

The Cognitive and Motivational Effects of Performance Feedback

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The design of employee performance feedback policies is complex for organizations because their purpose is both to signal competence and possible needs for remediation, and to motivate employees. The most important decisions are whether to conceal information or provide feedback on the employees' performance, and whether this feedback should be in terms of absolute performance or relative to co-workers' output, depending on the incentive schemes in use. The literature has identified a number of biases from the perspective of both the evaluators and those being evaluated. After highlighting the issues and questions raised by performance feedback policies, the discussion focuses on current theoretical and empirical evidence about their beneficial and detrimental effects. Directions for future research are then discussed.

1. General Considerations and Questions

What is expected from the information of employees about their performance appraisals? A signal allowing them to update their beliefs about their intrinsic value and a source of motivation to increase effort. However, these two objectives may not be aligned. A good signal on performance can encourage employees to put in more effort into obtaining a future promotion, whereas a bad signal may be discouraging or simply ignored because it is ego-threatening. Therefore, what are the theoretical rationales for concealing or for revealing such information, and in which conditions does providing performance feedback increase efficiency?

A second set of questions relates to whether it is more effective to provide feedback on absolute performance or rather on the employee's performance relative to a reference group. On the side of the evaluators, how to avoid biases in the subjective evaluation of performance, in particular leniency and centrality biases that negatively affect performance? On the side of the employees being evaluated, how to eliminate information avoidance, discouragement, loss of image and frustration? Conversely, how to ensure that a positive evaluation does not lead to a slackening of effort? This questions the optimal combination of incentive schemes and performance feedback policies.

These issues have been addressed in the literature both theoretically and empirically. The theoretical framework usually retained is the principal-agent paradigm with asymmetric information. In the empirical literature, the data come from econometric case studies, field and laboratory experiments. It is hard to find large datasets on companies' performance feedback practices, and many results on the impact of performance feedback come from studies in the education system focusing on students' effort. Experiments conducted in a controlled environment help identify the processes underlying the effects of performance feedback on employees' motivation, and to design feedback mechanisms that preserve the efficient properties

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of incentive schemes without inducing behavioral biases.

2. Theoretical Contributions

Three main strands in the theoretical literature help understand optimal performance feedback policies. The first strand relates to the study of moral hazard in static settings and focuses on the interactions between, on the one hand, a principal's ability to measure the agents' ability, human capital and output, and, on the other hand, the design of incentive schemes that maximize the agents' effort. When noise in the environment is limited, the quantitative measurement of the agents' performance can be objective and performance pay is effective. When luck plays a larger role in the determination of the output levels, measurement becomes more subjective. Noise in the appraisal of performance, and the associated risks of incentive distortions, may justify the use of rank-order tournaments instead of individual performance pay. Tournaments do not request a precise estimate of each agent's effort, but simply a relative performance evaluation. The analysis of performance appraisal is thus directly connected to the tournament theory.

Second, the dynamic principal-agent literature on strategic information disclosure identifies the conditions under which the principal, who has more information than the agents on their productivity, is better off when concealing or revealing private information to the agents and if so, at what moment. The principals' decision to release or conceal information is particularly important in the context of dynamic multi-stage tournaments in which agents have to make successive effort decisions over time. Concealing information is more profitable for the principal than revealing it when it reduces the expected cost of inducing a given level of effort (*e.g.*, Lizzeri *et al.*, 2002). The optimality of interim compared to final performance feedback depends on the effort cost function, the incentive scheme in use, and the possibility of learning. When it is asymmetric and unverifiable, principals may also distort information strategically by bringing news that motivate the agent to work harder, notably by manipulating feedback on output to influence beliefs about another variable such as ability. This is easier when information feedback is vague rather than precise.

Finally, the analysis of optimal performance feedback policy is related to the theoretical literature on individuals' intrinsic motivation and the role of self- and social image (*e.g.*, Benabou and Tirole, 2002). Individuals care not only about what other people do but also about what others think of them. In reference-dependent utility models, status-concerned individuals derive ego-utility from their interactions with others. They value approval from others and they dislike being disapproved. From that respect, information feedback in the form of relative performance evaluation or praise can signal the employee's value in the eyes of the principal, which impacts the agents' future willingness to exert effort. The weight put by the agents on image concerns in their utility function affects how performance feedback and its content impact effort.

3. Empirical Evidence on the Cognitive and Motivational Effects of Performance Feedback

Studies that have been conducted in companies confirm the positive effects of performance feedback that have been identified in the context of education, under different incentive schemes. The benefits of an effective information feedback policy are both cognitive and motivational. By providing signals on the employees' performance and /or their position in the

score distribution, relative feedback can help them update their beliefs about the marginal return of effort. When feedback is associated with public praise, employees tend to increase effort even without monetary incentives, especially when only a few of them receive recognition: the best performers reciprocate and the less good performers try to conform to others' productivity because of status concerns. When individual or team-based performance pay schemes are used, employees' concerns for their position among their co-workers drive the positive and frequently long-lasting effect of relative feedback on performance (Delfgaauw *et al.*, 2013). Monetary rewards in tournaments increase further the positive effects of relative feedback on effort but the effect is more heterogeneous than under non-monetary rewards. Those who lag behind in a tournament tend to increase effort to catch up, while frontrunners tend to decrease effort when learning their relative position.

Experimental evidence helps identify the mechanisms behind the effectiveness of such information feedback. Under flat wage schemes, self-esteem and ego-utility drive the positive effects of feedback on performance (Kuhnen and Tymula, 2012). A ratcheting effect has been identified, as those who learn they rank high fight to keep this status. Social comparisons and a pure preference for rank can justify the U-shaped response of performance to rank information. In a laboratory experiment designed to measure the causal effect of rank, subjects learning that they were the best or the worst performer, respectively, increased future performance by 21% and 13% ("first-rank loving" and "last-rank loathing"), respectively, whereas being in the middle of the distribution reduced future performance by 10% (Gill *et al.*, 2019).

Under piece-rate schemes, the impact of relative feedback on performance increases compared to a flat wage environment, regardless of whether output is above or below average (Azmat and Iriberry, 2016). The effect requires relatively precise feedback and is stronger when ranking is made public. In contests in which effort affects the probability of winning, in equilibrium information feedback should have no impact on agents with standard preferences. Experiments have shown, however, that two forces - the imitation of successful rivals and best response learning - play in different directions. Which of the two effects dominates depends on the nature of the pay scheme, in particular whether the winners take all or only a share of the rent proportional to their effort. In the former case, some found that the effect of imitation is mitigated, while others found that the heterogeneity of competitors' effort is reduced. Reduced heterogeneity would result from both relative payoff maximization and regret avoidance (for frontrunners, the regret from paying too much; for underdogs, the regret of missing an opportunity). The role of status concerns and emotions is also reflected in the fact that very few competitors who lag behind quit before the end of a tournament, although there is little doubt about who will win it (Eriksson *et al.*, 2009).

4. Empirical Evidence on the Risks of Performance Feedback

If the empirical literature had identified an overall positive effect of information feedback on employees' relative performance under different incentive schemes, it has also revealed a number of drawbacks both at the intensive and extensive margins. Employees' beliefs influence how relative performance feedback affects their future effort. It can deteriorate the motivation of those who underestimated their performance but also that of employees who overestimated it, leading to motivated information processing, selective memory of feedback information or feedback avoidance. Similarly, disappointment aversion (*i.e.*, loss aversion around an endogenous reference point based on expectations that is updated after feedback) may induce

discouragement. Negative emotions in the low performers, such as resentment and frustration, may demotivate them. Emotions can also reduce the future performance of the top performers, through an opposite effect on their motivation. Performance feedback can induce excessive motivation that reduces future performance if employees choke under pressure because they are unable to control their stress.

Social preferences also trigger negative effects if top performers revise effort downward (or collude with others) to conform to a social norm or because they internalize the negative externalities induced by their higher relative performance on others' earnings. Relational contracts and a risk of social punishment by peers reinforce this effect. This is crucial in cooperation-based environments but less so in individualized work environments. On the low achievers' side, a backlash of relative performance feedback on the future motivation may result from social status and image concerns, through discouragement, lowered aspirations, and self-handicapping. Moreover, performance feedback can impact how employees team up by putting more weight on peers' ability at the detriment of social ties that mitigated free-riding but no longer operate (Bandiera *et al.*, 2013).

In addition to contradictory effects on motivation, relative performance feedback may also produce detrimental effects on the quality of work or on productivity in tasks that are not the focus of performance measurement. Employees may distort their allocation of effort across tasks, favoring those in which they can outperform others and that are less ego-threatening, which may generate organizational inefficiencies (Hannan *et al.*, 2013). It may even induce antisocial behavior, such as sabotage within teams, notably when 360° review systems are used. If forced rating distribution reduces the evaluators' leniency bias and increases productivity, compared to free appraisal, these effects are mitigated when employees can sabotage each other (Berger *et al.*, 2013).

5. Future Directions

By opening up to behavioral economics and experimental methods, the literature has highlighted the economic, cognitive, and psychological processes involved in performance appraisal, both from the perspective of those who evaluate others' performance and the employees being assessed. Theoretical models and many empirical evidences have characterized the effects, sometimes contradictory, of the nature of feedback on the motivation of employees and success of organizations. They pave the way for new avenues of research.

From an empirical point of view, a challenge is to better identify the dynamic effects of feedback policies and in particular how often feedback should be provided to employees in order to sustain their effort over time. Little is known about the durability of the effect of feedback and whether continuous feedback outperforms intermittent feedback. New forms of work organization have developed during the COVID-19 pandemic, notably widespread telecommuting. An optimal performance feedback policy becomes even more complex to define, as the physical distance within teams increases. The extent to which this distance should change how performance is assessed and reported back to employees requests more attention.

From a methodological point of view, conducting multi-firm field experiments for different skill levels would allow us to assess the replicability, and therefore the robustness of results that

have been obtained in the context of single-firm single-job (typically low-skilled ones) studies. Using such methods would help understand the determinants of the diversity of corporate feedback policies and the heterogeneity of their effects according to the level of employees in the hierarchy. Indeed, if one feedback policy clearly dominated the others in terms of effectiveness, why would it not have generalized?

Finally, from a theoretical perspective, current models focus on how individuals update their beliefs and aspirations after receiving performance feedback, revealing the importance of confidence management at the individual level. Models that would focus on explaining the biases in the collective processes of updating beliefs at the level of the teams themselves remain to be developed. Progress is also expected in incorporating into utility functions models of self- and social image concerns that influence the ways in which feedback affects both cognitive processes and motivation. Indeed, why does overconfidence persist so frequently despite the provision of relative performance evaluation feedback to individuals?

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