How Formula One Teams Handle Underperformance

It may be the driver… or is it the engine? Here's how professional racing constructors trace performance problems to their source.

In an ideal world, managerial priorities would drive business outcomes. In the real world, though, we know the reverse is very often the case. Underperformance commonly comes as a surprise to managers, triggering a race to solve the problem. First, however, they must do a root cause analysis.

Today's business environment presents enormous challenges for managers trying to diagnose organisational ailments. The complexity and highly interconnected nature of business systems make it difficult to disentangle individual elements and isolate their impact on performance.

How, then, is a manager of an underperforming firm to identify whether the problem resides under their own roof, or with an external party such as a supplier? Obviously, the answer is crucial to defining next steps: If the supplier is the weak link, the firm should quickly cut ties.

Our new paper in ***Administrative Science Quarterly*** examines this managerial challenge in a context that is all about performance: Formula One (F1) motor racing.

F1 constructors – modern high-tech firms

As fans of the sport know, success or failure in F1 is not entirely determined by the skill, daring and reflexes of drivers. F1 racing cars are custom-designed at great expense to push the limits of automotive engineering. As with so many modern organisations, F1 teams succeed by building a high-performing organisation, excelling in production and collaborating with outstanding suppliers. The challenge facing F1 managers confronts executives across all types of organisations: They need to assess whether their supplier helps or hurts their performance – and whether to sustain the relationship or split with the supplier.

Constructors in F1 often order engines from suppliers such as Honda, Renault and Toyota rather than build them in-house. By interviewing dozens of F1 professionals, we found that constructors cannot pinpoint how their choice of engine contributes to team performance. "It's difficult to do because it's hard to discriminate between an engine power issue and aerodynamic drag," one engineer told us. They often do not know whether the chosen supplier helps or hinders performance.

Like managers mulling whether firing their supplier would elevate performance, F1 constructors looking to improve their league standing have a thorny diagnostic dilemma. Somehow, they must assess whether a core component on which so much is riding – the engine – is working for or against their goals.

We use data on F1 car constructors for the years 1981-2013, as well as on the engine suppliers they were using. We track the rankings and racing results for all competing constructors.

Vicarious performance feedback

We build on a classic field of business scholarship called performance feedback theory, which is devoted to exploring the frantic "problemistic search" that managers execute in cases of underperformance. According to performance feedback theory, "problemistic search" begins when firm performance falls below a certain aspiration level, which is defined by both social and historical factors. In other words, managerial expectations are shaped by social comparison with current competitors, as well as by the organisation's past achievements. Using similar logic, we estimated aspiration levels of F1 constructors as a combination of track record and current-season performance relative to the mean.

Our first main finding is probably not so surprising: When constructors slid below the aspiration level, they were more likely to cut ties with their engine supplier. More interestingly, we found that to clarify the murkiness of their internal performance data, constructors look outside – to the performance of rivals using the same engine supplier.

We found that a constructor's likelihood of switching suppliers was significantly greater when one or several competitors using the same supplier were also falling short of *their* historical track record. This effect sprang neither from imitating other outfits' decisions to terminate supplier relationships, nor from simple proxies of engine quality (we controlled for both). Rather, it suggested a process of fact-gathering specifically regarding the performance of certain competitors – those with an engine supplier in common – over the course of the season. We posit that in the absence of clarity about what's causing their own underperformance, decision makers will use the apparent experience of others as a litmus test. In the paper, we call this *vicarious performance feedback.*

Of course, using vicarious performance feedback is not the only way F1 constructors can learn about a supplier. Indeed, we found that vicarious performance feedback had less effect when constructors and suppliers were geographically closer. Vicariously observing the supplier's other customers is no replacement for more direct forms of access to knowledge, such as being able to conduct site visits and look your business partners in the eye.

However, given the relentlessly competitive, performance-obsessed environment of professional racing, one could reasonably conclude that if vicarious performance feedback is good enough for the likes of Mercedes and McLaren, it may be advisable for managers of all stripes.

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