

Nudging in Changing Employee Behavior: A Novel Approach in Organizational Transformation

Jan van de Poll¹, Marissa Miller², Dionne Herder³

1 Managing Director at Transparency Lab BV

2 Senior researcher at Transparency Lab BV

3 Senior research assistant at Transparency Lab BV

Abstract: Nudging is a Nobel prize-winning concept that government agencies and Business-to-Consumer companies alike have widely adopted. Until now, nudging has not found its way into changing employee behavior during an organizational transformation, nevertheless the apparent advantages. The main problem: how to deliver, repeatedly, a personal, relevant, and motivating message to a large number of (potentially thousands) employees in an organization? Usually, behavioral data cannot be found in the company data warehouse; you have to ask people. In this study, to address this problem, we designed a different survey scale than the usual Likert scale. We used an Artificial Intelligence (A.I.) platform to deliver personal dashboards to managers and employees. And these dashboards were the result of an organization-wide questionnaire paired with an A.I.-driven target setting. These dashboards showed – tailor-made – why to improve and what to improve, how to do that, and who could help improve whom. We sent a comparable questionnaire plus dashboards to the same audience (approx. 700 people in one organization) twice. The first time without nudging, the second time, the dashboards were accompanied by email nudges that guided respondents in using their dashboard. The second time, we saw 40% more clicks and 20% better clicks as an indicative figure. We defined better clicks as looking at dashboard pages that bring respondents in the ‘action mode’: what and how to improve and who can help whom.

Keywords: Employee polling, organizational transformation, nudging, Guttman-Poll

I. Introduction

Nudge theory which has come to prominence in the last decade, is a concept in behavioral economics, political theory, and behavioral sciences that proposes positive reinforcement and indirect suggestions as ways to influence the behavior and decision-making of groups or individuals. Ever since Thaler and Sunstein (2008) provide the basis of nudge theory, it has received great praise. Based on research in the field of behavioral sciences, nudge theory dictates that instead of being confronted with choices and choosing poorly, we can be “nudged” into making better choices for ourselves. In the McKinsey Podcast series, it is discussed that if executives use nudging techniques within their business, it can positively influence various factors, such as bringing together teams (www.mckinsey.com). Still, the challenge remains of introducing nudging systems in the workplace (Dickson, 2018). There are many benefits to having a behavioral science team, or “nudge-unit,” in your company, but it comes with challenges such as measuring success and maintaining ethics (Güntner et al., 2019). In a follow-up to his book, Thaler (2018) reiterates that choice architecture aims to help people make choices that will better their lives without restricting their options. However, this is not always the case, as many companies instead use “evil nudging” or “sludge.” In Beshears and Kosowsky’s (2020) recent publication, they analyze dozens of sources on nudging effects. They suggest that future research on nudging needs to focus more on which types of nudges are most effective and the long-run effects of nudging, among others.

The various works in *Nudge Theory in Action: Behavioral Design in Policy and Markets* (Abdukadirov 2016) analyze the policy-making side of nudging, the ethics behind it, and the efficiency of using nudging in public policy. Nudging has been studied in dental practice, with dental teams using nudging techniques to nudge patients towards making healthier choices and improving their oral health. Scarbecz (2012) asserts that dental teams can utilize these techniques without abolishing patient autonomy. Nudge policies have been most commonly used in the U.S. and U.K., such as to fight obesity. Oliver and Ubel (2014) discuss these policy interventions and state that nudge policies cannot solve obesity, but their marginal effects should not be discounted. Tyers (2018) analyzed the use of nudges to promote voluntary carbon offsetting in air travel, finding the nudges ineffective and suggesting there are limits to effective nudging, such as when the behavior is considered uncommon or harmful associations (in this case, extra fees). Sharma and Kilgallon’s (2015) paper suggests that nudge theory can also be extended to deterring situational crimes like shoplifting. In a systemic review done by Bucher et al. (2016), it was found that food product orders can influence consumer food choices. However, research still needs to be done that quantifies these effects in combination with food intake in the long term. Decisions, where a default option is given have been considered unethical since people are unaware of

being nudged. Loewenstein et al.'s (2015) study, in which people were informed about default options and given a chance to revise their decisions, found that the default options' effectiveness does not necessarily depend on deceitfulness.

An article by Behavia (n.d.) purports that nudging can enhance organizational performance. In an article for Forbes, Tams (2018) suggests that in comparison to public policy, nudging within companies has not been covered, perhaps due to competitive reasons, but that there is little reason to believe that it would not be just as beneficial. While nudging has been focused on most heavily by policymakers, businesses can implement these strategies to improve intra-organizational processes (Sterio, 2019). Digital nudging can be a valuable part of an organization's change management program, and the data can be used to measure success (Dhar et al., 2017). Ebert and Freibichler (2017) assert that nudging can also be used to promote knowledge worker productivity in a concept they call "nudge management." This paper aims to translate the advantages of nudging from the 'public' arena (consumers, government) to a business environment.

Even though Nudging Theory has been successfully used in many applications, its use in organizational transformations looks pretty scarce. This investigation aims to fill the gap by carrying out questionnaires and fine-tuning an Artificial Intelligence (A.I.) platform to deliver personal dashboards to managers and employees. We found that nudging causes 40% more clicks and 20% better clicks as an indicative figure.

II. Methodology

In this study, we divided the working methodology into three parts, namely procedure and participants, measures, and data analysis.

Procedure and participants

When it comes to transforming organizations, how managers and employees change their behaviors is the litmus test for the transformation's success. Implementing new technology is excellent, but it makes no sense if it is hardly used. It's good to have a process redesign as long as employees can do their work better. Therefore, it's paramount to measure verifiable facts and behavior as a testimony of the transformation. Often, the required data can't be found in the corporate datawarehouse; you *have* to ask people. In our two examples above: "How do you use the technology?" and "Can you do your job better due to this new process?" Of course, we need to break down these 'container' questions into a questionnaire. A questionnaire with Likert scales (agreeing with a statement) is usually not an excellent way to capture *verifiable* facts and *verifiable* behavior to nudge specific improved behavior. E.g., it makes no sense to prompt respondents to be more in agreement with a statement like: "I use the new technology very well." Therefore, we first designed an alternative scale based on the Guttman scale (Stauffer et al., 1950), specifically designed for employee polling (van de Poll, 2021). We used the world's first online SaaS platform for automated consultancy, to test our system in one organization (<https://www.praioritize.com>). Two questionnaires were sent to the same audience. There were nine months in between the first and second questionnaires. The strategic importance and the urgency to answer were comparable for both questionnaires. The organization had approximately the same board of directors, its sector leaders, and the team managers. The structure of the questionnaires was identical, although some topics differed. We obtained verifiable answers on the first questionnaire from 93 teams and 783 employees and a second comparable questionnaire to the same group, resulting in 81 teams and 683 employees. After answering a questionnaire, each employee immediately got an online personal dashboard, and each manager got an online group dashboard for their team. These dashboards showed why to improve, what items to improve, how to improve (step-by-step improvement suggestions), and which other colleagues could help with that improvement ("Click on a colleague").

A PowerPoint presentation or a PDF about the transformation, or a compelling poster hanging in the company restaurant, never tell how they are doing or whether they have just been read. Yet, an online dashboard captures the respondents' click behavior in real-time. That click behavior drives a rule engine that sends nudges. We sent managers and employees just their dashboards (round A). In the second round, we also sent nudges on using the dashboards (round B). The nudges were designed to guide managers and employees along a well-defined path. First, check the actual situation (why to improve). Then, look at the list of improvement items (what to improve, tailor-made per group and individual). Next, discover the improvement suggestions (how to improve, e.g., links to best practices or YouTube movies). And finally, check which colleagues can help with each improvement item (who can help). Figure 1 shows two screenshots (how to improve and who can help) of an employee's dashboard. The A/B test compared the click behavior on these dashboards to measure the nudging effect. In round B, we sent five nudges within four weeks.

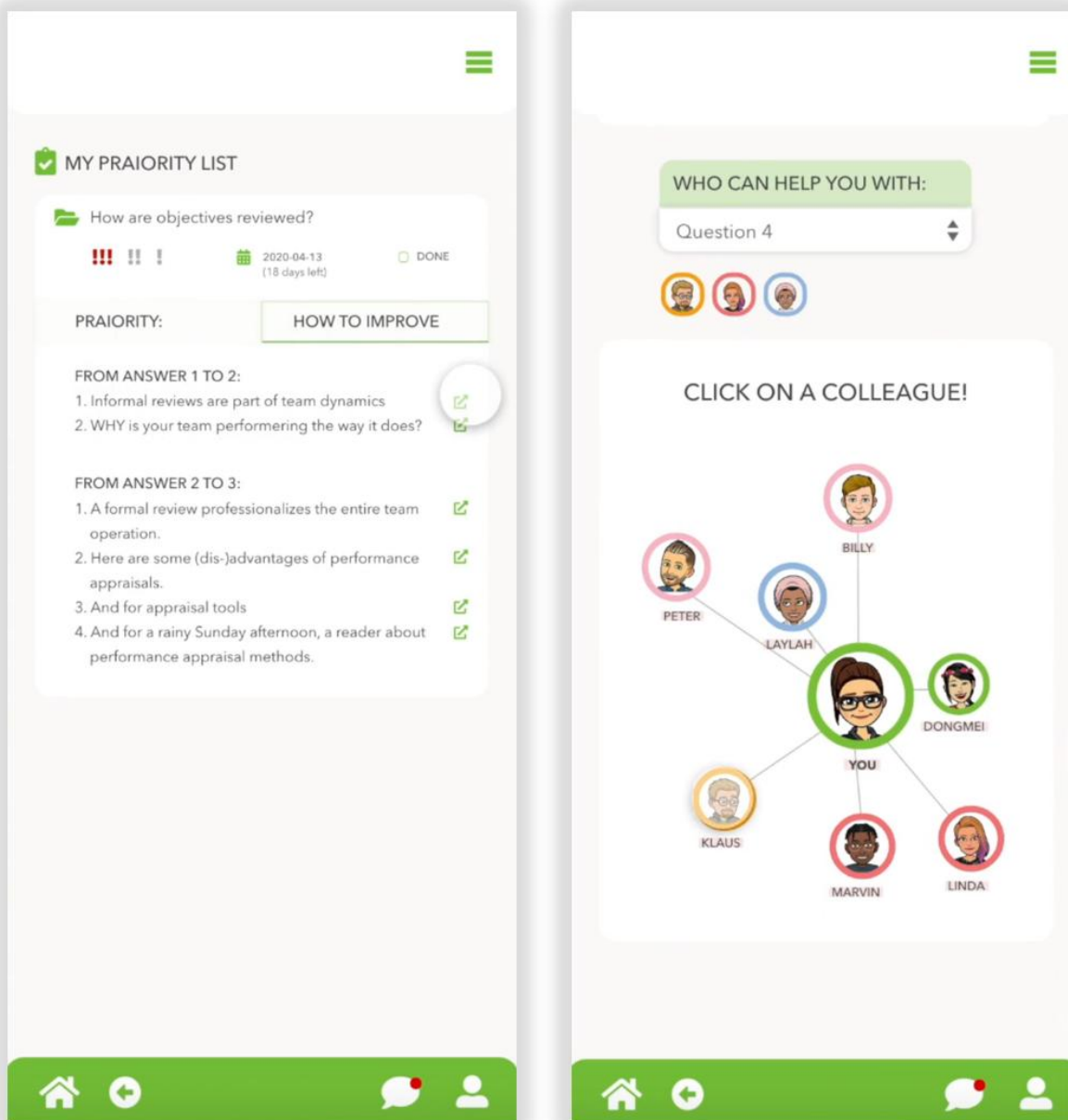


Figure 1. A dashboard example: (a) how to improve (b) who can help

III. Measures

Our nudging needs to change behavior in a setting of organizational transformation. We needed to guide managers and employees from analysis (why) to priorities (what, how, and who). We needed a survey scale that could entertain two scores: the actual situation, as indicated by the respondent, and a target score, as management had indicated. We substituted the traditional Likert survey format for a survey using a Guttman scale (Diamond, McDonald, and Shah, 1986). Every following answer indicates a better situation (closer to the management target, or even the target itself) than a previous answer (referred to as breaking points by Uhlaner, 2002). For example:

Q. How do you celebrate successes?

1. *We don't*
2. *When there is an apparent reason to do so, with whoever is involved*
3. *We make it a habit to celebrate successes with the entire team*

This question format can be considered as verifiable (Ahrens & Chapman, 2006 and Plewis & Mason, 2007) as there aren't any adjectives or adverbs that cannot be verified (e.g., "good"). This verifiability reduces interpretation bias. And there are "proof-words" like, e.g., 'formally,' 'measurable,' 'documented,' 'periodically,' and 'described' to reduce self-reporting bias by the respondent (discussed by Donaldson and Grans-Vallone, 2002). Additionally, using these "proof-words" prevents respondents from adding their cognitive or emotional meaning (Frese & Zapf, 1988). The delta between the actual situation and management target could mean that a respondent had to move from Answer 1 to, say, Answer 3. The survey format's verifiable nature allowed improvement content to improve from one answer to the next (how to improve). And an algorithm paired this respondent to a colleague whose actual situation was Answer 3 (who can help).

IV. Data analysis

We divided the various dashboards screens in the group and personal dashboards into three groups, Analysis (why to improve), Improvement (what to improve), and Get It Done (how to improve and who can help), yielding a "Change %" of 30%, 30%, and 40% respectively when clicking these pages a few times. That percentage was halved when only such a page was clicked only once or twice. And such a percentage would be zero if the page wasn't clicked at all. We tracked the clicks for each individual and averaged the "Change %" for all team members. We also kept track of how many respondents there were in a team. These two axes gave us the view, as shown in Figure 2.

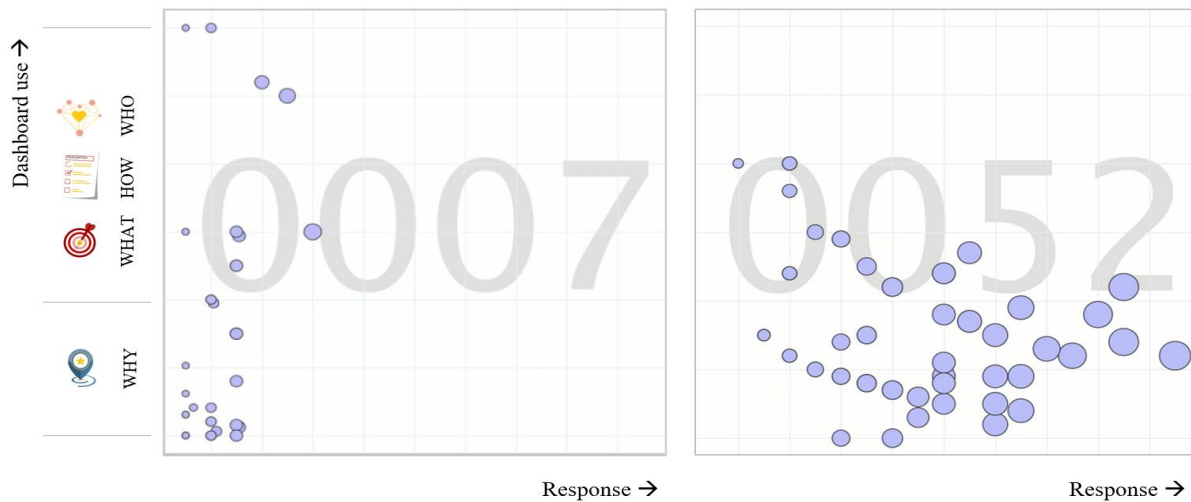


Figure 2. Teams' click behavior in Round A: a) after day 7, b) after day 52.

The two images have "Response" on the X-axis: how many respondents indicated they belonged to a team. And on the Y-axis, the "Change %." The counter (middle of the graph) shows for round A the teams on day seven after sending the dashboards and after day fifty-two. On day seven, a few team members dive deep into their dashboards (scoring a high "Change %"). On day fifty-two, more team members have joined the discussion (teams move right on the X-axis, and the spheres increase in size), but the average "Change %" drops back to mainly reiterating the "why" of the change. In round B, we have a similar moving picture.

Figure 3 (next page) shows the difference with the situation on day fifty-two in round A. We see more teams and more respondents clicking, on average a higher "Change %" per team, and some smaller teams that joined the transformation a bit later. The situation at day fifty-two was the result of a trajectory each team went through. Figure 4 (next page also) shows two examples of such a trajectory.

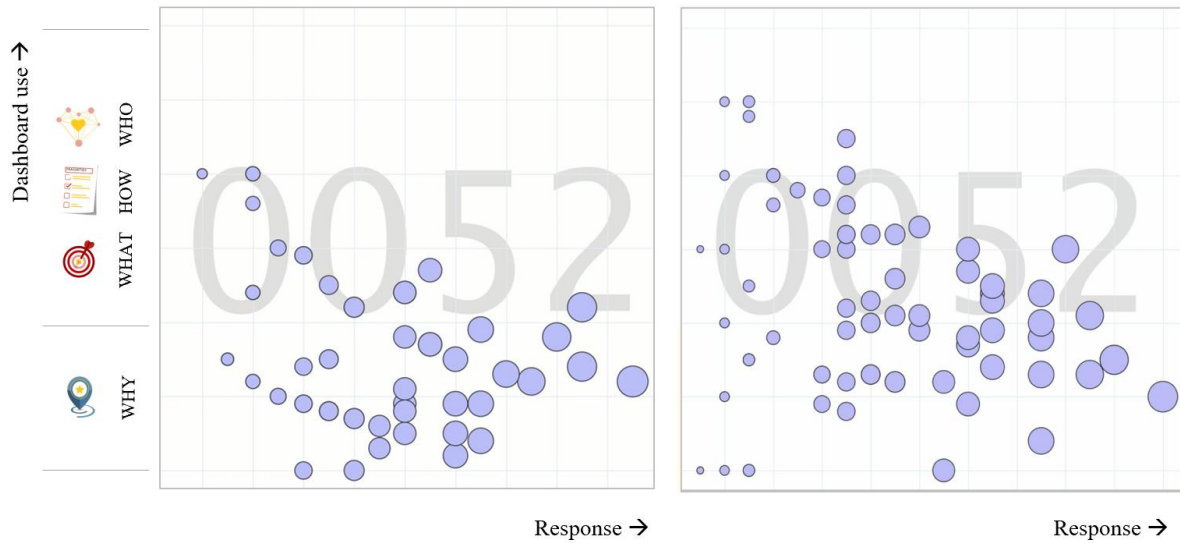


Figure 3. Comparing teams' click behavior: a) Round A b) Round B.

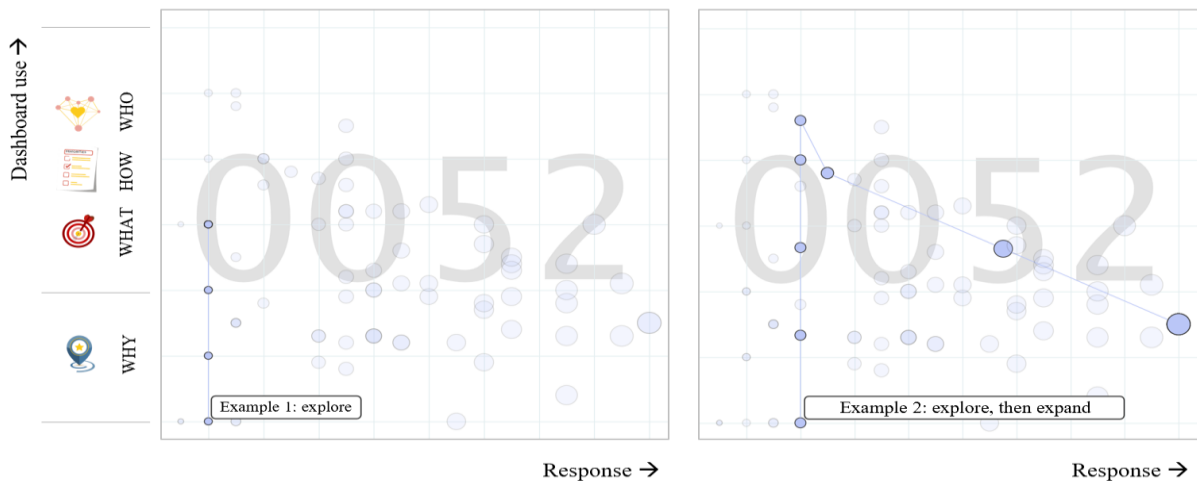


Figure 4. Click patterns over time - 2 examples.

Table 1 (next page) summarizes some key statistics comparing round A and round B. We considered as key statistics the number of teams in the sample, the number of teams clicking on their dashboards, the “Change %,” and the extent to which teams came in the ‘action mode’ (looking at the what/how/who screens).

We focused our comparison on five percentages in the lower part of Table 1 (“Difference between round A and round B”). Comparing round A and B, we see that 35% more teams started to click their dashboards and that, on average, the number of clicks per team increased by 42%. These improvements have to do with *more* clicks. Concerning *better* clicks, we see that the “Change %” improved by 18%. That means that the average respondents dove deeper into the dashboard pages that would lead to actual change. Of the teams that opened their dashboards, 21% more teams improved from discussing the ‘why’ (reiterating the problem) into the action mode of what/how/who. Of all the teams, 63% more teams moved to this action mode. As a rule of thumb, we can conclude from this A/B test: 40% more clicks, 20% better clicks.

Table 1
Comparing click behavior: without/with nudging

	Nbr. of teams	As % of total	Per team		Avg.	StDev.
			Min	Max		
<i>Round A: WITHOUT nudging</i>						
Number of teams	93					
Number of employees	783		1	30	8.3	6.1
Teams clicking	64	69%				
Clicks	7,742		1	374	121.0	78.1
Change %			0%	87%	18.9%	16%
Teams in What/How/Who	31	33%				
<i>Round B: WITH nudging</i>						
Number of teams	81					
Number of employees	683		1	70	8.8	9.4
Teams clicking	75	93%				
Clicks	13,874		1	480	171.3	115.9
Change %			1%	67%	22.2%	14%
Teams in What/How/Who	44	54%				
<i>Difference between round A and round B</i>						
MORE clicks						
% teams clicking	+35%					
Clicks per clicking team					+42%	
BETTER clicks						
Change %					+18%**	
% teams in What/How/Who*		+21%				
% teams in What/How/Who		+63%				

Min.: lowest number. Max: highest number. Avg: average number. StDev: standard deviation.
As % of total: the number of teams as percentage of the total number of teams.
** The number of teams as percentage of all clicking teams (rather than all teams in the sample)*
*** The relative increase from 18.9% (round A) to 22.2% (round B)*

V. Discussion

The advantages of nudging were known, but there was little to nudge to an employee in a setting of organizational transformation. Yet, we used a different survey scale driving artificial intelligence to provide every manager and employee with a tailor-made dashboard and opened an avenue for nudging. With a simple scoring mechanism, we could track the click behavior of teams and individuals in real-time. Based on that score, we populated a rule engine (which construction is out of this paper's scope) that drove the nudge emails' composition. The target setting algorithm which drives the design of the what/how/who screens was also out of scope for this paper. We chose specific percentages for clicking individual pages. Changing these percentages did not materially change the outcomes in Table 1. We did not assign more weight to the clicks of a manager than of an employee. We chose a certain threshold for the number of clicks to allocate a "Change %." Of course, this threshold could vary from a few clicks to tens of clicks on a single page. We did not study how changing the frequency and tone-of-voice of the nudge emails would influence the nudging. To summarize, the scoring and weighing of clicks merit a study on its own. As shown in Figure 4, there is also a lot to learn from the 'click trajectory' of a team. The analysis of these trajectories was also out of scope for this paper. Yet, it is another exciting avenue for research.

VI. Limitations

At the same time, we make several cautionary remarks about our approach. As the title indicates, this was a test to see whether our approach could work. There were undoubtedly too few teams, respondents, and questionnaires to allow for firm conclusions on nudging effectiveness. One could say that our rule-of-thumb of “40% more clicks, 20% better clicks” is ‘somewhat indicative’ at best. The change in click behavior could also be attributable to various other factors than nudging, of which we were unaware.

Next, we implicitly assumed that clicking on a dashboard with helpful transformation tips is a proxy for changing behavior. It could equally well be that 35% more teams looked in total disgust at their dashboards. We also could not formally do a repeat assessment to assess the actual change and to correlate that change with click behavior.

VII. Conclusions

Nudge policies have been most widely employed in U.S. and U.K in various disciplines in economics, political theory, and behavioral sciences. However, nudging has not found its way into changing employee behavior during an organizational transformation so far. In this study, we aimed to introduce a nudging system to translate the advantages of nudging from the ‘public’ arena (consumers, government) to a business environment. Towards this aim, we have developed an Artificial Intelligence (A.I.) platform to deliver personal dashboards to managers and employees. The outcomes seem very promising despite the small scale of our test with 40% more clicks and 20% better clicks. With a ‘delivery vehicle’ to nudge managers and employees in place, there is an exciting new branch of nudging laid bare for future studies.

VIII. Acknowledgement

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