



CIMA Global Academic Research Programme

How target setting can unleash and enhance creativity



Key conclusions

- Organisations desiring their employees to spend time away from their day-to-day activities to develop creative ideas and solutions often use one of the following two practices: (1) giving employees a specific amount of time to think creatively, and/or (2) setting easy targets on day-to-day outputs, allowing some slack to think creatively. Our study suggests that using both of these practices together leads to both greater productivity on employees' day-to-day activities and greater creativity.
- Creative task performance can be increased and enhanced when employees undertaking routine and creative tasks receive both input and output targets for their routine task.
- Input and output targets are complementary mechanisms, by which the provision of one increases the effectiveness of the other and vice versa.
- Individuals without an output target employ less focused task strategies to the detriment of performance on both tasks; individuals with an output target but no input target reserve less time for the creative task than those with both input and output targets. However, by providing an input and an output target, individuals are focused on the task at hand and reserve enough time for creative task performance.

Abstract

Many organisations rely on the knowledge and experiences of their employees in order to generate creative ideas for product, process, and other forms of innovation. Often, they allow their employees across rank-and-file to pursue some creative activities next to their regular job duties by specifying some time to spend away from their routine task (input target) or by incorporating budgetary slack in their regular output targets.

However, little is known about the effectiveness of these systems and the underlying mechanisms. Our experimental results demonstrate that providing both input and output targets for routine tasks leads to greater creative task performance relative to providing only one of these or no target. This result accords with theory suggesting that individuals need guidance on how much routine work to complete to achieve the cognitive closure necessary to think creatively. However, individuals also need guidance for limiting time on relatively comfortable routine work. Thus, by setting expectations for routine everyday responsibilities, organisations can increase the efficacy of allowing employees time for creative endeavors.



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Introduction

Problem

Many organisations strive to encourage their employees to think creatively about process improvements or ideas to develop new products and businesses. However, managing the process of creativity appears to be difficult for organisations, in particular when it is on top of routine tasks and daily routines. Although controls for routine activities are quite common in organisations, organisations typically impose little structure or control on the employees' creative time in order to give them the freedom for creative pursuits without the fear of evaluation. Therefore, companies use other mechanisms to encourage their employees to pursue such creative activities. The popular business press often stresses the benefits of policies where companies guide their employees to spend a certain amount of time away from their routine task to engage in these creative activities (e.g., Google's 20% time rule), thereby installing an input target. Academic research, however, highlights budgetary slack in the output targets of their routine tasks to provide their employees the necessary resources to conduct these research activities. Thus far, little is known about the effectiveness of both of these systems in influencing the creativity of their employees. Hence, we investigated in this project the effectiveness of each of these mechanisms in isolation, as well as the combined effect of installing input and output targets on routine tasks on the creative task performance of employees.

Combining routine and creative tasks in one job

In addition to everyday routine tasks, organisations are increasingly asking their employees to develop creative ideas that are both novel and useful for the company (Dorenbosch et al. 2011, Tate 2012). For example, employees across rank and functional areas at companies such as Google and 3M develop innovative product offerings on top of completing their expected daily activities. Moreover, management at manufacturing companies such as John Deere and Caterpillar ask rank-and-file employees to not only manufacture products but also develop creative ways to increase the efficiency of production.

Giving employees opportunities to develop creative ideas offers potential benefits to organisations. By incorporating the employees' unique experiences and knowledge into creative endeavors, their ideas may create the foundation for future innovation and process improvement for the company (Nonaka 1991). Moreover, providing employees the opportunity to develop creative ideas enhances job satisfaction and intrinsic motivation toward work activities (Shalley et al. 2000).

However, employees assigned both routine and creative tasks face inherent challenges that can potentially impair their productivity on creative endeavors. For example, individuals often prefer to work on tasks with which they feel competent and productive (Amabile and Kramer 2011). To the extent that individuals are productive on their relatively comfortable routine tasks, they may not allocate much time to more open-ended and uncertain creative endeavors on which they may feel less productive. Furthermore, even if they attempt to spend time working on both routine and creative tasks, cognitive limitations can still undermine their ability to do so effectively. For example, trying to solve both routine and creative tasks simultaneously could create some form of bottleneck in the individuals' brain that reduces their performance on both tasks (Pashler 1984). Moreover, just because someone stopped working on a task does not mean that an individual stops thinking about a task (Leroy 2009). This "attention residue" can also restrict the individuals' ability to work effectively. However, especially in a creative task, which is a cognitively highly-challenging task, such restrictions in the cognitive capacity can be problematic and lead to reduced performance of individuals. We investigate how far input and output targets around the routine task can help to mitigate some of these challenges.

Prediction

Based on goal setting theory we predict that output targets help individuals to focus on the task at hand (e.g., Locke and Latham 1990). In addition, output targets also allow individuals to get a feeling of accomplishing a target and fulfilling a task, thereby allowing a cognitive closure for a task. Therefore, there will be "less attention residue" once these individuals switch to another task, but they can fully focus on the new task, in contrast to a situation where there is only an input target. That said, according to the progress principle, accomplishing a target can also increase the feeling of competence and success on a task, which makes it less likely that they leave a task and switch to another one – where they still have uncertainty whether they will succeed in that task (Amabile and Kramer 2011). In this case, the input target can help individuals to break away from their routine task and pursue the creative activities. Following this line of argument input and output targets are complementary design choices where the provision of one of them, increases the effectiveness of the other one.

Therefore, we hypothesize that a combination of both input and output targets around the routine task leads to higher creative task performance than providing just one or none of these targets.

Research methodology

We ran an experiment with 97 students. Participants individually worked on two experimental tasks, a routine task and a creative task, for a total of 20 minutes. In the experiment we manipulated different forms of target setting with respect to the routine task. In particular, we manipulated the following two factors between participants:

1. the presence/absence of an input target suggesting that participants spend at least half of their available time in the experiment on the routine task, and;
2. the presence/absence of an output target suggesting a minimum amount of routine output to produce in the experiment. We set the output target such that the average participant could achieve it in half of the total time available, which could leave the remaining time for the creative task.

Therefore, we held the approximate guidance for allocating effort among the tasks constant across the input and output target conditions. Across all conditions, however, we informed participants that they could allocate their time and produce/create as much as they preferred, ignoring the guidance from the input and output targets. The participants were randomly assigned to one of the four experimental treatments (as shown in Figure 1) and they received 10 EUR for their participation.

Tasks

First, to represent a routine task, we adopted a simple letter decoding task used in prior research (e.g., Fisher et al. 2002). Here, participants decoded letter combinations into numbers, using a decoding table that we provided to them. Secondly, to represent creative work, we asked participants to develop ideas for future experimental tasks and to describe these tasks in a few sentences. Specifically, we asked participants to develop new, innovative, and useful tasks that researchers can use in their experiments. This task was open-ended in that participants completed it without any known procedures to follow.

At the same time it required participants to develop innovative, but useful solutions to a problem.

Creativity rating

In total, our participants provided 535 ideas for experimental tasks. Consistent with prior literature, we invited 10 additional students to rate the creativity of each idea on a scale from 1 (lowest creativity) to 10 (highest creativity). We randomly split the overall ideas in two sections and each of the raters had to provide ratings for 283 ideas (the first 31 were held constant across all raters to calibrate their ratings). Thus, for every idea we received the rating of 5 independent individuals (except for the first 31 ideas where we received the rating of all 10 individuals). We averaged the creativity ratings for each idea to get a creativity score for each idea. Afterwards, we counted for each of the 97 participants of our experiment the number of ideas he or she developed that were rated at or above the median creativity rating of 5.

Figure 1 – The four experimental treatments

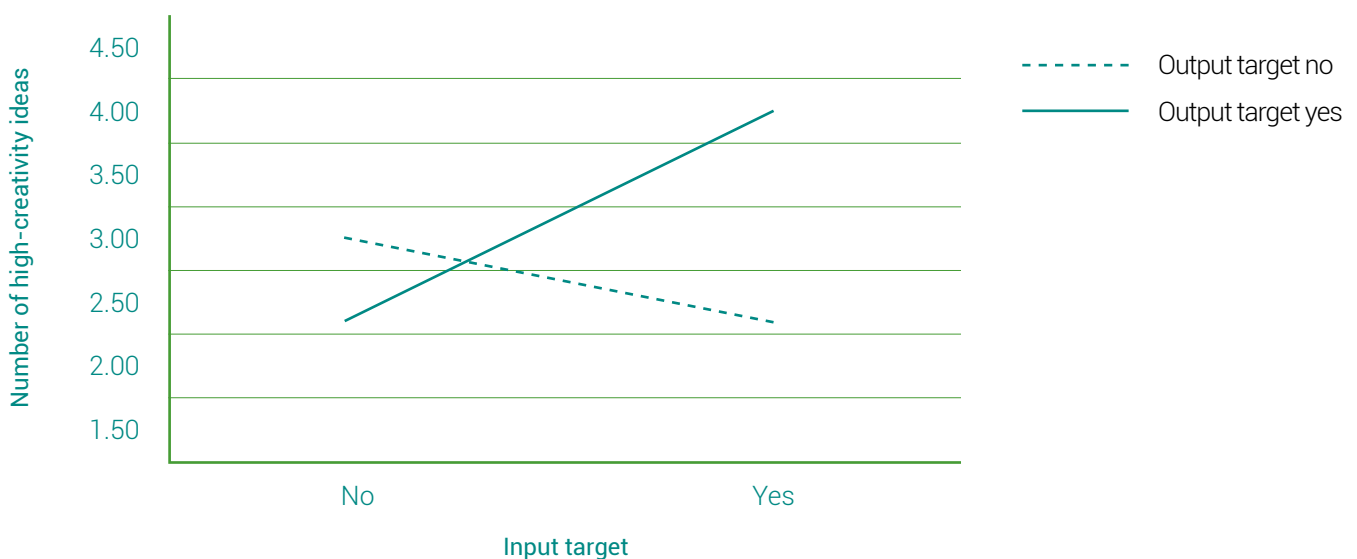
		Output target	
		No	Yes
Input target	No	Group 1	Group 2
	Yes	Group 3	Group 4

Results

We predict that providing both an input and output target on routine tasks leads to greater creative task performance relative to providing either one or neither of these targets. Figure 2 provides a graphical depiction of the average number of high-creativity ideas by experimental condition. Consistent with our hypothesis, participants in our input and output target condition submitted an average of 4.00 high-creativity ideas, while participants in the no target, input target only, and output target only conditions submitted an average of 3.00, 2.33, and 2.36 high-creativity ideas, respectively.

Using a planned contrast test, the pattern we predicted is also statistically significant ($F_{1,93} = 12.49, p < 0.01$). This supports our hypothesis that providing a combination of input and output targets around the routine task leads to higher creative task performance than providing just one of these targets or none.

Figure 2 – The effect of input and output targets on creative task performance



Note: Figure 2 shows the effect of input and output targets on the number of high-creativity ideas submitted by the experimental participants.

Number of high-creativity ideas = Number of ideas submitted with ratings equal or higher than the median rating of 5

Supplemental analyses show that, consistent with our theory, an output target provides individuals with the necessary task closure around the routine task that helps them to better focus on the tasks at hand. Furthermore, providing an input target on top of an output target encourages individuals to break away from the routine task and therefore reserve significantly more time on the creative task, than only providing them an output target alone. This indicates that input and output targets around the routine task are complementary design choices in order to enhance creative task performance of individual.

Key findings

In an environment where individuals are responsible not only for routine tasks but also creative task performance, we investigate how targets on employees' routine tasks can actually affect creative task performance. The results of our study suggest that a combination of both input and output targets on the routine task leads to higher creative task performance than providing just one of these targets or none.

Specifically, we find that providing either an input or an output target has no effect on the creative task performance. However, a combination of both input and output targets increases creative task performance. This finding indicates that input and output targets are complementary mechanisms by which the provision of one increases the effectiveness of the other and vice versa.

This research is important because, in these environments, the practitioner and academic literature documents and recommends seemingly disparate practices without clearly indicating their relative effectiveness at promoting creative task performance. While popular business press highlights examples of companies that allow their employees to spend some time away from the routine tasks to think about ways of how to improve the existing processes or come up with other ideas that lead to future innovation, the academic literature identified budgetary slack as one of the mechanisms to encourage their employees to pursue creative activities. This means, by incorporating slack in the output budgets of the routine task, employees are provided with the necessary resources and freedom to pursue these creative activities without the fear of evaluation. Our results show, however, that these two factors are complementary design choices. That is, organisations can increase the efficacy of the growing practice of suggesting that employees spend a portion of their work week on creative endeavors by setting expectations about what needs to be achieved during time on routine work. Moreover, organisations can increase the efficacy of using relatively easy output targets to foster creative pursuits by providing guidance to employees for allocating their resulting slack time.

Furthermore, our study also shows how properly designed control systems, i.e., input and output targets, can help organisations to foster creative task performance on top of their routine task. While for a long time there has been a perception that organisations cannot manage the creativity of their employees and specifically that incentive compensation hinders creative thinking of employees, recently there is a more nuanced view of control and creativity. Indeed, prior studies already indicate that some parts of management control systems can help organisations to achieve higher employee creativity and that even incentive compensation does not necessarily decrease creative task performance (e.g., Kachelmeier et al. 2008, Kachelmeier and Williamson 2010, Grabner 2014). We contribute to this stream of literature by showing that input and output targets around the routine task can help individuals to develop more creative ideas for their companies. Thereby we not only show how properly designed systems can help organisations to foster creativity of their employees, but also how these systems can help employees to better resolve the tension that they might experience when they are responsible for multiple tasks at the same time.

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Authors

Alexander Brügger

Professor
Accounting & Information Management, School of
Business and Economics
Maastricht University
E a.brugger@maastrichtuniversity.nl

Christoph Feichter

Postdoc
Assistant Professor
Accounting & Information Management, School of
Business and Economics
Maastricht University
E c.feichter@maastrichtuniversity.nl

Michael G. Williamson

A.C. Littleton Professor of Accountancy
University of Illinois at Urbana-Champaign
E migwilli@illinois.edu

Acknowledgements

This executive summary is based on a study that we conducted with the generous support of CIMA and that will be published in *The Accounting Review* under the title "The effect of input and output targets for routine tasks on creative task performance" in March 2018.



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November 2017