

# Interrelation of Controls for Autonomous Motivation: A Field Study of Productivity Gains Through Pressure-Induced Process Innovation

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**ABSTRACT:** This field study investigates an empirical setting where the introduction of new formal results controls—stretch targets for productivity that are seemingly unachievable with current process efficiencies—is associated with high productivity gains over extended periods of time. Contrary to findings from the prior management accounting research, employees meet the targets by being creative and risk-taking in continuously innovating processes, despite the pressure induced by high target-level difficulty. Mobilizing self-determination theory, we argue that a specific interrelation of personnel and cultural control with results control supports internalization of the latter by employees. In this situation, employees perceive the high performance required by the results control assimilated into their own values, which facilitates the autonomous motivation necessary for their creativity. Our findings contribute to the literature by identifying the conditions, and discovering the mechanisms, that enhance the efficacy of stretch targets.

**Keywords:** stretch targets; target-level difficulty; management control systems; performance management; high performance; self-determination theory.

## I. INTRODUCTION

Working here at GlobSearch is like jogging alongside a car that is going a little bit faster every quarter, meaning you have to go a little bit faster all the time. You have to get in better shape and keep up with the car, because if that car doesn't go a little bit faster, we are not going to be a competitive company any more. And then all sorts of bad things happen. Other cars that represent other companies pass us. So I tell people, "You take the good with the bad." Hey, we have all sorts of great perks here. We get paid well, it's a very casual environment, and we get free food, lots of cool stuff. But that comes with a high degree of expectation and responsibility. And that's, in a way, who we are. If there's any micromanagement going on, it's just making sure that everybody is using a consistent process to make sure everybody understands that and tries their best, so that we can measure people's performance along those lines.

—Corporate Controller, GlobSearch Inc.

Employees can raise productivity by working faster and longer using conventional processes, or take risks by directing their efforts to identifying process innovations that renew and increase process efficiency (e.g., [Webb, Williamson, and Zhang 2013](#)). The capacity to develop innovations depends on whether and to what extent the organizational conditions support employees' potential creativity, that is, their cognitive ability to imagine and deliver new ideas for process innovations

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(Amabile 1988; Adler and Chen 2011; Sitkin, See, Miller, Lawless, and Carton 2011). The prior literature on stretch targets<sup>1</sup> argues that extremely challenging targets encourage employees to take risks and direct their attention to the generation of innovations (e.g., Thompson, Hochwarter, and Mathys 1997; Kerr and Landauer 2004; Sprinkle, Williamson, and Upton 2008). However, recent findings from experimental accounting research by Webb et al. (2013) suggest that the high pressure and perceived stress associated with stretch targets and target-based pay constrain productivity by negatively affecting the cognitive ability of employees to identify new process efficiencies (see, also, Beilock and Carr 2005; Sitkin et al. 2011).<sup>2</sup>

We address this controversy in the literature through a field study of a case company that applied stretch targets effectively. The case company, GlobSearch (a pseudonym), qualifies as an extreme case (cf. Cooper and Morgan 2008) in terms of several performance dimensions relevant to our theoretical interest. Specifically, according to professional associations ranking global companies, the case company is among the best for the criteria “employer quality” and “innovativeness” and, throughout the course of our field work, outperformed the market to rapidly become one of the largest in the world by market capitalization. We conducted a series of observations in one department of the case firm, where high productivity gains have been sustained since the introduction of formal stretch targets for productivity and related rewards. Employees achieved the productivity gains by being creative and risk-taking to continuously develop process innovations, despite the high pressure induced by the stretch targets.

From the perspective of self-determination theory (SDT) in psychology, the case department presents a theoretically interesting tension, since external monitoring and performance pressure might inhibit employees’ perceived self-determination required for creativity (Deci and Ryan 1985; Deci, Koestner, and Ryan 1999; Gagne 2014). SDT distinguishes between autonomous and controlled motivation, with the former generally supporting and the latter inhibiting creativity (Ryan and Deci 2000). An extreme form of autonomous motivation is purely intrinsic, where an individual’s creativity is facilitated by the satisfaction gained from performing tasks and reaching self-imposed goals, and doing so entirely of their own volition. By contrast, settings with extrinsic motivators, for example, in workplaces, have long been commonly associated with controlled motivation, where the individual might feel a sense of pressure and coercion to engage in particular tasks (Gagne and Deci 2005). Being subject to control means primarily performing for instrumental reasons, such as rewards. That is expected to reduce creativity because the individual’s attention shifts from task to reward (Hennessey, Moran, Altringer, and Amabile 2014), a phenomenon described by many different terms, such as “the hidden cost of reward” (Lepper and Greene 1978) or “motivation crowding-out effect” (Frey 1994). Given the abovementioned factors, how is it that the case department appears able to make high productivity gains triggered by demanding formal stretch targets and related rewards, yet its employees remain creative and continuously innovate processes?

For some time, an argument has been evolving that extrinsic motivators do not necessarily undermine autonomous motivation, and might, under certain conditions, even strengthen it (Lepper and Greene 1978; Amabile 1993; Deci and Ryan 2000). In this vein, SDT distinguishes different gradations of extrinsic motivation that can be perceived either as controlled or autonomous forms, depending on the extent of the employee’s internalization of extrinsic motivators (see Ryan and Connell 1989). In relation, Adler and Chen (2011) claim that an important aspect of the coexistence of creativity and control is how the interplay of different controls (e.g., Simons 1995; Malmi and Brown 2008; Bedford 2015) shapes the conditions where employees internalize extrinsic motivators. Several studies on formal behavior and/or output control argue for the importance of personnel control (e.g., attraction, selection, attrition) in creativity-dependent settings (e.g., Abernethy and Brownell 1997; Kachelmeier and Williamson 2010; Grabner and Speckbacher 2016). However, none of the prior studies, to our knowledge, explain a situation such as our case firm, where stretch targets for productivity are successfully applied, leading to high performance outcomes via a continuous stream of process innovations. Our research sets out to identify the conditions of such a situation and explain how they function, addressing the following research question: How can stretch targets be interrelated with other controls to support conditions for autonomous motivation?

We draw on the control framework by Merchant and Van der Stede (2017) to conceptualize the interrelation between results controls (here, specifically, stretch targets) and other types of control, and mobilize SDT as our method theory (Lukka and Vinnari 2014) to interpret how the interrelation of controls supports employee motivation. Overall, our findings suggest that for employees to be creative and risk-taking in pursuing innovations, the stretch targets require a specific interrelation with personnel and cultural control to enhance employees’ basic psychological needs for autonomous motivation. Specifically, this interrelation of controls should support employees’ feelings of competence, relatedness, and autonomy in the risky pursuit of

<sup>1</sup> A stretch target here describes an organizational target with an objective probability of attainment, which may be unknown and is seemingly impossible given current process efficiencies. In contrast to a challenging target that is perceived to be difficult, but can be met using conventional processes, a stretch target is extremely high and perceived by employees to be very difficult. It requires novelty in performance, a novel path to meet the target under current capabilities (adapted from Sitkin et al. [2011]).

<sup>2</sup> Due to these cognitive constraints, employees might increase conventional effort rather than engage in riskier, yet potentially more productive, process innovations.

innovations, which helps them positively reframe dysfunctional forms of stress, fosters their self-determination, and, due to the internalization of the stretch targets, facilitates creativity. Crucially, however, personnel control requires the selection of employees with a certain predisposition to risk-taking. We find that notably risk-averse employees cannot internalize the extrinsically motivated tasks, even if the interrelation of controls principally fulfills the conditions supporting autonomous motivation.

These findings have important implications. The primary contribution of this study extends the literature on the efficacy of stretch targets by showing, based on the informants' responses to different control interrelations, the conditions that facilitate the internalization of the stretch targets. Our results are contrary to the experimental accounting research by [Webb et al. \(2013\)](#), who find that target-level difficulty is negatively associated with identifying and renewing process efficiencies. We advance this prior literature by considering the characteristics of the control environment in which the stretch targets operate, adding to the work by [Sitkin et al. \(2011\)](#), who develop a contingency framework to assess which companies are positioned to take advantage of stretch targets. Our findings go beyond their organization-level analysis by focusing on the cognitive and behavioral mechanisms through which stretch targets affect individual performance. In doing so, we theorize and empirically illustrate how management control systems design, i.e., the specific interrelation of the stretch targets with personnel and cultural control, can establish the motivational underpinnings that support employees in internalizing the high target-level difficulty. In this situation, employees perceive the high performance required by the stretch targets as assimilated into their own values, which facilitates the autonomous motivation necessary for their creativity and establishes what behavioral economics labels an instance of the "motivation crowding-in effect" ([Frey 1994](#)). As such, these findings extend the management accounting literature on incentive systems in creativity-dependent settings (e.g., [Kachelmeier and Williamson 2010](#); [Chen, Williamson, and Zhou 2012](#); [Grabner 2014](#)).

In addition, our findings add to the related literature on target-oriented contracting for risk-taking (e.g., [Bonner and Sprinkle 2002](#); [Sprinkle et al. 2008](#)) by demonstrating why and how the effectiveness of those contracts depends on factors in the control environment (i.e., the specific interrelation of those contracts with personnel and cultural control). Specifically, the prior research suggests that stretch targets can promote greater risk-taking, yet the stress induced by those targets might limit employees' cognitive ability to reach them ([Webb et al. 2013](#)). Our findings show that if employees have a certain predisposition to risk-taking, then the control environment can facilitate conditions where they perceive themselves "in control" of the stress and remain able to perform.

More generally, the findings are relevant to the literature on management control systems as a package (e.g., [Malmi and Brown 2008](#); [Grabner and Moers 2013](#)), offering a theoretical mechanism through which personnel and cultural control complements results control. This study also provides insights for the literature on accountability systems and group norms (e.g., [Patil, Tetlock, and Mellers 2017](#)), explaining how the functioning of those systems relies on their interrelation with personnel and cultural control.

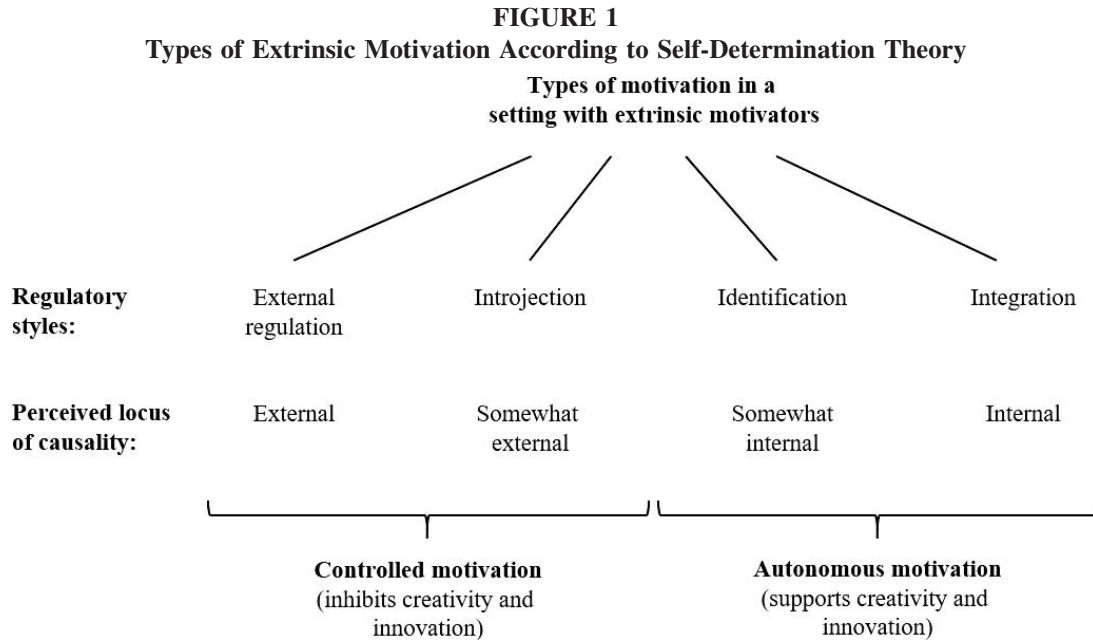
The next section develops the theory, and Section III describes the research design. Section IV presents the empirical data and analysis, Section V the discussion, and Section VI the conclusions.

## II. THEORY DEVELOPMENT

### Autonomous versus Controlled Motivation

Theories of motivation provide an understanding of the processes that cause certain behaviors. Although these processes are not directly observable (i.e., they occur in the mind of the individual), the theoretical constructs facilitate explanations and predictions of how certain work conditions affect behavior. We draw on self-determination theory (SDT), one of the most established theories on motivation, because it provides the theoretical tools to analyze the effects of instrumentality (such as the introduction of new results controls) on employee behavior ([Deci and Ryan 1985](#)). Employees' self-determination depends on whether they experience an internal or external perceived locus of causality (PLOC) ([Rotter 1966](#); [DeCharms 1968](#); [Deci 1971](#)). An internal PLOC means that the employee feels that the behavior is self-emanated and "volitional and accompanied by the experience of freedom and autonomy" ([Ryan and Deci 2000](#), 65); hence, the employee internalizes the instrumentality triggering extrinsic motivation. An external PLOC means the behavior is not representative of the employee's self and, therefore, "accompanied by the experience of pressure and control" ([Ryan and Deci 2000](#), 65).

SDT considers different gradations of PLOC according to the extent of employees' internalization of extrinsic motivators. These relate to four different classes of reasons for acting, which can be meaningfully placed along a continuum ranging from controlled to autonomous. External regulation, the most controlled form, is where the employee has no motivation to perform other than an externally imposed regulation triggered by an external authority, fear of punishment, or rule compliance. Another controlled form, introjection, is an intermediate between external control and behavior in accordance with the employee's own values, so tasks are performed because the employee feels pressure to avoid guilt or anxiety, or to attain self- and other-



Adapted from Ryan and Deci (2000).

approval. By contrast, identification, an autonomous form of motivation, means that the employee identifies a personal relevance in task completion, believes in its value, and accepts the regulation as if it were self-imposed. Integrated regulation is a type of extrinsic motivation where the employee experiences the task as fully assimilated to the self (Ryan and Deci 2000). We use the term controlled motivation to label the external and introjected forms of motivation, and autonomous motivation to encompass identified and integrated forms of motivation.<sup>3</sup>

Research on experimental psychology indicates that external tangible rewards, deadlines, directives, surveillance, competition pressure, and evaluations can undermine autonomous motivation (see meta-analytic review by Deci et al. [1999]). Hence, the introduction of such extrinsic motivators might trigger a PLOC shift toward an external source that constrains employee self-determination and, as a result, their creativity (Amabile 1998; Hennessey et al. 2014; Byron and Khazanchi 2015). This phenomenon, which can occur when autonomous motivation to undertake the specific task is high at the outset, has been recognized in cognitive psychology, as well as behavioral economics, acquiring many different labels, such as “overjustification” (Lepper, Greene, and Nisbett 1973), the “corruption effect” (Deci 1975), “the hidden cost of reward” (Lepper and Greene 1978), and “motivation crowding-out effect” (Frey 1994).<sup>4</sup> By contrast, research has shown that the introduction of extrinsic rewards and (other) formal controls does not necessarily lead to the deterioration, or even elimination, of autonomous motivation, but could strengthen it (Amabile 1993; Cerasoli, Nicklin, and Ford 2014). Weibel et al. (2014, 81) found in their literature review that further research is required “to unravel the conditions” where formal control has a positive effect on autonomous motivation, because findings on the motivation crowding-in effect are “still fragile and scattered.” Figure 1 provides an overview of the types of extrinsic motivation.

### Conditions for Autonomous Motivation

To establish conditions for autonomous motivation, it is important to consider how the instrumentality triggering extrinsic motivation can facilitate an internal PLOC, that is, self-determined behavior. According to SDT, conditions for self-determined

<sup>3</sup> The use of the notion of intrinsic motivation in economics-based motivation crowding theory is supposed to mean the same as the more differentiated notion of autonomous motivation in psychology-based SDT: “Hence although economists do not care to differentiate different forms of extrinsic motivation it is still apparent that their understanding of intrinsic motivation includes what SDT views as identified—or integrated extrinsic motivation and as pure intrinsic motivation” (Weibel, Wiemann, and Osterloh 2014, 75).

<sup>4</sup> Frey (1994) translated these ideas from psychology to behavioral economics, and challenged the mainstream assumption of the relative price effect (higher price for wages leads to higher performance), arguing that there can be crowding effects that undermine (“crowding-out”) or strengthen (“crowding-in”) performance. Motivation crowding theory (MCT) initiated experimental research providing substantial findings on the crowding-out effect (Frey and Jegen 2001; Frey 2012; Weibel et al. 2014).



behavior rely on three basic psychological needs: competence, relatedness, and autonomy (Ryan and Deci 2000). For competence, employees need to feel that they have the relevant skills to succeed in the extrinsically motivated task. Hence, an extrinsic motivator that offers employees optimal levels of challenge, including feedback positively promoting task effectiveness, facilitates autonomous motivation (Csikszentmihalyi 1997; Deci and Ryan 2000). Employees should feel free from “demeaning evaluation” (Ryan and Deci 2000, 58). For relatedness, employees perform tasks triggered by extrinsic motivators because they are valued by “significant others” (Ryan and Deci 2000, 64) to whom they feel related. Hence, it is important for autonomous motivation that employees perceive “a sense of belongingness and connectedness to the persons, group, or culture” (Ryan and Deci 2000, 64) that disseminates the extrinsic motivator. For autonomy, the degree of internalization depends on whether employees perceive the extrinsically motivated task concordant with their integrated sense of self, and whether they can maintain their desire “to self-organize experience and behavior” (Deci and Ryan 2000, 231). The more the employees feel that the extrinsic motivator steers behavior that they themselves value, rather than simply being regulated by the manager, the greater the likelihood that autonomous motivation will be triggered (Deci and Ryan 1985).

### Interrelation of Controls

Initiated through a series of studies by Simons (1987, 1990, 1995), a substantial body of management accounting research has established a common understanding among scholars that formal behavior and output control can facilitate conditions for creativity and innovation, depending on the specific design, use, and interrelation of formal controls (e.g., Simons 1995; Adler and Borys 1996; Ahrens and Chapman 2004).<sup>5</sup> This literature problematizes the dilemma that formal control is often useful in settings requiring creativity and innovation, yet risks undermining the autonomous motivation of employees required to perform such tasks (e.g., Davila, Foster, and Oyon 2009; Grabner 2014; Speklé, van Elten, and Widener 2017). Adler and Chen (2011) called for a better understanding of the motivational underpinnings of management control design and, drawing on SDT, highlight theoretically the importance of employees internalizing formal control for creativity to occur.<sup>6</sup>

The prior literature is controversial regarding the efficacy of stretch targets to trigger creativity and innovation (see, for example, Sitkin et al. 2011).<sup>7</sup> On the one hand, earlier research suggests that stretch targets encourage employees to take risks and direct their attention to the generation of innovative solutions (Thompson et al. 1997; Sprinkle et al. 2008). On the other hand, recent experimental accounting research by Webb et al. (2013)<sup>8</sup> found that participants assigned an easy target and paid a fixed wage identified the greatest number of process efficiencies, while challenging targets and target-based pay enhanced participants’ effort to improve processes through conventional process efficiency. Based on distraction theory in psychology, Webb et al. (2013) suggest that the pressure and related stress induced by stretch targets and target-based pay might constrain individuals’ cognitive ability to be creative<sup>9</sup> (e.g., Beilock and Carr 2005). Further, Sitkin et al. (2011) argue that the effects of stretch targets are likely to be dysfunctional in most organizational settings other than highly specific circumstances, especially those where the company can draw on sufficient slack resources and high recent performance.

To provide a better understanding of the thread underlying these controversial findings in the prior literature, we analyze the efficacy of stretch targets by focusing on how they interrelate with other controls (e.g., Simons 1995; Grabner and Moers 2013; Bedford 2015). For example, prior studies highlight the importance of complementing result-oriented management control systems with employee attraction, selection, and attrition in settings requiring creativity (Kachelmeier and Williamson

<sup>5</sup> This view challenged earlier studies that found that in settings requiring creativity and innovation (e.g., research and development), personnel control was suitable, while formal behavior and output control would hamper the freedom required to conduct such work (e.g., Ouchi 1979; Rockness and Shields 1984; Abernethy and Brownell 1997). For an overview of the evolution of research on the linkages between management control and creativity/innovation, see Davila et al. (2009) and Chenhall and Moers (2015). More recently, this literature has been focusing on distinguishing different types of creativity and innovation (e.g., Pfister 2014; Cools, Stouthuysen, and Van den Abbeele 2017; Davila and Dittillo 2017).

<sup>6</sup> Several management accounting studies consider SDT more generally, thereby examining, for example, its role in budget participation (Wong-On-Wing, Guo, and Lui 2010), strategic planning meetings (De Baerdemaeker and Bruggeman 2015), performance metric design (Groen, Wouters, and Wilderom 2017), subjective performance evaluation (Kunz 2015), and control systems for scholarly work (Sutton and Brown 2016).

<sup>7</sup> The literature on target setting suggests, as might be expected, that challenging, but likely achievable, targets are often optimal for motivational purposes (Stedry 1960; Merchant and Manzoni 1989). However, the literature is more controversial where the expected type of tasks relate to creativity and innovation (Chen et al. 2012; De Dreu, Baas, and Nijstad 2012; Byron and Khazanchi 2015). Elevating organizational aspirations, extremely difficult targets can spark energy among employees and promote exploratory learning for an improved future (Thompson et al. 1997; Kerr and Landauer 2004; Chen and Jones 2005). However, those targets also deliver increased experienced uncertainty, uncontrolled directions, and other disruptive side effects commonly discussed as the paradox of stretch targets (e.g., Zhang and Jia 2013; Pina e Cunha, Giustiniano, Rego, and Clegg 2017; Gary, Yang, Yetton, and Serman 2017).

<sup>8</sup> Participants in the experiment were given the option to engage in existing process efficiencies or perform a meta-routine targeting the discovery and subsequent application of new process efficiencies. Pursuing the meta-routine would significantly improve productivity, yet it was uncertain whether new process efficiencies could be identified.

<sup>9</sup> Webb et al. (2013, 1434) use the term “outside the box thinking,” which is aligned with the definition of creativity “as trying to discover original and better ways to accomplish a task” (see, also, Shalley 1995).

2010; Adler and Chen 2011; Grabner and Speckbacher 2016).<sup>10</sup> Likewise, Grabner (2014), drawing on survey-based research on creativity-dependent firms, found that performance-related pay and subjective evaluations complement each other in creativity-dependent settings, while these two control system components might be unrelated in other settings.

### Controls as Conditions for Autonomous Motivation

Our analysis of the interrelation of controls draws on the widely applied management control framework by Merchant and Van der Stede (2017), chosen because it conceptualizes the interrelation between the results controls (stretch targets) and other relevant types of control in our setting. We distinguish results control, action control, personnel control, and cultural control (see, also, Merchant 1985). Results control depends on the knowledge of the desired results, ability to influence them, and a suitable metric. According to Merchant and Van der Stede (2017), results control is indirect because employees are given autonomy on how to achieve the results, thereby enhancing self-determination from an SDT perspective. However, results control also involves characteristics that employees could perceive as more direct. For example, results control directs employee actions toward target-oriented tasks at the expense of those irrelevant to targets; regulates employee effort through target-level difficulty; and affects persistence (e.g., working faster versus longer) depending on whether the targets are coupled to a time limit (Latham and Locke 1991; Locke and Latham 2002). Results control is further differentiated by whether rewards are attached to achieving or exceeding the results, and how vaguely or specifically result contents are formulated (e.g., Sprinkle et al. 2008).

Action control, such as pre-action reviews and action accountability, relies on managerial knowledge on which tasks are (un)desirable for the organization, and is designed to ensure that employees will (not) perform those tasks. Action control constitutes a more significant intervention in employee autonomy than results control because it tends to be more prescriptive. Personnel control refers to selection, training, and infrastructure facilitating employees' performance of desirable tasks on their own initiative due to a sense of aspiration, self-realization, and satisfaction gained from performing the tasks. From an SDT perspective, personnel control is the least problematic form with regard to autonomy, and crucially influences employee needs for competence and relatedness. Finally, cultural control constitutes arrangements, such as a code of conduct, tone at the top, physical and social arrangements, and group rewards, undertaken to establish corporate values and social norms that create an environment where employees monitor and affect each other's behavior (Merchant and Van der Stede 2017). From an SDT perspective, cultural control is particularly important to support all three needs for self-determined behavior. Based on these different types of control, we will explore how results controls (i.e., stretch targets) interrelate with other controls to support conditions for autonomous motivation.

## III. RESEARCH DESIGN

### Abductive Analysis Based on Case Research

The empirical part of our research constituted the case analysis of a global technology company ranked by professional associations among the world's best over many years for employer quality and innovation. The company was rapidly growing to become one of the largest in the world by market capitalization. These characteristics make it what Cooper and Morgan (2008) term an extreme case, useful to develop and test new theoretical insights. We capitalized on the fact that field-based research provides the opportunity to understand the antecedents and consequences of management accounting practice (e.g., Chua 1986; Itner and Larcker 2002; Hopwood 2007). Applying an abductive research process (Peirce 1960; Lukka and Modell 2010), we were able to make sense of the empirical evidence by moving back and forth iteratively between the emic and etic perspectives (Pike 1954; Jönsson and Lukka 2007). This abductive process combines data collection and analysis with theoretical testing and interpretation (Ahrens and Chapman 2006). Tracking the case company over time, we made some striking observations that contradicted existing theoretical patterns, and then narrowed and further honed the empirical investigation to refine the focus of our theory (Dubois and Gadde 2002). Abductive research is a suitable approach in this context, enabling us to make sense of unexpected and surprising features not predicted by existing theory (Timmermans and Tavory 2012).

Our analysis built on the potential for interpretive research to contribute to the investigation of cause and effect (Morgan and Winship 2007; Lukka 2014). Many of our questions looked to discover how associations between phenomena occur and, due to our methodology choice, we were able to explore the processes and mechanisms that generate outcomes from particular

<sup>10</sup> Abernethy, Dekker, and Schulz (2015) argue that selection processes and incentive contracting operate in balance. In some areas, where contracting facilitates employee alignment with the organization's mission, they are complementary. In others, where they are difficult to measure due to noise and external volatility, they act as substitutes (see, also, Campbell 2012).

conditions. This helped us understand “how the ‘arrows’ between variables work” (Lukka 2014, 7). Our analytical interest was to generate “thick explanations” at the etic level based on rich emic-based empirics (Lukka and Modell 2010).<sup>11</sup>

### Data Access

Access to the case company was facilitated via the network of one of the authors, and initially established in 2007 as part of a cross-sectional study involving the CEO, Vice President of Finance (Chief Accountant), and the Director of the Internal Audit. Follow-up interviews with senior managers in 2010 and 2011 narrowed the focus of the current study to an investigation of the implementation of new performance metrics concerning employees in the accounting department. While our initial decision to study an accounting department did not look to focus on creativity and innovation, this focus became apparent early in the abductive research process. Retrospectively, the choice of an accounting department, as opposed to other types of department typically associated with innovation (e.g., research and development, production, or services), has proved to be important. It shows that our theoretical generalizations can be applied even in an organizational function associated with high risk aversion.<sup>12</sup>

### Data Collection

We held a total of 35 semi-structured interviews: three in 2007, 25 between 2010 and 2013, and seven in 2016 and 2017.<sup>13</sup> All were conducted by one of the authors, either in person, via field visits to headquarters, or via conference calls.<sup>14</sup> The interview data were complemented with internal documents provided by the interviewees.<sup>15</sup> We adjusted the interview guide as our theoretical interest was honed over time. The interview questions typically dealt with the following themes: the interviewees’ roles and responsibilities; their involvement in the new performance metrics; the nature of their work; how they felt about the new performance metrics and the work environment in general; and the outcomes of their work. We conducted interviews until we reached saturation point, i.e., new interviews merely confirmed our interpretation and theoretical refinement (e.g., Ahrens and Chapman 2006).

Additional insights were gathered through notes from field visits. Being at the company allowed us to experience its organizational life; for example, how people interact formally and informally—in the hallways, during coffee breaks, or at lunch—and it was important to understanding the work environment (Dent 1991; Ahrens and Dent 1998). These insights were complemented by public domain news, videos, books, and documentaries on the case company. The triangulation of all these sources provided valuable information on the company context.

### Data Analysis

In analyzing the interview transcripts, we were careful to separate the emic meanings of the actors in the field from our etic interpretation, to ensure that we were not held hostage to our theoretical preconceptions. We employed three supporting tools in the data analysis process.

First, one of the authors coded all the interview material according to the emerging theoretical and practical themes, using qualitative analysis software. This was performed in the first round by paragraph; specific parts were refined later if the material was relevant to the theoretical argumentation (Silverman 2006).<sup>16</sup> This coding process supported our reflective work on data interpretation and theorizing (e.g., Alvesson 2003), especially in developing a holistic picture of the data, capturing the actors’ (emic) perspectives, and how those perspectives related to our theoretical patterns.

Second, the authors drafted a synopsis that comprised the theoretical problematization and related research questions, as well as a methodological, theoretical, and empirical outline. This synopsis was continuously tested among the authors and their

<sup>11</sup> This paper does not juxtapose interpretive and functionalist research since, inasmuch as beliefs on causes and effects are a natural part of everyday life, interpretive research can quite naturally include functional aspects in its analysis (see Lukka 2014).

<sup>12</sup> This refers to the longstanding debates on conservatism in accounting (e.g., Watts 2003).

<sup>13</sup> The primary focus of the study concerns a time period between 2010 and 2013. The interviews before and after that period were important to understanding and situating the introduction and effects of the new performance measurement system in the context of the case company’s long-term development. In addition, the interviews in 2017 enabled us to reconfirm prior data from an *ex post* perspective. Descriptive information on the purpose of specific interviews is provided in Appendix A.

<sup>14</sup> The interviews were recorded, transcribed, and archived by interviewee name, date, location, and type (see Appendix A). Two exceptions: One interview was conducted via correspondence, and one could not be recorded due to a confidentiality agreement.

<sup>15</sup> Internal documents provided contextual and illustrative information in support of our analysis of the transcripts. We received presentation slides on the new dashboard, information on cost drivers and cost measurements, as well as figures on cost allocations, which helped in understanding the transcripts that related to those matters.

<sup>16</sup> Appendix A provides descriptive data on the length of interviews, and the number of codes and references used for their analysis. Appendix B presents an overview of the 49 codes, which, in total, were coded on 3,258 references.

colleagues. These interactions enabled the authors to revise and hone the document over time, until the line of argumentation could be extended to a longer paper. A key aspect of the document was to ensure that our research demonstrated a strong theoretical motivation (Alvesson and Sandberg 2011) and could provide a clear initial focus for the theoretical and empirical analysis. However, we consciously avoided falling into the trap of being wedded to the initial theoretical lines. Instead, we let the empirics unfold and allowed the story be “reflective in the round” in an abductive manner.

Third, immediately after each meeting of the authors, one added a memo to a continuous research diary that noted new theoretical or empirical thoughts. We also noted down feedback from colleagues, comments from conference audiences, other observations made during the research process, and the next steps to be taken. This diary proved to be particularly useful in advancing the theoretical and empirical understanding over time.

## IV. EMPIRICAL DATA AND ANALYSIS

### Company Background

GlobSearch Inc. is a listed multinational technology corporation headquartered in the U.S., specializing in Internet-related services and products. GlobSearch has radically innovated the industry in which it operates and rapidly become one of the largest companies in the world by market capitalization. In 2015, GlobSearch’s total revenue exceeded US\$70 billion and its total assets amounted to more than US\$140 billion. Between 2007 and 2015, GlobSearch acquired more than 100 companies, raising personnel numbers from approximately 10,000 to over 60,000, with more than 70 offices all around the world. One consequence of this extreme growth is that the organization has kept pace with rapid globalization and changes in business structures.

GlobSearch presents an exception to the typical view of accounting as a somewhat stable part of an organization. Its accounting department, the focus of our analysis, has always been a dynamic place where employees need to continuously adapt to the environment with new incoming unstandardized work. Due to the company’s extreme growth, continuous introduction of new products and services, high share of acquisitions, and large numbers of new employees across the organization, operations in accounting and compliance demand a flexible organization that can cope with uncertainty and adaptation.

### Introduction of Formal Stretch Targets on Productivity

In 2011, senior executives at GlobSearch stressed that resource deployment for support functions such as accounting needed to grow much more slowly than those for engineering and operations. The primary focus in the accounting department had, for many years, been to keep pace with the immense growth in task volume; productivity was not a priority, not systematically managed, and only monitored through general cost measures. To meet the new productivity demands, senior accounting managers<sup>17</sup> initiated a new dashboard to improve productivity management and demonstrate the department’s progress to senior executives. The dashboard was to take significant steps toward objectifying aggregate and individual performance with integrated metrics on quality and productivity (see Figure 2). In support of the result-oriented metrics, task-oriented productivity metrics were introduced through a time-tracking tool to measure employees’ time per task. Task-oriented productivity metrics had been successfully applied to external contractors. GlobSearch set challenging targets and monitored contractor time per task in detail, which improved their productivity over time.

For the GlobSearch accountants, the aspiration was to trigger extraordinary performance through the new metrics by offering direct individual rewards of some 30 percent on top of the base salary. The initial expectation was to become 10 percent more productive each year. However, in alignment with the corporate work philosophy of setting stretch targets, this objective was soon raised to 20 percent for many areas of the department, which was perceived by employees to be extremely challenging.<sup>18</sup>

### Induced Pressure on Employees

Although employees understood the need for more detailed metrics,<sup>19</sup> they were concerned that it would constitute a platform for micromanagement with detrimental effects on their motivation.

<sup>17</sup> “Senior managers” are the Chief Accountant and the Corporate Controller, while other managers are generally described as “employees.”

<sup>18</sup> The accounting department of GlobSearch encompassed eight subunits: corporate control, global revenue accounting, fixed assets, business process and compliance, internal audit, mergers and acquisitions, ventures, and external reporting. It comprised around 200 employees worldwide in 2011, some 120 of which were members of the corporate control team.

<sup>19</sup> The task-oriented metrics based on time-tracking were less detailed for GlobSearch employees than contractors.



**FIGURE 2**  
**Performance Dashboard**

Quality		
Close metrics		
Stat compliance		
Vendor Quality and Efficiency		
BPC ops quality metrics		
Customer satisfaction (CSAT)		
Other Financial quality metrics		
Efficiency		
CPU reduction (20%)		
Cost Savings goal of \$15M		
Systems		
BPO Management		
Contract systems unification		
Risk		
Risk assessments		
Hardware risk and expertise		
[...]		
People dashboard		
People dashboard		

The first layer, entitled quality, has the highest priority and contains the quality and compliance metrics. The second layer contains the productivity metrics, which address how the quality and compliance standards could be met more efficiently (i.e., reducing the cost per unit [CPU] by 20 percent). The third layer contains additional risk assessments, as well as the people dashboard, reflecting results from employee surveys. The traffic light (red, amber, green) provides a visual indicator for the type of managerial attention needed. On the right side of each category there is space for comments.

It drives down morale in some sense because the more metrics you put in place, the less the workforce feels that you trust them to do a good job. It feels like, “Okay! Even though you’re not sitting on my shoulder, these metrics are a way for you to kind of micromanage me.” (Accounting Manager)

Employees were challenged to provide the necessary data that would convey their performance to senior managers. A Revenue Controller described an appraisal meeting:

I called it like I had to go and justify my existence . . . That was really painful . . . like trying to find out the number of hours we worked compared to our output [for specific tasks].

While employees ultimately accepted the refined quality and result-oriented productivity metrics, they opposed the detailed time-tracking of tasks.

“Okay my manager doesn’t trust me enough to do that. But I have to spend, you know, 30 minutes at the end of my day to go and fill out this time sheet and prove to them that I was thinking about these things efficiently.” Well, it gets people starting to think: “This is a little too much, yeah!” So in that respect I know people hated doing that time sheet, they’re already busy enough as it is during the day. (Accounting Manager)

Employees criticized the sparse feedback they received from senior managers on the benefits of task-oriented metrics. It seemed to display distrust, on the part of senior managers, of employee competence and interfered with employee autonomy. Consequently, after 18 months of testing, time-tracking was abandoned.

Senior managers took employees’ concerns seriously. They replaced the task-oriented productivity metrics, providing employees with more autonomy, but simultaneously imposing greater pressure by limiting resources:

. . . we’re going to start with this assumption that everyone is going to get 10 to 20 percent more productive every year and sort of have that be a forcing function—for people to manage their time accordingly. (Corporate Controller)

Senior managers limited resources by constraining recruitment despite work volume growth.

If the company’s growing by 20 percent we’re only going to add a 3 percent head count. So, by definition, if you’re going to keep up with the company growth, you have to get more efficient. (Corporate Controller)

A Revenue Accounting Manager reflects on the effects of this “forcing function”:

. . . to know that there’s probably, not necessarily headcount coming, you have to think of ways to be smarter, use technology in trying to improve the process and saving time within the processes, so you can [free up] time for new products or things that might come along.

Personnel rationing induced pressure on employees to innovate processes to keep pace with growth and meet productivity growth targets of some 10–20 percent per year.

### **A Continuous Stream of Process Innovations**

Employees pursued the productivity targets via both physical and financial process improvements, concentrated on elimination, automation, and/or outsourcing. In doing so, GlobSearch employees were expected to improve existing unstandardized, inefficient processes and/or “stabilize” new incoming accounting work (i.e., transforming work into efficient standard processes), which created physical productivity gains. The work was challenging for GlobSearch personnel because many new services and products in the dynamic business environment required process innovations, which would differ from prior arrangements, and the expectation was to progress beyond incremental solutions.

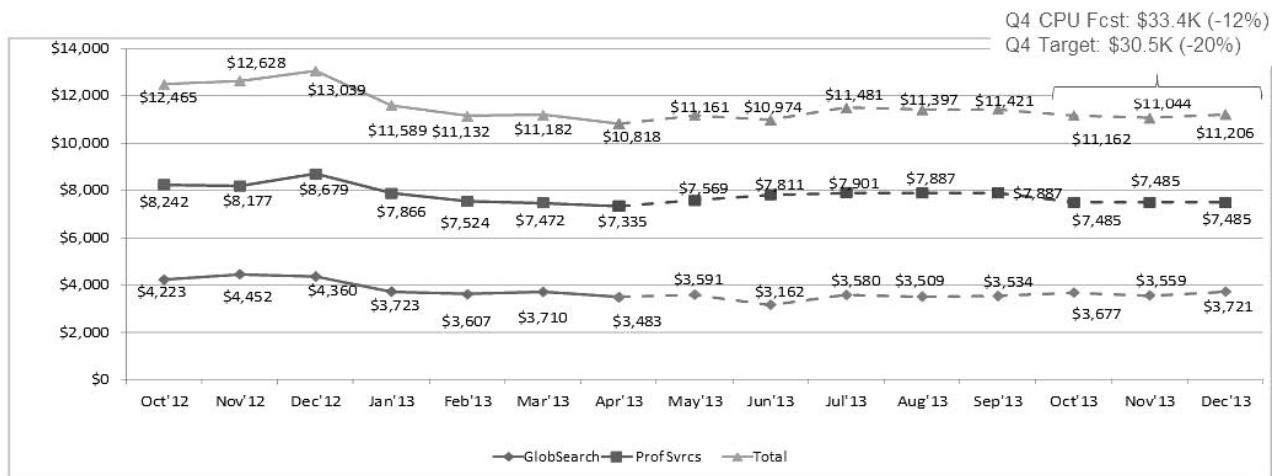
You can make incremental changes . . . [but] I don’t think that’s typically our objective . . . Our objectives are more like, “How do we transform this process that takes, you know, ten days, a month or whatever, so that it can be done in a day or at the click of a button?” (Accounting Manager)

These process innovations concerned all types of accounting processes relating to acquisitions, products, and services. Employees deployed large-scale automation to build custom tools, created customizations on top of the enterprise resource planning (ERP) system or any other boundary system, and experimented with robotic process automation. While, over time, employees acquired experience and could apply some of those process innovations across a variety of processes, they continuously strived to find new and even more productive ways to innovate processes.

The most innovative thing is this machine learning application where we’ve utilized through the algorithms that people bring and some of these internal tools related to machine learning to actually evaluate what the risk level of an individual contract might be. (Business Compliance Senior Manager)

If automation was not possible, then stabilizing typically meant finding ways to reduce the complexity of the processes so they could be performed more easily and, except for processes that were viewed as high-risk, potentially be carried out by contractors and monitored by GlobSearch employees. Outsourcing reduced labor costs and generated financial productivity gains, as exemplified in Figure 3, based on the Corporate Controller of North America team.

**FIGURE 3**  
**Corporate Controller Cost Per Weighted Legal Entity in North America**



GlobSearch \$K	671	708	693	584	566	583	559	577	507	589	577	582	645	624	653
Prof Svcs \$K	1,311	1,301	1,381	1,235	1,181	1,173	1,177	1,215	1,253	1,300	1,298	1,298	1,313	1,313	1,313
Volume	159	159	159	157	157	157	160	160	160	165	165	165	175	175	175

The figure shows different cost categories (total, GlobSearch employees, contractors) divided by volume (measured by weighted legal entities), leading to the cost per weighted legal entity. It was important to keep the costs for GlobSearch employees as constant as possible, and shift as much work as possible to professional services. The GlobSearch employees were the most expensive, while temporary and external contractors were less costly. While the in-house headcount was kept relatively stable, the business volume increased and GlobSearch was able to generate high productivity gains.

Productivity pressure meant that employees would aspire to improve the role of outsourcing in a variety of ways. For instance, instead of outsourcing directly from GlobSearch to a contractor, the work was moved in between outsourcing centers to take advantage of rate arbitrage<sup>20</sup> between different locations. Employees took several measures to improve and provide their own training for contractors, and to control the contractor’s work environment by offering them an allowance to use GlobSearch buildings.

... we can reduce attrition [of external contractors] because people are happier and then it attracts a higher quality type of person, because they’re excited to be in a GlobSearch building ... so we can control the overhead cost picture more effectively because there should be some savings there. (Senior Supply Manager)

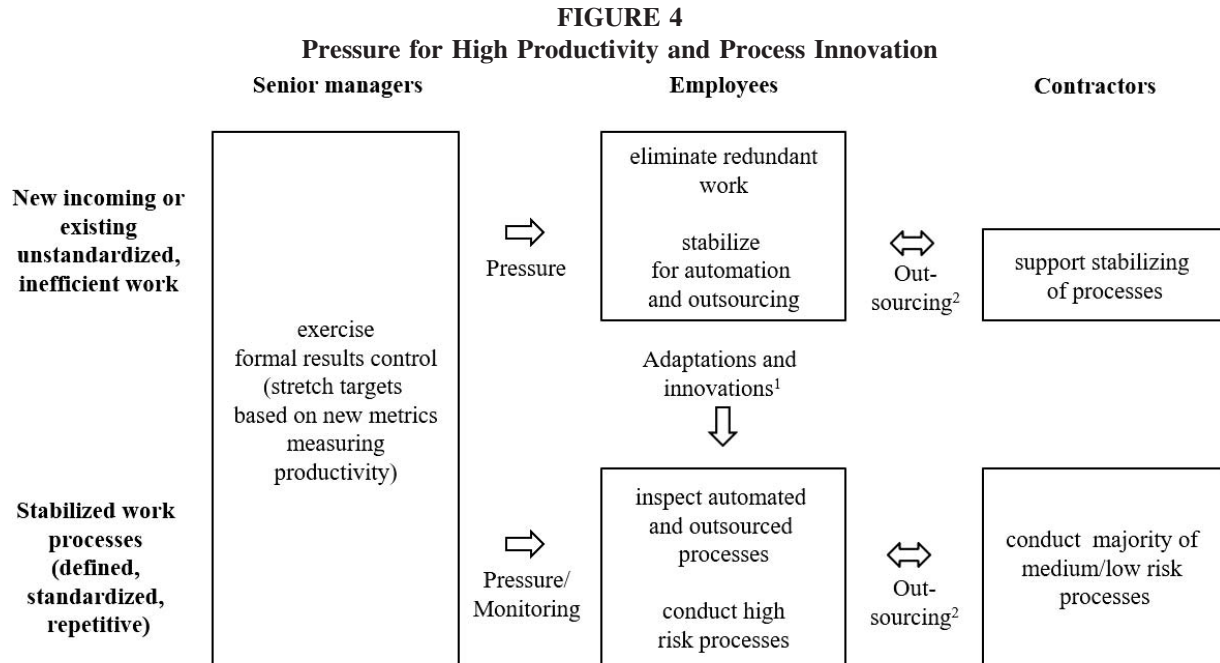
Initially, many accountants were concerned that the focus on process innovation might put accounting quality at risk (e.g., if automation or contractors’ work was erroneous) or a post might even be eliminated. However, after those initial reactions, most employees started to believe in the purpose and potential of process innovation to facilitate the required scaling under extreme growth. Figure 4 summarizes the effects of the new productivity targets.

### Achieved Productivity Gains and Employee Performance Evaluation

In 2013, two years after the implementation of the new productivity metrics, the accounting department continuously achieved extraordinary annual productivity gains of 10–20 percent in many areas. These gains were possibly due to work volume growth, but also to process innovations.

I’ve been actually pretty surprised at how productive people have been able to get ... People can achieve these productivity gains that are much greater than people really realized, when they’re pushed to do it. And then you measure that they can actually do it and they start believing that they can do it. You only need to look at any economic study, like no-one’s going to say that people are getting 20 percent more productive every year. (Corporate Controller)

<sup>20</sup> Initially, employees might outsource to higher-cost locations (with a more skilled workforce), performing more process-type work that would help in standardizing, documenting, and simplifying the process. Once a process was well-defined, it could be moved to the center with the lowest costs (with a less skilled workforce) to scale the work.



- <sup>1</sup>) Physical productivity improvements
- <sup>2</sup>) Financial productivity improvements (rate arbitrage between employees and contractors; and among contractors)

<sup>a</sup> Physical productivity improvements.

<sup>b</sup> Financial productivity improvements (rate arbitrage between employees and contractors, and among contractors).

The department, working with the subcontractors, managed to improve process productivity significantly in certain areas. But due to the growth and continuous change in the business environment, new demand for productivity improvements was continuous. On being asked whether the organization could continue to set such demanding targets for employees in the long run, the Corporate Controller pointed out:

It's got to be infinite, you know as long as people continue to innovate. And so, I do think there are limitations, certainly case by case, but ... we've demonstrated statistically that we consistently get 10 to 20 percent more productive every year.

In 2016, five years after the implementation of the new productivity metrics, our evidence indicates that the department was able to keep pace with sustained high productivity gains. The Corporate Controller provided an example to support this argument:

GlobSearch as a company was growing at an annual growth rate of about 20 to 25 percent over a five-year period whether you measure that in revenue or you measure it in head count. Whereas our team—over like the same five-year period—our annual growth rate was only 10 percent.

To evaluate employee performance in a fair manner, senior managers asked employees to present their productivity data with their subjective “story” about their efforts during the current period. This subjective component was important because, for example, productivity gains shown in the data could relate to current efforts by the employee, or sometimes be the result of process innovations undertaken in previous periods.<sup>21</sup> Senior managers aimed to reward employees who achieved significant productivity gains by finding new solutions. Reflecting on the performance evaluation, the Controller distinguished two types of employee:

<sup>21</sup> For example, automation undertaken a few years ago (and rewarded at the time) could significantly improve the current productivity metrics of an employee without any new effort.



And so the people who want to keep doing it the same way are often risk averse and they're worried about the quality metrics. They're like "well if I just do it myself I know I'll get that right . . . And as more work comes in I just work harder. I start working over lunch hour, maybe I'll work some overtime etc. And I just start taking on 10 percent more work every year." And so those people on the team are fine, like they're getting their work done, I don't have any issues with them, that's fine, but over time there's limits to how much more productive they can be.

Other employees embraced the riskier work of innovating processes.

I've got this other person who's like, "you know what, every new chunk of work comes in I'm clever and I'm open-minded and I'm creative about how I can figure out how to outsource this or automate it." I look at their productivity instead of going up 10 percent every year, their productivity is going up 20/30/40 percent every year. This person I'm giving a really big giant bonus because like I'm getting a lot of leverage out of that person.

Prior to the introduction of the metrics, approximately a quarter of the department's employees fell into the latter group, proactively seeking to be more productive; in 2016, three-quarters of the personnel were doing so.<sup>22</sup> The more risk-averse employees might stay in the department, yet had to excel as subject matter and business partner experts in accounting and control. These were different roles tailored to those employees who were exceptional accountants, but preferred not to be placed in the position of risk-taking process innovator. In the remainder of this section, we will focus on those employees who pursued process innovations.

### **Autonomous Motivation from Employees**

Even though employees who pursued the process innovations perceived a constant pressure to perform to the maximum, the expectations seemed to be integrated with their values and beliefs.

I really love working for GlobSearch, I really believe in the mission of the company and what we do . . . and seeing where we're going with the company is really exciting. It's also a very challenging place to work and there are very high expectations, and I think that's both good and bad. Some days you don't feel like doing it, but most days I think I'm excited by the challenge. (Business Compliance Senior Manager)

Believing in the company's mission seemed to mitigate dysfunctional forms of stress.

I really believe in what the company does and I want to put together things that are very good . . . So it's a different kind of pressure [than their previous work in investment banking]. It's the same amount but more aligned with what I want to do and what I believe in. (Senior Accountant)

Some employees even felt energized by the pressure.

The pressure is there, I think that's what's exciting. It's what gets you up in the morning. (Transition Manager)

They felt self-determined and, as a result, could reframe any perceived pressure and stress.

My husband works here too and we've got this culture at home where the kids go to sleep and we jump back onto our computers . . . Because we enjoy it not because we feel stressed about it. We really want to keep going. (Senior Supply Manager)

Employees had a common understanding that each should expect to be a true expert in their area of responsibility, and constantly strive to further that. This facilitated the perception that pressure was under their own control rather than externally imposed.

. . . from my perspective, you put pressure on yourself to ensure you are a subject-matter expert in what you're responsible for . . . And it's what keeps you going . . . it's a different kind of pressure but I think more favorable. It's better to be under pressure from yourself than a very stressful environment where everybody is suffering from something they ultimately really can't control. (South East Asia Pacific Controller)

Our evidence shows that employees felt supported in the basic psychological needs for autonomous motivation. For example, they expressed autonomy in their pursuit of process innovations.

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<sup>22</sup> There was also some rotation of employees who moved to other areas within GlobSearch or left the company, even though the external attrition rate remained in single figures and only 1 percent of employees had to be "formally managed out" over the years.

What I like about GlobSearch is that you're empowered, you can make decisions, changes, and are actually encouraged in many cases to do just that. It's very good because the environment changes, the things we do, change. (Fixed Assets Controller)

They felt supported to pursue their ideas, which, in turn, supported their autonomy.

I feel that if we come up with a big idea, there's actually the political will to act on it, and to me that's a huge plus. (Business Compliance Senior Manager)

Employees were encouraged to create new and improved processes, and believed in their own competence to be creative and innovative.

You're encouraged to consider not taking the same approach as last year because it may not make sense, but to derive your own approach, apply it and see what difference it makes and why . . . I'm very creative . . . some of what we're doing has never been done before, which keeps it really interesting. (Business Process and Compliance Specialist)

Being part of a highly skilled workforce seemed to support employees' belief in their own skills.

I'm constantly humbled by my peer group, where I have people bringing in ideas and working with me. I feel inspired to be working with them and wonder how I managed to find myself in this crowd! (Senior Supply Manager)

Employees' relatedness was shown by their respect for one another.

. . . everyone here is very ambitious and wants to do a good job, and spends time prioritizing the things that are important. (Accounting Manager)

They felt that the work environment was collaborative and helpful across the hierarchy, which supported their relatedness.

. . . everybody is really focused, very smart, wants to help, is easy to work with at any level, and that's very good. (Fixed Assets Controller)

Information from the new productivity metrics evidenced if an employee seemed overloaded, and work needed to be shifted to others in order to avoid burnout. Another form of feedback was provided by employee satisfaction surveys.

Every year there are a few people who complain about the expectations are too high or a bit unfair. But there's far more who are excited, were motivated by it. (Corporate Controller)

An employee, who had doubts about the job at some point due to the high productivity pressure, expressed the importance of being connected to coworkers, and the enjoyment and perceived relevance of the work.

. . . but yeah, I ended up staying because I liked the people I worked with and the work itself, the challenges, the problem solving, and actually seeing my work maybe make the news. (Revenue Controller)

Hence, the majority of the employees maintained autonomous forms of motivation, despite the pressure induced by the stretch targets. To explain this observation, we now present how the stretch targets interrelated with personnel and cultural control.

### **Interrelation of Stretch Targets with Personnel Control**

Due to its excellent global reputation, GlobSearch attracted a large pool of candidates for each open position, which made it possible to maintain a high hiring threshold.

What is special at GlobSearch is the people. We're fortunate that we're able to attract and retain, you know, really bright people that are motivated, that are not comfortable or not content with the status quo. And they are ambitious and so they want to be part of something that's special, right. (Corporate Controller)

Candidates were required to meet the recruitment policy's organization-wide criteria, which demanded outstanding grades from the most reputable universities combined with the required accounting qualifications. The hiring committee was particularly concerned as to whether candidates had a "moral compass" and would fit the corporate values. Candidates were immediately discharged if they appeared just a little serpentine. Hence, selection procedures involved several hurdles and could take time. If the requirements were not met, the hiring policy remained strict, sometimes leading to positions remaining vacant for several months. Crucially, in the years before the introduction of the formal stretch targets (and the increased focus on process innovation), the rigid hiring policy raised motivational issues in the accounting department. Senior managers were

constrained to hiring highly qualified and ambitious individuals who would feel underchallenged performing standard accounting tasks.

... sometimes it is frustrating because the company is so worried in hiring the wrong person that they neglect to worry about getting the right person. The alpha risk, if you will. (Chief Accountant)

The introduction of formal stretch targets for productivity enabled senior managers to heavily intensify the focus on process innovations for GlobSearch employees, which was part of a solution to ensure a better match between employee skills and their work challenges. The new metrics defined the job profile, including hiring and training procedures.

If you want to see the biggest output of the metrics, it's that ... We defined the job description of what it means to be successful and in some cases, we trained existing people to do that, to operate that way. And in other cases, we've been able to attract more people who are, who approach their jobs that way. And lastly, you've got some people who have been, you know they don't like that pressure of having to get more efficient every year and they've left. (Corporate Controller)

The hiring criteria had been extended because the accountants were required to possess additional skills to support them in designing process innovations (i.e., programming, scripting desktop procedures, educational skills to coach contractors, project management).

If you asked people four years ago what the key sets of skills is to be successful in a role they might have looked at like three things, maybe four. Now we've got eight. (Corporate Controller)

New hires were specifically selected for their skill set and experience in process innovations.

We hire for that as a characteristic, people who are constantly looking to make things better or faster or more. I think that it's natural that people embrace these sort of stretch targets. (Business Compliance Senior Manager)

Training and the necessary technical infrastructure supported employees in improving and expanding their skill set to meet the extended requirements, which also enhanced their confidence in the quality of the process innovations.<sup>23</sup>

### Interrelation of Stretch Targets with Cultural Control

GlobSearch maintained formal mission and value statements that promoted the company's purpose and the impact it aspired to have on the world, building on corporate values of high ambition, innovativeness, and the kind of collaborative and easygoing work environment more often found in a start-up. The company was globally renowned for its "strong culture," its history as a radical innovator, and its reputation as a high-quality employer.

... one thing that drew me to GlobSearch was the mission statement ... I'm excited to be in an engineering company where we have the possibility of having such a large impact on the world because of that big big attitude. (Senior Supply Manager)

Accountants expressed their belief in the mission and excitement at working with engineers developing new high-impact products and services.

We work with all the teams that are developing new things and have a significant impact on everything. (Fixed Assets Controller)

One of the GlobSearch values is that being great is not good enough, which was directly linked to the corporate work philosophy of setting and striving to attain currently unobtainable targets, i.e., stretch targets. This and other corporate values were rigorously applied, starting from the founders, who were still involved in senior executive roles in the organization. Employees described how approachable the founders were, despite also being media celebrities publicized for their inclination to "think big." They set the tone at the top and provided a role model for "living the values" of striving to achieve stretch targets.

And it's in the way that our CEO talks about the business and the way that our engineering organization focuses on there and there's this idea of watching and iterating and constantly striving for product excellence and other things like that. I think it permeates all of even the non-engineering organizations. (Business Compliance Senior Manager)

<sup>23</sup> Training took place in various forms: specific and general internal training on process improvement, external advanced training (e.g., in programming), and knowledge sharing among coworkers. While all employees took part in training, those who repeatedly performed below tolerable expectations were especially expected to do so.

Employees described the culture in the accounting department as influenced by the engineering side of the organization, which, in order to be early to market, followed the credo of “launch and iterate.”

We never stop. Whereas in a lot of companies . . . they say, “Hey yeah we’ve got a process now we’ll stop.” Whereas with GlobSearch, because our culture is launch and iterate. In other words, look, write a piece of software, it doesn’t have to be 100 percent there, it could be 70 percent there, be audacious get the thing out and then keep improving it. We have that culture in finance whereby we don’t have fixed processes. (Head Finance Europe Middle East and Africa)

Senior managers in the accounting department stressed that accounting quality was consistently the top priority. Yet they also established the corporate values and social norms of risk-taking among employees.

. . . you should be willing here to take risks and those risks may not always pan out, and that’s okay as long as you learn from it and GlobSearch learns something from it as a result then all the better. (Transition Manager)

Another corporate value was collaboration among employees, highlighted by the employees themselves and perceived to be important despite high workloads requiring prioritizing.

You nevertheless have to prioritize a lot because everybody’s plate is really very full . . . everybody is eager to help but they are also [very busy]. (Fixed Assets Controller)

Performance pressure was mitigated by physical and social arrangements. On entering the accounting department, you encountered a climbing wall (where employees enjoyed a recreational break) before reaching colorful open-space offices surrounded by meeting rooms and, separated by a glass wall, some offices for senior managers. Employees were given great flexibility in terms of working time and place, received free meals, dress code freedom, and lots of recreational activities, and entertainment was on offer. The GlobSearch campus was designed to be unique, which seemed to boost employees’ perception of being in an outstanding place.

The department offered relatively high remuneration compared with market rates. It typically comprised a mix of salary, bonus, and equity, which were part of a package intended to enhance the perception of a prime employer. The equity and high base salary offered a sense of ownership and appreciation typically associated with cultural controls, while bonuses were, for many employees, directly related to the stretch targets on productivity. Senior managers allocated the bonuses and other recognition (salary raises, promotions) to foster corporate values and social norms of risk-taking and innovation. Deciding on those rewards was sensitive because of the naturally competitive spirit born of hiring only highly ambitious employees.

Everyone here are straight A students and they’ve always got promoted and their raises, and then you put them together and say well which of these should get promoted or which of these should get the raise. (Senior Supply Manager)

The introduction of the new performance metrics was useful in this work environment to provide a common standard for employee evaluation.

It’s been good for morals in that people like transparency in how their performance is measured. And not just relative to themselves but relative to each other. (Corporate Controller)

Hence, hiring ambitious employees and setting high expectations risks dysfunctional forms of competition, which senior managers mitigated by enhancing transparency among employees and promoting the corporate values of collaboration and an easygoing approach.

## V. DISCUSSION

The literature on stretch targets is controversial (e.g., [Sitkin et al. 2011](#)). Earlier research argues that stretch targets encourage employees to be creative and risk-taking in pursuit of innovations ([Thompson et al. 1997](#); [Sprinkle et al. 2008](#)). However, the recent experimental accounting research by [Webb et al. \(2013\)](#) suggests that the pressure of high target-level difficulty induces stress that constrains employees’ cognitive ability to be creative. Our empirical findings report on developments in the case firm department, where the introduction of stretch targets for productivity and related rewards is associated with substantial productivity gains over several years, achieved by employees being creative and taking the risk of continuous innovation.

Based on our empirical findings and the assumption that creativity requires conditions supporting autonomous motivation, we argue theoretically that the specific interrelation of the stretch targets with personnel and cultural control can establish conditions where employees feel self-determined and are able to internalize the stretch targets, thereby coping with the pressure



induced by the high target-level difficulty. To explain this argument, we now discuss how the specific interrelation of controls can facilitate each of the basic psychological needs for autonomous motivation.

### Competence

An important aspect of employees' psychological need for competence is that the interrelation of controls supports the match between employees' level of competence and their work challenges (Csikszentmihalyi 1997; Deci and Ryan 2000). To secure a high-level skill set and ambition, the interrelation of personnel and cultural control can ensure the selection of employees who are competent to work in an environment with high expectations (Kachelmeier and Williamson 2010). For example, senior executives at GlobSearch role modeled "thinking big"; the mission statement promoted a "large impact on the world"; and, most strikingly, stretch targets were made an element of the formal corporate work philosophy. These high expectations were paired with appealing social, physical, and financial arrangements in the workplace. GlobSearch publicly marketed its cultural controls, which made it possible to attract a large pool of ambitious and talented candidates for each position at the corporate level. Hence, designing a purposeful set of cultural controls is an important condition to maintain extremely rigid personnel control.<sup>24</sup>

The psychological need for competence is further supported by tailoring selection and training toward skills that support employees in their pursuit of innovations. For example, the introduction of formal stretch targets for productivity in the accounting department at GlobSearch expanded the required skill set for accountants to include skills especially supportive of process innovations. Moreover, the department established the social norm that everybody should strive to feel like a true subject matter expert in their responsibility area, and develop their skills toward this goal ("you put pressure on yourself to ensure you are a subject-matter expert in what you're responsible for").<sup>25</sup> Thus, establishing this type of social norm, a cultural control, supports employees in perceiving training and other personnel development as a useful means to be in control of the pressure induced by the stretch targets.

Employees' psychological need for competence can be further reinforced through positively promoting feedback on task effectiveness and related forms of recognition (Deci and Ryan 2000). For example, senior managers used the productivity metrics and related rewards to clearly define expectations, enhance transparency among employees, and boost their confidence ("And then you measure that they can actually do it and they start believing that they can do it"). Employees were rewarded with a "giant bonus" (up to 30 percent of the base salary) or, in some cases, promoted, if they found new solutions to significantly increase productivity. According to SDT, it is important that employees perceive such feedback to be free from "demeaning evaluation" (Ryan and Deci 2000, 58). At GlobSearch, senior managers strived to be fair in their evaluations by combining the productivity data with subjective factors to assess the extent of creative effort behind specific productivity gains (see, also, Grabner 2014). They also accepted that risk-taking sometimes does not pan out and promoted mistakes as an opportunity to learn. When unsuccessful attempts to innovate are accepted despite the general ambition, it supports employees' feeling of competence, mitigates their perceived stress, and encourages creativity and risk-taking among them. Hence, this specific interrelation of results control with personnel and cultural control, as in the studied department, can support employees' basic psychological need for competence in the pursuit of innovations.

### Relatedness

The interrelation of controls supports employees' psychological need for relatedness to the company ("I really love working for GlobSearch") and among each other across the hierarchy ("everybody . . . is easy to work with at any level"). This strong relatedness is important, because employees tend to assimilate tasks triggered by extrinsic motivators when they are valued by people or the group to whom they feel related (see Deci and Ryan 1985).<sup>26</sup> For example, pressuring accountants to constantly take risks by innovating processes does not naturally align with the risk aversion associated with the accounting function and, as a result, might lead to dysfunctional forms of stress in employees. However, accountants at GlobSearch accepted this pressure because they related to senior executives, the company's mission, and the engineering function, which all worked with the constant aspiration to improve and innovate ("it permeates all of even the non-engineering organizations").

<sup>24</sup> In fact, for the accounting department at GlobSearch, the corporate hiring threshold had raised motivational issues in the years prior to the introduction of the formal stretch targets for productivity, because employees were partially demotivated to perform standard accounting tasks (i.e., "the alpha risk"). The introduction of formal stretch targets for productivity was part of a solution to this motivational problem, because it led to high demands for creativity and risk-taking in the pursuit of process innovations and, ultimately, to a better fit between the competence of employees and their work challenges (Csikszentmihalyi 1997; Deci and Ryan 2000).

<sup>25</sup> Throughout Section V, we will use quotes from interviewees (see empirical data and analysis section) to substantiate our theoretical argumentation.

<sup>26</sup> Crucially, this argumentation builds on the assumption that the values promoted by the external regulation build on professionalism and ethical standards. Several corporate failures have occurred where, even though highly talented employees were hired, the corporate values and social norms within the company undermined those employees' ambition or channeled it in the wrong direction (see Anand, Ashforth, and Joshi 2005).

Moreover, relatedness among employees also helped mitigate dysfunctional forms of stress induced by the stretch targets (“but yeah, I ended up staying because I liked the people”).

To establish the feeling of relatedness, the specific interrelation of controls can foster corporate values that support a collaborative and distinctive work environment. For instance, in its mission statement, GlobSearch promoted the values of collaboration and an easygoing approach. Those corporate values were lived by example, starting from the founders (who were easily approachable) and other senior executives and managers, and were ultimately reinforced among employees. They expressed how privileged they felt to work with helpful coworkers (“everybody is eager to help”), who they respected and with whom they developed “big ideas.” The entire GlobSearch campus was designed to support this easygoing approach and boost employees’ perception of working at an outstanding place. Personnel control was extremely rigorous in selecting employees who fit the corporate values of collaboration and an easy-going approach (including whether candidates had a “moral compass”). Hence, while hiring talented employees in creativity-dependent settings is important (e.g., [Abernethy and Brownell 1997](#); [Kachelmeier and Williamson 2010](#); [Grabner and Speckbacher 2016](#)), we go beyond the prior research by highlighting the specific interrelation of personnel control with cultural control to support the psychological need for relatedness. The relatedness helps in coping with the stress from the target-level difficulty, and facilitates positive (rather than dysfunctional) forms of competition among employees, which is especially important when only ambitious “straight A students” are hired, as in the case company.

### Autonomy

According to SDT, support for competence and relatedness is necessary, but not sufficient, for employees to realize an internal PLOC. Support for the psychological need for autonomy is important to significantly internalize the stretch targets, facilitate creativity, and achieve related high-performance outcomes ([Deci and Ryan 2000](#)). Initially, senior managers at GlobSearch complemented the stretch targets with task-oriented productivity metrics based on a time-tracking tool, a type of action control. However, those metrics were opposed by GlobSearch employees. This demonstrates how being monitored by task-oriented metrics can hamper employees’ psychological need for autonomy in pursuing creative tasks.<sup>27</sup> Senior managers reacted to employee concerns and abandoned the task-oriented metrics. Instead, they limited employee headcount, a resource constraint executed via personnel control, to enforce the stretch targets and exert heavy pressure on employees to innovate. While this “forcing function” (as labeled by the senior manager) was still somewhat contrary to autonomy, it was largely accepted by employees because, as explained above, the interrelation of personnel and cultural control facilitated employees’ perception of the process innovations as aligned with their sense of self, not as an experience constraining them in their work (“it’s a different kind of pressure . . . It’s the same amount but more aligned with what I want to do and what I believe in”).

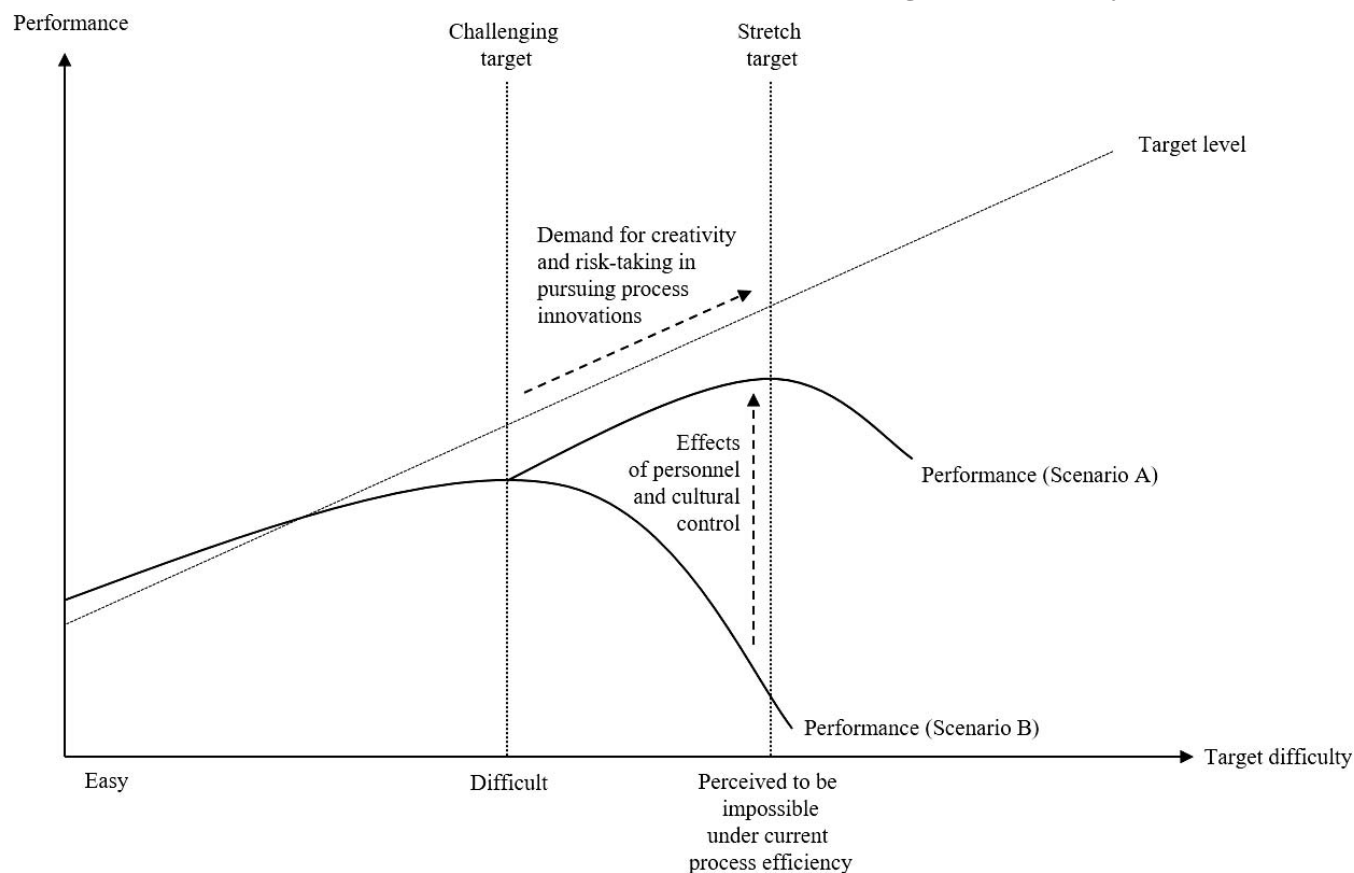
Crucially, senior managers at GlobSearch provided autonomy to employees in deciding how to pursue process innovations (“you’re empowered, you can make decisions, changes”), let them prioritize their tasks as they wished, and encouraged them to create new solutions (“derive your own approach”) to achieve the demanding targets. The psychological need for autonomy was further supported by work arrangements that gave employees freedom and flexibility regarding work time and place, and put free recreational activities and entertainment at their disposal. From the SDT perspective, being free to make choices and having a sense of your own agency ([DeCharms 1968](#)) helps employees cope positively with the pressure and internalize the stretch targets (“we jump back onto our computers . . . Because we enjoy it not because we feel stressed about it”).

### Joint Effect

Overall, we argue that due to the specific joint effect of results control, personnel control, and cultural control, as observed in the accounting department of GlobSearch, employees can be creative and take risks by developing innovations despite the high performance pressure, ultimately achieving, for instance, extensive productivity gains over several periods. We explain this finding based on the three basic psychological needs for autonomous motivation: competence, relatedness, and autonomy. We assert that the joint effect of controls should support those three needs in order to trigger employees’ internalization of the stretch targets. Based on our finding, we further develop the classic argument of [Stedry \(1960\)](#) on the relationship between target-level difficulty and performance. As illustrated in Figure 5, for employees working in a setting where managers design and use personnel and cultural control in a specific way (i.e., to support conditions for autonomous motivation by employees),

<sup>27</sup> The introduction of task-oriented productivity metrics may be perceived by employees as an expression of distrust in their competence and, as a result, threaten their relatedness to senior managers. In contrast, GlobSearch external contractors accepted the task-oriented productivity metrics. For standardized tasks, action controls seem acceptable, and can even enhance productivity despite significantly constraining the autonomy of employees in self-organizing experience and behavior ([Deci and Ryan 2000](#)).

**FIGURE 5**  
**Interrelation of Personnel and Cultural Control with Target-Level Difficulty**



Adapted from [Stedry \(1960\)](#) and [Emmanuel, Otley, and Merchant \(1990\)](#).

as shown in Scenario A, performance expectations can be set at a higher level compared to other workplaces, as shown in Scenario B.

Our theoretical perspective based on SDT extends and complements the previous research by [Webb et al. \(2013\)](#), who employ distraction theory (e.g., [Beilock and Carr 2005](#)) to explain the efficacy of stretch targets. In alignment with distraction theory, our findings based on SDT suggest that if employees maintain an external PLOC ([Deci and Ryan 1985](#)), then they perceive the stretch targets as an external pressure, leading to dysfunctional forms of stress that stifle creativity. However, our SDT-based theorizing also goes beyond this view, showing that if the specific joint effect of controls supports employees in developing an internal PLOC, then they perceive the pressure of the stretch targets as assimilated into what they believe in and expect of themselves ([Ryan and Connell 1989](#)). In this situation, employees can positively reframe dysfunctional feelings of stress,<sup>28</sup> foster their self-determination, and, as a result, be creative. Behavioral economics labels this situation “motivation crowding-in effect,” a phenomenon not well understood in the prior literature in terms of how formal controls can support it (see [Weibel et al. 2014](#)).

## VI. CONCLUSIONS

In this field study, we theorize and empirically demonstrate the motivational underpinnings that support the efficacy of stretch targets. Drawing on SDT, we argue that if employees are expected to be creative and risk-taking in pursuit of innovations, then the stretch targets need to interrelate in a specific way with personnel and cultural control to support

<sup>28</sup> According to [Weinstein and Ryan \(2011\)](#), conditions of autonomous motivation are associated with less stress incursion and positively affect how people cope with demanding events.

employees' basic psychological needs for autonomous motivation. A control environment of that nature enhances employees' feelings of competence, relatedness, and autonomy (for instance, in pursuing process innovations), which helps them positively reframe negative forms of stress, fosters their self-determination, and, due to the internalization of the stretch targets, facilitates creativity.

This study contributes to the literature on the efficacy of stretch targets by identifying, based on respondents' psychological responses to different control interrelations, the conditions, and related mechanisms that facilitate the internalization of stretch targets. Our findings are contrary to the experimental accounting research by Webb et al. (2013), who suggest that target-level difficulty is negatively associated with identifying and renewing process efficiencies. Applying SDT as our theoretical lens, we explain these contradictory findings by considering how personnel and cultural control can be interrelated with stretch targets to facilitate creativity, innovation, and high performance. In so doing, we extend the contingency perspective of Sitkin et al. (2011) by showing how both psychological and contextual factors are implicated in explaining individuals' behaviors in organizations. In this regard, our findings not only address the controversy in the prior literature on stretch targets (e.g., Zhang and Jia 2013; Gary et al. 2017; Pina e Cunha et al. 2017), but more broadly demonstrate the conditions where the introduction of extrinsic motivators enhances autonomous motivation by employees. This responds to a call by Weibel et al. (2014) for research on what behavioral economics labels an instance of the crowding-in effect of motivation.

Furthermore, the findings contribute to the related literature on target-oriented contracting for risk-taking (e.g., Bonner and Sprinkle 2002; Sprinkle et al. 2008). The earlier research claims that stretch targets can promote risk-taking. However, the stress induced by those targets might limit employees' cognitive ability to reach them (Webb et al. 2013). In contrast, we show that the specific interrelation of controls can establish conditions where employees positively reframe externally induced pressure, and so are able to perform. Somewhat surprisingly, and identified due to the abductive approach, this finding can even apply to employees in an accounting department, an organizational function typically associated with high risk aversion. Crucially, however, personnel control requires the selection of employees with a certain predisposition to risk-taking. We found that significantly risk-averse employees cannot internalize the extrinsically motivated tasks demanded by the stretch targets, even if the control environment generally supports the conditions for autonomous motivation.

More generally, the insights have implications for the literature on management control systems as a package (e.g., Malmi and Brown 2008; Grabner and Moers 2013) by providing a theoretical mechanism to study how personnel and cultural control complements results control. The findings also have implications for the literature on process and outcome accountability (e.g., de Langhe, van Osselaer, and Wierenga 2011; Patil et al. 2017) by explaining how task-oriented and result-oriented productivity metrics are interrelated with personnel and cultural control, and to what extent those interrelations support employee motivation.

The limitations of our study provide opportunities for future research. The abductively derived findings present important theoretical implications that can be further tested and refined, possibly through other methods, such as experiments or surveys. Mobilizing the three basic psychological needs for autonomous motivation, future research could examine the nuances of different control environments (i.e., variations in the design of personnel and cultural controls, and their interrelation with target difficulty), and how those affect employees' creativity and productivity. In this vein, it would be both relevant and interesting to further investigate different difficulty levels of stretch targets, their short- and long-term effects on employees and, most crucially, how constantly working under such high pressure affects employee health and well-being. We investigated creativity in the context of process innovations, and further research could examine how our theoretical findings relate to other types of creativity and innovation (e.g., Chen 2017; Pfister, Jack, and Darwin 2017; Speckbacher 2017). In that respect, future studies could also deepen understanding of how employees' cognitive ability to be creative, including motivational support for this ability from the control environment, relates to their willingness to take risks. Hence, the theoretical generalizations of this study provide a plethora of possibilities for future research.

## REFERENCES

- Abernethy, M. A., and P. Brownell. 1997. Management control systems in research and development organizations: The role of accounting, behavior and personnel controls. *Accounting, Organizations and Society* 22 (3/4): 233–248. [https://doi.org/10.1016/S0361-3682\(96\)00038-4](https://doi.org/10.1016/S0361-3682(96)00038-4)
- Abernethy, M. A., H. C. Dekker, and A. K. D. Schulz. 2015. Are employee selection and incentive contracts complements or substitutes? *Journal of Accounting Research* 53 (4): 633–668. <https://doi.org/10.1111/1475-679X.12090>
- Adler, P. S., and B. Borys. 1996. Two types of bureaucracy: Enabling and coercive. *Administrative Science Quarterly* 41 (1): 61–89. <https://doi.org/10.2307/2393986>
- Adler, P. S., and C. X. Chen. 2011. Combining creativity and control: Understanding individual motivation in large-scale collaborative creativity. *Accounting, Organizations and Society* 36 (2): 63–85. <https://doi.org/10.1016/j.aos.2011.02.002>



- Ahrens, T., and C. S. Chapman. 2004. Accounting for flexibility and efficiency: A field study of management control systems in a restaurant chain. *Contemporary Accounting Research* 21 (2): 271–302. <https://doi.org/10.1506/VJR6-RP75-7GUX-XH0X>
- Ahrens, T., and C. S. Chapman. 2006. Doing qualitative field research in management accounting: Positioning data to contribute to theory. *Accounting, Organizations and Society* 31 (8): 819–841. <https://doi.org/10.1016/j.aos.2006.03.007>
- Ahrens, T., and J. F. Dent. 1998. Accounting and organizations: Realizing the richness of field research. *Journal of Management Accounting Research* 10: 1–39.
- Alvesson, M. 2003. Beyond neopositivists, romantics, and localists: A reflexive approach to interviews in organizational research. *Academy of Management Review* 28 (1): 13–33. <https://doi.org/10.5465/amr.2003.8925191>
- Alvesson, M., and J. Sandberg. 2011. Generating research questions through problematization. *Academy of Management Review* 36 (2): 247–271.
- Amabile, T. M. 1988. A model of creativity and innovation in organizations. *Research in Organizational Behavior* 10: 123–167.
- Amabile, T. M. 1993. Motivational synergy: Toward new conceptualizations of intrinsic and extrinsic motivation in the workplace. *Human Resource Management Review* 3 (3): 185–201. [https://doi.org/10.1016/1053-4822\(93\)90012-S](https://doi.org/10.1016/1053-4822(93)90012-S)
- Amabile, T. M. 1998. How to kill creativity. *Harvard Business Review* (September–October): 76–81.
- Anand, V., B. Ashforth, and M. Joshi. 2005. Business as usual: The acceptance and perpetuation of corruption in organizations. *Academy of Management Executive* 19 (4): 9–23.
- Bedford, D. S. 2015. Management control systems across different modes of innovation: Implications for firm performance. *Management Accounting Research* 28: 12–30. <https://doi.org/10.1016/j.mar.2015.04.003>
- Beilock, S. L., and T. H. Carr. 2005. When high-powered people fail: Working memory and “choking under pressure” in math. *Psychological Science* 16 (2): 101–105. <https://doi.org/10.1111/j.0956-7976.2005.00789.x>
- Bonner, S. E., and G. B. Sprinkle. 2002. The effects of monetary incentives on effort and task performance: Theories, evidence, and a framework for research. *Accounting, Organizations and Society* 27 (4/5): 303–345. [https://doi.org/10.1016/S0361-3682\(01\)00052-6](https://doi.org/10.1016/S0361-3682(01)00052-6)
- Byron, K., and S. Khazanchi. 2015. Rewards’ relationship to creativity, innovation, and entrepreneurship. In *The Oxford Handbook of Creativity, Innovation, and Entrepreneurship*, edited by Shalley, C. E., M. A. Hitt, and J. Zhou, 47–59. Oxford, U.K.: Oxford University Press.
- Campbell, D. 2012. Employee selection as a control system. *Journal of Accounting Research* 50 (4): 931–966. <https://doi.org/10.1111/j.1475-679X.2012.00457.x>
- Cerasoli, C. P., J. M. Nicklin, and M. T. Ford. 2014. Intrinsic motivation and extrinsic incentives jointly predict performance: A 40-year meta-analysis. *Psychological Bulletin* 140 (4): 980–1008. <https://doi.org/10.1037/a0035661>
- Chen, C. C., and K. T. Jones. 2005. Are companies really ready for stretch targets? *Management Accounting Quarterly* 6 (Summer): 10–18.
- Chen, C. X. 2017. Management control for stimulating different types of creativity: The role of budgets. *Journal of Management Accounting Research* 29 (3): 23–26. <https://doi.org/10.2308/jmar-51795>
- Chen, C. X., M. G. Williamson, and F. H. Zhou. 2012. Reward system design and group creativity: An experimental investigation. *The Accounting Review* 87 (6): 1885–1911. <https://doi.org/10.2308/accr-50232>
- Chenhall, R., and F. Moers. 2015. The role of innovation in the evolution of management accounting and its integration into management control. *Accounting, Organizations and Society* 47: 1–13. <https://doi.org/10.1016/j.aos.2015.10.002>
- Chua, W. F. 1986. Radical developments in accounting thought. *The Accounting Review* 61 (4): 601–632.
- Cools, M., K. Stouthuysen, and A. Van den Abbeele. 2017. Management control for stimulating different types of creativity: The role of budgets. *Journal of Management Accounting Research* 29 (3): 1–21. <https://doi.org/10.2308/jmar-51789>
- Cooper, D. J., and W. Morgan. 2008. Case study research in accounting. *Accounting Horizons* 22 (2): 159–178. <https://doi.org/10.2308/acch.2008.22.2.159>
- Csikszentmihalyi, M. 1997. *Creativity: Flow and the Psychology of Discovery and Invention*. New York, NY: Harper Collins.
- Davila, A., and A. Ditillo. 2017. Management control systems for creative teams: Managing stylistic creativity in fashion companies. *Journal of Management Accounting Research* 29 (3): 27–47. <https://doi.org/10.2308/jmar-51806>
- Davila, A., G. Foster, and D. Oyon. 2009. Accounting and control, entrepreneurship and innovation: Venturing into new research opportunities. *European Accounting Review* 18 (2): 281–311. <https://doi.org/10.1080/09638180902731455>
- De Baerdemaeker, J., and W. Bruggeman. 2015. The impact of participation in strategic planning on managers’ creation of budgetary slack: The mediating role of autonomous motivation and affective organizational commitment. *Management Accounting Research* 29: 1–12. <https://doi.org/10.1016/j.mar.2015.06.002>
- DeCharms, R. 1968. *Personal Causation: The Internal Affective Determinants of Behavior*. New York, NY: Academic Press.
- Deci, E. L. 1971. Effects of externally mediated rewards on intrinsic motivation. *Journal of Personality and Social Psychology* 18 (1): 105–115. <https://doi.org/10.1037/h0030644>
- Deci, E. L. 1975. *Intrinsic Motivation*. New York, NY: Plenum.
- Deci, E. L., and R. M. Ryan. 1985. *Intrinsic Motivation and Self-Determination in Human Behavior*. New York, NY: Plenum.
- Deci, E. L., and R. M. Ryan. 2000. The “what” and “why” of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry* 11 (4): 227–268. [https://doi.org/10.1207/S15327965PLI1104\\_01](https://doi.org/10.1207/S15327965PLI1104_01)

- Deci, E. L., R. Koestner, and R. M. Ryan. 1999. A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin* 125 (6): 627–668. <https://doi.org/10.1037/0033-2909.125.6.627>
- De Dreu, C. K. W., M. Baas, and B. A. Nijstad. 2012. The emotive roots of creativity: Basic and applied issues on affect and emotion. In *Handbook of Organizational Creativity*, edited by Mumford, M. D., 217–240. New York, NY: Academic Press.
- de Langhe, B., S. M. J. van Osselaer, and B. Wierenga. 2011. The effects of process and outcome accountability on judgment process and performance. *Organizational Behavior and Human Decision Processes* 115 (2): 238–252. <https://doi.org/10.1016/j.obhdp.2011.02.003>
- Dent, J. F. 1991. Accounting and organizational cultures: A field study of the emergence of a new organizational reality. *Accounting, Organizations and Society* 16 (8): 705–732. [https://doi.org/10.1016/0361-3682\(91\)90021-6](https://doi.org/10.1016/0361-3682(91)90021-6)
- Dubois, A., and L-E. Gadde. 2002. Systematic combining: An abductive approach to case research. *Journal of Business Research* 55 (7): 553–560. [https://doi.org/10.1016/S0148-2963\(00\)00195-8](https://doi.org/10.1016/S0148-2963(00)00195-8)
- Emmanuel, C., D. Otley, and K. Merchant. 1990. *Accounting for Management Control*. 2nd edition. London, U.K.: Thomson.
- Frey, B. S. 1994. How intrinsic motivation is crowded out and in. *Rationality and Society* 6 (3): 334–352. <https://doi.org/10.1177/1043463194006003004>
- Frey, B. S. 2012. Crowding out and crowding in of intrinsic preferences. In *Reflexive Governance for Global Public Goods*, edited by Brousseau, E., T. Dedeurwaerdere, and B. Siebenhüner, 75–83. Cambridge, MA: MIT Press.
- Frey, B. S., and R. Jegen. 2001. Motivation crowding theory. *Journal of Economic Surveys* 15 (5): 589–611. <https://doi.org/10.1111/1467-6419.00150>
- Gagne, M. 2014. *The Oxford Handbook of Work Engagement, Motivation, and Self-Determination Theory*. Oxford, U.K.: Oxford University Press.
- Gagne, M., and E. L. Deci. 2005. Self-determination theory and work motivation. *Journal of Organizational Behavior* 26 (4): 331–362. <https://doi.org/10.1002/job.322>
- Gary, M. S., M. M. Yang, P. W. Yetton, and J. D. Sterman. 2017. Stretch goals and the distribution of organizational performance. *Organization Science* 28 (3): 395–410. <https://doi.org/10.1287/orsc.2017.1131>
- Grabner, I. 2014. Incentive system design in creativity-dependent firms. *The Accounting Review* 89 (5): 1729–1750. <https://doi.org/10.2308/accr-50756>
- Grabner, I., and F. Moers. 2013. Management control as a system or a package? Conceptual and empirical issues. *Accounting, Organizations and Society* 38 (6/7): 407–419. <https://doi.org/10.1016/j.aos.2013.09.002>
- Grabner, I., and G. Speckbacher. 2016. The cost of creativity: A control perspective. *Accounting, Organizations and Society* 48: 31–42. <https://doi.org/10.1016/j.aos.2015.11.001>
- Groen, B. A., M. J. Wouters, and C. P. Wilderom. 2017. Employee participation, performance metrics, and job performance: A survey study based on self-determination theory. *Management Accounting Research* 36: 51–66. <https://doi.org/10.1016/j.mar.2016.10.001>
- Hennessey, B. A., S. Moran, B. A. Altringer, and T. M. Amabile. 2014. Extrinsic and intrinsic motivation. In *Wiley Encyclopedia of Management: Organizational Behavior*, edited by Flood, P. C., and Y. Freeney. New York, NY: John Wiley & Sons.
- Hopwood, A. G. 2007. Whither accounting research? *The Accounting Review* 82 (5): 1365–1374. <https://doi.org/10.2308/accr.2007.82.5.1365>
- Ittner, C. D., and D. F. Larcker. 2002. Empirical management accounting research: Are we just describing management consulting practice? *European Accounting Review* 11 (4): 787–794. <https://doi.org/10.1080/0963818022000047082>
- Jönsson, S., and K. Lukka. 2007. There and back again: Doing interventionist research in management accounting. In *Handbook of Management Accounting Research*, edited by Chapman, C. S., A. G. Hopwood, and M. D. Shields, 373–397. Amsterdam, The Netherlands: Elsevier.
- Kachelmeier, S. J., and M. G. Williamson. 2010. Attracting creativity: The initial and aggregate effects of contract selection on creativity-weighted productivity. *The Accounting Review* 85 (5): 1669–1691. <https://doi.org/10.2308/accr.2010.85.5.1669>
- Kerr, S., and S. Landauer. 2004. Using stretch goals to promote organizational effectiveness and personal growth: General Electric and Goldman Sachs. *Academy of Management Executive* 18: 134–138.
- Kunz, J. 2015. Objectivity and subjectivity in performance evaluation and autonomous motivation: An explorative study. *Management Accounting Research* 27: 27–46. <https://doi.org/10.1016/j.mar.2015.01.003>
- Latham, G. P., and E. A. Locke. 1991. Self-regulation through goal setting. *Organizational Behavior and Human Decision Processes* 50 (2): 212–247. [https://doi.org/10.1016/0749-5978\(91\)90021-K](https://doi.org/10.1016/0749-5978(91)90021-K)
- Lepper, M. R., and D. Greene, eds. 1978. *The Hidden Costs of Reward: New Perspectives on Psychology of Human Motivation*. Hillsdale, NY: Erlbaum.
- Lepper, M. R., D. Greene, and R. E. Nisbett. 1973. Undermining children's intrinsic interest with extrinsic reward: A test of the "overjustification" hypothesis. *Journal of Personality and Social Psychology* 28 (1): 129–137. <https://doi.org/10.1037/h0035519>
- Locke, E. A., and G. P. Latham. 2002. Building a practically useful theory of goal setting and task motivation. *American Psychologist* 57 (9): 705–717. <https://doi.org/10.1037/0003-066X.57.9.705>
- Lukka, K. 2014. Exploring the possibilities for causal explanation in interpretive research. *Accounting, Organizations and Society* 39 (7): 559–566. <https://doi.org/10.1016/j.aos.2014.06.002>

- Lukka, K., and S. Modell. 2010. Validation in interpretive management accounting research. *Accounting, Organizations and Society* 35 (4): 462–477. <https://doi.org/10.1016/j.aos.2009.10.004>
- Lukka, K., and E. Vinnari. 2014. Domain theory and method theory in management accounting research. *Accounting, Auditing and Accountability Journal* 27 (8): 1308–1338. <https://doi.org/10.1108/AAAJ-03-2013-1265>
- Malmi, T., and D. A. Brown. 2008. Management control systems as a package—Opportunities, challenges and research directions. *Management Accounting Research* 19 (4): 287–300. <https://doi.org/10.1016/j.mar.2008.09.003>
- Merchant, K. A. 1985. *Control in Business Organizations*. Marshfield, MA: Pitman Publishing.
- Merchant, K. A., and J-F. Manzoni. 1989. The achievability of budget targets in profit centers: A field study. *The Accounting Review* 64 (3): 539–558.
- Merchant, K. A., and W. A. Van der Stede. 2017. *Management Control Systems: Performance Measurement, Evaluation and Incentives*. 4th edition. Essex, U.K.: Pearson Education Limited.
- Morgan, S. L., and C. Winship. 2007. *Counterfactuals and Causal Inference: Methods and Principles for Social Research*. Cambridge, U.K.: Cambridge University Press.
- Ouchi, W. G. 1979. A conceptual framework for the design of organizational control mechanisms. *Management Science* 25 (9): 833–848. <https://doi.org/10.1287/mnsc.25.9.833>
- Patil, S. V., P. E. Tetlock, and B. A. Mellers. 2017. Accountability systems and group norms: Balancing the risks of mindless conformity and reckless deviation. *Journal of Behavioral Decision Making* 30 (2): 282–303. <https://doi.org/10.1002/bdm.1933>
- Peirce, C. S. 1960. *Collected Papers of Charles Sanders Peirce*, Volume V–VI, edited by Hartshorne, C., and P. Weiss. Cambridge, MA: Belknap Press of Harvard University Press.
- Pfister, J. 2014. Controlling creativity and innovation: Paradox or necessity? In *Management Control and Uncertainty*, edited by Otley, D., and K. Soin, 134–148. New York, NY: Palgrave MacMillan.
- Pfister, J. A., S. L. Jack, and S. N. Darwin. 2017. Strategizing open innovation: How middle managers work with performance indicators. *Scandinavian Journal of Management* 33 (3): 139–150. <https://doi.org/10.1016/j.scaman.2017.06.001>
- Pike, K. L. 1954. Emic and etic standpoints for the description of behavior. In *Language in Relation to a Unified Theory of the Structure of Human Behavior*, edited by Pike, K. L., 8–28. Dallas, TX: Summer Institute of Linguistics.
- Pina e Cunha, M., L. Giustiniano, A. Rego, and S. Clegg. 2017. Mission impossible? The paradoxes of stretch goal setting. *Management Learning* 48 (2): 140–157. <https://doi.org/10.1177/1350507616664289>
- Rockness, H. O., and M. D. Shields. 1984. Organizational control systems in research and development. *Accounting, Organizations and Society* 9 (2): 165–177. [https://doi.org/10.1016/0361-3682\(84\)90005-9](https://doi.org/10.1016/0361-3682(84)90005-9)
- Rotter, J. B. 1966. Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied* 80 (1): 1–28.
- Ryan, R. M., and J. P. Connell. 1989. Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology* 57 (5): 749–761. <https://doi.org/10.1037/0022-3514.57.5.749>
- Ryan, R. M., and E. L. Deci. 2000. Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology* 25 (1): 54–67. <https://doi.org/10.1006/ceps.1999.1020>
- Shalley, C. E. 1995. Effects of coaction, expected evaluation, and goal setting on creativity and productivity. *Academy of Management Journal* 38 (2): 483–503.
- Silverman, D. 2006. *Interpreting Qualitative Data*. 3rd edition. London, U.K.: Sage.
- Simons, R. 1987. Accounting control systems and business strategy: An empirical analysis. *Accounting, Organizations and Society* 12 (4): 357–374. [https://doi.org/10.1016/0361-3682\(87\)90024-9](https://doi.org/10.1016/0361-3682(87)90024-9)
- Simons, R. 1990. The role of management control systems in creating competitive advantage: New perspectives. *Accounting, Organizations and Society* 15 (1/2): 127–143. [https://doi.org/10.1016/0361-3682\(90\)90018-P](https://doi.org/10.1016/0361-3682(90)90018-P)
- Simons, R. 1995. *Levers of Control: How Managers Use Innovative Control Systems to Drive Strategic Renewal*. Boston, MA: Harvard Business School Press.
- Sitkin, S. B., K. E. See, C. C. Miller, M. W. Lawless, and A. M. Carton. 2011. The paradox of stretch goals: Organizations in pursuit of the seemingly impossible. *Academy of Management Review* 36 (3): 544–566.
- Speckbacher, G. 2017. Creativity research in management accounting: A commentary. *Journal of Management Accounting Research* 29 (3): 49–54. <https://doi.org/10.2308/jmar-51754>
- Speklé, R. F., H. J. van Elten, and S. K. Widener. 2017. Creativity and control: A paradox—Evidence from the levers of control framework. *Behavioral Research in Accounting* 29 (2): 73–96. <https://doi.org/10.2308/bria-51759>
- Sprinkle, G. B., M. G. Williamson, and D. R. Upton. 2008. The effort and risk-taking effects of budget-based contracts. *Accounting, Organizations and Society* 33 (4/5): 436–452. <https://doi.org/10.1016/j.aos.2007.11.001>
- Stedry, A. C. 1960. *Budget Control and Cost Behaviour*. Hemel Hempstead, U.K.: Prentice Hall.
- Sutton, N. C., and D. A. Brown. 2016. The illusion of no control: Management control systems facilitating autonomous motivation in university research. *Accounting and Finance* 56 (2): 577–604. <https://doi.org/10.1111/acfi.12099>
- Thompson, K. R. W., W. Hochwarter, and N. Mathys. 1997. Stretch goals: What makes them effective? *Academy of Management Executive* 11 (3): 48–60.

- Timmermans, S., and I. Tavory. 2012. Theory construction in qualitative research: From grounded theory to abductive analysis. *Sociological Theory* 30 (3): 167–186. <https://doi.org/10.1177/0735275112457914>
- Watts, R. L. 2003. Conservatism in accounting, Part I: Explanations and implications. *Accounting Horizons* 17 (3): 207–221. <https://doi.org/10.2308/acch.2003.17.3.207>
- Webb, R. A., M. G. Williamson, and Y. Zhang. 2013. Productivity-target difficulty, target-based pay, and outside-the-box thinking. *The Accounting Review* 88 (4): 1433–1457. <https://doi.org/10.2308/accr-50436>
- Weibel, A., M. Wiemann, and M. Osterloh. 2014. A behavioral economics perspective on the overjustification effect: Crowding-in and crowding-out of intrinsic motivation. In *The Oxford Handbook of Work Engagement, Motivation, and Self-Determination*, edited by Gagné, M. New York, NY: Oxford University Press.
- Weinstein, N., and R. M. Ryan. 2011. A self-determination theory approach to understanding stress incursion and responses. *Stress and Health* 27 (1): 4–7. <https://doi.org/10.1002/smi.1368>
- Wong-On-Wing, B., L. Guo, and G. Lui. 2010. Intrinsic and extrinsic motivation and participation in budgeting: Antecedents and consequences. *Behavioral Research in Accounting* 22 (2): 133–153. <https://doi.org/10.2308/bria.2010.22.2.133>
- Zhang, Z., and M. Jia. 2013. How can companies decrease the disruptive effects of stretch goals? The moderating role of interpersonal- and informational-justice climates. *Human Relations* 66 (7): 993–1020. <https://doi.org/10.1177/0018726713483630>



## APPENDIX A

## Summary of the Interviews

No.	Year	Month	Function(s)	Type	Purpose	Minutes	Words	Codes	Ref.
1	2007	July	Director of Internal Audit	In person	Growth, culture and control	55	5,849	13	64
2	2007	Aug.	Vice President Finance/Chief Accountant	In person	Growth, culture and control	70	4,789	24	78
3	2007	Aug.	Chairman/Chief Executive Officer	Corresp.	Growth, culture and control	NA	514	5	11
4	2010	Sept.	Vice President Finance/Chief Accountant	Call	Follow-up, outsourcing	35	3,744	31	77
5	2010	Oct.	Director of Internal Audit	Call	Follow-up, outsourcing	32	4,622	21	68
6	2011	April	Vice President Finance/Chief Accountant	In person	Dashboard initiative	58	6,928	30	114
7	2011	April	Director of Internal Audit	In person	Dashboard initiative	32	4,622	31	85
8	2011	April	Corporate Controller	In person	Dashboard initiative	63	9,744	39	205
9	2011	April	Metrics Project Leader	In person	Dashboard initiative	53	8,102	27	100
10	2011	Oct.	Corporate Controller	Call	Follow-up on developments	35	4,708	26	97
11	2011	Oct.	Metrics Project Leader	Call	Follow-up on developments	56	7,361	23	82
12	2011	Nov.	Head of Finance EMEA	Call	International perspective on initiative	67	9,162	33	122
13	2011	Nov.	Metrics Manager	Call	Follow-up on developments	63	7,020	16	67
14	2011	Nov.	Deputy Director of Internal Audit	Call	IA perspective on initiative	43	5,064	22	86
15	2012	Jan.	Chief People Officer G&A	Call	HR procedures in accounting	50	NA	NA	NA
16	2012	March	Transition Manager	Call	Follow-up on developments	34	4,816	26	59
17	2012	March	Corporate Controller	Call	Follow-up on developments	47	5,984	28	84
18	2013	Feb.	Corporate Controller	Call	Follow-up on developments	66	8,870	34	178
19	2013	April	Director of Internal Audit	Call	IA perspective on initiative	42	5,291	24	138
20	2013	June	Controller for America	In person	Evaluation of implementation	55	10,275	25	134
21	2013	June	Senior Accountant and South East Asia Pacific Controller (shared interview)	In person	Evaluation of implementation	53	9,339	23	67
22	2013	June	Corporate Controller	In person	Evaluation of implementation	15	2,237	20	43
23	2013	June	Senior Supply Manager (in Finance)	In person	Evaluation of implementation	50	8,602	31	134
24	2013	June	Business Process and Compliance Specialist	In person	Evaluation of implementation	55	12,056	31	143
25	2013	June	Business Process and Compliance Manager	In person	Evaluation of implementation	25	5,255	21	55
26	2013	June	Fixed Assets Controller	In person	Evaluation of implementation	29	5,042	27	124
27	2013	June	Business Compliance Senior Specialist	In person	Evaluation of implementation	28	5,478	28	77
28	2013	June	Accounting Manager, Strategic Partnerships	In person	Evaluation of implementation	28	4,724	31	94
29	2016	Feb.	Corporate Controller	Call	Long-term perspective	43	6,557	27	98
30	2016	July	Business Process and Compliance Manager (Metrics Manager)	Call	Long-term perspective	52	9,067	32	197
31	2017	Aug.	Corporate Controller (former)	Call	Long-term perspective	35	4,142	23	74
32	2017	Aug.	Accounting Manager, Strategic Partnerships (former)	Call	Long-term and <i>ex post</i> perspective	30	4,107	23	70
33	2017	Aug.	Revenue Controller (product-specific)	Call	Long-term and <i>ex post</i> perspective	39	5,493	27	76
34	2017	Aug.	Revenue Manager (product-specific)	Call	Long-term and <i>ex post</i> perspective	24	3,234	28	88
35	2017	Sept.	Controller for America	Call	Long-term and <i>ex post</i> perspective	25	3,456	23	69
Total						1,487	206,254		3,258
Average						44	6,066	26	96

**APPENDIX B**  
**Definition of the Codes**

**Panel A: New Metrics**

Tree Address	Title of Code	Definition of Code
1	New Metrics	Information regarding the design of the new metrics
1 1	“Dashboard” initiative	Information regarding the initiative triggering the new (productivity) metrics (called the “Year of the Dashboard” initiative)
1 2	Technical design	Technicalities about the design of the new metrics
1 2 1	<i>Cost per unit</i>	<i>Technicalities about the design of the new metrics as part of the new dashboard</i>
1 2 2	<i>Time-tracking</i>	<i>Information about the time-tracking in relation to the new metrics</i>
1 2 3	<i>Target-setting</i>	<i>Expected targets by senior management</i>
1 2 4	<i>Employees’ evaluation</i>	<i>Integration of the new metrics with performance evaluation</i>
1 2 5	<i>Incentive systems</i>	<i>Integration of the new metrics with incentive setting</i>
1 3	Managerial intention	Senior management’s intention relating to the new metrics
1 4	Employee motivation	Employee perceptions of their self-determination
1 4 1	<i>Controlling</i>	<i>Perceptions and behaviors relating to “controlling” form</i>
1 4 2	<i>Autonomous</i>	<i>Perceptions and behaviors relating to “autonomous” form</i>

**Panel B: Types of Work**

Tree Address	Title of Code	Definition of Code
2	Types of Work	Information regarding types of work
2 1	Unstabilized	Information regarding unstabilized work and work to be stabilized
2 2	Stabilized	Information regarding stabilized work
2 2 1	<i>Internal</i>	<i>Information regarding stabilized work performed by GlobSearch employees</i>
2 2 2	<i>Outsourced</i>	<i>Information regarding outsourced work, work to be outsourced, or external contractors providing outsourcing</i>
2 2 3	<i>Automated</i>	<i>Information regarding automated work or work to be automated</i>
2 2 4	<i>Eliminated</i>	<i>Information regarding eliminated work or work to be eliminated</i>
2 3	Comparison of internal versus external work	Comparison between GlobSearch employees and external contractors

**Panel C: Other Controls**

Tree Address	Title of Code	Definition of Code
3	Other controls	Information about personnel and cultural controls
3 1	Hiring and turnover	Information regarding the hiring procedure and turnover
3 2	Training	Information regarding training and other competence development
3 3	Organizational culture	Information regarding the organizational culture
3 3 1	<i>Cultural control</i>	<i>Information concerning cultural control</i>
3 3 2	<i>Motivational aspects</i>	<i>Perceptions of employees regarding their relatedness</i>
3 3 3	<i>Future</i>	<i>Anticipation by employees about the future situation of GlobSearch</i>

**Panel D: Outcomes of Initiative**

Tree Address	Title of Code	Definition of Code
4	Outcomes of Initiative	Outcomes of the new metrics
4 1	Productivity	Information regarding efficiency-related performance
4 2	Innovative behavior and innovations	Information regarding innovative performance
4 3	Quality and compliance	Information regarding compliance and quality-related performance
4 4	Team morale and employees’ perceptions	Perception of employees regarding the design of the new metrics in the context of the workplace

(continued on next page)

## APPENDIX B (continued)

## Panel E: Contextual Information

Tree Address		Title of Code	Definition of Code
5		Contextual information	Information providing an understanding of the context
5	1	Interviewees' responsibility	Information regarding the interviewees' role, function, and hierarchical position at GlobSearch
5	2	About the organization	General information about GlobSearch
5	2	1 <i>Market, competition, strategy</i>	<i>Information regarding the market environment, competitors, and the strategic positioning of GlobSearch</i>
5	2	2 <i>Transition toward more formalization</i>	<i>Steps and decisions taken to become a more formal organization</i>
5	2	3 <i>Products</i>	<i>Information about the services and products of GlobSearch and their relation to the new metrics</i>
5	2	4 <i>Organizational structure</i>	<i>Information facilitating an understanding of the organizational structure of GlobSearch</i>
5	2	5 <i>Parallel initiatives</i>	<i>Information regarding other (parallel) initiatives</i>
5	3	New metrics involvement in the organization	Information about how the new metrics relate to other functional areas and management instruments
5	3	1 <i>Involvement with business operations</i>	<i>Information regarding the integration of the new metrics with operational issues</i>
5	3	2 <i>Budgeting and resource allocation</i>	<i>Integration of the new metrics with budgeting and resource allocation</i>
5	3	3 <i>Risk management and internal control</i>	<i>Information regarding the integration of risk management and internal control with the new metrics</i>
5	3	4 <i>Internal auditing</i>	<i>Information regarding the integration of internal auditing with the new metrics</i>
5	3	5 <i>External auditing</i>	<i>Information regarding the integration of external auditing with the new metrics</i>
5	3	6 <i>Contractor management (in accounting)</i>	<i>Information regarding the integration of contractor management with the new metrics</i>

## Panel F: Other

Tree Address	Title of Code	Definition of Code
6	Abbreviations	Statements containing abbreviations
7	Research project administration	Administrative information about the project