked the training and experience to properly address these functions.

Low-quality performance metrics reinforce the propensity to engage in indirect peer monitoring because managers feel that the organisation is failing to fulfil their basic needs since fairness is not being considered (Groen, 2018). Employees' perceptions of weak organisational support and control, with little attention to fairness and justice, lead to negative relational attitudes toward the organisation and other participants (Dhanani and LaPalme, 2019), reducing the perception of the organisation's dependability and belonging. This perception increases the confusion and anxiety (Passeti *et al.*, 2020), and fosters behaviours like gossiping about the performance of other managers, or even refusing to socialise or avoiding peers who performed poorly.⁵ On the contrary, the perception that the performance metrics and measurement are based on accurate information (free of bias) and/or the goals properly reflect the employee's overall performance, provides incentives for goal congruence, and eventually the means and incentives to engage in personally costly direct peer monitoring and their consequences. In other words, high-quality performance metrics help individuals overcome their 'avoidance instinct', hesitation and anxiety so they are able to address the conversations associated with direct peer monitoring (Globis, 2016). Moreover, the disclosure of the performance metrics may induce some individuals to 'game the system' (Ezzamel and Willmott, 1998; Libby and Lindsay, 2010) and direct peer monitoring could be an effective way to control this inappropriate behaviour (Loughry and Tosi, 2008).⁶

Prior literature on imperfect performance measures also suggests that in the presence of incomplete information, staff will either identify 'workarounds' to get the job done (Franco-Santos and Otley, 2018), or seek out information held in the performance management system (Andon *et al.*, 2007). The lack of information leads them to rely on gossip in an attempt to gather information and make further inferences regarding the underlying cause of co-workers' performance and compensations. On the contrary, high-quality performance metrics increase the level of transparency and clarity, explicitly defining procedures and outcomes, consequently reducing ambiguity among employees

⁵In their case study, ter Bogt and Scapens (2012) show that low quality performance metrics (i.e., lack of clarity, imprecise KPIs or non-controllable targets) increase anxiety and stress and, at the same time, foster individuals to reallocate their time to their own benefit. In addition, the lack of clarity in the performance metrics drives additional pressures on individuals, who seek to reduce this uncertainty by getting additional 'indirect' information, in an attempt to make their work and goals 'more predictable, understandable, and ultimately controllable' (Saks and Ashforth, 1997, p. 236).

⁶As an example, Loughry and Tosi (2008) indicate that managers who understand their peers' metrics and jobs and frequently see their performance are in the best position to understand whether their actions and behaviours are suitable for the context, creating a setting of monitored tasks. Thus, informal direct peer monitoring can influence peers to conform to expectations and goals in order to get peer acceptance and praise. In addition, clear and understandable metrics allow easy detection of potential inappropriate behaviours, like gaming the system.

(Elbashir *et al.*, 2021). This focus is likely to encourage discussions among members about how work gets done, and how to enhance procedures, thereby acting as a catalyst for direct peer monitoring. Additionally, the open disclosure of employees' performance that is comparable and clear to the participants can be viewed as an implicit organisational legitimisation of direct peer monitoring (Bourmistrov and Kaarb e, 2013; Kennedy and Widener, 2019). This is particularly relevant when the observability of daily activities and efforts are not possible when peers are geographically dispersed. This is in line with the evidence found by Globis (2016, p. 7) which suggests that the 'recognition that expectations were not made clear enough' do not provide managers with the means and incentives to engage in direct peer monitoring.

In sum, the more clear, attainable, controllable and precise the performance metrics, the more empowered, legitimised and incentivised individuals will be to get involved in direct peer monitoring. In contrast, performance metrics that are perceived to be of low quality lead to misunderstanding and frustration, increasing organisational conflicts, gossip and the avoidance of peers with different views and approaches to targets. This discussion suggests the following hypotheses:

H1: Quality of performance metrics is positively associated with direct peer monitoring.

H2: Quality of performance metrics is negatively associated with indirect peer monitoring.

3.2. Peer monitoring and goal commitment

Prior research shows that direct peer monitoring drives goal commitment by helping to alleviate uncertainties about expected behaviour and outcomes, giving purpose and direction, and creating individual focus (Loughry and Tosi, 2008; Sedatole *et al.*, 2016). These take place because direct peer monitoring informs on different pathways for achieving pre-established goals, opens channels for discussions and motivates employees who are directly praised. It also provides additional assurance and understanding about acceptable and desirable behaviours (Loughry and Tosi, 2008). Direct peer monitoring fosters commitment by making expectations about peers' own behaviours more explicit and, consequently, by enhancing the prominence of these expectations (De Jong *et al.*, 2014). Moreover, direct peer monitoring signals to organisational members the consequences of their behaviours and actions.

Mas and Moretti (2009) found that workers exhibit cooperative behaviour when they are noticed and observed by co-workers and when they are likely to interact with them again in the future. Empirical evidence exists that direct peer monitoring reduces budgetary and performance monitoring from supervisors, thereby reducing the feeling of being scrutinised (Loughry and Tosi, 2008). As a

consequence, an environment of trust between supervisors and subordinates is created. Trustworthiness has been associated with higher levels of psychological empowerment (de Castro, 2017; Long, 2018) and goal commitment (Locke *et al.*, 1988). Direct peer monitoring could facilitate the direct exchange of information among peers thereby contributing to co-workers' responses and engagement that is reflected in higher levels of goal commitment. Based on the above reasoning, we formally propose the following hypothesis:

H3: Direct peer monitoring is positively associated with goal commitment.

Prior research shows that the threat of being gossiped about or avoided could lead to positive consequences, such as maintaining groups against free-riding (Beersma and Van Kleef, 2012). Although these actions may constitute an effective way to constrain peers' decisions and actions, most of the literature recognises that the overall motivational consequences are more harmful than good (Loughry and Tosi, 2008; Grosser *et al.*, 2010, 2012). On the one hand, indirect peer monitoring has been found to negatively influence employees' organisational citizenship behaviour and motivation (Wu *et al.*, 2018). Some researchers compared the consequences of being targeted by negative workplace gossip as similar to being a victim (Ellwardt *et al.*, 2012). Studies show that perceptions of gossip could have serious negative psychological effects on individuals, detrimentally compromising their self-esteem (Wu *et al.*, 2018) and work-related success (Grosser *et al.*, 2012). On the other hand, avoidance represents a unique type of social mistreatment that influences attitudes and behaviours. As a form of social distancing, avoidance is a type of informal ostracism used by peers to counteract deviant tendencies and actions that threaten the larger social group's integrity (Westphal and Khanna, 2003). Previous literature has shown that workplace ostracism affects employee psychological distress (e.g., job tension and emotional exhaustion) and has a direct negative impact on the mood of employees at work (Wu *et al.*, 2018).

Overall, indirect peer monitoring is commonly perceived by employees as a social control that is disrespectful (Loughry and Tosi, 2008), arbitrary (Cugueró-Escofet and Rosanas, 2013) and morally wrong (Loughry and Tosi, 2008), being understood as an 'act of rejecting and distancing oneself from the peer rather than taking responsibility for one's interactions with the peer' (Loughry and Tosi, 2008, p. 885). Monitored peers feel uncomfortable at being indirectly scrutinised, which can create conflict and social disruptions within groups. Prior work shows evidence of its consequences on negative social climate and an unpleasant work environment that would deteriorate trust environments and trigger behavioural problems (Baker and Jones, 1996; Wittek and Wielers, 1998). Consequently, we argue that the levels of goal commitment could be negatively related to indirect peer monitoring in the workplace. We formalise this proposal in the following hypothesis:

H4: Indirect peer monitoring is negatively associated with goal commitment.

4. Research methods

4.1. Research setting

Our research setting is the retail units of the Brazilian division of a multinational retailer. This division represents one of the most important operations of the parent company and it is one of the largest retail chains in Brazil (70,000+ employees, 350+ retail units and annual turnover above \$US9 billion).⁷ Retail units are wholly owned by the company and are organised as profit centres that report to regional offices. Based on their size, they are divided into: (i) convenience stores and (ii) mid-size and large-size supermarkets. Retail unit performance is tracked by a common performance measurement system designed at the company's national headquarters. The metrics are common for all retail units and are available to regional and unit managers through the corporate management information system (namely budgetary system). The compensation of store managers is composed of three elements: (i) fixed salary (66 percent), (ii) variable salary (34 percent) and (iii) an additional bonus (of about 10 percent of fixed salary). Variable salary is based on sales (30 percent) and net operational profit versus budgetary goals (70 percent) achievements. Overall performance of the division triggers the additional bonus (i.e., 10 percent), which is at the regional director's discretion.⁸

This division of the company informally encourages peer monitoring over its more than 350 wholly-owned stores by openly distributing reports containing information on store performance among regional directors and store managers. Several, different in frequency, performance measurement reports (i.e., weekly, monthly and annual) rank stores from best to worst performers in different key performance indicators (KPIs) mostly taken from the budgetary system. There are no formal guidelines linking the position of stores in the rankings to action plans. However, regional directors frequently highlight and identify the best performers (benchmarks) and discuss best practices. KPIs based in the budgetary system are the most relevant ones for our sample as they

⁷The interpretation of results from previous research using cross-sectional data from different organisations is difficult due to the diversity in the design and use of the control systems. In our research, we gather data from the stores of a single company. This allows us to control for spurious effects and explicitly distinguish the different types of effects involved in our research and to test their significance.

⁸Findings from field experiment show that the type of reward determines the motivational effects on organisational participants (Lourenço, 2016). In our research, all participants are subject to the same rewards, hence controlling for the diverse motivational effects of different types of compensation.

have direct influence on store managers' salaries.⁹ Managers performing below expectations are expected to take action to improve their position in the ranking.¹⁰

4.2. Sample

We gathered data from a survey since the data sought are not available from public sources. Respondents were store managers in charge of the operational management of the retail units. Questionnaires were developed after two interviews with different managers at retail units. Additionally, two researchers, the CFO of the division and two operational managers from the examined company pre-tested the questionnaire, providing comments. Received feedback was used to adjust the terminology adopted (mainly issues related to getting a better translation of the original measurement instruments)¹¹ and the order of the questions to make it more suitable for the setting. The questionnaire was designed online, and the invitation to all store managers to participate was made via email sent by the regional director of the company, who fully agreed to collaborate with this research project. This email contained a notification of the confidentiality of their responses, and also included a link to access the questionnaire. We took into account the recommendations of Dillman (2007) to compose response-friendly surveys and to ensure the personalisation of the emails. Surveys were administered between November 2013 and January 2014. Furthermore, we gained access to secondary data covering the specific time of the survey on the performance of stores, which is monitored by the company. The questionnaires were sent off by the CFO of the division. Questionnaires were only sent off once, no follow-up emails were allowed under the internal procedures of the company. Of the 385 managers contacted to participate in this study, 87 responses were received, which provides a response rate of 22.6 percent.

Participation in the survey was optional. Thus, we investigate the possibility of non-response bias by comparing respondents and non-respondents in terms of the size and location of retail units, as well as the respondent profile (age and gender) of the targeted sample. *t*-Tests ruled out non-response bias. The usable sample was reduced to 77, since 10 questionnaires with a considerable amount

⁹The use of budgetary systems is widely recognised in retail firms where, for example, targets are determined by budgeted sales and expense ratios (Aranda *et al.*, 2014; Aranda *et al.*, 2017).

¹⁰Research shows that commitment to difficult goals was higher when goals were made public rather than private (Klein *et al.*, 2020).

¹¹We conducted back-to-back translation (English–Portuguese–English) to establish semantic equivalence (Schaffer and Riordan, 2003).

Table 1
Sample distribution and descriptive statistics

Panel A: Sample distribution				
<i>By region</i>	<i>N</i>	<i>%</i>		
South	21	27.27%		
Southeast	28	36.36%		
Northeast	27	35.06%		
Centre	1	1.30%		
Total	77	100%		
<i>By store category</i>	<i>N</i>	<i>%</i>		
Large-size and mid-size supermarkets	53	68.83%		
Convenience store	24	31.17%		
Total	77	100%		
Panel B: Sample descriptive statistics				
	Mean	Median	SD	Min-Max
Store size (m ²)	4,646.75	7,000	2,982.74	700–7,000
Manager age	36.91	37.00	5.56	25–54
Manager tenure in firm	5.57	4.00	6.12	0.25–32
Education	%			
High School – not finished	7.8			
High School degree	39.0			
Undergraduate currently	23.4			
Undergraduate degree	15.6			
Postgraduate currently	1.3			
Postgraduate degree	13.0			

of missing data were discarded.¹² We compare our usable sample to the overall population of the retail units of the Brazilian division of the multinational retailer. Previous literature states that these comparisons help provide evidence on the extent to which the sample is representative of the overall population (Klassen *et al.*, 2017). Table 1, Panel A, compares the size and region of our sample to the overall population, evidencing the representativeness. Table 1, Panel B, shows that the stores, on average, have a floor space of 4,646.75 m². This table also displays the mean (median) of managers' age and tenure in the firm: 36.91 (37.00), and 5.57 (4.00), respectively. Finally, Table 1, Panel B, presents the manager-education distribution of our sample.

¹²Cases with four items or less of missing data were replaced using the expectation-maximisation (EM) method in SPSS.

Since we use survey data, we followed the recommendations of Podsakoff *et al.* (2003) to overcome problems related to common method bias. First, we ran a Harman's one-factor test by including all items in an exploratory factor analysis. Results revealed that no single factor explained the majority of the variance. Four factors with eigenvalues larger than 1.0 emerged, and the first factor explains 27 percent (below the 50 percent criterion). Second, we also ran the partial correlation adjustment procedure (Lindell and Whitney, 2001). We used the tenure and age of the respondent as the marker variables (Krishnan *et al.*, 2006; Schilke and Cook, 2015). All significant correlations in the zero-order model remained significant after both partial correlation adjustments. Third, in the design of the survey instrument, we assured the respondents' anonymity and issued a disclaimer saying there were no right or wrong answers, reducing evaluating apprehension. Fourth, we also avoided commonalities like the use of Likert scales with similar endpoints and appearance, preventing anchoring effects (Abernethy *et al.*, 2013). The survey pre-test also helped to avoid vague concepts, kept questions simple and specific, or identified items that needed to be reworded. Overall, we conclude that common method bias was unlikely to be a significant problem in our study.

4.3. Measurement of variables

The main constructs and control variables included in this study are operationalised based on existing measures available in the literature. The Appendix displays the items in the questionnaire used to measure the variables involved in the study.

The *quality of performance metrics* is understood here from an employee's perspective. It is captured as the extent to which the properties of the budgetary performance goals are perceived to be: (i) clear, (ii) fostering cooperation among employees, (iii) prioritising objectives, (iv) precise, (v) attainable and (vi) controllable.¹³ We use the budgetary performance goals as our measure of quality of performance metrics given the importance the company attributes to these metrics that constitute a significant part of the compensation given to the participants of this study. Following previous literature in accounting, these properties represent the quality of the metrics (Kenis, 1979; Goold and Quinn, 1990; Gibbs *et al.*, 2009; Groen *et al.*, 2017). All properties are scaled (5-point scale, where '1 = not at all' to '5 = very high') so that a larger value indicates a positive perception of the quality of the performance metrics.

¹³Previous literature has frequently accounted for two other properties, namely incentive and participation. We do not include these in our study, as the incentives are the same for all managers, and there is no participation in budget setting as they are top-down, designed by the headquarters. Performance targets are negotiated but not elaborated in participation with managers of retail units.

To measure *direct and indirect peer monitoring*, we rely on an adjusted version of a construct developed by Loughry and Tosi (2008). The number of items used to capture both constructs was reduced to reflect the organisational setting and the low interdependence between managerial tasks, and also to avoid redundancies without compromising the semantic equivalences from the original scales.¹⁴ To measure direct peer monitoring we asked questions about the frequency in which the peers (managers in a similar position): (i) notice what peers in other units are doing in terms of management practices, (ii) notice what peers are doing at work, (iii) praise peers when they do a good job, and (iv) openly discuss performance with peers. In measuring indirect peer monitoring, we asked questions about the frequency in which their peers: (i) gossip about how peers perform at work, (ii) refuse to socialise with peers who perform poorly, (iii) avoid peers who perform poorly, and (iv) gossip about the poor performance of other strategic business units managers. The scale for both constructs ranges from '1 = almost never' to '7 = very often'.

Goal commitment was measured using the validated scale of Chong and Chong (2002). Goal commitment refers to the employees' determination to reach a goal (Locke *et al.*, 1988) and its presence is usually identified as a consequence of the perceived quality of pre-set goals (Webb, 2004) and peer monitoring (Dhanani and LaPalme, 2019). This measure captures the view of commitment as being an attitude about a goal. We asked respondents to indicate the extent to which they agree or disagree with statements regarding the priority of achieving budget objectives, the seriousness of budget goals and the importance of budget goals. The scale ranges from '1 = strongly disagree' to '5 = strongly agree'.

We included *manager tenure* in the retail unit, *manager age*, *manager education*, *size* of the retail unit, and *customer satisfaction* as control variables. Previous literature indicates that in the early years of their service, managers have a greater incentive to show that they can achieve the objectives that favourably influence perceptions of the firm (Karuna, 2007; Ali and Zhang, 2015; Gomez-Conde *et al.*, 2019). Both manager tenure and age were computed in years. Manager education was measured in six categories, as we noted above. Education can play a role in interpreting the performance metrics, influencing peer monitoring. In terms of size, retail units with limited resources have more problems reaching the proposed goals (Karuna, 2007). We measure the size of the retail unit by the number of employees. An alternative size measure like square meters of retail surface yields similar results. Lastly, we also included customer satisfaction as employees in customer-oriented organisations develop

¹⁴Derived from the survey pre-test and the back-to-back translation process, we included eight out of 13 items from the original peer monitoring scale of Loughry and Tosi (2008) ('correct' and 'report' dimensions were dropped in this process). The low applicability of some dimensions in the research setting (i.e., low task interdependence) or the semantic issues around some items are the main reasons behind this process.

a personal relationship with customers, increasing goal commitment (Donavan *et al.*, 2004). A measure of customer satisfaction was obtained from the company's annual internal survey (0–10 scale).¹⁵

Descriptive statistics for each item are reported in Table 2. Overall, quality of performance metrics and goal commitment show high values in relation to the scale, while indirect peer monitoring presents slightly higher values than direct peer monitoring. A correlation matrix is displayed in Table 3. All correlations are below $r = 0.5$. Multicollinearity is also analysed by computing variance inflation factors (VIFs). The highest VIF across the dependent variables models is 1.797, which is well below the general threshold of 10. Thus, multicollinearity is not a significant concern in our study.

5. Results

The proposed hypotheses were tested using the partial least squares (PLS) technique. PLS estimates the parameters based on the ability to minimise the residual variances of dependent variables (Ringle *et al.*, 2015; de Castro, 2017). PLS does not make distributional assumptions and can estimate models with small sample sizes. PLS needs a minimum sample size of 10 times the largest number of independent constructs explaining a dependent construct (Ringle *et al.*, 2015). Thus, our sample size is adequate. The PLS technique employs a bootstrap method to examine the significance of each path coefficient. We use a large number of bootstraps (i.e., 5,000 bootstraps) to provide stable coefficients (Ringle *et al.*, 2015).¹⁶

PLS simultaneously takes into account both the measurement and the structural models. The measurement model allows for an estimation of construct validity and reliability. Results in Table 2 indicate that multi-item constructs show acceptable reliability with a composite reliability score well above 0.7, and loadings above 0.4 (Bedford *et al.*, 2019; Braumann *et al.*, 2020).¹⁷ Variance extracted values (AVE) are also above 0.50, indicating adequate convergent validity. Finally, concerning discriminant validity, Table 3 also shows that the square roots of the AVE are all greater than with all other constructs, supporting the measures' discriminant validity. In Table 4 we run an additional test of discriminant validity, examining the heterotrait-monotrait (HTMT) ratio of the correlations, following recent

¹⁵To rule out that potential correlated omitted variables drive our results, we rerun our model including an additional control variable: unit performance. All our inferences remain unchanged.

¹⁶Data were analysed with the statistical software SmartPLS v.3.

¹⁷If we employ the 0.5 cutoff, two additional items must be excluded: DPM4 and QPM5. For completeness, we ran our model without both items. Results remain unchanged.

Table 2
Descriptive, reliability and AVE statistics

	Mean	Median	Standard deviation	Min-Max	Theoretical range	Loadings	Eigenvalue	Composite reliability	Average variance explained
Quality of performance metrics	3.987	4.000	0.688	2.20–5.00	1–5	0.461–0.811	2.369	0.795	0.502
Direct peer monitoring	5.143	5.250	1.141	2.25–7.00	1–7	0.543–0.906	2.516	0.855	0.614
Indirect peer monitoring	5.273	5.667	1.262	2.00–7.00	1–7	0.559–0.902	1.883	0.778	0.589
Goal commitment	4.191	4.333	0.674	2.33–5.00	1–5	0.516–0.869	1.540	0.735	0.518
Tenure in retail unit	3.610	2.000	4.386	0–23	–	–	–	–	–
Manager age	36.909	37.000	5.556	25–54	–	–	–	–	–
Manager education	3.033	3.000	1.441	1.00–6.00	1–6	–	–	–	–
Size (employees)	184.299	206.000	123.705	25–518	–	–	–	–	–
Customer satisfaction	7.992	8.100	0.484	6.5–8.8	0–10	–	–	–	–

Table 3
Correlation matrix

	1	2	3	4	5	6	7	8
1. Quality of performance metrics	<i>0.708</i>							
2. Direct peer monitoring	0.223	<i>0.784</i>						
3. Indirect peer monitoring	-0.132	0.089	<i>0.767</i>					
4. Goal commitment	0.450	0.334	-0.179	<i>0.720</i>				
5. Tenure in retail unit	0.040	-0.066	0.045	-0.019	-			
6. Manager age	-0.038	- 0.066	-0.080	0.069	-0.052	-		
7. Manager education	0.114	-0.082	-0.013	0.045	0.347	-0.175	-	
8. Size (employees)	0.198	- 0.102	0.018	0.113	0.397	-0.133	0.245	-
9. Customer satisfaction	0.115	0.072	0.035	0.053	-0.031	0.058	-0.077	0.325

Correlations that are significant at a 10 percent significance level or lower are reported in bold. Diagonal elements are the square roots of the AVE statistics.

Table 4
HTMT discriminant validity

	1	2	3	4	5	6	7	8
1. Quality of performance metrics								
2. Direct peer monitoring	0.365							
3. Indirect peer monitoring	0.298	0.392						
4. Goal commitment	0.499	0.422	0.496					
5. Tenure in retail unit	0.166	0.149	0.135	0.170				
6. Manager age	0.111	0.201	0.148	0.210	0.092			
8. Manager education	0.069	0.133	0.115	0.061	0.100	0.008		
7. Size (employees)	0.112	0.141	0.086	0.219	0.321	0.024	0.127	
9. Customer satisfaction	0.184	0.237	0.076	0.108	0.093	0.012	0.146	0.295

developments in management accounting measurement (Bedford and Speklé, 2018). All these correlations are well below the 0.85 cut-off value.

5.1. Hypotheses testing

Results of the structural model used to test our hypotheses are displayed in Table 5. In addition to the hypothesised relationships, the structural model controls for: (i) other non-hypothesised links (quality of performance metrics on goal commitment), and (ii) the effect of control variables.

H1 posits that the performance metrics quality is positively associated with direct peer monitoring. Results reveal a statistically and positive significant relationship providing support for H1 ($\beta = 0.318$, $p < 0.01$). H2 predicts that the quality of performance metrics is negatively associated with indirect peer monitoring. Results indicate a negative and significant association, providing support for H2 ($\beta = -0.258$, $p < 0.05$).

H3 expects a positive association between direct peer monitoring and goal commitment. The results show a positive and significant path, offering support for H3 ($\beta = 0.245$, $p < 0.05$). H4 predicts that indirect peer monitoring has a negative and significant association with goal commitment. The results support this postulation ($\beta = -0.321$, $p < 0.05$).

5.2. Additional tests: Non-hypothesised relationships

In addition to the results related to H1–H4, a number of non-hypothesised relationships arise in our theoretical model. Specifically, the quality of performance metrics is positively associated with goal commitment ($\beta = 0.311$, $p < 0.01$) in line with prior work (Webb, 2004). The quality of these metrics usually focuses on managers' attention and effort to reach the targets in their business units. Prior work offers evidence that more

Table 5
PLS structural model results: path coefficients, *t*-statistics, VIF and *R*²

Independent variables	Dependent variables		
	Direct peer monitoring	Indirect peer monitoring	Goal commitment
Quality of performance metrics	0.318*** (2.677)	-0.258** (1.651)	0.311*** (2.436)
Direct peer monitoring			0.245** (1.862)
Indirect peer monitoring			-0.321** (2.274)
Tenure in retail unit	0.054 (0.416)	-0.003 (0.140)	0.056 (0.555)
Manager age	-0.143 (1.052)	-0.045 (0.174)	0.048 (0.612)
Manager education	-0.063 (0.526)	-0.076 (0.637)	-0.002 (0.140)
Size (employees)	-0.226* (1.728)	0.017 (0.155)	0.090 (0.870)
Customer satisfaction	0.246* (1.716)	-0.005 (0.077)	0.245* (1.862)
<i>R</i> ²	0.212	0.067	0.388
Max. VIF	1.297	1.297	1.372

Each cell reports the path coefficient (*t*-value). *** Significant level 1 percent, ** Significant level 5 percent, * Significant level 10 percent, (one-tailed for hypothesised relationships, two-tailed otherwise).

sophisticated performance metrics can sharpen managers' understanding of the performance drivers in their business units, increasing commitment by bolstering self-efficacy beliefs (Malina and Selto, 2001; Gumbus and Lyons, 2002; Webb, 2004). Moreover, our model suggests two indirect effects of quality of performance metrics on goal commitment through both peer monitoring types, direct and indirect. We performed this test for mediation using the SmartPLS tests for specific indirect effects. In non-tabulated results, we find support for these (partial) mediation effects through both direct peer monitoring ($\beta = 0.078$, $p < 0.10$) and indirect peer monitoring ($\beta = 0.095$, $p < 0.10$). These results suggest that the quality of performance metrics has a role beyond the direct effect on goal commitment, by being positively (negatively) associated with direct (indirect) peer monitoring and, subsequently, fostering (reducing) the positive (negative effect) of direct (indirect) peer monitoring on goal commitment.

5.3. Extended analysis: The role of performance in shaping peer monitoring

Literature on peers' response to co-workers' performance shows that the motivational effects of peer monitoring could be influenced by the performance of peers (LePine and Van Dyne, 2001; Jackson and LePine, 2003). Direct peer monitoring includes deploying different informal mechanisms to enforce goal commitment among peers. In this regard, high-performing individuals are openly praised by their peers, gaining the respect and acceptance of other members (Hsu *et al.*, 2017). These incentives are associated with closer social relations, improved psychological attachment, loyalty to one another, enhanced pride for being part of the group and increased commitment (Hsu *et al.*, 2017). Conversely, low-performing individuals may resent peers who correct them, attempt to discuss their performance with them or praise high achievers (Loughry and Tosi, 2008).

Related to indirect peer monitoring, gossiping about or avoiding high-performing individuals, although likely perceived by them as negative, is unlikely to reduce their commitment to the organisational goals. High performers are associated with self-efficacy beliefs and they will maintain goal commitment despite indirect peer monitoring. Conversely, the negative effects of indirect peer monitoring on commitment are expected to be stronger for low-performing individuals. Low-performing individuals may feel aggrieved when they recognise that peers are gossiping about their performance or avoiding interaction with them (Loughry and Tosi, 2008), undermining their organisational goal commitment.

Table 6 presents the results of subgroup analyses made to extend our model using performance as a splitting variable (based on the median). Performance for each retail unit in the sample was obtained from the parent company's internal accounting system. The researchers received consolidated data for the past 12 months' performance for the retail units that completed the

Table 6
PLS structural model results: Additional analysis

Independent variables	Dependent variables		
	Direct peer monitoring	Indirect peer monitoring	Goal commitment
Panel A: High performance subsample			
Quality of performance metrics	0.281* (1.306)	-0.134 (0.320)	0.555*** (2.705)
Direct peer monitoring			0.210* (1.319)
Indirect peer monitoring			-0.097 (0.491)
Tenure in retail unit	0.194 (0.484)	-0.012 (0.063)	0.189 (0.865)
Manager age	-0.180 (0.620)	-0.250 (1.084)	0.147 (1.093)
Manager education	-0.177 (0.824)	-0.038 (0.291)	0.038 (0.288)
Size (employees)	-0.215 (0.942)	-0.150 (0.579)	-0.212 (0.765)
Customer satisfaction	0.219 (0.876)	-0.227 (1.200)	0.210 (1.319)
R^2	0.207	0.142	0.597
Max. VIF	1.692	1.692	1.797
Panel B: Low performance subsample			
Quality of performance metrics	0.381** (1.892)	-0.415** (1.816)	0.158 (0.509)
Direct peer monitoring			0.204 (1.191)
Indirect peer monitoring			-0.473***

(continued)

Table 6 (continued)

Independent variables	Dependent variables		
	Direct peer monitoring	Indirect peer monitoring	Goal commitment
Tenure in retail unit	0.003 (0.204)	-0.012 (0.129)	(2.760) -0.065 (0.700)
Manager age	-0.081 (0.435)	0.119 (0.885)	-0.131 (0.718)
Manager education	0.006 (0.022)	-0.038 (0.252)	-0.052 (0.367)
Size (employees)	-0.223 (1.406)	-0.150 (0.905)	0.350** (2.256)
Customer satisfaction	-0.131 (0.435)	-0.081 (1.005)	-0.119 (0.885)
R^2	0.238	0.206	0.544
Max. VIF	1.190	1.190	1.431

Each cell reports the path coefficient (t -value). *** Significant level 1 percent, ** Significant level 5 percent, * Significant level 10 percent (one-tailed for hypothesised relationships, two-tailed otherwise).

questionnaire. This information included operational KPIs (e.g., customer satisfaction, engagement or turnover) and financial data (e.g., working capital or gross margin). In the paper, productivity (EBIT) was used to capture retail unit performance. Findings confirm these prior appreciations. Results displayed in Table 6 indicate that the effect of direct peer monitoring on goal commitment is significant in the high performers' subsample (see Panel A) and non-significant in the low performers' subsample (see Panel B). Similarly, the negative effect of indirect peer monitoring on goal commitment is significantly greater in the low performers' subsample (see Panel B) than in the high performers' subsample (see Panel A). Figure 2 also shows the simple slopes for both subgroup analyses.

5.4. Further analysis: Additional outcomes of peer monitoring

Overall, our findings present evidence consistent with direct (indirect) peer monitoring being positively (negatively) related to goal commitment. Our final set of tests sheds light on the consequences of peer monitoring. Specifically, we examine whether peer monitoring is relevant in a more observable managerial behaviour, such as decision speed.¹⁸ Prior work argues the existence of additional benefits of direct peer monitoring (Kennedy and Widener, 2019). Thus, peers performing similar tasks, by using peer monitoring benefit from this two-way communication exchange where both agents learn about the process and the organisation, which facilitates decision-making and, ultimately, increases decision speed. In their well-known study, Kahneman *et al.* (1982) indicate that decision speed and mistakes are, to some extent, produced by individual and organisational constraints and motivations. Direct peer monitoring, by providing additional information and attention, enables faster operational decisions. Overall, we expect that direct peer monitoring increases information flows among managers and thereby speeds decision-making (Baum and Wally, 2003). Untabulated results indicate that direct peer monitoring is positively associated with decision speed ($\beta = 0.234$, $p < 0.05$), while the effect of indirect peer monitoring is negative but non-significant ($\beta = -0.073$, $p > 0.10$).

¹⁸Decision speed was measured using nine items adapted from prior work (Baum and Wally, 2003). We ask about the approximate time it would take you/your organisation to decide on the following aspects (1 = immediately, 2 = on the same day, 3 = the same week, 4 = the same month, 5 = after a month) (reverse coded): (i) layout and display of products in store; (ii) customers' needs; (iii) expenses; (iv) employee development and training; (v) waste; (vi) inventories/stocks; (vii) food safety; (viii) procedures and routines; and (ix) human resources. The nine items showed acceptable loadings (>0.4) and composite reliability (>0.7).

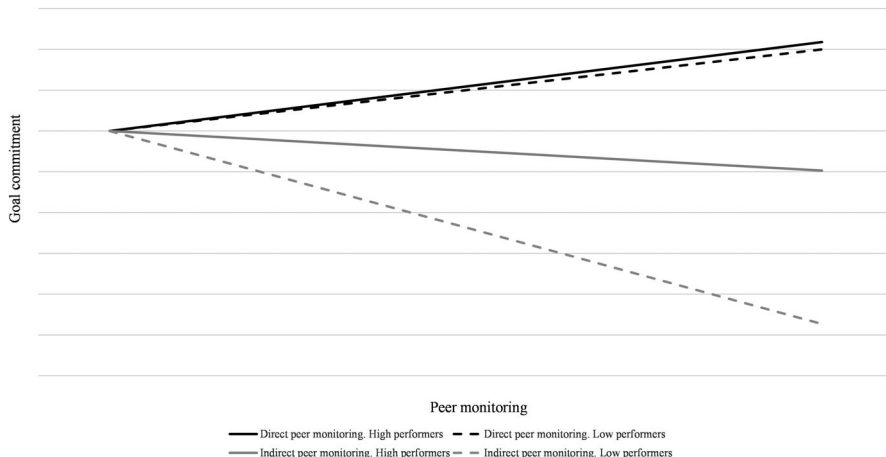


Figure 2 Simple slopes for high and low performers.

6. Discussion and conclusions

The aim of this study was to examine the impact of the quality of performance metrics on peer monitoring and its consequences on goal commitment. We find that high-quality performance metrics are positively associated with direct peer monitoring, while low-quality performance metrics are negatively associated with indirect peer monitoring. We also document that direct peer monitoring is positively linked to goal commitment, whereas the association with indirect peer monitoring is negative, being a non-desired outcome by employers, and becoming a consequence of the lack of performance metrics quality. These are important findings for both academics and practitioners. Our setting to analyse these relationships, retail units, is especially interesting as they operate in a highly dynamic environment, meaning that goal commitment and performance metrics are particularly relevant.

This study contributes to the current organisational control literature in at least three ways. First, we shed more light on the effects of horizontal organisational control. Previous research in this area concentrates on self-managed work teams (Hartmann and Slapnicar, 2009; Román, 2009; De Jong *et al.*, 2014; Sedatole *et al.*, 2016; Kennedy and Widener, 2019). Our sample of store managers extends previous research by demonstrating the important effects of peer monitoring at the level of managers in charge of independent profit centres. Therefore this study responds to calls for a better understanding of how peer pressure happens at managerial level (Loughry and Tosi, 2008). In our study, we found that the effects of peer monitoring on motivation could be significant even in the absence of task interdependence. Although the

performance of store managers was completely independent of other stores, an organisational culture that fosters frequent meetings, league tables and highlights best practices and benchmarks creates opportunities for peer monitoring to emerge and affect motivation.

Second, we explicitly recognise the potential role of formal accounting control systems on informal control and how their motivational implications extend existing frameworks and contribute to an enhanced understanding of the control systems from a broader perspective (Bedford and Malmi, 2015). In doing so, we respond to recent calls for a better understanding of the interrelationships between formal and informal controls (Cardinal *et al.*, 2017; Gackstatter *et al.*, 2019). Specifically, results explain alternative control patterns between performance management and peer monitoring, which have scarcely been captured by existing research findings.

Third, peer monitoring has been treated mainly as a single undifferentiated phenomenon (De Jong *et al.*, 2014). This paper models the integrated effects of the perceptions of performance metrics with both direct and indirect peer monitoring on goal commitment. We suggest that these types of peer monitoring have identifiable impacts on goal commitment. Therefore, we extend previous literature in accounting by examining different dimensions and consequences of peer monitoring.

We acknowledge that our study has several limitations. First, this research relies on a cross-sectional survey and it is therefore limited in its inferences about causality. Second, it was conducted within one organisation. Although this particular choice allowed us to keep constant many of the factors that could otherwise explain the relationships explored in this research, it limited generalisability. Generalisability could be another limitation when cultural characteristics of the sample are taken into consideration. Previous research has shown that members of collectivistic and high-power-distance cultures such as in Brazil, seek feedback from peers rather than from superiors and/or subordinates. This is because collectivistic and high-power-distance individuals feel uncomfortable about approaching their superiors and they do not expect their subordinates to criticise their boss (Taras *et al.*, 2010). Therefore, the perceptions about peer monitoring in our sample might be even more significant than in other jurisdictions. Third, in this research we concentrate on examining the effects of performance metrics, peer monitoring and goal commitment. We did not investigate the potential effects of excessive peer monitoring. Future research could explore such relationships via curvilinear models.

This study also has important implications for management practitioners. Employees' lack of commitment is one of the main current organisational concerns (Gallup, 2017). Conventional wisdom holds that managers must rely on peer monitoring as a mechanism to increase employee commitment. In this regard, Turner and Makhija (2006) indicate that there is a need for managers to be aware of informal control systems because it can be a source of sustainable

competitive advantage if it is used to achieve better performance. However, a superficial understanding of the effects and characteristics of peer monitoring may lead to unintended consequences. In this regard, we offer implications on how companies can make a difference in shaping peer monitoring by raising an alert for the risk that managers may overlook the harmful effects of indirect peer monitoring in employees' goal commitment.

Additionally, our study provides the important message that the design of performance metrics plays an active role in managing peer monitoring and goal commitment. In this regard, direct peer monitoring may be higher in settings where the performance metrics are perceived by employees as clear, controllable, cooperative, attainable and precise. This quality of performance metrics provides encouragement to managers to learn from each other's behaviours and/or tasks, being beneficial to the whole organisation in terms of increasing goal commitment. Furthermore, it will also reduce the level of indirect peer monitoring, which has a negative association with goal commitment. Crucially, for firms that wish to improve goal commitment by managing peer monitoring for motivational purposes, our study highlights one key remedy: increase the quality of the performance metrics. This is a potentially salient message for organisations that might doubt whether performance metrics have behavioural consequences.

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Appendix

Abbreviated survey questions

Quality of performance metrics (QPM)

- QPM1. The extent the budgetary goals are clear to you.
- QPM2. The extent budgetary goals foster cooperation among employees.
- QPM3. The extent you (managers) know what their main budgetary goals are.
- QPM4. The extent budgetary goals reflect your overall performance.
- QPM5. The extent you think it is not possible to achieve the budgetary goals (Rev).
- QPM6. The extent the budgetary goals are under your control*.

Direct peer monitoring (DPM)

DPM1. Notice what peers in other units are doing in terms of management practices.

DPM2. Notice what peers are doing at work.

DPM3. Praise peers who did a good job.

DPM4. Openly discuss performance with peers.

Indirect peer monitoring (IPM)

IPM1. Gossip about how peers perform at work.

IPM2. Refuse to socialise with peers who perform poorly.

IPM3. Avoid peers who perform poorly.

IPM4. Gossip about the poor performance of other SBUs managers*.

Goal commitment (GC)

GC1. The achievement of budgetary goals is one of my daily priorities.

GC2. Since it is not always possible to tell how tough meeting the budgetary goal will be until you have worked on it for a while, it is hard to take the budgetary goals seriously (Rev).

GC3. Quite frankly, I don't think achieving the budgetary goals is so important (Rev).

*Items dropped in the initial results due to low loading and/or cross-loading (below 0.4).; (Rev): Reverse coded.