

# Persuasion in Corporate Idea Contests: The Moderating Role of Content Scarcity on Decision-Making

Tobias Kruff , Christoph Tilsner, Andreas Schindler , and Alexander Kock 

*Organizations increasingly use corporate online ideation platforms to foster individual innovativeness. Recent research, however, has shown the downside of such contests—the selection of ideas is not entirely rational. Analyzing the impact of content scarcity, which occurs when ideators provide very little issue-relevant information when submitting ideas, contributes to this new literature stream. The main argument is that evaluators increasingly rely on heuristics based on issue-irrelevant information when content scarcity obstructs reflective decision-making. The default-interventionist model of decision-making in combination with the Yale attitude change approach allows us to examine the mechanisms evaluators apply when content scarcity occurs. The hypotheses are tested on an extensive data set of 3025 ideas. The results show that content scarcity affects the evaluators' decision-making process by preventing them from intervening their first intuitive decision. The scarcer the content of the submitted idea, the stronger the persuasiveness of issue-irrelevant aspects that affect idea selection: aspects of the ideator, message, and community.*

## Practitioner Points

- Evaluators not always decide reflectively and can be affected by intuitive factors of ideators, idea description, and community.
- Idea descriptions should not be too short, otherwise evaluators tend to supplement the scarce content with even more intuitive information from ideator, message, and community.
- Instead of providing too much text-based content, ideators should provide visualizations of the content, which triggers content-based heuristic processes.
- Using three combinable action strategies—concerning the platform, idea content, and evaluators—managers might individually promote reflective selection processes and also improve idea quality.

## Introduction

Organizations increasingly endeavor to leverage individual creativity through online ideation platforms in order to harness the ideas of their customers, users (Poetz and Schreier, 2012), and employees (Björk and Magnusson, 2009). Corporate online ideation platforms tap into employees' creativity

and knowledge in a closed setting, generating a large amount of high-quality ideas and thus adding to an organization's innovation portfolio (Beretta, 2019; Kock, Heising, and Gemünden, 2015; Zhu, Kock, Wentker, and Leker, 2019). Since not all ideas can be implemented, the large number of generated ideas require a careful evaluation of idea quality. However, evaluators face harsh criticism regarding their capability to choose the best ideas (Galbraith, Ehrlich, and DeNoble, 2006; Knudsen and Levinthal, 2007; Liedtka, 2015).

Understanding the struggles of evaluators is key to improve idea selection and thus the overall innovation process. This requires accepting that evaluators do not only consider issue-relevant information in their decision-making, but also resort to heuristics based on intuition and issue-irrelevant information, which averts their reflective response (Hovland, Janis, and Kelly, 1953). Relying on intuition can increase evaluation speed but may decrease evaluation quality as it is more sensitive to biases such as loss aversion and status quo biases. It is therefore seen as less objective than reflective decision-making based on rational thinking and issue-relevant information (Eliëns, Eling, Gelper, and Langerak, 2018). Evaluators' objective idea evaluation capability goes hand in hand with cognitive resource availability, such as the time available for the evaluation process, their cognitive capacity, and issue-relevant information (Crisciolo,

\*Address correspondence to: Tobias Kruff, Department of Technology and Innovation Management, Technische Universität Darmstadt, Hochschulstr. 1, 64289 Darmstadt, Germany. E-mail: kruff@tim.tu-darmstadt.de. Tel: +49 6151 16-24350

Dahlander, Grohsjean, and Salter, 2017; Piezunka and Dahlander, 2015). While forming evaluation teams may increase cognitive capacity, evidence shows that teams face the same difficulties as individuals by having to rely on heuristics (Brodbeck, Kerschreiter, Mojzisch, and Schulz-Hardt, 2007; Criscuolo et al., 2017; Piezunka and Dahlander, 2015). Evaluators may therefore be rather persuaded by issue-irrelevant than issue-relevant information.

Most corporate idea contests are hosted on online platforms that enable employees to submit ideas regardless of time and place. This approach also allows employees to ideate with colleagues in ideation groups. However, evaluators and ideators are not necessarily in direct contact. Most issue-relevant information is therefore found in the idea description's text. If ideators do not convey their ideas properly, content scarcity occurs in the form of missing issue-relevant information—for example, information that they regard as obvious and therefore omit.

During the evaluation phase, evaluators have to base their decision on the scarce issue-relevant information available. In this case, they tend to look for additional information, which is, mostly, inherently issue-irrelevant. Such issue-irrelevant information leads evaluators to make a more intuitive and, thus, less objective decision (Evans, 2011).

Finding indicators for idea success is a major goal of idea evaluation research. In order to do so, an understanding about how issue-irrelevant information affects an evaluation team's decision-making process is of high importance since persuasion might lead evaluators to select certain ideas over others. In this context, persuasiveness is the effect issue-irrelevant information may have to, allow intuitive decisions to outweigh reflective ones and determine the final decision based on issue-irrelevant information rather than content (Evans, 2011).

Previous online ideation studies have analyzed various aspects of the decision-making process that are essential for whether a decision is made intuitively or reflectively. They found essential sources of issue-irrelevant information, such as personal distance to authors (Reitzig and Sorenson, 2013), a large pool of idea submissions, referred to as crowding (Piezunka and Dahlander, 2015), and diverse aspects of community reactions (Gatzweiler, Blazevic, and Piller, 2017; Magnusson, Wästlund, and Netz, 2014). Overall, literature shows that issue-irrelevant aspects may persuade evaluators toward intuitive decisions and can be expressed in different ways through ideas. For example, sentiments—emotions transmitted by written communication—can be conveyed in the idea description or corresponding comments. Characteristics of the ideator and the contributing community can also convey issue-irrelevant information (Beretta, 2019; Piezunka and Dahlander, 2015). These findings are in line with the Yale attitude change approach (Hovland et al., 1953), one of the best known factor-based theories in the area of decision-making and persuasion, as it allows an understanding of the factors that play a role in persuading recipients of information.

However, there is still no consensus on which aspects persuade evaluators and how these aspects interact with one another and with issue-relevant information. Specifically, theory-driven analyses of the persuasive effect of sentiments on idea evaluation and selection are scarce. Furthermore, although persuasion has been thoroughly investigated for many

#### BIOGRAPHICAL SKETCHES

**Mr. Tobias Kruff** is a doctoral student at the Technische Universität Darmstadt, Germany. He has received his B.Sc. and M.Sc. in business administration and engineering majoring in mechanical engineering. His research focuses specifically on the exchange process between corporate incubators and their hosting company including corporate entrepreneurship, ideation contests, innovation climate as well as strategic partnerships between organizations and start-ups.

**Mr. Christoph Tilsner** studied business administration and engineering majoring in mechanical engineering at Technische Universität Darmstadt, Germany, where he received his B.Sc. and M.Sc. His research interests focus on the front end of innovation and cultural aspects of innovation management. He worked in idea management and supported corporate online ideation contests.

**Mr. Andreas Schindler** graduated from the Technische Universität Darmstadt in 1995 and has a long international working career in global corporations. He is married and has two kids. He teaches management & entrepreneurship at Darmstadt University of applied sciences and runs a startup community framework for master's students at TU Darmstadt. His current research interests are on cross-industry collaborations, new digital learning models for graduates and AI-driven innovation management.

**Dr. Alexander Kock** is a professor of technology and innovation management at the Technische Universität Darmstadt, Germany. His research interests include organizational issues of innovation management, especially the management of innovation portfolios, highly innovative projects, the front end of innovation, and university–industry collaboration. His work is published in various journals, including *Journal of Product Innovation Management*, *IEEE Transactions on Engineering Management*, *R&D Management*, *International Journal of Human Resource Management*, *International Journal of Project Management*, and *Project Management Journal*.

decades (Eagly and Chaiken, 1993; Kruglanski and Thompson, 1999), this has not been explicitly done in the online idea evaluation context. The first research question therefore addresses this research gap: *What issue-irrelevant information has a persuasive effect on evaluation teams regarding selecting certain ideas on corporate online ideation platforms?*

To address this question, the dimensions of the Yale attitude change approach are linked to the persuasive roles that ideators, the idea message, and the ideation community play in online ideation contests (Hovland et al., 1953). Combining this with the default-interventionist model (Evans, 2011) allows us to undertake a process-oriented analysis of how persuasion takes place in ideas' evaluation.

According to the default-interventionist model, decisions are based on intuitive and reflective responses. If a reflective response cannot be formed due to the lack of cognitive resources, the issue-irrelevant information is more likely to persuade evaluators to choose the intuitive response as the final decision over the reflective one (Evans, 2011). The effects of cognitive resources such as time and cognitive capacity have been analyzed thoroughly in online ideation studies (Boudreau, Guinan, Lakhani, and Riedl, 2016; Chen, Yao, and Kotha, 2009; Criscuolo et al., 2017; Haas, Criscuolo, and George, 2014; Mueller, Melwani, and Goncalo, 2012; Piezunka and Dahlander, 2015). However, more insight regarding the effect of issue-relevant content's availability is a prerequisite to fully understand decision-making in idea evaluation.

While online contests allow organizations to reach out to employees around the globe, the physical distance between ideators, contributors, and evaluators comes at a price. Murphy, Long, Holleran, and Esterly (2003) show that online text presentations are significantly less interesting, comprehensible, and persuasive than traditional ways of communication, such as face-to-face, although they do modify the recipients' knowledge and beliefs effectively. In addition, community members' and evaluators' lack of collocation leads to communication barriers that result in a lack of critical information. When an idea's description—which is one of the few issue-relevant information sources an evaluator encounters in ideation platforms—is scarce on information, there is an especially high likelihood that issue-irrelevant aspects will affect the decision-making. Since evaluators are required to handle this content scarcity

and the available information's ambiguity, they are forced to make assumptions and rely on their inferences from the available information (Schweiger, Sandberg, and Ragan, 1986). Therefore, the investigation whether there is a shift toward the presumed persuasive effect of issue-irrelevant information on evaluation teams of corporate online ideation contests when ideas lack issue-relevant information forms the second research question: *To which extent do evaluation teams of online ideation contests rely on issue-irrelevant information when faced with content scarcity?*

A data set of 3025 ideas from 227 campaigns on a globally operated Corporate Online Ideation Platform provides the foundation for investigation of the research question. The results support the core argument that content scarcity shifts evaluators' decision-making process to intuitive decisions based on issue-irrelevant information. The study contributes to current research in several ways: First, it contributes to a rather new stream in ideation literature about evaluators' biases and ideators' persuasive behavior by introducing content scarcity (Criscuolo et al., 2017; Piezunka and Dahlander, 2015; Reitzig and Sorenson, 2013). It thereby offers an explanation for crowdsourcing literature's contradictory findings on the impact of issue-irrelevant information on idea selection (Di Gangi and Wasko, 2009; Jensen, Hienerth, and Lettl, 2014; Piezunka and Dahlander, 2015; Recker, Malsbender, and Kohlborn, 2016). Specifically, the results show that, in online ideation contests, content scarcity largely moderates the persuasiveness of issue-irrelevant information regarding the ideators, the idea message's sentiments, and the community context. Second, insights into intuitive decision-making processes add to idea evaluation literature in general (Chen et al., 2009; Eliëns et al., 2018) and knowledge exchange research by examining how knowledge exchange works when only a little knowledge reaches the recipient, who has no opportunity to make further inquiries (Ko, Kirsch, and King, 2005; Lyles, van Wijk, and Jansen, 2008; Menon and Blount, 2003). Finally, applying the default-interventionist model's process (Evans, 2011) to a new and contemporary context and contributing to the Yale attitude change approach provides various insights to the psychological research stream on persuasion and decision-making (Crano and Prislin, 2006; Hovland et al., 1953; Petty, Wegener, and Fabrigar, 1997).

## Conceptual Background

### *Corporate Online Ideation Platforms*

Corporate ideation is defined as a company's internal steps to generate and select ideas for future innovations (Björk and Magnusson, 2009; Tian and Wang, 2014). In order to allow ideators to connect and share knowledge, assumptions, and beliefs in a virtual community regardless of time and place, companies increasingly host such platforms online, promising increased opportunities for innovation performance (Kroh, Luetjen, Globocnik, and Schultz, 2018). Corporate online ideation platforms differ from open platforms in that only employees have access to post ideas or comment on other ideas as part of the community (Björk and Magnusson, 2009; Bugshan, 2015).

The analysis of corporate online ideation platforms has steadily increased since Björk and Magnusson's (2009) work, but remains sparse compared to that of open platforms. Most studies' goal is to find indicators for ideas' quality and selection (Björk, di Vincenzo, Magnusson, and Mascia, 2011; Boudreau, 2010; Poetz and Schreier, 2012). The majority of studies therefore tap into quantitative measures based on commercial ideation platforms' direct output on the idea level by operationalizing the number of votes, comments, and idea contributors (Di Gangi and Wasko, 2009; Hoornaert, Ballings, Malthouse, and Van den Poel, 2017; Piezunka and Dahlander, 2015; Schemmann, Herrmann, Chappin, and Heimeriks, 2016), and on the individual level by counting ideators' previous ideas, the number of votes they received, their organizational position, and tenure (Bayus, 2013; Hoornaert et al., 2017; Hossain and Islam, 2015; Piezunka and Dahlander, 2015; Zhu, Li, and Andrews, 2017). Recent studies also include the effects of sentiments in idea description and comments, such as the positioning of commenters on ideas (Beretta, 2019; Coussement, Debaere, and De Ruyck, 2017; Hoornaert et al., 2017; Piezunka and Dahlander, 2015). However, sentiments have so far only been used as control variables; a thorough theory-driven analysis of sentiments' impact on decision-making is still missing in corporate online ideation literature.

### *Decision-Making Theories*

Decision-making can be understood as the process of receiving a message, comparing its core

with beliefs and inherent knowledge, and choosing how to respond. Over time, various theories have emerged on decision-making, tackling the question how two conflicting demands can be met. The first demand is slow and incremental processing of information and the second is intuitive and quick processing (Sloman, 1996). Parallel-competitive theories assume that both demands are met at the same time (Evans, 2011; Sloman, 1996; Smith and DeCoster, 2000). A more recent stream is that of sequential processing. The default-interventionist model of decision-making (Evans, 2011) argues that an intuitive response is formed first and may be intervened by a reflective response later. Evaluators switch to the more complex reflective process if they, unconsciously, lack confidence in their judgment and have sufficient resources in terms of time and high quality, issue-relevant information. Therefore, the confidence in the initial response has a major impact on the motivation to invest in the reflective process (Evans, 2011). This is where the persuasiveness of issue-irrelevant information affects decision-making.

### *Persuasiveness of Issue-Irrelevant Information in Online Ideation*

Persuasion was not systematically investigated until the 1950s (Kruglanski and Thompson, 1999). Hovland et al. (1953) initiated persuasive communication research by developing the Yale attitude change approach. This approach supports the assumption that several factors of persuasion can impact attention, comprehension, and acceptance in order to change the recipient's attitude toward an idea. The authors identified four factor dimensions: sender (in our case, the ideators), message (transmitted by the idea description), context (the online ideation community), and recipient (in this study, the evaluation teams) (Janis and Hovland, 1959). Over the last decades, research on persuasion identified several variables that suit the Yale attitude change approach. However, the predominant focus is on the recipient dimension and how recipient and sender interact with each other (Crano and Prislin, 2006; Eliëns et al., 2018; Mayer, Davis, and Schoorman, 1995; Petty et al., 1997; Stone and Lukaszewski, 2009). For the sender's dimension, Janis and Hovland (1959) state expertise, trustworthiness, likeability, and status to be key aspects for the persuasiveness. Furthermore,



a similarity to the audience and the level of consensus between ideator and evaluators are said to have an impact on an idea’s persuasiveness. These aspects go hand in hand with major challenges of knowledge transfer, which originate from the relationship between the sender and the receiver of information, the source credibility, and the encoding of information transfer (Ko et al., 2005; Lyles et al., 2008; Menon and Blount, 2003). Antons and Piller (2015) link these challenges to their research on the acceptance of ideation and innovation by referring to the not invented here syndrome, which describes the negative attitude of evaluators toward ideas that originate from external sources to them or unknown ideators. Similar attitudes can be experienced from the surrounding ideation community, which affects the context dimension. The message dimension covers factors such as the writing style, one-sided and two-sided argumentation, and explicitness of the message (Janis and Hovland, 1959; Stone and Lukaszewski, 2009).

In sum, the Yale attitude change approach explains the factors of persuasion but does not take the process of persuasion itself into account. This leads to a rather descriptive approach to persuasion research and might be why empirical evidence of the specific factors’ impact is often contradicting (Petty and Cacioppo, 1986). However, in combination with the default-interventionist model it is possible to include the aspects on persuasion in the process of decision-making, which is highly relevant

for idea evaluation. Figure 1 illustrates this model combination of theories in our final process view on decision-making.

In the context of online ideation, an idea is reviewed based on issue-irrelevant information and cognitive resources. The issue-irrelevant information can, for example, consist of the ideator characteristics, sentiments conveyed in the idea description, as well as the community’s attention to an idea in the form of comments or votes. It enables the intuitive response, which is formed rapidly. If the confidence in this intuitive response is not great enough and cognitive resources are available, a reflective response is formed. In this case, evaluators’ confidence in the reflective response depends on those cognitive resources. If the confidence in the reflective response is greater than that in the intuitive response, evaluators will intervene and choose the reflective decision. However, if the reflective decision cannot revoke their intuitive response, issue-irrelevant information suffices as an idea selection indicator (Evans, 2011). Since the evaluators are the hosting company’s employees, they can be assumed to be sufficiently motivated to evaluate ideas objectively and analytically, and eager to create a reflective response to each idea. However, based on the setting of online ideation, content in the idea description can be scarce. If content scarcity occurs, the evaluators’ confidence in the reflective response cannot be high, as an essential aspect of cognitive resources is unavailable. Therefore,

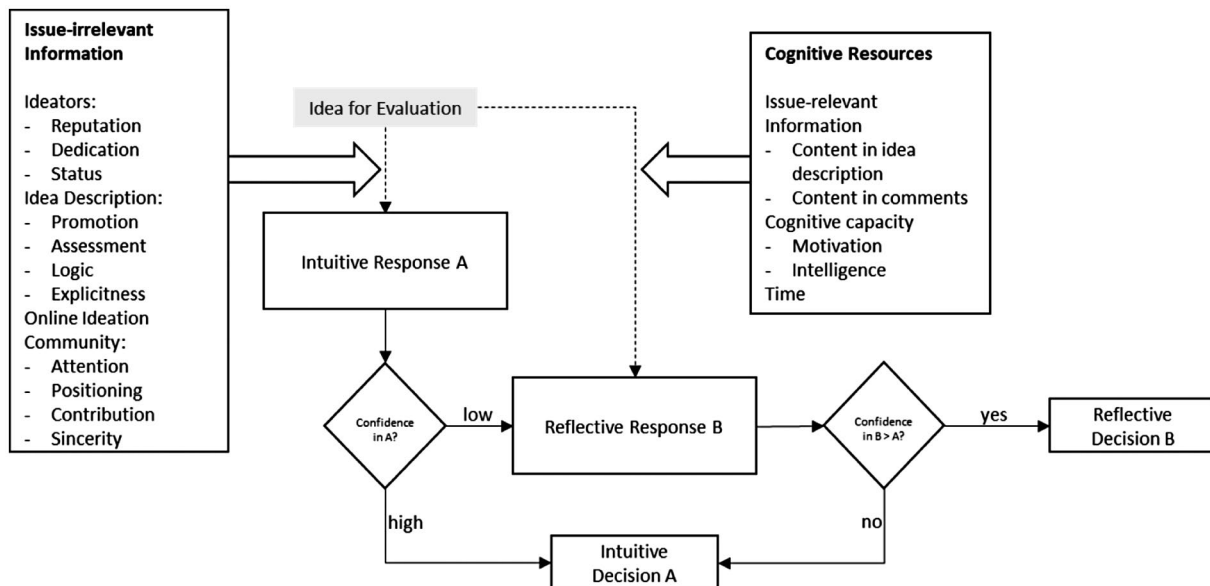


Figure 1. Issue-Irrelevant Information and Content Scarcity in the Process of Decision-Making

even a low confidence in the intuitive response suffices to make evaluators prefer the intuitive decision over the reflective one. In a nutshell, if evaluation teams do not have sufficient issue-relevant information, they seek issue-irrelevant information to close the gap and make a decision, likely by taking an attitude toward a decision. But even if issue-relevant information is available, issue-irrelevant information can bias evaluation teams to make an intuitive decision rather than a reflective one. To understand under which conditions intuitive responses overrule reflective ones, it is important to know which aspects of issue-irrelevant information lead evaluators to intuitive decisions.

### *Literature Review on Biases in Corporate Idea Selection*

Existing literature on corporate idea selection contains empirical studies on idea evaluation biases (see Table 1). Most literature addresses the evaluators' inclination (or lack thereof) to select more novel and intellectually distant ideas (Boudreau et al., 2016; Criscuolo et al., 2017; Mueller et al., 2012; Piezunka and Dahlander, 2015), which partly depends on an evaluator's capability to recognize creative ideas (Chen et al., 2009; Mueller et al., 2012). Evaluators cannot recognize an idea's potential when they do not comprehensively carry out a reflective decision, or when the uncertainty regarding an idea's success is too high. One reason for the former was found to be the evaluator's workload, for example due to crowding, which narrows organizations' attention due to a large number of ideas that need to be evaluated within a certain timeframe (Criscuolo et al., 2017; Haas et al., 2014; Piezunka and Dahlander, 2015). In such cases, evaluators simply lack time to evaluate reflectively. The similarities between the ideator and the evaluator, such as their age, gender, and language, or their organizational, hierarchical, and structural distance, are intuitive aspects that evaluators might then reasonably use to substitute reflective decision-making (Antons, Declerck, Diener, Koch, and Piller, 2017; Beretta, 2019; Criscuolo et al., 2017; Reitzig and Sorenson, 2013; Schweisfurth, Zaggl, and Schöttl, 2017). Probably for that reason, Beretta (2019) also controls for the ideators' anonymity, which can be regarded as a decisive factor in many of the ideator dimension's persuasive aspects (Hovland et al., 1953).

However, even if the ideator is unknown to the evaluator, the community and idea description could still provide sufficiently motivational persuasive material for the evaluator to not carry out a fully reflective decision-making process. The literature only investigates the ideator's efforts to successfully promote an idea to the evaluators and the community's promotional aspects to some extent by analyzing the message's style and the ideators' passion (Beretta, 2019; Chen et al., 2009; Hoornaert et al., 2017; Piezunka and Dahlander, 2015). The results give a first glimpse into persuasive factors but fail to provide a comprehensive statement.

While all these aspects address intuition regarding decision-making and when, due to time or motivational reasons, it is more likely to occur, a few studies also control for the amount of idea content provided (Beretta, 2019; Criscuolo et al., 2017; Piezunka and Dahlander, 2015; Schweisfurth et al., 2017). This amount is important, because the idea description is the only way of obtaining issue-relevant information and of making a reflective decision. However, whether the amount of content affects the persuasiveness of issue-irrelevant information has not yet been considered.

In sum, previous literature on biases of idea selection addresses individual aspects, which potentially correspond to the default-interventionist model and the Yale attitude change approach. However, none of these studies refer to the underlying theories or focus on the persuasiveness of issue-irrelevant information. Therefore, evidence is rather fragmented, which is why the current study strives for a theory-driven and comprehensive investigation of these aspects.

### **Research Model and Hypothesis Development**

The underlying rationale for our framework is that evaluators' decisions are generally subject to the default-interventionist model; they therefore create an intuitive response based on issue-irrelevant information before reflecting this response in issue-relevant information. It is therefore hypothesized that all the persuasive aspects of *ideator*, *message*, and *community*—the three dimensions—increase the probability that an idea will be selected. Further, we hypothesize that content scarcity strengthens the relationships between the persuasive aspects and idea selection. The overall model is displayed in Figure 2.

**Table 1. Empirical Studies on Biases in Corporate Idea Selection**

Study	Context	Central Variable(s)	Bias Investigated	Conditions Considered	Parallels to Yale Attitude Change Approach	Parallels to Default-Interventionist Model
Chen et al. (2009)	Investment decisions	Funding decision, quality, creativity, passion	Affective and cognitive passion	Face-to-face presentation	Issue-irrelevant information of the message's dimension: promotion	
Mueller et al. (2012)	General, experimental study	Creativity rating, creativity bias	Inclination to select less creative ideas; ability to recognize creative ideas	Experience of uncertainty		Cognitive capacity of evaluators
Reitzig and Sorenson (2013)	Corporate idea contests	Idea approval	Preference for the ideas of ideators sharing the same location	Phenotypic similarities between the evaluator and the ideator	Issue-irrelevant information of the sender's dimension: likeability	
Haas et al. (2014)	Online Knowledge Sharing Platforms	Decision to allocate attention		Crowding; problem length, breadth, novelty		Cognitive capacity and time of evaluators
Piezunka and Dahlander (2015)	Corporate crowd-sourcing campaigns	Organization's attention	Preference for familiar ideas	Crowding; amount of idea content provided; linguistic style of the idea description and comments	Issue-irrelevant information of the message's and context's dimensions: style	Cognitive capacity and time of evaluators
Boudreau et al. (2016)	Frontier scientific research projects of universities	Evaluation score	Preference for ideas with a higher intellectual distance		Issue-irrelevant information of the sender's dimension: likeability	
Antons et al. (2017)	Knowledge exchange between organizations, departments and groups	Not-Invented-Here syndrome	Not-Invented-Here syndrome	Theoretical insights into attitude structure	Issue-irrelevant information of the sender's dimension: likeability	
Criscuolo et al. (2017)	Corporate R&D projects	Share of requested funding awarded	Preference for more novel ideas	Evaluator's workload; expertise diversity & shared location; amount of idea content provided		Cognitive capacity and time of evaluators, and content provided
Schweisfurth et al. (2017)	Corporate idea contests	Idea selection and amount of idea content provided	Preference for ideas of ideators at the same hierarchical level	Phenotypic similarities between the evaluator and the ideator; linguistic style of the idea description; amount of idea content provided	Issue-irrelevant information on the sender's dimension: likeability and status	Content provided
Beretta (2019)	Corporate idea contests	Selection for funding	Preference for more extensively formulated ideas	High status contributors; anonymity; linguistic style of the idea description and comments	Issue-irrelevant information of the sender's, message's and context's dimensions: status, style	

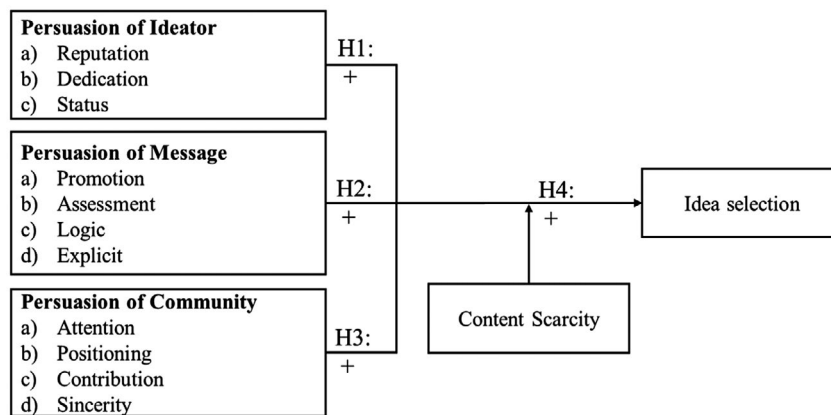


Figure 2. Overall Research Model

### The Persuasive Role of the Ideator

The ideator’s persuasion draw on the persuader dimension of the Yale attitude change approach (Janis and Hovland, 1959) and provides the factors *dedication, reputation, and status*. Dedication describes the amount of effort an ideator invests in an ideation platform. Reputation represents how the other platform members, especially the evaluators, view ideators, which refers to the ideators’ *social* position within the network. Status is defined as how others see the ideators’ *hierarchical* position in the organization. These factors’ issue-irrelevant information allows inferences about the ideator’s characteristics, which, in the Interventionist Model, play an important role in terms of the strength of the evaluator’s default intuitive response (Reitzig and Sorenson, 2013; Thompson, Prowse Turner, and Pennycook, 2011). This issue-irrelevant information’s accessibility strongly affects the intuitive response’s feeling of rightness, thus strengthening it in comparison with the reflective response (Evans, 2011; Thompson, 2009).

Even though ideation platforms’ evaluators are not in direct contact with the ideators, the latter’s previous ideas give evaluators insight into their dedication. This dedication enables ideators to build their ideation proficiency and expertise (Dreyfus and Dreyfus, 1980; Long, 1997). Ideators’ reputation also supports trust in their expertise (Jain and Posavac, 2001), which has been proven to have a significant effect on advertisements’ evaluation (Goldberg and Hartwick, 1990). Unlike previous studies, a focus is set on the ideator’s ideation expertise instead of issue-relevant expertise affecting the reflective response (Zhu et al., 2017). The Yale model also mentions that the

persuader’s status is relevant for the persuasiveness toward evaluators (Janis and Hovland, 1959). This status can be the ideators’ formal rank in the organization or on the corporate online ideation platform, and therefore has a direct impact on the impression the ideator makes on the evaluator (Beretta, 2019). In conclusion, the first hypothesis posits:

*H1: Persuasive information about ideators that evaluation teams can easily access, such as their a) reputation, b) dedication, and c) status, is positively related to the likelihood of an idea being selected.*

### The Persuasive Role of the Message

The message forms the second dimension in the Yale attitude change approach (Janis and Hovland, 1959). Regarding issue-irrelevant information, the message dimension describes the writing style used in the description of an idea. The constructs are *promotion, assessment, logic, and explicitness*. Promotion is the writing style of ideators emphasizing their passion and conviction regarding the idea (Chen et al., 2009). Relying on the persuading message’s substantive and affective information, the idea attributes’ persuasiveness, and the feelings experienced during the evaluators’ exposure to the message affect their decisions. The promotion of ideators who use positive language and reflect their exuberant conviction of their ideas can induce these feelings (Macmillan and Narasimha, 1987; Parhankangas and Ehrlich, 2014; Pham and Avnet, 2004). Consequently, promoting ideas in a positive tone increases attention to these ideas (Reitzig and Sorenson, 2013).



A two-sided assessment of an idea characterizes a message that communicates an idea's positive and negative attributes in the idea description. This gives evaluators a quick understanding of the arguments and the information. Such analytical argumentation allows evaluators to accept an idea's plausibility, which increases the perception of credibility (Cox and Cox, 2001; Pechmann, 1992). This goes hand in hand with a logical approach to problems and their solutions. Logical messages base their arguments on systematically derived evidence from other sources and enable the transfer of plausibility and credibility. Therefore, logical idea descriptions persuade evaluators by communicating plausible ideas (El-Shinnawy and Vinze, 1998).

While this shows that cutting corners and ignoring arguments inhibit assessing an idea and decrease its credibility, it is imperative for evaluators not to waste their time on idea descriptions that do not cut to the chase and explicitly state their core message. Therefore, explicitness conveys the degree to which an idea description states its core message directly. In terms of the crowding effect, evaluating committees with little time tend to specifically select ideas that are consistent with their organizational and social norms, dismissing those that are highly distinct (Piezunka and Dahlander, 2015). This shows the need for explicit idea descriptions and for giving evaluators time to take new and unconventional ideas into account. A combination of these four constructs produces an idea description that is appealing to evaluators. It is presumed that this appealing writing style and an idea description's rhetorical attributes make its message easier to understand and therefore lead the evaluation team to assess the idea more positively regardless of its content (Antons, Joshi, and Salge, 2018; Ko et al., 2005). The second hypothesis therefore posits:

*H2: An idea description's style, which is characterized by a) promotion, b) assessment, c) logic, and d) explicitness, is positively related to the likelihood of it being selected.*

### *The Persuasive Role of the Community*

The Yale model describes the situational surroundings' strong impact on the persuasion process. While the idea campaign's set-up fundamentally controls these surroundings, the community's contributions to corporate online ideation platforms offer

an additional aspect for evaluation (Beretta, 2019; Janis and Hovland, 1959; Zhu et al., 2019). Similar to the abovementioned ideator, the corporate online ideation platform's community does not interact directly with the evaluator, but via its actions on the platform, and especially with the evaluated idea. In conclusion, the community's effects on the persuasion are similar to those as described in the interventionist model (Evans, 2011). However, the effect is not equal, as the community only contributes to already formulated ideas and thus plays the role of a supporter (Zhu et al., 2019). From the situational surroundings dimension, which the Yale attitude change approach defines, *attention, positioning, contribution, and sincerity* emerge as factors of the community's effects on the corporate online ideation platform. Attention addresses whether the community notices an idea, while the way the community reacts to it defines the positioning. Contribution and sincerity represent the degrees to which the community adds value to the idea and whether they can be taken seriously.

The community's support requires attention. An attentive community can signal whether an idea is popular. The community's attention therefore allows it to promote an idea and to also increase the evaluators' interest (Zhu et al., 2017). This is also possible by examining the community's positioning regarding the idea (Piezunka and Dahlander, 2015). While positive wording in idea descriptions showcases the ideators' conviction, the same is true of a community's positive comments on ideas. A crowd can therefore clearly state whether it believes in a submitted idea or not, thus helping evaluation committees decide on whether an idea is welcome in the organization, or whether this idea will hamper a project based on it. Positive comments on an idea have been shown to be an indicator of idea implementation (Hoornaert et al., 2017). Furthermore, comments can contribute to ideas by providing new insights into problems and how the relevant idea can overcome these (Zhu et al., 2019). By relying on the wisdom of crowds, the community's contribution enables tapping into information that would otherwise not have been available, since the ideator would neither have known of its existence, nor where to find it (Schemmann et al., 2016; Surowiecki, 2004). Contributions are therefore an essential element of crowdsourcing on ideation platforms in order to influence evaluators' decisions (Zhu et al., 2019).

In order for the community to influence evaluators, these need to trust the community's contributions and be able to rely on the community's position and arguments. Dervitsiotis (2003) mentions sincerity as one of the building blocks of trust and defines sincerity as "the degree to which people mean what they say" (p. 513). Believing in a corporate online ideation platform community's sincerity is generally easier for evaluators than doing so on open ideation platforms where anonymous contributors can provide comments and leave the platform without consequences. However, even if they have the greatest respect for their colleagues, evaluators should very cautiously take comments into account. Sincere contributions strengthen the relationship between the community and the evaluators, allowing the community to affect the evaluators' choices. This leads to the third hypothesis.

*H3: A corporate online ideation platform community's supportive stimuli of an idea—a) attention, b) positioning, c) contribution, and d) sincerity—are positively related to the likelihood of it being selected.*

### *The Moderating Role of Content Scarcity*

Content scarcity is the extent to which issue-relevant information is missing in an idea's formulation. A submitted idea might be brilliant, but since it is only conveyed via text, it is not fully comprehensible for evaluators when content scarcity occurs. Information is imperative for negotiation success and, thus, persuasive; we therefore suggest that it is more likely that heuristic decision-making based on issue-irrelevant information occurs when there is less issue-relevant information (i.e., higher content scarcity), since evaluators have to subsequently draw on other information than content (Young, Bauman, Chen, and Bastardi, 2012).

This shift in focus potentially leads evaluators to make intuitive decisions, because recognizing an idea's significance and making a reflective decision are more difficult (Beretta, 2019; Di Gangi, Wasko, and Hooker, 2010). Contrary to Piezunka and Dahlander's (2015) findings that evaluators may reject ideas that lack content, they should, instead, cope with the difficulty of making a reflective decision by adjusting their decision-making process and

focusing on the meta-information of ideas and their gut feeling. For example, if an idea description does not convey sufficient issue-relevant information to fully justify a reflective decision, evaluators need to gain better insight by analyzing the comments or by trusting that the ideator's expertise and dedication justify the idea's implementation. The interventionist model supports this approach by mentioning that motivation and cognitive resources are required for a reliable reflective response that can supersede evaluators' initial intuitive decision (Evans, 2011). Since issue-relevant information is one of these cognitive resources, content scarcity is likely to inhibit the forming of a reflective response that may outweigh the initial intuitive decision formed by means of sentiments, attitude, and other heuristics based on issue-irrelevant information.

Additionally, in ideation literature, various studies find that workload influences evaluators' ability to make reflective decisions on which ideas they should select. When content scarcity occurs, the effort required to obtain issue-relevant information increases, resulting in a higher workload and reducing a preference for novel ideas (Criscuolo et al., 2017). The effect is similar to that of crowding (Piezunka and Dahlander, 2015). This leads to the conclusion that when content scarcity occurs, the intervention of a reflective response is less likely, and the reflective responses' evaluation therefore shifts in favor of an intuitive decision. Therefore, the fourth hypothesis in accordance with the interventionist model posits:

*H4: Content scarcity strengthens issue-irrelevant information's effect on the likelihood of an idea being selected (positive moderation).*

## **Metho dology**

### *Sample*

The case company, an international multi-industry corporation with more than 25,000 employees and sales above \$10 billion, uses a dedicated Ideation & Innovation platform to support campaign-based idea generation, idea evaluation, and innovation portfolio management. The platform was enhanced to a corporate-wide online ideation platform in 66 countries in 2015, which enables all internal employees to participate in the dedicated innovation campaigns that

various departments inside the company run. Several marketing and incentive campaigns ensure that employees of all areas know of the platform and make use of it.

The company manages the ideation process through idea campaigns advertised on the corporate intranet prior to their official start. These campaigns are implemented to elicit radical ideas on specific search fields. The submitted ideas are mainly product and process innovations, but also include new business model innovations and service innovation.

A sponsor (senior or executive level) actively represents and supports each campaign. Idea campaigns serve as the ideation front end and result in ideas being selected and substantiated in the concept and the project phases. Access to a campaign can be limited to specific departments or user groups. In order to keep the ideators focused, large campaigns involving users from across the company's business units are organized so that they do not overlap. When visiting the platform, users see all the campaigns in which they are invited to participate. The invitees can submit their respective idea to a campaign and help enrich other ideas submitted to this campaign by discussing them openly. A team of ideation platform managers is responsible for the currently open campaigns. Each of them represents one business unit to ensure that the ideation campaigns of all the business units are spread evenly over the year. An ideation campaign's duration ranges from three to eight weeks. Typical campaigns collect ideas to improve known issues and generate new products, services, or business models.

Campaigns' evaluation process follows a general structure. The evaluation is made once the idea submission phase has terminated and the extended community voting and discussion phase is over. The evaluators filter the ideas that meet predefined criteria by means of a funnel process to decide which ideas have the potential to produce a positive outcome.

The data set consists of 3025 ideas, 6581 comments, and 6619 votes submitted by a total of 2828 unique contributors. The ideas were generated over four years in 227 idea campaigns. The campaigns have different purposes and therefore vary regarding the rate at which ideas are selected. In total, 222 ideas have been selected, which is a rate of 7%. Eight semi-structured interviews with different

campaigns' evaluators expand the knowledge of the evaluation process. The following criteria to choose interviewees allowed us to obtain a diverse picture of the evaluation process: the evaluators' position, whether the evaluators were also executive sponsors of the campaign, the campaign's domain focus and size, whether ideas were treated as confidential within the business unit, and the year in which the campaign started.

### Measures

The dependent variable of our analysis is the dichotomous "selection for implementation," which is based on the decision committees' evaluation. The variable's operationalization follows other studies using a similar proxy to examine selection decisions in idea contests (Boudreau, 2010; Hoornaert et al., 2017; Schemmann et al., 2016).

Content scarcity is measured as the inverse count of the idea description's words as, in a text-based idea contest, this is the only rational source that can provide information on the idea's potential and weaknesses (Beretta, 2019).

The measurement of most of the predictor variables using Linguistic Inquiry and Word Count (LIWC) text analysis software (Pennebaker, Chung, Frazee, Lavergne, and Beaver, 2014) corresponds to innovation literature (Antons et al., 2018; Beretta, 2019; Coussement et al., 2017; Piezunka and Dahlander, 2015). This software analyzes a text's linguistic content by means of dictionaries and algorithms based on the assumption that individuals' use of words reflects their cognitive and emotional states and processes (Pennebaker, Booth, and Francis, 2007). Algorithm-based variables were measured in percentage, while purely dictionary-based variables counted the number of items in the analyzed text.

Following the Yale attitude change approach's dimensions (Janis and Hovland, 1959; Mayer et al., 1995; Stone and Lukaszewski, 2009), the predictor variables derive from the three dimensions *ideator*, *message*, and *community's support*. The *ideator* dimension encompasses reputation, dedication, and status. Ideators' reputation was measured as the submitting ideators' number of previously selected ideas, as this indicates their expertise and trustworthiness. The measurement of dedication corresponds to how Schemmann et al. (2016) operationalized

motivation, namely by means of previously submitted ideas, including rejected ones. This considers the ideators' increased visibility through their strong commitment and involvement with the idea platform. Both reputation and dedication were visible to the community and the evaluators. Further, the algorithm-based LIWC measure "clout," which builds on how confidently people display their status and leadership through the expressions that they use, measures status (Kacewicz, Pennebaker, Davis, Jeon, and Graesser, 2014). This indirect measure is required, because the evaluators cannot see the hierarchical structure on the online platform and therefore need to infer the ideators' status on the basis of their writing style.

The *message* dimension is based on the idea description and contains the variables: amount of promotion, assessment, logic of arguments, and explicitness of the message text. The LIWC variable "emotional tone" (Cohn, Mehl, and Pennebaker, 2004), which calculates the difference between positive and negative words as a relative measure between 1 and 100, provides a measure for the idea's promotion. Numbers below 50 suggest a more negative emotional tone while numbers above suggest a more positive tone. Example items are "fabulous, intelligent, awesome, beautiful, bright, creative, and helpful" for positive emotions and "ignore, disturb, embarrass, empty, unlucky, fail, loss, critical, and difficult" for negative emotions. Furthermore, two aspects of the message text's argumentative structure required measurement. First, assessment, which is the extent to which the text shows the evaluation of arguments for and against an idea, was measured with the LIWC word count variable "compare," which includes items like "more, difference, fewer, stronger, than, unique, and worse." Second, logic by means of the algorithm-based LIWC variable "analytic," which captures the degree to which people use formal and logical words, as well as hierarchical thinking patterns. Conversely, texts low in analytical writing style tend to be written more narratively, focusing on the here-and-now, and personal experiences (Pennebaker et al., 2014). Finally, the text's explicitness in the message dimension, which is measured by the mean amount of words per sentence in the idea description and multiplied by -1 (Pennebaker et al., 2014).

The community's attention, positioning, sincerity, and contribution were chosen as variables for

the third dimension *community's supportive stimuli*. Community's attention was measured by the number of votes for each idea (Hoornaert et al., 2017). The variable tenor from research on media reputation (Pfarrer, Pollock, and Rindova, 2010), which calculates the number of positive and negative comments to provide an overall community tenor toward the idea, captures the community's positioning toward an idea. Furthermore, the community's contributions are measured by means of the LIWC variable "differ" as an indicator of the extent to which the comment's author and the ideator differ in opinion concerning the idea content, which is capable of stimulating idea improvement (Bullinger, Neyer, Rass, and Moeslein, 2010; Zhu et al., 2019) instead of other comments with less difference in opinion which contribute less to the idea. Example items are "actually, although, aren't, but, despite, unlike, and opposite." Finally, we measured sincerity with the algorithm-based LIWC variable "authentic," which was derived from various studies to distinguish between honest and deceptive texts (Newman, Pennebaker, Berry, and Richards, 2003).

Several other variables allow us to control for alternative explanations arising from evaluator-, ideator-, idea-, and campaign-specific factors that could affect the likelihood of ideas being selected. At the campaign level, it is important if the campaigns are open to all domains or one domain only; therefore, whether the search focus is unspecific, or addresses a specific domain. Further, the study controls whether the ideators can, beforehand, discuss their ideas outside the platform or only online on the platform. Owing to the workshops that the firm specifically provided for various campaigns, the idea quality and discussion intensity on the online platform might differ from those without workshops. Additionally, the variable confidential measures whether employees not involved in the campaign could view the posts or not.

The idea description's language, idea content, idea category, content distance, structural distance, the time (in days) when the idea was submitted, the number of ideators per idea, as well as the number of total words in the comments provide idea-specific controls, because several LIWC variables are based on the number of dictionary words. Experts from the case company defined 16 dimensions to control for the idea's content, considering that the



ideas may cover more than one content dimension at a time. Idea categories are based on the type of innovation at which the idea is aimed, namely new business models, process innovation, product innovation, and service innovation. Additionally, we added the category Unspecified for those ideas that do not clearly fall into any of these categories. Finally, content and structural distance (Piezunka and Dahlander, 2015) are indicators of an idea's distinctiveness and, therefore, its innovativeness.

The number of evaluators in the campaign's evaluating committee is an evaluator-specific control. Furthermore, the analyses include the evaluation committee's workload—measured by the total amount of ideas per campaign—since information overload can lead to decreased decision-making (Criscuolo et al., 2017; O'Reilly, 1980).

The number of ideators who participated in the formulation of the idea and integrated the idea submitters' network size as a control of their experience in the field provides an ideator-specific control. The ideators' network size is measured by means of the number of different persons with which the ideators had previously submitted ideas. Additionally, the ideators' mean platform tenure provides a proxy for experience on the specific innovation platform. The variables' definition and operationalization are summarized in Table 2.

### *Estimation Strategy*

A probit regression is used to test the hypotheses. Since several ideas are generated by the same ideators, it is important to control for the non-independence of the observations. Calculating robust standard errors clustered by ideators addresses this issue.

Since probit regression models are nonlinear and include several moderation effects, established best practice provides knowledge to interpret the moderation terms' significance. Since the interaction's effect between the two variables and their significance vary with each change in the other model variables (Hoetker, 2007), a post hoc analysis was conducted. Both the calculation of the response for the "average observation" and the average of the responses for each observation are similar. Therefore, the regression output's values (see Table 4) addresses the calculation for the "average observation," which is the most common

approach (Long, 1997). A comprehensive post hoc analysis of all the interaction effects comprised nonlinear simple slopes analysis and the calculation of the interaction effects of each observation, including the  $z$ -statistic (Hoetker, 2007).

## **Results**

Table 3 provides the descriptive statistics. Table 4 shows the regression output for controls (Model 1), direct effects (Model 2), and interaction effects (Model 3). Model 4 is the final model that includes only significant interaction effects. The average variance inflation factor in the full model is 1.72, with a maximum of 4.3 for the variable dedication, which is noticeably lower than the threshold value of 10 (Cohen, West, and Aiken, 2014). Furthermore, the condition number of the collinearity diagnostics is lower than the suggested value (Belsley, Kuh, and Welsch, 1980), which is why we conclude collinearity not to be an issue.

Figure 3a–m provides a visualization of the results of all the interaction effects whose means are significant. The line "Interaction (Model)" represents the interaction effect of the marginal effects, as displayed in Table 4, while "Interaction (True)" shows the cross-partial derivative of the expected value calculated for each observation (Norton, Wang, and Ai, 2004). The simple slopes analysis was calculated for three levels of each variable. Since the distribution of most of the variables is strongly right-skewed, because they count the number of words found in the idea description, the three levels are calculated at zero (low), one standard deviation above (mid), and two standard deviations above (high).

Regarding the hypotheses, reputation is positively related to idea selection ( $b = .081$ ,  $p = .008$ ), while dedication is negatively related ( $b = -.022$ ,  $p = .009$ ). The relationship between status and the acceptance probability was insignificant. The findings therefore support H1a, but not H1b and H1c. For an increase in the ideators' reputation by 10 previously selected ideas, the average increase in the selection probability (mean marginal effect) is 5.6%. For an increase in the ideators' dedication by 10 previously submitted ideas, the average decrease in the selection probability is 1.6%.

In the message dimension, promotion ( $b = .288$ ,  $p = .032$ ) and assessment ( $b = 3.900$ ,  $p = .045$ ) are positively related to idea selection, providing support for

**Table 2. Definition and Measurement of Variables**

Variable	Definition
<i>Dependent variable</i>	
Selected	Dummy = 1 if the idea was selected for project or implementation
<i>Control variables</i>	
<i>Campaign level</i>	
Multidomain	Dummy = 1 if the campaign did not specifically target only one domain
Online only	Dummy = 1 if the main community discussion only took place on the platform
Confidential	Dummy = 1 if ideators not invited to the campaign cannot see the campaign ideas
<i>Idea level</i>	
Language	Dummies for the idea's language (English, French, German, Spanish)
Content	Dummies for the idea's content (16 dimensions)
Idea categories	Dummies for the idea's category (New Business Models, Process Innovation, Product Innovation, Service Innovation, Unspecified)
Time	Day the idea was submitted to the platform
Content distance	Indicator of the distinctiveness of the relevant idea's content and that of other previously submitted ideas (Piezunka and Dahlander, 2015)
Structural distance	Indicator of the distinctiveness of the contributing community's relevant idea and that of other previously submitted ideas (Piezunka and Dahlander, 2015)
# Words comments	Number of words in all comments on the idea
<i>Evaluator level</i>	
# Evaluators	Number of evaluators evaluating one campaign
Workload	Total number of ideas in an idea campaign to measure how much effort and time evaluators invest in each idea
<i>Ideator level</i>	
# Ideators	Number of ideators who participated in the formulation of the idea
Ideator network size	Number of ideators with whom the idea ideators had previous submitted ideas; represents ideators' experiences with collaborating with other ideators
Ideator platform tenure	Mean number of years since the ideators' first platform activity; represents ideators' experiences with using the platform
<i>Independent variables</i>	
Content scarcity	Lack of rational information about the idea; measured as an idea description's word count multiplied by $-1$
<i>Ideator-based persuasion</i>	
Reputation	Social position of ideators in the network as perceived by the evaluator; based on the number of previously submitted and selected ideas by idea's ideators
Dedication	Effort the ideator invested in the platform; measured by the number of previous ideas submitted by all the idea ideators
Status	Hierarchical position of ideators in the organization expressed by the ideators' confidence or assertiveness; measured by means of the dictionary-based LIWC variable "clout" that analyzes the idea description
<i>Message-based persuasion</i>	
Promotion	Ideators' passion and conviction regarding their idea; based on the dictionary-based LIWC variable "emotional tone" which calculates the relative difference between positive and negative words of the idea description
Assessment	The extent to which an idea description communicates an idea's positive and negative attributes; based on the dictionary-based LIWC variable "compare" that analyzes the idea description and indicates an idea's traits to communicate both positive and negative attributes
Logic	Extent to which the idea description's arguments are systematically derived and enable the transfer of plausibility and credibility; measured with the dictionary-based LIWC variable "analytic" that analyzes the idea description and indicates plausible and rational idea argumentation and comprehensible structure
Explicitness	Degree to which an idea description directly represents the core message; calculated by the mean amount of words per sentence in the idea description, multiplied by $-1$
<i>Community-based persuasion</i>	
Attention	Extent to which to the community reacts to die idea; measured by the number of an idea's votes
Positioning	Overall community's opinion about the idea; measured by means of the variable tenor (Pfarrer et al., 2010), which calculates an overall community position toward the idea based on the amount of positive and negative comments
Contribution	Extent to which an idea's comments contribute to an idea improvement; measured by means of the dictionary-based LIWC variable "differ" that indicates the extent to which a text differs in opinion and thus provides potentially constructive feedback
Sincerity	Degree to which people mean what they say; dictionary-based LIWC variable "authentic" that analyzes the idea comments that shows whether comments can be taken seriously or whether they may be misleading

H2a and H2b. Logic and explicitness, however, are insignificant, which leads to a rejection of H2c and H2d. An increase in the message's promotion by 10% makes it on average 3.1% more likely to be selected. An increase in the message's assessment by 10 words leads to an average increase in the selection probability of 4.2%.

Within the community dimension, attention ( $b = 3.248, p = .020$ ) and positioning ( $b = 1.142, p = .037$ ) are positively related to idea selection, while contribution and authentic are insignificant, therefore providing support for H3a and H3b, but not for H3c and H3d. An increase of attention by means of 10 additional votes results in an average increase of selection probability of 2%, while a 10% increase in positioning makes selection on average 6.9% more likely.

The coefficient of the interaction term between content scarcity and reputation in model 4 is positive and significant ( $b = .110, p = .004$ ). Figure 3a illustrates the effect of an increase in content scarcity (fewer words in the idea description) on reputation's effect. At a word count of about 164 words, the effect switches. Nevertheless, at a word count higher than 115 words, the effect becomes insignificant. Figure 3b illustrates the true interaction for each idea in black dots and the corresponding  $z$ -values in red triangles. The figure shows that the interaction effect is positive for most of the ideas, especially for those whose predicted likelihood of being selected is higher than .2. The  $z$ -statistic in Figure 3b shows that the interaction effect remains significant, especially for almost all of the selected ideas, while many interaction effects are insignificant for ideas whose predicted likelihood of being selected is lower than .2. Reputation therefore partially supports H4, especially when content is scarce, or ideas have been selected.

Status ( $b = .581, p = .016$ ), logic ( $b = .866, p = .034$ ), and contribution ( $b = 4.169, p = .035$ ) provide similar results. They all have a point at which the effect switches (see Figure 3e, g, and l). In most cases, the interaction effect of a higher word count than the turning point is insignificant, is consistently positive for most of the ideas, and the  $z$ -statistic has higher values than 1.96 in most of the observations whose predicted likelihood of ideas being selected is higher than .2 (see Figure 3f, h, and m for more details). Consequently, status, logic, and contribution also partially support H4, especially with regard to scarce content and selected ideas.

Explicitness differs from reputation, status, logic, and compare for two reasons. The moderation effect is negative, and the  $z$ -statistic is higher than 1.96 in only a very few ideas (see Figure 3k), which means that most of the observations' overall effect is insignificant. Likewise, the calculated effect of the mean of all the other variables (see Table 4, model 4) is insignificant at the 5% significance level ( $b = -.611, p = .067$ ). Dedication, like explicit, also shows a negative interaction effect, but unlike explicit, it is highly significant ( $b = -.026, p = .000$ ) and significant for many ideas whose predicted likelihood of being selected is higher than .2 (see Figure 3d). Dedication therefore shows the reverse effect of what was expected, which leads to the partial rejection of H4.

### Robustness Tests

Calculating the logit and rare event logit regression analyses (ReLogit Stata procedure of Tomz, King, and Zeng, 2003) and comparison of the model fit by means of Akaike's information criterion and Bayesian information criterion as well as each observations' predictions allow a robustness test of the model. Probit regression provides slightly better model fit and predictions show no outliers.

Various further robustness tests for the variables help avoid different possible operationalizations having inconsistent effects on the results. Calculating content scarcity on the basis of a word count adjusted by stop words avoids content scarcity results being biased by non-content relevant words. For this purpose, the words from the stop word list of Salton, Buckley, and Fox (1983), which contains 571 words, were excluded from the word count calculation. The results of the adjusted and unadjusted content scarcity are very similar. Further, manually coding all the LIWC variables (Pennebaker et al., 2014) on the basis of a 10% random sample of ideas and their comments based on their conceptual definitions showed that correlations between the manually coded values and those calculated by the LIWC are considerably large: the lowest correlation is .68 for the variable assessment, the highest correlation is .79 for the variable promotion. It is therefore safe to assume that the LIWC variables have sufficient validity. Further robustness tests consisted in measuring the variable positioning with the LIWC variable emotional tone (Pennebaker et al., 2014) instead of tenor (Pfarrer,

**Table 3. Descriptive Statistics**

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1 Selected	.07	.26																									
2 Multi domain	.06	.23	-.03																								
3 Online only	.93	.26	.02	.02																							
4 Confidential	.17	.37	.06	.08	.07																						
5 Time	826.14	366.34	-.14	-.02	-.01	-.25																					
6 Content distance	-46.30	2.78	-.09	-.14	.01	-.07	.04																				
7 Structural distance	-1.25	1.62	-.09	.01	-.10	-.11	.16	.08																			
8 # Words comments	84.82	175.30	.09	.06	.05	.17	-.17	-.23	-.63																		
9 # Evaluators	2.64	2.72	-.04	.06	.09	.44	-.01	-.07	-.10	.14																	
10 Workload	79.48	91.36	-.10	-.09	.16	-.28	.44	.25	-.07	-.17	-.10																
11 # Ideators	1.39	1.17	.04	.24	-.23	.00	-.06	-.10	-.04	.09	.04	-.11															
12 Ideator network size	1.36	3.70	.09	.26	-.07	-.03	-.05	-.10	-.01	.06	-.02	-.15	.27														
13 Ideator platform tenure	.45	.72	.13	-.10	.04	.01	.21	.03	.07	-.07	-.15	-.06	-.08	.23													
<i>Dependent variables</i>																											
14 Content scarcity	-94.56	107.62	-.05	-.11	-.03	-.07	-.07	.66	.02	-.23	-.01	.15	-.11	-.04	.02												
15 Reputation	.89	3.14	.18	-.03	.03	.00	.04	.01	.00	.01	-.12	-.08	.01	.23	.51	.02											
16 Dedication	5.75	1.97	.14	.02	.00	-.06	.07	.03	.01	-.02	-.13	.01	.10	.48	.53	.04	.80										
17 Status	61.23	2.88	-.05	.07	-.12	-.15	.12	-.07	-.02	-.01	-.02	.12	.08	.03	-.05	-.01	-.02	.01									
18 Promotion	56.59	32.04	.03	.04	-.02	-.05	.06	-.21	-.04	.03	.01	.02	.00	-.01	-.06	-.07	-.06	-.08	.13								
19 Assessment	2.04	2.46	.09	-.01	.01	.06	-.09	-.11	.04	.01	.00	-.13	-.03	-.02	.07	-.06	.08	.02	-.14	.07							
20 Logic	88.26	16.11	-.02	.02	.07	-.02	.05	.03	-.01	.00	.06	.08	.03	-.01	-.03	-.05	-.07	-.04	.01	.00	-.04						
21 Explicitness	-26.19	27.03	.03	.02	-.03	.06	-.09	.15	.12	-.05	.00	-.04	-.04	-.04	.18	.06	.07	-.07	-.07	-.08	.04	-.12					
22 Attention	2.07	3.50	.02	-.09	.12	-.02	.02	.01	-.39	.25	.09	.41	.00	-.06	-.14	.02	-.09	-.08	.07	.04	-.10	.04	-.03				
23 Positioning	65.64	25.37	-.01	-.01	.02	-.02	.05	.03	.00	-.02	.01	.11	-.02	-.01	-.01	-.02	-.01	-.00	.01	.02	-.03	.00	-.02	.05			
24 Contribution	1.48	2.27	.04	-.04	.04	.08	-.15	-.07	-.37	.30	.02	-.08	.02	-.01	-.00	-.03	.05	.02	-.02	.03	.01	-.05	.00	.11	-.06		
25 Sincerity	36.89	23.08	-.02	.01	-.02	-.10	.12	.07	.31	-.24	-.12	.02	-.08	-.03	.03	.01	.05	.04	.02	.01	-.02	.00	.03	-.13	-.09	-.05	

Note: *N* = 3025, *M* = mean, *SD* = standard deviation, all correlations above .037 are significant at 5%.



**Table 4. Probit Regression Models Predicting Idea Selection**

	Model 1		Model 2		Model 3		Model 4	
<i>Campaign controls</i>								
Multi domain	-.23	[.24]	-.22	[.24]	-.26	[.24]	-.25	[.24]
Online only	.08	[.21]	.05	[.22]	.05	[.23]	.06	[.23]
Confidential	.01	[.18]	.02	[.18]	.02	[.19]	.01	[.19]
<i>Idea controls</i>								
Language dummies	yes (4)	yes (4)	yes (4)	yes (4)				
Content dummies	yes (16)	yes (16)	yes (16)	yes (16)				
Idea categories	yes (5)	yes (5)	yes (5)	yes (5)				
Time	-.05*	[.02]	-.05*	[.02]	-.05*	[.02]	-.04*	[.02]
Content distance <sup>a</sup>	-.85***	[.24]	-.56+	[.32]	-.42	[.33]	-.41	[.32]
Structural distance	-.11***	[.03]	-.10**	[.04]	-.12**	[.04]	-.12**	[.04]
# Words comments <sup>a</sup>	-.01	[.03]	-.01	[.03]	-.02	[.03]	-.01	[.03]
<i>Evaluator controls</i>								
# Evaluators	.00	[.02]	.00	[.02]	.00	[.02]	.00	[.02]
Workload	-.13	[.16]	-.17	[.16]	-.15	[.15]	-.17	[.15]
<i>Ideator controls</i>								
# Ideators	.11*	[.04]	.11**	[.04]	.12**	[.04]	.12**	[.04]
Ideator networksize	.02*	[.01]	.04**	[.01]	.04**	[.01]	.04**	[.01]
Ideator platform tenure	.28**	[.10]	.20*	[.10]	.22*	[.10]	.22*	[.10]
Content Scarcity <sup>a,c</sup>			-.16	[.11]	-1.52***	[.45]	-1.48***	[.42]
Content Scarcity sq <sup>a,c</sup>			-.04	[.03]	-.05*	[.03]	-.05*	[.02]
<i>Ideator dimension</i>								
Reputation			.08**	[.02]	.08**	[.03]	.08**	[.03]
Dedication			-.02+	[.01]	-.02**	[.01]	-.02**	[.01]
Status <sup>b</sup>			-.09	[.20]	-.07	[.20]	-.08	[.20]
<i>Message dimension</i>								
Promotion <sup>b</sup>			.28*	[.13]	.30*	[.13]	.29*	[.13]
Assessment <sup>a</sup>			3.78*	[1.90]	3.58	[2.27]	3.90*	[1.95]
Logic <sup>b</sup>			.09	[.28]	.04	[.27]	.04	[.27]
Explicitness <sup>a</sup>			-.10	[.21]	-.48	[.30]	-.46	[.30]
<i>Community dimension</i>								
Attention <sup>a</sup>			2.88*	[1.38]	2.39	[1.70]	3.25*	[1.40]
Positioning <sup>b</sup>			1.13*	[.55]	.88	[1.04]	1.14*	[.55]
Contribution <sup>a</sup>			-1.21	[1.66]	-.73	[1.63]	-.72	[1.63]
Sincerity <sup>b</sup>			.16	[.18]	.20	[.18]	.22	[.17]
<i>Ideator interaction</i>								
Content scarcity × reputation					.12**	[.04]	.11**	[.04]
Content scarcity × dedication					-.03***	[.01]	-.03***	[.01]
Content scarcity × status					.54*	[.26]	.58*	[.24]
<i>Message interaction</i>								
Content scarcity × promotion					.17	[.17]		
Content scarcity × assessment					.86	[3.16]		
Content scarcity × logic					.89*	[.40]	.87*	[.41]
Content scarcity × explicitness					-.64*	[.33]	-.61+	[.33]
<i>Community interaction</i>								
Content scarcity × attention					-1.33	[.95]		
Content scarcity × positioning					.75	[2.04]		
Content scarcity × contribution					4.47*	[1.88]	4.17*	[1.98]
Content scarcity × sincerity					-.16	[.19]		
Constant	-1.99***	[.25]	-2.21***	[.42]	-2.22***	[.42]	-2.24***	[.42]
Wald chi <sup>2</sup>	394.54***		643.72***		770.97***		763.21***	
Log likelihood	-644.16		-624.54		-607.96		-609.29	

Note: Robust standard errors for two-tailed tests clustered by the idea submitter in square brackets.

<sup>a</sup>Per 100 days, ideas, units, or words.

<sup>b</sup>In percent (per 100).

<sup>c</sup>Mean-centered variable.

+*p* < .10; \**p* < .05; \*\**p* < .01; \*\*\**p* < .001; *N* = 3025.

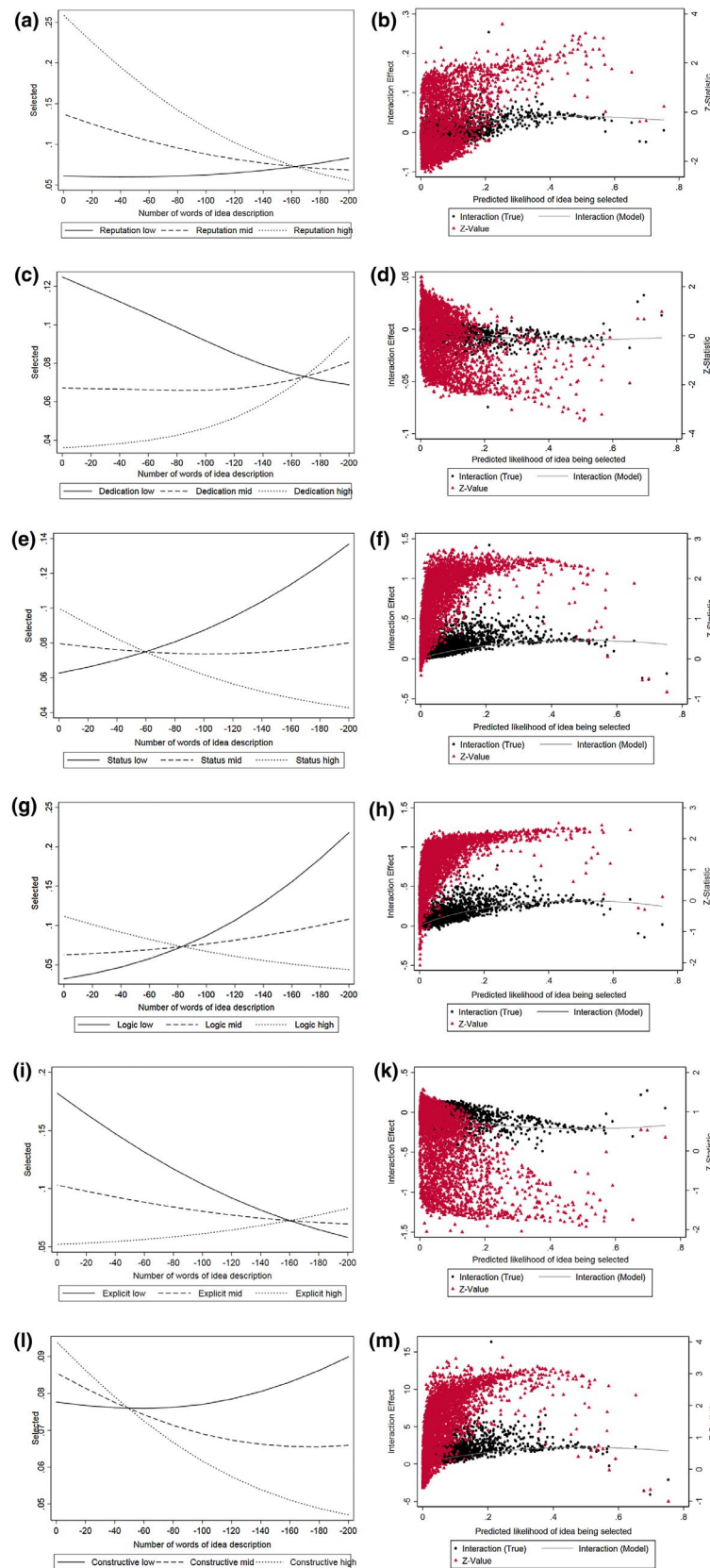


Figure 3. Simple Slopes and z-Statistics [Colour figure can be viewed at wileyonlinelibrary.com]

et al., 2010), and the variable explicitness by means of Flesch reading ease (Flesch, 1948), which also contains the variable words per sentence. The results for both robustness tests showed very similar results compared to the results in Table 4.

## Discussion

This study provides insights into the decision-making process of ideation platform evaluators, while examining content scarcity in idea descriptions. The findings show that decision-making is not purely reflective, but that issue-irrelevant information strengthens evaluators' intuitive response. The focus on the three influencers' *ideator*, *message*, and *community* allowed us to distinguish between the different dimensions representing the core of the Yale attitude change approach.

With respect to the first research question, the findings show that ideators and messages convey issue-irrelevant information about reputation, dedication, promotion, and assessment. Furthermore, the community's attention and positioning have a persuasive effect on the evaluation teams regarding the selection of certain ideas over others on corporate online ideation platforms. Dedication, however, shows an unexpected reverse effect.

With respect to our second research question, when faced with content scarcity, evaluation teams rely even more on issue-irrelevant information about the ideators' reputation and dedication. However, the ideators' status, the ideas' logic and explicitness, and the community's contribution become relevant when content scarcity is high. According to one evaluator: "If the description is very short, you have to let your imagination go and then it can take you more time to evaluate." With high content scarcity, however, the idea's explicitness shows a different effect than expected.

All of the significant moderation effects showed a turning point where the effect of a higher reputation, the ideators' dedication and status, the logical argumentation of the message, and the contribution of the community's comments does not affect the likelihood of an idea being selected (see Figure 3a, c, e, and g). The effect of content scarcity is likely to begin to take effect at this point. This means that when idea descriptions are fewer than 48–171 words (depending on which persuasion effect is considered), evaluators increasingly make use of intuitive, nonreflective

information to make a decision. In most cases, the interaction effect becomes insignificant when the idea description word count is higher than at this scarcity point, which supports the proposition.

### *Effects of the Ideator Dimension*

Information on the ideator can be accessed fairly easily on a corporate ideation platform through the organization's network and tracking ideators' success is particularly convenient. Ideators' reputation on ideation platforms is regularly presented by badges and other gamification artifacts, which influence evaluators subjectively and subconsciously (Goldberg and Hartwick, 1990). Owing to evaluators' need for closure, this effect has an even stronger impact when there is content scarcity. When ideators of high reputation submit an idea with high content scarcity, they are more likely to be successful than ideators with a low reputation submitting the same idea with rich content (see Figure 3a). When ideas present little issue-relevant information, evaluators might argue that ideators known for their success on the platform will probably have good ideas that will become perspicuous with further process. One evaluator argued: "If you know the person, this helps you better understand the context, the mindset, and the way individuals can generate ideas."

Ideators' dedication might intuitively seem to support their reputation and, hence, to affect the likelihood of idea selection positively. However, given that members of the organization usually access corporate online ideation platforms during working hours, their time is likely to be limited; consequently, ideators who submit many ideas might appear to spam ideas on the platform, resulting in a negative effect on the likelihood of an idea being selected. Evaluators and members who submit only a few ideas might think that the ideator in question reacts to incentives to provide ideas regardless of their quality. These incentives can be manifold, whether they are awards for very dedicated ideators or the expectation of an enthusiastic superior. Dedication's increased negative effect when evaluators face content scarcity should be understood as being similar to reputation's effect. Since evaluators are required to choose ideas, they will increasingly submit to beliefs about the relevant ideator and respond intuitively.

Ideators' status is especially critical in organizations with flat hierarchies. Ideators must behave in

accordance with the corporate culture and—even if they are hierarchically superior to other members on the platform—should not use their hierarchical power. However, a higher status in the company may give ideators a better overview of its problems, thus enabling them to better assess ideas with potential. In addition, ideators with more power are also more likely to implement ideas. Evaluators could thus favor ideas of high status ideators. In fact, evaluators only seem to trust the presentation of ideators' status when facing content scarcity. This is arguably due to status initially only being a potential source of innovation activities, contrary to reputation, which measures innovation activities actually carried out. If evaluators can already assess an idea's quality on the basis of the idea description in the decision-making process, they will, at most, consider issue-irrelevant information based on already submitted ideas. Evaluators subsequently no longer examine whether indirect effects, such as the ideators' status, could be beneficial for the idea. Only if content is scarce do evaluators seek as much information as possible about the ideators, thus also considering their status (see Figure 3e).

### *Effects of the Message Dimension*

With respect to the message's issue-irrelevant information, the study shows that evaluators are more likely to accept well-promoted and two-sided assessed ideas. One could argue that this builds on rhetoric argumentation, which should be distinguished from rational scientific argumentation. Hence, the promotion does not necessarily need to rely on objective truth but could use a persuasive rhetorical style to support intuitive decisions. Ideators' use of two-sided assessment shows evaluators that they have already considered possible barriers, thus implying a higher chance of success. These factors affect the idea decision-making regardless of content scarcity, because the factors' nature partially comprise issue-relevant and issue-irrelevant information. Interestingly, the logical writing style and the idea description's explicitness do not appear to affect the decision-making process at all when content scarcity is held constant. Our interviews provide a reason for this, as “the structure does not really matter if the content serves the why, the what, and the how.”

However, when taking content scarcity into account, logical argumentation seems to be more persuasive when content is scarce than narrative argumentation does. This could be due to the analyzed company being a large science and technology company whose employees are more convinced by an analytic argumentation structure. If content is scarce, it should at least be explained logically and objectively in order to understand the remaining content better. Explicitness also plays a role if content is scarce, but the effect is opposite to the one that H2 suggests. However, the effect is only significant for the “average observation” (see Table 4 model 4), which only applies to a few observations (see Figure 3k). Nevertheless, one explanation could be that longer rather than shorter sentences convey content scarcity better. If a text is lengthy, it may not be so obvious that relevant content is missing. In addition, it is possible that short texts serve a completely different purpose than longer texts. A text that is already so short that even explicit formulations are no longer sufficient to convey the entire content could therefore be more convincing if it deliberately just touches on the idea instead of explaining all aspects in detail.

### *Effects of the Community Dimension*

With respect to the communities' issue-irrelevant information, the study shows that the community can successfully persuade evaluators by means of their attention and positioning, while their comments' contribution and authenticity do not seem to be relevant. The community's influence seems to primarily lie in drawing the evaluators' attention to certain ideas and thereafter convincing them with mostly positive comments, rather than in the comments alone improving the idea. When content becomes scarce, attention and positioning's effects do not become stronger, but how these comments potentially contribute to the idea becomes relevant. This might be because contributions are a good indication of the idea's potential and assists evaluators in thinking the idea ahead. Community comments' sincerity might be insignificant, because the sincerity comments' overall level was very low in the word count (see Table 3). In the words of two interviewed evaluators: “Half of the comments were [...] just ‘I like your idea’ and that's it. Honestly, I didn't pay too much attention to this” and “I found the community discussion to be relatively constructive, [...] but it did not have any decision-making relevance for me.”



This is surprising, since the closed setting of firm internal ideation platforms, their high sincerity and trust, as well as their highly trained participants, are their potential advantages. If the community does not comment sincerely and constructively, one could argue that its discussion is not at all necessary because the quality of relationships within networks is a central factor for knowledge transfer and thus potential idea improvements (Takahashi, Indulska, and Steen, 2018). However, by arguing that ideators are part of the community, the wisdom of the crowd becomes important, because ideation platforms allow an insight into information about ideators, which apparently influences the selection of ideas. Furthermore, community factors might seem insincere in this data set due to the high number of comments that mention a “good idea” or “I like that idea” instead of providing advice and feedback on how to improve the idea further. These comments therefore add as little value to the ideation as a vote does. Nevertheless, when the idea content is scarce, evaluators increasingly use contributing comments to compensate for the lack of information in the idea description (see Figure 3I).

### *Implications for Theory*

This study contributes to current research in several ways. First, it contributes to a rather new stream in ideation literature about evaluators’ biases and ideators’ persuasive behavior. Research has already examined evaluators’ motivation, time, and lack of expertise (Crisuolo et al., 2017; Piezunka and Dahlander, 2015; Reitzig and Sorenson, 2013) as well as ideators’ persuasive strategies in terms of upward influence tactics (Lu, Bartol, Venkataramani, Zheng, and Liu, 2018) or destructive and constructive deviant content (Gatzweiler et al., 2017) to explain biased decision-making. The study complements this research by focusing on the critical aspect of the content itself and on what happens when this content is scarce. With the help of content scarcity in combination with the Yale attitude change approach, and the default-interventionist model, the study contributes to a better understanding of how intuitive decisions arise in the context of ideation platforms. It offers an explanation for crowdsourcing literature’s contradictory findings on the impact of issue-irrelevant information on idea selection (Di Gangi and Wasko, 2009; Jensen et al., 2014; Piezunka and Dahlander, 2015; Recker et al., 2016). Specifically, it shows that,

in online ideation contests, content scarcity largely moderates the persuasiveness of issue-irrelevant information regarding the ideators, the idea message’s sentiments, and the community context.

Second, the study provides insights into intuitive decision-making processes to contribute to decision-making literature in general (Chen et al., 2009; Eliëns et al., 2018). Besides text-based platform mechanisms, persuasion also takes place face-to-face during which it is, presumably, even stronger (Lam, Rees, Levesque, and Ornstein, 2018). The results are therefore applicable to more general decision-making processes.

Third, it adds to the knowledge exchange literature by examining how knowledge exchange works when little knowledge reaches the recipient, who also has no opportunity to acquire more. Knowledge transfer’s major challenges originate from the relationship between the sender and the receiver of information, the source credibility, and the encoding of information transfer (Ko et al., 2005; Lyles et al., 2008; Menon and Blount, 2003). Evidence suggests that the recipient seems to intuitively supplement the content with issue-irrelevant information, which may depend on the sender itself, the way the message was transported, or the environment (Evans, 2011; Hovland et al., 1953).

Fourth, this paper provides many insights for psychological research. Evidence suggests the basic processes of the default-interventionist model to provide a clear explanation of when evaluators act more intuitively and when not. These mechanisms appear to work in text-based situations as well and the results show that the amount of content provided has an influence on when decision-makers stick to their intuitive decisions and when they seem to switch to a reflective one. This way, the paper adds to the “cognitive control problem” (Evans, 2011, p. 95), which addresses the key issue of when the intuitive response is intervened by a reflective one. It also provides new insights for psychological research regarding the issue-irrelevant information used when an intuitive (type 1) decision is made (Evans, 2011). Applying the Yale attitude change model’s (Hovland et al., 1953) factors to the conditions of text-based idea competitions suggests that not all factors of the three dimensions are effective. In some cases, contrary effects occur. This gives us reason to assume that some aspects of the Yale attitude change model work differently in digital idea competitions. However, various factors are confirmed.

### *Implications for Practice*

This study contributes to encouraging reflective evaluator decisions in order to identify and address intuitive and, thus, potentially irrational decisions that may lead to wrong ideas being selected. Three combinable action strategies—concerning the platform, idea content, and evaluators—can individually promote reflective selection processes and also improve idea quality. These action strategies either reduce issue-irrelevant information or make it uniformly available to all ideators to ensure all ideas have an equal opportunity to be chosen.

The online ideation platform is itself a central starting point for improvement. Here, reflective decisions can be promoted via the three dimensions: the ideator, the message, and the community. A central strategy could, for example, be to deliberately prevent the evaluators from seeing issue-irrelevant information. This strategy works particularly well with the ideator dimension. If evaluators do not know who the ideators are, they cannot derive information about their reputation and dedication.

In the message dimension, managers should try to give all the ideators the same opportunity to persuade the evaluator, since issue-irrelevant information cannot be excluded from this dimension due to its strong interrelations with the essential issue-relevant information that the message dimension conveys. For example, campaign managers should define the campaign search fields more clearly and evaluators should transparently and in advance communicate their decision criteria in order to align the ideators to the same goals. Platform managers could also provide ideators with predefined templates that allow them to address specific aspects of their idea, thus enhancing the ideas' assessment and explicitness. However, such templates could be an obstacle to ideators posting ideas. Consequently, we suggest that the initial idea should be posted form-free on the platform, but that the final template fields must be filled out at the end of the campaign. Ideators should thereafter be encouraged to improve their idea in exchange with the community and fill out the templates consecutively.

In the community dimension, managers need to be very cautious when addressing issue-irrelevant information with systemic constraints, as this can affect the wisdom of the crowd, which is an idea platform's key advantage. Platform managers should consider incentivizing comments which contribute to the idea

with the help of gamification elements, while also incentivizing ideators to actively improve the idea accordingly. Then, however, the comments and votes should not be visible to the evaluators, as they distract from the actual idea's content.

The second strategy concerning the ideas' content deliberately addresses the issue-relevant information's improvement, because in keeping with the default-interventionist model, reflective decisions can only be made if sufficient information is available (Evans, 2011). Such a strategy is based on promoting a more innovative working environment, as well as educating ideators and community members. Since most activity on corporate ideation platforms occurs during work hours, an innovation-friendly climate is required to properly motivate and instruct all of its members (Kruft, Gamber, and Kock, 2018). The community needs to dedicate their attention to feedback and voting mechanisms should only be used to increase the sincerity of the community's contributions. Only when the community abides by the rules will they be taken seriously and support evaluators' decision-making process.

Furthermore, managers should offer ideators training that will explain the importance of issue-relevant information. In order to address most of the persuasive effects investigated in this study, each ideator should write an idea description of at least 170 well-considered words. The ideal idea description length could be much longer, given that the evaluators have unlimited time resources. However, it is important for ideators to understand that more content is not always better. Long texts are time-consuming and difficult to assess, implying that, by adding irrelevant details, there is a lack of focus on the idea's key aspects (Beretta, 2019; Haas et al., 2014; Piezunka and Dahlander, 2015). If more information needs to be provided, ideators should provide visualizations of the content, which trigger content-based heuristic processes that could save time, but not distract the evaluator from the actual content (Killen, Geraldini, and Kock, 2018). One evaluator identified this as a key point:

*What I would like is to have a kind of illustration: In other words, a sketch or a snapshot of the idea that will briefly convey part of the previous brainstorming or a PowerPoint presentation of the idea. That would be really helpful, because you will then have some content and, potentially, some illustration of the idea. It's much better to see something than reading about it.*

The third strategy, which addresses the evaluators themselves, aims to make them aware of the problem, to train them toward reflective decision-making, to support them with the required resources, and to set incentives. First, the study shows evaluators and their managers how to become aware of non-reflective decisions. This awareness must be deliberately stimulated, so that evaluators can consciously distinguish between issue-irrelevant and issue-relevant information, which will allow them to solely focus on ideas' content. In addition, evaluators can prevent content scarcity from occurring at all. A manager of a very small, exceptional campaign for our case company that successfully addressed content scarcity describes one way of doing so:

*Not only did we evaluate hard at the end [...] but also during the ongoing campaign. We screened, categorized, and evaluated the incoming ideas once or twice a week, and, especially when the quality of the information was insufficient, we immediately returned it to the ideators. [...] We actually tried to say: "Idea first." [...] Just because someone does not formulate an idea in a qualitatively good way from our point of view, it can nevertheless be a good idea. We therefore tried very hard to adopt a neutral attitude, and not to decide how that person ticks and how much energy we think is behind the idea on the basis of what we believe. We also assigned the ideas to people from specialist departments and have asked them to re-check if something was missing or not. [...] I believe that this has given us a higher quality, as it would have been very difficult for us to provide the necessary resources [for a comparably high quality] in the short period of the final evaluation.*

In order for such feedback loops between evaluators and ideators to function sustainably, the platform must facilitate and actively promote such an exchange. However, this strategy only works if evaluators have sufficient issue-relevant information and time to process it (Criscuolo et al., 2017; Evans, 2011; Piezunka and Dahlander, 2015). Managers must therefore reduce evaluators' workload during the evaluation phase, to ensure they have cognitive resources available for reflective decisions.

### *Limitations and Further Research*

This study has some limitations that can inform future research. First, the data set stems from a

single organization. Organizational requirements and culture form the boundaries of idea evaluation. Considering the case company's industry, it is fair to assume a relatively high level of education in comparison to other industries such as manufacturing. Furthermore, taking the complex jargon within specific industries into account, the outcomes may well differ to similar studies based on varying case companies. By assessing other organizations through either multi-level or meta-analysis, insightful evidence could be gathered on varying organizational requirements, habits, and boundaries in order to verify our findings. Second, in the investigation of the decision-making process, it is not certain whether the evaluator's decisions were correct. Although this aspect is irrelevant for the investigated underlying psychological process, further research could investigate organizational expectations' effect on the interventionist process in greater detail (Evans, 2011). Third, members of firm-internal platforms might also communicate offline, which means that we could not measure persuasion if this occurred. The variable "online only" tries to control for such a situation. However, this variable can only control for a small amount of offline communication, as it does not track whether and how intensively offline communication occurs. Finally, dictionary-based sentiment analyses might have limitations. Manual verification checks increase confidence in the measures. However, future research might profit from more accurate measures allowed by advanced text-based analytical methods. Future research could focus on finding better measurements in order to improve the dictionary-based method, since it is also a convenient way for practitioners to undertake text analysis. Notwithstanding these limitations, this study provides important insight into the highly relevant persuasion on online ideation platforms and into content scarcity's role in reflective and intuitive decision-making.

### References

- Antons, D., M. Declerck, K. Diener, I. Koch, and F. T. Piller. 2017. Assessing the not-invented-here syndrome: Development and validation of implicit and explicit measurements. *Journal of Organizational Behavior* 38 (8): 1227–45.
- Antons, D., A. M. Joshi, and T. O. Salge. 2018. Content, contribution, and knowledge consumption: Uncovering hidden topic structure and rhetorical signals in scientific texts. *Journal of Management*. <https://doi.org/10.1177/0149206318774619>.

- Antons, D., and F. Piller. 2015. Opening the black box of “not invented here”: Attitudes, decision biases, and behavioral consequences. *The Academy of Management Perspectives* 29 (2): 193–217.
- Bayus, B. L. 2013. Crowdsourcing new product ideas over time: An analysis of the Dell Ideastorm community. *Management Science* 59 (1): 226–44.
- Belsley, D. A., E. Kuh, and R. E. Welsch. 1980. *Regression diagnostics*. New York: Wiley Online Library.
- Beretta, M. 2019. Idea selection in web-enabled ideation systems. *Journal of Product Innovation Management* 36 (1): 5–23.
- Björk, J., F. di Vincenzo, M. Magnusson, and D. Mascia. 2011. The impact of social capital on ideation. *Industry and Innovation* 18 (6): 631–47.
- Björk, J., and M. Magnusson. 2009. Where do good innovation ideas come from? Exploring the influence of network connectivity on innovation idea quality. *Journal of Product Innovation Management* 26 (6): 662–70.
- Boudreau, K. 2010. Open platform strategies and innovation: Granting access vs. devolving control. *Management Science* 56 (10): 1849–72.
- Boudreau, K. J., E. C. Guinan, K. R. Lakhani, and C. Riedl. 2016. Looking across and looking beyond the knowledge frontier: Intellectual distance, novelty, and resource allocation in science. *Management Science* 62 (10): 2765–83.
- Brodbeck, F. C., R. Kerschreiter, A. Mojzisch, and S. Schulz-Hardt. 2007. Group decision making under conditions of distributed knowledge: The information asymmetries model. *The Academy of Management Review* 32 (2): 459–79.
- Bugshan, H. 2015. Co-innovation: The role of online communities. *Journal of Strategic Marketing* 23 (2): 175–86.
- Bullinger, A. C., A. K. Neyer, M. Rass, and K. M. Moeslein. 2010. Community-based innovation contests: Where competition meets cooperation. *Creativity and Innovation Management* 19 (3): 290–303.
- Chen, X. P., X. Yao, and S. Kotha. 2009. Entrepreneur passion and preparedness in business plan presentations: A persuasion analysis of venture capitalists' funding decisions. *Academy of Management Journal* 52 (1): 199–214.
- Cohen, P., S. G. West, and L. S. Aiken. 2014. *Applied multiple regression/correlation analysis for the behavioral sciences*. London: Routledge Chapman & Hall.
- Cohn, M. A., M. R. Mehl, and J. W. Pennebaker. 2004. Linguistic markers of psychological change surrounding September 11, 2001. *Psychological Science* 15 (10): 687–93.
- Coussement, K., S. Debaere, and T. De Ruyck. 2017. Inferior member participation identification in innovation communities: The signaling role of linguistic style use. *Journal of Product Innovation Management* 34 (5): 565–79.
- Cox, D., and A. D. Cox. 2001. Communicating the consequences of early detection: The role of evidence and framing. *Journal of Marketing* 65 (3): 91–103.
- Crano, W. D., and R. Prislin. 2006. Attitudes and persuasion. *Annual Review of Psychology* 57: 345–74.
- Criscuolo, P., L. Dahlander, T. Grohsjean, and A. Salter. 2017. Evaluating novelty: The role of panels in the selection of R&D projects. *Academy of Management Journal* 60 (2): 433–60.
- Dervitsiotis, K. N. 2003. Beyond stakeholder satisfaction: Aiming for a new frontier of sustainable stakeholder trust. *Total Quality Management & Business Excellence* 14 (5): 515–28.
- Di Gangi, P. M., and M. Wasko. 2009. Steal my idea! Organizational adoption of user innovations from a user innovation community: A case study of Dell IdeaStorm. *Decision Support Systems* 48 (1): 303–12.
- Di Gangi, P. M., M. M. Wasko, and R. E. Hooker. 2010. Getting customers' ideas to work for you: Learning from Dell how to succeed with online user innovation communities. *MIS Quarterly Executive* 9 (4): 197–212.
- Dreyfus, S. E., and H. L. Dreyfus. 1980. *A five-stage model of the mental activities in directed skill acquisition*. Berkeley: University of California.
- Eagly, A. H., and S. Chaiken. 1993. *Psychology of attitudes*. Orlando, FL: Harcourt Brace Jovanovich College Publishers.
- Eliëns, R., K. Eling, S. Gelper, and F. Langerak. 2018. Rational versus intuitive gatekeeping: Escalation of commitment in the front end of NPD. *Journal of Product Innovation Management* 35 (6): 890–907.
- El-Shinnawy, M., and A. S. Vinze. 1998. Polarization and persuasive argumentation: A study of decision making in group settings. *Management Information Systems Quarterly* 22 (2): 165.
- Evans, J. S. B. T. 2011. Dual-process theories of reasoning: Contemporary issues and developmental applications. *Developmental Review* 31 (2–3): 86–102.
- Flesch, R. 1948. A new readability yardstick. *Journal of Applied Psychology* 32 (3): 221–33.
- Galbraith, C. S., S. B. Ehrlich, and A. F. DeNoble. 2006. Predicting technology success: Identifying key predictors and assessing expert evaluation for advanced technologies. *Journal of Technology Transfer* 31 (6): 673–84.
- Gatzweiler, A., V. Blazevic, and F. T. Piller. 2017. Dark side or bright light: Destructive and constructive deviant content in consumer ideation contests. *Journal of Product Innovation Management* 34 (6): 772–89.
- Goldberg, M. E., and J. Hartwick. 1990. The effects of advertiser reputation and extremity of advertising claim on advertising effectiveness. *The Journal of Consumer Research* 17 (2): 172–79.
- Haas, M. R., P. Criscuolo, and G. George. 2014. Which problems to solve? Attention allocation and online knowledge sharing in organizations. *Academy of Management Journal* 58 (3): 680–711.
- Hoetker, G. 2007. The use of logit and probit models in strategic management research: Critical issues. *Strategic Management Journal* 28 (4): 331–43.
- Hoornaert, S., M. Ballings, E. C. Malthouse, and D. Van den Poel. 2017. Identifying new product ideas: Waiting for the wisdom of the crowd or screening ideas in real time. *Journal of Product Innovation Management* 34 (5): 580–97.
- Hossain, M., and K. M. Z. Islam. 2015. Ideation through online open innovation platform: Dell IdeaStorm. *Journal of the Knowledge Economy* 6 (3): 611–24.
- Hovland, C. I., I. L. Janis, and H. H. Kelly. 1953. *Communication and persuasion: Psychological studies of opinion change*. New Haven, CT: Yale University Press.
- Jain, S. P., and S. S. Posavac. 2001. Prepurchase attribute verifiability, source credibility, and persuasion. *Journal of Consumer Psychology* 11 (3): 169–80.
- Janis, I. L., and C. I. Hovland. 1959. An overview of persuasability research. In *Personality and persuasability*, ed. C. I. Hovland and I. L. Janis, 1–26. New Haven, CT: Yale University Press.
- Jensen, M. B., C. Hienerth, and C. Lettl. 2014. Forecasting the commercial attractiveness of user-generated designs using online data: An empirical study within the LEGO user community. *Journal of Product Innovation Management* 31 (SI): 75–93.
- Kacwicz, E., J. W. Pennebaker, M. Davis, M. Jeon, and A. C. Graesser. 2014. Pronoun use reflects standings in social



- hierarchies. *Journal of Language and Social Psychology* 33 (2): 125–43.
- Killen, C. P., J. Geraldi, and A. Kock. 2018. Visualizations: Their use and impact on innovation portfolio decision making. *Innovation and Product Management Development Conference (IPDMC)*, Glasgow.
- Knudsen, T., and D. A. Levinthal. 2007. Two faces of search: Alternative generation and alternative evaluation. *Organization Science* 18 (1): 39–54.
- Ko, D.-G., Kirsch, L. J., and King, W. R. 2005. Antecedents of knowledge transfer from consultants to clients in enterprise system implementations. *MIS Quarterly* 29 (1): 59–85.
- Kock, A., W. Heising, and H. G. Gemünden. 2015. How ideation portfolio management influences front-end success. *Journal of Product Innovation Management* 32 (4): 539–55.
- Kroh, J., H. Luetjen, D. Globocnik, and C. Schultz. 2018. Use and efficacy of information technology in innovation processes: The specific role of servitization. *Journal of Product Innovation Management* 35 (5): 720–41.
- Krufft, T., M. Gamber, and A. Kock. 2018. Substitutes or complements? The role of corporate incubator support and innovation climate for innovative behavior in the hosting firm. *International Journal of Innovation Management* 22 (5): 1–29.
- Kruglanski, A. W., and E. P. Thompson. 1999. Persuasion by a single route: A view from the unimodel. *Psychological Inquiry* 10 (2): 83–109.
- Lam, C. F. U., L. Rees, L. L. Levesque, and S. Ornstein. 2018. Shooting from the hip: A habit perspective of voice. *Academy of Management Review* 43 (3): 470–86.
- Liedtka, J. 2015. Perspective: Linking design thinking with innovation outcomes through cognitive bias reduction. *Journal of Product Innovation Management* 32 (6): 925–38.
- Long, J. S. 1997. *Regression models for categorical and limited dependent variables*. Thousand Oaks, CA: Sage.
- Lu, S., K. M. Bartol, V. Venkataramani, X. Zheng, and X. Liu. 2018. Pitching novel ideas to the boss: the interactive effects of employees' idea enactment and influence tactics on creativity assessment and implementation. *Academy of Management Journal* 62 (2): 579–606.
- Lyles, M. A., R. van Wijk, and J. J. P. Jansen. 2008. Inter- and intra-organizational knowledge transfer: A meta-analytic review and assessment of its antecedents and consequences. *Journal of Management Studies* 45 (4): 830–53.
- Macmillan, I. C., and P. N. S. Narasimha. 1987. Research notes and communications: Characteristics distinguishing funded from unfunded business plans evaluated by venture capitalists. *Strategic Management Journal* 8 (6): 579–85.
- Magnusson, P. R., E. Wästlund, and J. Netz. 2014. Exploring users' appropriateness as a proxy for experts when screening new product/service ideas. *Journal of Product Innovation Management* 33 (1): 4–18.
- Mayer, R. C., J. H. Davis, and F. D. Schoorman. 1995. An integrative model of organizational trust. *The Academy of Management Review* 20 (3): 709–34.
- Menon, T., and S. Blount. 2003. The messenger bias: A relational model of knowledge valuation. *Research in Organizational Behavior* 25 (03): 137–86.
- Mueller, J. S., S. Melwani, and J. A. Goncalo. 2012. The bias against creativity: Why people desire but reject creative ideas. *Psychological Science* 23 (1): 13–7.
- Murphy, P. K., J. F. Long, T. A. Holleran, and E. Esterly. 2003. Persuasion online or on paper: A new take on an old issue. *Learning and Instruction* 13 (5): 511–32.
- Newman, M. L., J. W. Pennebaker, D. S. Berry, and J. M. Richards. 2003. Lying words: Predicting deception from linguistic styles. *Personality and Social Psychology Bulletin* 29 (5): 665–75.
- Norton, E. C., H. Wang, and C. Ai. 2004. Computing interaction effects and standard errors in logit and probit models. *The Stata Journal* 4 (2): 154–67.
- O'Reilly, C. A. 1980. Individuals and information overload in organizations: Is more necessarily better? *Academy of Management Journal* 23 (4): 684–96.
- Parhankangas, A., and M. Ehrlich. 2014. How entrepreneurs seduce business angels: An impression management approach. *Journal of Business Venturing* 29 (4): 543–64.
- Pechmann, C. 1992. Predicting when two-sided ads will be more effective than one-sided ads: The role of correlational and correspondent inferences. *Journal of Marketing Research* 29 (4): 441–53.
- Pennebaker, J. W., R. J. Booth, and M. E. Francis. 2007. *Linguistic inquiry and word count: LIWC [Computer software]*. Austin, TX: liwc. Net.
- Pennebaker, J. W., C. K. Chung, J. Frazee, G. M. Lavergne, and D. I. Beaver. 2014. When small words foretell academic success: The case of college admissions essays. *PLoS ONE* 9 (12): 1–10.
- Petty, R., and J. Cacioppo. 1986. The elaboration likelihood model of persuasion. In *Communication and persuasion*, ed. Richard E. Petty, 123–62. New York: Academic Press.
- Petty, R. E., D. T. Wegener, and L. R. Fabrigar. 1997. Attitudes and attitude change. *Annual Review of Psychology* 48: 609–47.
- Pfarrer, M. D., T. G. Pollock, and V. P. Rindova. 2010. A tale of two assets: The effects of firm reputation and celebrity on earnings surprises and investors' reactions. *Academy of Management Journal* 53 (5): 1131–52.
- Pham, M. T., and T. Avnet. 2004. Ideals and oughts and the reliance on affect versus substance in persuasion. *Journal of Consumer Research* 30 (4): 503–18.
- Piezunka, H., and L. Dahlander. 2015. Distant search, narrow attention: How crowding alters organizations' filtering of suggestions in crowdsourcing. *Academy of Management Journal* 58 (3): 856–80.
- Poetz, M. K., and M. Schreier. 2012. The value of crowdsourcing: Can users really compete with professionals in generating new product ideas? *Journal of Product Innovation Management* 29 (2): 245–56.
- Recker, J., A. Malsbender, and T. Kohlborn. 2016. Using enterprise social networks as innovation platforms. *IT Professional* 18 (2): 42–9.
- Reitzig, M., and O. Sorenson. 2013. Biases in the selection stage of bottom-up strategy formulation. *Strategic Management Journal* 34 (7): 782–99.
- Salton, G., C. Buckley, and E. A. Fox. 1983. Automatic query formulations in information retrieval. *Journal of the American Society for Information Science* 34 (4): 262–80.
- Schemmann, B., A. M. Herrmann, M. M. H. Chappin, and G. J. Heimeriks. 2016. Crowdsourcing ideas: Involving ordinary users in the ideation phase of new product development. *Research Policy* 45 (6): 1145–54.
- Schweiger, D. M., W. R. Sandberg, and J. W. Ragan. 1986. Group approaches for improving strategic decision making: A comparative analysis of dialectical inquiry, devil's advocacy, and consensus. *Academy of Management Journal* 29 (1): 51–71.
- Schweisfurth, T. G., M. A. Zaggel, and C. P. Schöttl. 2017. Does similarity between evaluator and creator affect the evaluation of ideas? *Academy of Management Annual Meeting Proceedings*: 1–6.



- Slooman, S. A. 1996. The empirical case for two systems of reasoning. *Psychological Bulletin* 119 (1): 3–22.
- Smith, E. R., and J. DeCoster. 2000. Dual-process models in social and cognitive psychology: Conceptual integration and links to underlying memory systems. *Personality and Social Psychology Review* 4 (2): 108–31.
- Stone, D. L., and K. M. Lukaszewski. 2009. An expanded model of the factors affecting the acceptance and effectiveness of electronic human resource management systems. *Human Resource Management Review* 19 (2): 134–43.
- Surowiecki, J. 2004. *The wisdom of crowds*. New York: Random House Inc.
- Takahashi, M., M. Indulska, and J. Steen. 2018. Collaborative research project networks: knowledge transfer at the fuzzy front end of innovation. *Project Management Journal* 49 (4): 36–52.
- Thompson, V. A. 2009. Dual-process theories: A metacognitive perspective. In *In two minds: Dual processes and beyond*, ed. J. Evans and K. Frankish, 171–95. Oxford, England: Oxford University Press.
- Thompson, V. A., J. A. Prowse Turner, and G. Pennycook. 2011. Intuition, reason, and metacognition. *Cognitive Psychology* 63 (3): 107–40.
- Tian, X., and T. Y. Wang. 2014. Tolerance for failure and corporate innovation. *Review of Financial Studies* 27 (1): 211–55.
- Tomz, M., G. King, and L. Zeng. 2003. ReLogit: Rare events logistic regression. *Journal of Statistical Software* 8 (i02). <https://doi.org/10.18637/jss.v008.i02>.
- Young, M. J., C. W. Bauman, N. Chen, and A. Bastardi. 2012. The pursuit of missing information in negotiation. *Organizational Behavior and Human Decision Processes* 117 (1): 88–95.
- Zhu, H., A. Kock, M. Wentker, and J. Leker. 2019. How does on-line interaction affect idea quality? The effect of feedback in firm-internal idea competitions. *Journal of Product Innovation Management* 36 (1): 24–40.
- Zhu, J. J., S. Y. Li, and M. Andrews. 2017. Ideator expertise and cocreator inputs in crowdsourcing-based new product development. *Journal of Product Innovation Management* 34 (5): 598–616.