Does constructive feedback improve idea quality in idea contests? Exploring the role of hierarchy and feedback overlap

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To fuel the innovation process with high-quality ideas, firms are increasingly soliciting ideas from their employee workforce and involving them in idea contests. During an idea contest employees suggest ideas on a firm-internal, digital idea platform. Once submitted, idea holders can receive constructive feedback from colleagues on their ideas – which has been advanced as positive instrument for stimulating idea improvement and idea quality. Examining three firm-internal, multi-staged idea contests that generated 395 ideas from a global management consulting firm, we examine under what conditions constructive feedback positively influences idea quality. We focus on the hierarchical roles of feedback providers and receivers and the role of feedback overlap (which indicates whether feedback focuses on similar issues). We find that the effect of constructive feedback on idea quality is larger when feedback providers have a higher hierarchical rank, but that this effect does not depend on the hierarchical rank of feedback recipients. Further, we show that (partial) feedback overlap strengthens idea quality. Our results generate new insights for both idea-contributing employees and innovation managers about the important role of managing feedback during idea contests.

1. Introduction

To stay ahead in today's competitive business environment, firms seek to create a constant inflow of high-quality ideas to fuel their innovation process (Kim and Wilemon, 2002; Drejer et al., 2004; Kijkuit and Van Den Ende, 2007; Björk and Magnusson, 2009; Björk et al., 2011; Bergendahl and Magnusson, 2015). Whereas firms have opened their innovation process to include ideas from the external environment (Poetz and Schreier, 2012; Hoornaert et al., 2017; Pinarello et al., 2022), a myriad of firms

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rely on their employee workforce to solicit ideas (Neyer et al., 2009; Kruft et al., 2019). Thanks to the widespread adoption of digital platforms, firms have become increasingly enabled to tap into the wisdom of the crowd by organizing idea contests (Piller and Walcher, 2006; Morgan and Wang, 2010; Kornish and Ulrich, 2011; Adamczyck et al., 2012; Malhotra and Majchrzak, 2014; Hutter et al., 2017; Porter et al., 2020; Gamber et al., 2022). An idea contest is a competitive process where employees generate and ameliorate ideas to corporate innovation challenges, often over multiple rounds (Terwiesch and Xu, 2008; Leimeister et al., 2009; Girotra et al., 2010). Recent research has shed light on how firm-internal idea contest can be managed to improve idea generation (yielding more ideas) and idea elaboration (yielding higher quality ideas). During the firm-internal idea contests, and on the digital idea management platforms typically used for that purpose, employees can freely give feedback to each other's ideas without being bounded by departments, hierarchical ranks or geographical sites.

The role of feedback during idea contests has recently attracted considerable attention from innovation scholars (e.g., Wooten and Ulrich, 2017; Beretta, 2019; Piezunka and Dahlander, 2019; Zhu et al., 2019; Chen et al., 2020; Beretta and Søndergaard, 2021; Di Vincenzo et al., 2021). These studies have found that feedback is effective in bolstering both (repeated) idea generation and idea quality outcomes during idea contests. In terms of idea generation, idea contributors who receive feedback on their ideas have been found to be more likely to suggest more consecutive ideas (Wooten and Ulrich, 2017), also when earlier ideas are rejected (Piezunka and Dahlander, 2019). After their genesis, ideas need to mature (Salter et al., 2015; Perry-Smith and Mannucci, 2017). Feedback has shown to be an effective instrument in this arena too, as it provides input to idea owners that can be used to refine ideas and heighten idea quality (Zhu et al., 2019; Beretta and Søndergaard, 2021). A first dimension established in recent studies relates to the content of feedback where a distinction was made between feedback that is positively *versus* negatively formulated. Positive feedback increases the probability that ideas get selected (Di Vincenzo et al., 2021) whereas negatively formulated feedback has the opposite effect (Beretta, 2019). Beretta and Søndergaard (2021) distinguish between more categories of feedback and find that employees are predominantly engaged in providing constructive feedback. Constructive feedback provides concrete hints, makes connections to people who have constructive knowledge, or poses important questions (Nadler, 1977; Zhu et al., 2019),

and has been shown to have a positive relationship with idea quality (Zhu et al., 2019). A second dimension that has received significant attention in existing feedback studies relates to the diversity characteristics of feedback providers. Diversity of feedback providers is perceived as beneficial for idea quality, as diverse feedback contributors can provide unique perspectives (Beretta, 2019; Zhu et al., 2019).

In this paper, we aim to advance our understanding of the role of feedback in idea contests by examining the boundary conditions through which constructive feedback can affect idea quality in idea contests. Particularly, we examine whether the effect of constructive feedback on idea quality is moderated by the hierarchical rank of feedback providers and feedback receivers. Within the organizational context, exploring the moderating role of hierarchical ranks of feedback providers and receivers is important as the extent to which employees will incorporate feedback to improve their ideas is likely to depend on their own hierarchical rank and the hierarchical rank of the feedback provider. Further, we examine the role of feedback overlap, which indicates to which extent constructive feedback addresses partly similar issues. We argue that idea holders face a lot of uncertainty on how to refine their ideas and improve idea quality and therefore may not always be sure what feedback is relevant to incorporate. Receiving feedback that partially overlaps signals feedback consistency and can increase the idea holder's confidence in regard to processing and internalizing the information communicated, which allows the idea holder to improve his or her idea.

To test our hypotheses, we rely on data from three idea contests organized by a global management consulting firm between 2014 and 2016. During the three idea contests 395 ideas passed through a five-stage idea contest where ideas were assessed on their quality and were either eliminated or allowed to proceed for further development. We find that constructive feedback has a positive effect on idea quality in a multistage idea contest. This effect is stronger when feedback is provided by employees with a higher hierarchical rank, while the hierarchical rank of the feedback recipient does not influences the effect of constructive feedback. Finally, we find that feedback overlap enhances idea quality rather than diminishing it.

2. Theoretical background and hypotheses

Feedback is a well-known, and multi-faceted instrument for communicating knowledge and evaluative information on performance and for bringing about

change (Nadler, 1979; Zhou, 2008; De Stobbeleir et al., 2011) and has been a longstanding topic of interest for organizational scholars, traditionally focused on employee job performance evaluations. The extant literature on feedback in organizations has advanced and validated several central parameters that strongly predict the way that feedback will affect employee behavior, including the nature of feedback, the organizational characteristics of the feedback provider, and the organizational characteristics of the feedback receiver (Ilgen et al., 1979; Nadler, 1979; Zhou, 1998; Shalley and Perry-Smith, 2001; Harrison and Rouse, 2015; Ashford et al., 2016).

More recently, the role of feedback has started to receive growing interest from innovation scholars too, closely linked to the widespread adoption of idea contest platforms (Björk and Magnusson, 2009; Van den Ende et al., 2015; Beretta et al., 2017; Hoornaert et al., 2017; Kruft et al., 2019; Piezunka and Dahlander, 2019). This line of studies has shed light on how feedback can affect (repeated) idea generation, idea quality and ultimately the selection of ideas for implementation during firm internal-collective idea contests. Central parameters highlighted include the content (framing) of feedback (Beretta, 2019; Zhu et al., 2019; Di Vincenzo et al., 2021), the timing of feedback (Chen et al., 2020), the competition for feedback (Di Vincenzo et al., 2021) and the diversity of feedback providers in terms of knowledge, functional expertise, and geographical locations (Beretta, 2019; Zhu et al., 2019).

Building on the organizational feedback literature and recent studies on feedback during firm-internal idea contests, we build argumentation for several hypotheses that relate to the relationship between constructive feedback and idea quality. Figure 1 presents our conceptual model. We first formulate a baseline hypothesis on the relationship between constructive feedback and idea quality. Next, we examine previously unexplored boundary conditions that moderate the effect of constructive feedback on idea quality. We test whether the effect of constructive feedback effect is contingent upon the hierarchical status of feedback providers and recipients and whether feedback overlap affects idea quality.

2.1. Constructive feedback (baseline hypothesis)

A central tenet in the organizational feedback literature is that the content or nature of feedback can strongly affect how employees will react to feedback. The nature of feedback can differ on its valence, differing in positive or negative connotations (Beretta, 2019), the style in which feedback is delivered (Zhou, 1998; Shalley and Perry-Smith, 2001), and the developmental information it entails (Nadler, 1977; Zhou, 2003, 2008). Feedback containing developmental information is generally defined as directive or *constructive feedback*.

Constructive feedback – as per its definition – provides developmental information that can be used as input to refine and improve ideas (Tushman and Nadler, 1978; Zhou, 2003, 2008; Harrison and Rouse, 2015; Majchrzak and Malhotra, 2016), directly affecting idea quality (Ederer, 2010; Zhu et al., 2019; Beretta and Søndergaard, 2021). When receiving constructive feedback, an idea holder can reflect upon and internalize the information transmitted, use it to amend the idea or to reduce commitment to low quality development strategies (Nadler, 1977; Ederer, 2010). Constructive feedback is expected to affect idea quality as it provides informative input that can be leveraged and which helps to brings the idea content closer to the required standards of quality (Ashford, 1986; Wooten and Ulrich, 2017) and to a closer fit with the strategic focus of the organization (Kock et al., 2015). Recent empirical work has shown that this mechanism holds true, by demonstrating a positive relationship between constructive feedback and idea quality in an idea contest (Zhu et
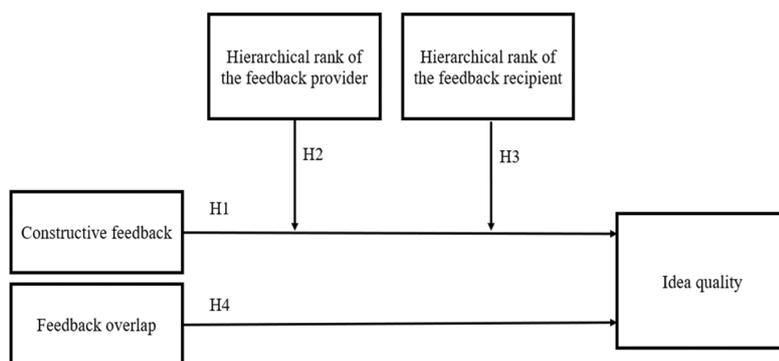

Figure 1. Conceptual model.

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al., 2019). Based on the above argumentation, we formulate the following baseline hypothesis:

Hypothesis 1 Constructive feedback is positively related to idea quality in idea contests.

2.2. Constructive feedback and organizational hierarchy

The extent to which employees will react and internalize feedback depends strongly on the characteristics of feedback providers and recipients (Fodor and Carver, 2000; Ashford et al., 2003; Zhou, 2008). Within the context of organizations, employees can differ in function of their hierarchical ranks, departmental functions and knowledge or expertise domains they hold (Keum and See, 2017; Beretta, 2019). A hierarchical rank is considered as a formal representation of the power and status an actor holds within an organizational structure (Ibarra, 1993). The hierarchical structure of the firm represents the asymmetrical distribution of resources, responsibilities and decision-making authority, where lower echelons have less formal power and status, and higher echelons hold a larger share of formal power and status (Mintzberg, 1983; Ibarra, 1993). Typically, feedback in organizations is communicated habitually more often from senior (higher hierarchy) organizational members towards their subordinates (lower hierarchy). On firm-internal idea (contest) platforms, however, employees can typically provide feedback freely to any suggested idea from any other member in the organization, unrestricted by hierarchical ranks (Mack and Landau, 2018). The flow of feedback from and to immediate peers, superiors and subordinates alike provides a fitting window to investigate the different hierarchical directions in which constructive feedback is sent (upward, downward, peer-to-peer) and how it affects idea quality.

When receiving constructive feedback from high-ranking organizational members, idea holders could perceive the feedback as more valuable because of the perceived knowledge, competence and expertise of the feedback provider (Zhou, 2008; Van der Vegt et al., 2010). Employees with a higher hierarchical rank have typically accrued more knowledge and expertise over the years, overcome performance hurdles to reach the high hierarchical position and often have been present longer in the organization, therefore having a better understanding of the organization's values and strategy (Van der Vegt et al., 2010; Fuchs et al., 2019). An employee with a high hierarchical rank might therefore be perceived as a more knowledgeable source

for feedback (Reitzig and Maciejovsky, 2015; Keum and See, 2017) which increases the chance that feedback transmitted is perceived as valuable and will be implemented by idea holders to refine their ideas, resulting into higher quality ideas. We hypothesize:

Hypothesis 2 The relationship between constructive feedback and idea quality in idea contests is stronger when feedback providers have a higher hierarchical rank.

As theorized in extant feedback literature, the individual-level characteristics of a feedback recipient, in our case an idea holder, will likely affect the extent to which feedback is reacted on and internalized (Fodor and Carver, 2000; Zhou, 2008). We expect that idea holders with low hierarchical positions are more likely to respond to constructive feedback than their counterparts in high hierarchical positions. Idea holders in high hierarchical positions have power and status in their organization (Keum and See, 2017) and therefore may be less likely to consider feedback (Harvey and Fischer, 1997; See et al., 2011). High-hierarchy members have been shown to be less concerned with the beliefs, opinions and encouragements both from colleagues positioned lower in the organizational hierarchy, as they are less dependent on them, and from their peers as they do not want to acknowledge their dependence on others in fear of undermining their perceptions of power or status (Kipnis, 1972; Fiske, 1993; De Jong and Den Hartog, 2007). Idea holders who hold low hierarchical positions are in contrary expected to react more to constructive feedback in order to learn and gain the favor of feedback providers (Mihm et al., 2010), which may help them in improving their ideas. We therefore hypothesize:

Hypothesis 3 The relationship between constructive feedback and idea quality in idea contests is stronger when the feedback recipient has a lower hierarchical rank.

2.3. Feedback overlap

Ideas can receive constructive feedback from a variety of people (Beretta, 2019; Zhu et al., 2019). The feedback obtained may differ in content and highlight different areas for improvement or may partially overlap and contain similar advice on how to further develop an idea. On the one hand, overlap in constructive feedback could be argued to be dispensable, as the overlapping part of feedback does not highlight any new information (Van

Swol and Ludutsky, 2007). On the other hand, feedback overlap may be valuable as idea holders may consider constructive feedback more relevant if different feedback messages partially overlap in their content. Our reasoning for this is two-fold. First, if different people give similar feedback, this serves as a signal that feedback is relevant, simply because multiple people arrived to it independently. Secondly, overlapping feedback can give a sense of higher feedback uniformity, which comprises a greater consistency among feedback messages (Howell and Burnett, 1978; Gatignon and Robertson, 1986). Idea holders face a lot of uncertainty on how to refine their ideas and improve idea quality (March, 2006; Kijkuit and Van Den Ende, 2007) and therefore may not always be sure what feedback is relevant to incorporate. Receiving feedback that partially overlaps signals feedback consistency and can increase the idea holder's confidence in regard to processing and internalizing the information communicated, which allows him/her to learn from it more effectively (Zhou, 2008). *Vice-versa*, without a certain degree of overlap in feedback, receiving idea holders may get confused in which direction to proceed with their ideas and feedback may therefore not be implemented. Taken together, we argue that constructive feedback, when there is a certain degree of feedback overlap, will more likely be internalized by idea holders to improve the quality of their ideas.

Hypothesis 4 Feedback overlap is positively related to idea quality in idea contests.

3. Data & methodology

3.1. Context and data sources

We test our hypotheses on a unique dataset, retrieved from Apollo, a pseudonym for a global management consulting firm. We collected data from the Apollo Innovation Challenges, a series of three annually internally organized idea contests between 2014 and 2016. The idea contests are set up as a structured ideation processes wherein employees generate and refine ideas over multiple rounds. Each idea contests consists of a number of specific challenges, such as improving smart mobility or leveraging big data in new domains, and an open call for ideas. The entire workforce, counting 966 employees (anno 2016), are invited to freely to participate. Apollo is organized according to a clear linear hierarchical structure, in which employees start as analyst (37% of employees) and then grow to become consultant (28% of employees),

manager (31% of employees) and possibly director (4% of employees).

All employees can freely suggest ideas and provide feedback to ideas on a digital idea management platform that was installed in support of the idea contests. The platform tracks the progress of each idea as it proceeds throughout the funnel process of the idea contest and keeps records of all the interactions happening between the employees. At the end of each idea contest, three winning ideas remain. The selected winners receive support and resources to further implement their idea. Employees proceeding until the final round of an idea contest must present their ideas before the senior board of directors. The combination of guaranteed resource commitment, the opportunity to implement an idea and the social recognition served as the main incentives for employees to participate in the idea contests. Approximately 55% of the workforce ($n = 427$) participated through soliciting ideas or giving feedback.

The Apollo Innovation Challenges followed a predetermined development and selection process (see Figure 2). After their genesis, preliminary ideas become refined by the idea holders by undergoing several development phases: entering the initial concept of the idea (stage 1), defining a value proposition and a business model canvas (stage 2), choosing a go-to-market strategy (stage 3), preparing a business plan (stage 4), and eventually specifying resource and funding requirements (stage 5). The output at the end of the contests are full-fledged elaborated ideas. After each development stage there is an evaluation gate where ideas are assessed by internal and external experts on their quality and are either eliminated or allowed to proceed and develop further. The idea contests are time-bound and take place over a predetermined period of five months. During the three contests, 395 ideas were submitted (stage 1), 297 ideas reached to stage two, 186 ideas to stage three, 87 ideas to stage four, 27 ideas to stage five (the finals) and 9 ideas (stage six) were chosen as winners.

3.2. Measures – dependent variable

As we are interested in the effect of constructive feedback on idea quality, we use the number of stages that an idea reaches in a competitive idea contest as dependent variable. Ideas develop iteratively through six stages with five evaluation gates. At each gate, ideas are assessed by a jury on their quality and consequentially are either eliminated or allowed to develop further and proceed to the next stage. The jury evaluating ideas is comprised of firm representatives with
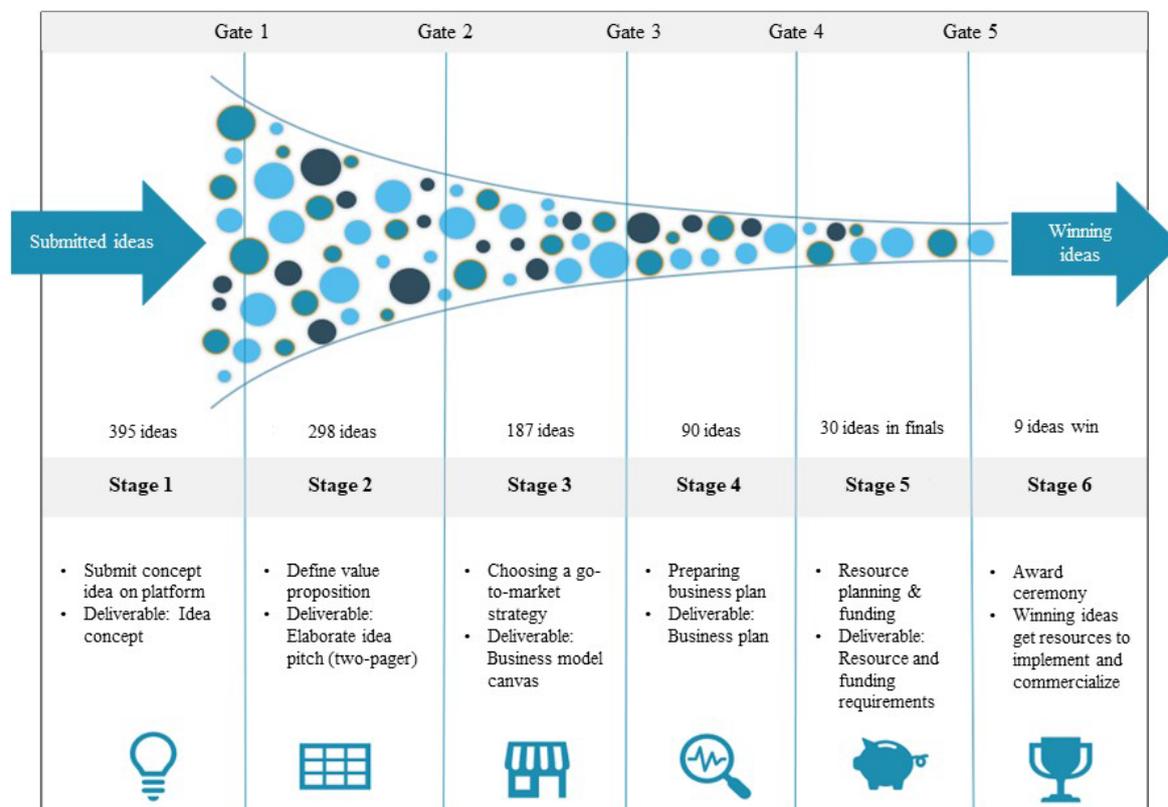
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Figure 2. The idea contest process of the 'Apollo Innovation Challenges'.

innovation expertise and external innovation experts who join the juries to limit possible internal politics and selection biases (Reitzig and Sorenson, 2013). The evaluation of ideas is done through consensual agreement in line with the standards as proposed by the creativity literature (Amabile, 1996; Amabile and Hennessey, 2011). Important to note is that the innovation jury is blinded from the feedback that is given to ideas on the digital idea platform when evaluating ideas, therefore minimizing the direct visibility effect of feedback on idea evaluators, which leaves us with a measure of the effect of feedback on idea quality. Appendix A provides an example of an idea and illustrates how the idea and idea holder were influenced by the constructive feedback that was provided during the idea contest.

3.3. Measures: independent variables

3.3.1. Constructive feedback
Constructive feedback is measured as the number of constructive feedback messages that an idea received during the first stage of the idea contest. In line with Zhu et al. (2019), a feedback message is considered constructive if it contains developmental information on how to improve an idea. This includes concrete hints for improvement, references to knowledge

sources (including people) and follow-up questions. We focus exclusively on feedback that is provided during the first stage of the idea contest to reduce endogeneity concerns due to reverse causality whereby ideas that proceed further in an idea contest have more opportunities to get feedback. As most feedback (85%) in the Apollo idea contests was provided during the first stage of the idea contest, the constructive feedback variable is constructed on most of the feedback provided to the ideas.

In total, 788 messages were provided to the 395 ideas during the first stage of the ideation process. All messages – in the format of a text – were classified following an interpretative content coding approach to filter out constructive feedback. The feedback commentaries were read, interpreted and categorized by (i) the lead researcher and (ii) eight students with a master in innovation and entrepreneurship to check for interrater agreement and consistency. To control for chance agreement, we compute the Cohen's Kappa and Gwet's AC1, which yield, respectively, high inter-rater agreements of 0.92 ($P = .02$) and 0.97 ($P < .01$), indicating a very high agreement consistency of the raters (Gwet, 2008). In filtering out constructive feedback messages, we also identify feedback messages that only provide emotional support ('*I like your idea*' or '*go get them*!')

or destructive feedback to an idea ('*your idea is unethical*' or '*your idea is illegal*') (Piezunka and Dahlander, 2019; Beretta and Søndergaard, 2021), for which we control in our analyses.

3.3.2. Constructive feedback and hierarchy

We created four groups of constructive feedback messages based on the hierarchical rank of the feedback provider and the hierarchical rank of the feedback recipient. We consider directors and managers as employees with a high hierarchical rank, and consultants and analysts as employees with a low hierarchical rank. We constructed four variables (see Figure 3) that outline the direction of feedback: 'low-hierarchy peer feedback', 'upward hierarchy feedback', 'downward hierarchy feedback' and 'high-hierarchy peer feedback'. This set-up with four mutually exclusive categories of constructive feedback provides the most detailed insights into the moderating role of organizational hierarchy on the relationship between constructive feedback and idea quality.

3.3.3. Feedback overlap

We used text content similarity analysis in NVivo to measure overlap in constructive feedback content. Before computing similarity coefficients, we pre-process feedback messages for valid textual similarity comparisons by removing punctuations, white spaces and stop words such as 'if', 'and', 'or', 'when' from the feedback texts. Next, we turned all the words to lowercase, and we stemmed each word to its root form. Similar procedures to text content similarity

analyses can be found in the study of Beretta (2019) to compute idea content similarity and by Piezunka and Dahlander (2019) to investigate matching interests of idea contributors and organizations in feedback messages. To measure the overlap of two feedback messages, we calculated Sorensen-Dice coefficients, which outline the percentage of overlap between two sets of text (Verma and Aggarwal, 2020). Sorensen-Dice coefficients take values from zero to one, with zero indicating no overlap and one indicating that two messages are identical. Our variable – constructive feedback overlap – indicates the number of pairs of constructive feedback messages whose content partly overlaps, with a Sorensen-Dice coefficient threshold that is equal to or above 20%. Sorensen-Dice coefficient scores for pairs of constructive feedback messages vary in our sample between 0 and 0.44. The choice for a threshold of 20% is based on an inspection of the values of the Sorensen-Dice coefficients found in the data and a human check of the partial similarity of corresponding feedback messages. Examples of overlapping feedback messages are provided in Table 1. Feedback messages with a Sorensen-Dice coefficient below 20% are argued to be different in content, while feedback messages with a Sorensen-Dice coefficient higher than 20% are deemed to partly overlap in content. We note that this might seemingly be perceived as a low threshold value, but this is because our text content analysis approach does not take synonyms into account and that the feedback messages tend to be quite long (on
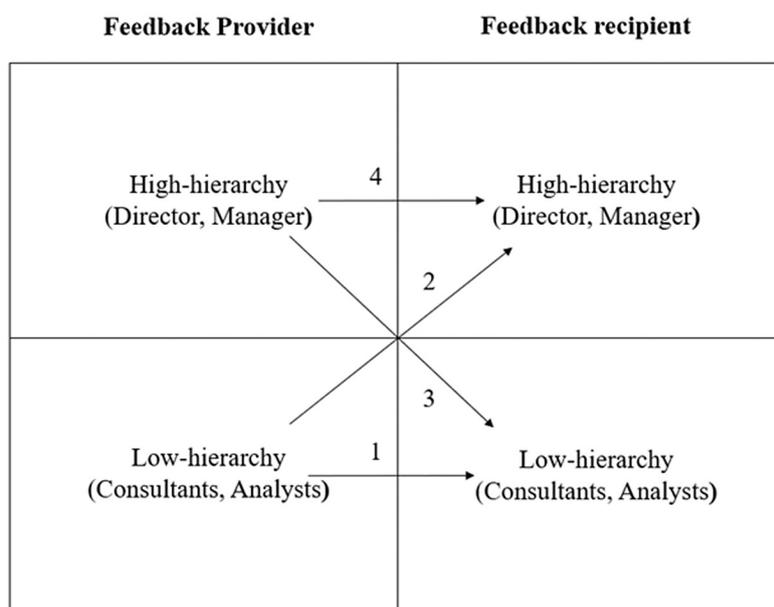

Figure 3. Constructive feedback and hierarchy. (1) Low-hierarchy peer feedback. (2) Upward hierarchy feedback. (3) Downward hierarchy feedback. (4) High-hierarchy peer feedback.

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Table 1. Examples of feedback overlap

Idea 1 (summary)	An idea that suggests a 'full digital restaurant experience', where the role of the waiter is replaced by a tablet, allowing people to take their orders by themselves. The intent of the idea was to digitize the customer journey or restaurant experience from booking tables, to ordering, to entertaining, and after-services such as billing and customer survey		
Feedback #1	*Not a technological point-of-view, but notice that with this process, waiters and waitresses cannot propose you an aperitif; sometimes you agree to order one, but if it is just a bullet on an ipad, you likely will not take it. And sometimes if there is a good atmosphere at your table, 'The house' offers you some digestives; once again it will not happen with an app. An additional problem, quite often people do not know what are the ingredients of a meal, and with this they will not be allowed to ask it to a waitress*		
Feedback #2	*I think the app would be actually great to show the ingredients in a meal. It would be very easy to look it up. Adding to this, restaurants could share which ingredients they have in house for that day and people could create their own dishes and order it (assuming the cook is good enough to make something extraordinary out of it). Regarding the 'aperitif' or 'digestives of the house' the waiter or waitresses can still propose this*		
Feedback #3	*Some friends of mine have a start-up that tried to accomplish the same:* http://youbba. com/?page_id=27. *The app works like this: Each table has got a QR-code. The user should scan this code and when he does, the menu is shown. The user can add drinks to his basket and press the 'order' button to send the drinks to his table. They are now working on similar ideas for aviation and hospitals. The app you describe has much more functionality and potential and I'm pretty sure there is a market for this*		
Sorensen-Dice Coefficient	Feedback 1 & 2	Feedback 1 & 3	Feedback 2 & 3
	0.26	0.06	0.08
Idea 2 (summary)	An idea that suggests a digital app that gathers all your travel details & information, informs you of your travel ahead, change of gates, flight delay and automatically checks you in for your flight (delivers mobile boarding passes & seat reservation)		
Feedback #1	*Another possible add-on is that it informs your friends/family when your flight is delayed. So people are not trying to pick you up in vain…*		
Feedback #2	*I would incorporate this in an existing app. Maybe give it for free the first 6 months and then ask a fee at the customers*		
Feedback #3	*Where would you generate your revenues? Would you ask the airline companies a fee or rather charge the customers using this application?*		
Sorensen-dice coefficient	Feedback 1 & 2	Feedback 1 & 3	Feedback 2 & 3
	0.0	0.0	0.25

average 23 words, maximum of 180 words) and that they do not follow a predetermined text structure (in comparisons for instance with patent descriptions).

3.4. Measures – control variables

We control for multiple factors that might interfere the relationship between our dependent and independent variables. First, we include a set of parameters that concern feedback characteristics. As previous research has found a positive relation between feedback diversity and idea quality and implementation (Beretta, 2019; Zhu et al., 2019), we constructed a Blau's index (Blau, 1977) that measures *feedback diversity*, considering both cognitive and demographic characteristics of feedback providers, including the functional domain (business or technology-related), age (in four categories per ten years) and gender (binary).

Further, we control for *feedback competition*, which measures the extent to which ideas compete with other ideas for the attention of the same feedback providers. Ideas that share only a limited number of common feedback providers with other ideas get a low value for feedback competition and may benefit from more unique feedback (Di Vincenzo et al., 2021). To construct the feedback competition measure we build, for each of the three ideation contests, a matrix of dimension 'n × m' where rows contain ideas and columns contain feedback providers. Each cell (F_{ik}) contains the number of constructive feedback messages that a specific idea (i) received from a specific feedback provider (k). The degree of feedback competition between two ideas i and j is measured by calculating the cosine index $FC_{i,j}$ that measures the angular separation between the row vectors (i) and (j).

$$FC_{i,j} = \frac{\sum_{\ddot{k}=1} F_{ik} \times F_{jk}}{\sqrt{\sum_{\ddot{k}=1} F^2 ik} \times \sqrt{\sum_{\ddot{k}=1} F^2 jk}}$$

$FC_{i,j}$ takes values between 0 and 1. It is equal to 1 for pairs of ideas with an identical distribution of constructive feedback over feedback providers, while it goes to zero for pairs of ideas that do not share the same feedback providers. For a specific idea, feedback competition is calculated as the average value of the degree of feedback competition ($FC_{i,j}$) of that idea with all other ideas that it is competing with in a specific ideation contest.

Feedback can vary in length, indicating its elaborateness (Zhu et al., 2019). To measure *feedback elaborateness*, we calculated the average number of words of all constructive feedback that an idea received. We control for *feedback between the same function*, measured as the percentage of constructive feedback messages that are given by members that belong to the same organizational department as the feedback recipient. The organization is composed of nine departments, each with a functional specialization regarding consulting services. When feedback recipients belong to the same function as feedback providers, they may benefit from a similar underlying knowledge base (Chen et al., 2020; Asplund et al., 2022) and close personal connections (Reitzig and Sorenson, 2013) which may help them in understanding and implementing feedback and improving the quality of their ideas.

Second, we include indicators of the *initial quality of ideas* as they have been submitted at the start of the idea contest, as they are likely to correlate with the amount of feedback that ideas receive. To control for this, three evaluators rated each idea description on a set of idea quality criteria in 2017. The evaluators are (non-renumerated) academics with considerable experience in idea evaluation. An idea is assessed based on its novelty and usefulness (Amabile, 1996; Dean et al., 2006). Usefulness relates to whether an idea is feasible, has a high value potential and is specific (Dean et al., 2006; Amabile and Hennessey, 2011; Poetz and Schreier, 2012). Each criterium is assessed on an ordinal scale ranging from 0 to 5. The assessments of the three evaluators have a percentage agreement for the different quality criteria of around 90% and Brennan and Prediger and Gwet AC's value of inter-rater agreements between 0.6 and 0.7, indicating moderate inter-rater agreement. The measures of initial idea quality are calculated as average scores of the three evaluators.

Third, we control for differences between participants and their teams. First, we control for *team size*, measured as the number of employees that is working on an idea. In line with prior literature that refers to both the advantages and disadvantages of a large team for idea quality (Taylor and Greve, 2006; Bercovitz and Feldman, 2011), we are testing for a non-linear

effect of team size. Next, we control for several diversity parameters of the teams. *Functional diversity* is measured by a dummy variable that takes a value equal to one when the team includes members with a technology and a business background. Next, *gender diversity* is coded as a dummy variable that takes the value one if there are both females and males within a team. In addition, the variable *manager presence* indicates in a binary fashion whether the team contains at least one manager or director. Finally, we control for the *average age* and *average tenure* of the team members, as a proxy for work experience.

As the three idea contests took place in consecutive years, we control for *repeated entry* of idea holders, which takes a value one if at least one team member participated in an idea contest before. We also control for whether ideas are submitted to an *open call* for ideas or to one of the innovation challenges. The variable *open call for ideas* is a dummy that takes a value one if a specific idea responded to the open call for ideas. Finally, we control for the *number of ideas submitted* to an idea contest. When more ideas enter the idea contest, there is more competition and the probability of an individual idea to proceed far in an idea contest decreases because the number of ideas that are allowed to move through the specific phases is predetermined towards the end, as is the number of winners per year. Further, as demonstrated by Boudreau et al. (2011), when the number of competitors increases contestants will perceive their probability of success to be lower, which might result in less effort exerted.[1]

3.5. Methodology – Ordered Probit model

Our dependent variable, idea quality, is an ordinal variable taking on the values (1,2,3,4,5,6). Therefore, we estimate Ordered Probit models. The Ordered Probit model for y (conditional on x) can be derived from a latent variable model (Wooldridge, 2010):

$$y_i = 0 \text{ if } y_i^* \leq \alpha_1 \quad y_i = 1 \text{ if } \alpha 1 < y_i^* \leq \alpha_2$$
$$\ldots \quad y_i = 6 \text{ if } y_i^* > \alpha_5$$

where $y_i^* = x_i\beta + \varepsilon_i$ is the latent variable, ε_i follows a normal distribution, and $\alpha_1 < \alpha_2 < \alpha_3 < \alpha_4 < \alpha_5$ are unknown cut points (threshold parameters) that are estimated together with β.

4. Empirical results

4.1. Descriptive statistics and correlations

Table 2 displays the descriptive statistics and correlations. Ideas receive on average 1.4 constructive

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Table 2. Summary statistics and correlations

	Mean	Std. dev.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)
(1) Constructive feedback	1.416	2.278	1																									
(2) Low-hierarchy peer feedback	0.497	1.375	0.74	1																								
(3) Upward hierarchy feedback	0.235	0.787	0.35	−0.11	1																							
(4) Downward hierarchy feedback	0.388	0.982	0.66	0.57	−0.12	1																						
(5) High-hierarchy peer feedback	0.268	0.713	0.28	−0.13	0.32	−0.14	1																					
(6) Feedback overlap	0.061	0.321	0.36	0.29	0.26	0.22	0.06	1																				
(7) Feedback diversity	0.234	0.203	0.46	0.28	0.22	0.30	0.24	0.15	1																			
(8) Feedback competition	0.024	0.033	0.26	0.09	0.15	0.12	0.27	0.10	0.42	1																		
(9) Feedback elaborateness	23.60	31.10	0.40	0.22	0.15	0.32	0.22	0.14	0.49	0.21	1																	
(10) Feedback within the same function	0.168	0.325	0.18	0.11	0.07	0.11	0.25	0.04	0.30	0.17	0.27	1																
(11) Motivational feedback	0.201	0.552	0.47	0.36	0.22	0.27	0.05	0.23	0.25	0.08	0.16	0.06	1															
(12) Destructive feedback	0.038	0.228	0.18	0.24	0.03	0.04	0.03	0.14	0.11	0.04	0.07	0.03	0.16	1														
(13) Novelty	2.241	0.612	0.13	0.07	0.08	0.08	0.09	−0.01	0.11	0.08	0.16	0.20	−0.01	0.01	1													
(14) Feasibility	2.752	0.578	0.01	−0.04	0.02	0.03	0.03	0.06	0.02	0.01	−0.01	0.02	0.01	−0.07	0.17	1												
(15) Value creation potential	2.389	0.611	0.08	0.05	0.04	0.05	0.02	−0.02	0.04	0.07	0.08	0.11	0.04	0.01	0.46	0.31	1											
(16) Specificity	2.814	0.741	0.19	0.17	0.06	0.16	0.01	0.10	0.11	0.03	0.19	0.07	0.04	0.01	0.37	0.39	0.29	1										
(17) Team size	2.125	1.308	0.06	0.12	−0.05	0.10	−0.06	−0.02	0.04	0.03	−0.04	0.16	0.07	0.03	0.29	0.14	0.18	0.09	1									
(18) Team size (squared)	6.222	7.438	0.06	0.12	−0.05	0.07	−0.05	−0.02	0.03	0.03	−0.05	0.19	0.06	0.04	0.27	0.14	0.17	0.08	0.97	1								
(19) Team Functional diversity	0.306	0.461	0.07	0.14	−0.05	0.09	0.06	−0.01	0.03	0.07	0.00	0.01	−0.01	0.01	0.18	0.13	0.16	0.12	0.63	0.56	1							
(20) Manager presence in team	0.207	0.255	0.09	0.14	0.01	0.10	−0.07	−0.05	0.05	0.17	−0.02	0.11	0.08	0.04	0.24	0.05	0.09	0.07	0.72	0.65	0.50	1						
(21) Team Gender diversity	0.204	0.403	0.16	0.20	0.07	0.14	−0.07	0.06	0.07	−0.05	0.01	0.12	0.15	0.05	0.05	0.05	0.16	0.01	0.51	0.48	0.39	0.44	1					
(22) Average team tenure	30.47	21.52	0.02	−0.06	0.10	0.00	0.09	0.07	0.10	0.06	−0.04	−0.00	−0.05	0.03	−0.06	−0.05	0.01	−0.06	−0.13	−0.12	−0.12	−0.07	0.00	1				
(23) Average team age	29.89	5.047	0.01	−0.10	0.11	−0.09	0.25	0.03	0.12	0.08	−0.03	0.04	0.00	−0.09	−0.09	−0.04	−0.05	−0.07	−0.07	−0.16	−0.16	−0.09	−0.12	0.49	1			
(24) Repeated entry	0.329	0.470	−0.11	−0.05	−0.04	−0.05	−0.07	−0.05	−0.10	0.13	0.15	0.06	−0.03	0.02	0.02	−0.06	−0.03	−0.15	0.34	0.33	0.20	0.31	−0.07	0.04	0.04	1		
(25) Open call for ideas	0.729	0.444	−0.10	−0.14	0.07	−0.06	−0.02	0.03	−0.04	−0.03	−0.08	0.04	0.01	0.04	0.04	−0.01	−0.06	0.00	−0.07	−0.08	−0.09	−0.10	−0.12	−0.07	−0.04	−0.06	1	
(26) N° of submissions per year	135.01	22.57	0.26	0.15	0.15	0.10	0.16	0.14	0.24	−0.10	0.28	0.03	0.17	0.10	0.01	0.01	−0.07	0.21	0.18	0.18	−0.10	−0.11	0.04	0.23	0.38	−0.57	−0.16	1

Significant correlations at 5% level are expressed in bold.

feedback messages, ranging between zero and twenty-two messages. Constructive feedback overlap occurs less frequently (six percent of all observations) with a maximum of three pairs of similar messages for one idea. This is not surprising as a considerable number of ideas (175 out of 392 ideas) do not receive more than one constructive feedback message. Separated based on the hierarchical rank of feedback providers and recipients, ideas that belong to idea owners positioned in the lower tier of the hierarchical structure of the firm receive on average 0.50 constructive feedback messages from low hierarchy employees and 0.39 feedback messages from high hierarchy employees. Ideas that belong to a high hierarchy employee receive on average 0.24 feedback messages from low hierarchy employees and 0.27 feedback messages from their peers. The correlations among the independent variables do not warrant immediate concerns about multicollinearity. The average variance inflation factor ranges between 3.20 and 4.27 across models, well below conventional cut-off values.

4.2. Regression results

To estimate the effect of feedback on idea quality in a multistage idea contest, we conduct stepwise ordered probit regression models (see Table 3). Model 1 presents the baseline model and contains only the control variables that are unrelated to feedback. First, idea novelty shows a significant positive relationship with idea quality, while no significant effects are found for feasibility, value creation potential and specificity. Second, team size has an inverted U-shaped relationship with idea survival. The optimal team size ranges between 4 and 5 employees. Third, we find that teams that are diverse, in terms of functional background and gender, are associated with higher quality ideas. No significant effect is found for manager presence, although this effect becomes significant in full model 4. No significant effects are found for the team's age or tenure, for repeated entry and for the open call for ideas. The number of idea submissions has a negative coefficient and is significant in full model 4 only.

In model 2 we add *constructive feedback* to our model, and control additionally for feedback diversity, feedback competition, feedback elaborateness, feedback within same function and we add measures for destructive feedback and emotional support feedback. The coefficient of constructive feedback is significant ($b = 0.107$, $P = .002$). This indicates that constructive feedback has a positive relationship with

idea quality, confirming our baseline Hypothesis 1 and affirming prior evidence of this relationship (Zhu et al., 2019). To get an indication of the magnitude of this effect, we have calculated semi-elasticities that measure the effect of one unit change in constructive feedback on the percentage change of the probabilities that an idea reaches certain stages ($n = 6$) in the idea contest. When an idea receives one additional constructive feedback message, this increases the probabilities that an idea reaches stages 3, 4, 5 or 6 in the idea contest by respectively 6%, 18%, 27% and 36%.

In model 3, we examine how organizational hierarchy moderates the relationship between constructive feedback and idea quality in ideation contests. Three of the four constructive feedback variables have a positive and significant coefficient: *low-hierarchy peer feedback* (β_1) ($b = 0.10$, *P*-value = .07), *downward hierarchy feedback* (β_3) ($b = 0.16$, *P*-value = .042) and *high-hierarchy peer feedback* (β_4) ($b = 0.23$, *P*-value = .015). No significant effect is found for *upward hierarchy feedback* (β_2) ($b = -0.02$, *P*-value = .825). In order to test hypotheses 2 and 3, we conduct chi-squared tests on sums of coefficients of the constructive feedback variables[2]. The sums of coefficients of constructive feedback provided by high-hierarchy employees ($\beta_3 + \beta_4$) are significantly larger than the sum of coefficients of constructive feedback provided by low-hierarchy employees ($\beta_1 + \beta_2$) (chi^2 = 4.49, *P*-value = .034). This confirms Hypothesis 2: The relationship between constructive feedback and idea quality in idea contests is stronger when feedback providers have a higher organizational rank. A chi square test comparing the sum of coefficients of constructive feedback received by low-hierarchy employees ($\beta_1 + \beta_3$) and the sum of coefficients of constructive feedback received by high hierarchy employees ($\beta_2 + \beta_4$) is not significant (chi^2 = 0.45, *P*-value = .502). We therefore reject the third hypothesis that the relationship between constructive feedback and idea quality in ideation contests is stronger when feedback recipients have a lower hierarchical rank.

In model 4, we add *feedback overlap*. Constructive feedback overlap is positive and significant (coefficient = 0.56, *P*-value = .004). This confirms Hypothesis 4 that constructive feedback overlap is positively related to idea quality in ideation contests. The calculation of semi-elasticities shows us that the effect of feedback overlap is large. When an idea gets one additional unit of overlapping feedback, this increases the probabilities that it reaches stages 3, 4, 5, or 6 in an idea contest by, respectively, 37%, 95%, 146%, and 190%.

Table 3. Ordered probit regression models

	Model 1	Model 2	Model 3	Model 4
Constructive feedback		0.107*** (0.035)		
Low-hierarchy peer feedback (β_1)			0.104* (0.058)	0.072 (0.059)
Upward hierarchy feedback (β_2)			−0.018 (0.082)	−0.084 (0.088)
Downward hierarchy feedback (β_3)			0.156** (0.077)	0.144* (0.062)
High-hierarchy peer feedback (β_4)			0.227** (0.093)	0.221** (0.100)
Feedback overlap		0.489 (0.365)	0.542 (0.325)	0.558*** (0.191)
Feedback diversity				0.619* (0.326)
Feedback competition		−4.372** (2.006)	−4.765** (2.029)	−5.423*** (2.044)
Feedback elaborateness		−0.002 (0.002)	−0.002 (0.002)	−0.002 (0.002)
Feedback within same function		0.344 (0.188)	0.257 (0.191)	0.268 (0.191)
Motivational feedback		−0.052 (0.120)	−0.014 (0.121)	−0.033 (0.121)
Destructive feedback		−0.205 (0.257)	−0.221 (0.269)	−0.278 (0.263)
Novelty	0.549*** (0.111)	0.495*** (0.113)	0.505*** (0.112)	0.522** (0.112)
Feasibility	0.037 (0.109)	0.052 (0.111)	0.051 (0.109)	0.017 (0.111)
Value creation potential	−0.016 (0.108)	−0.005 (0.111)	−0.017 (0.161)	0.037 (0.110)
Specificity	−0.038 (0.092)	−0.072 (0.093)	−0.078 (0.096)	−0.088 (0.095)
Team Size	1.421*** (0.026)	1.504** (0.021)	1.427*** (0.026)	1.431*** (0.024)
Team Size (squared)	−0.158*** (0.038)	−0.173*** (0.038)	−0.162*** (0.038)	−0.162*** (0.038)
Team functional diversity	0.308** (0.157)	0.354** (0.158)	0.358** (0.158)	0.368*** (0.158)
Manager presence in team	0.164 (0.130)	0.213 (0.141)	0.183* (0.138)	0.318** (0.138)
Team gender diversity	0.298* (0.158)	0.176 (0.164)	0.267 (0.158)	0.199 (0.158)
Average Tenure	−0.004 (0.003)	−0.004 (0.003)	−0.004 (0.003)	−0.004 (0.003)
Average Age	0.004 (0.014)	0.008 (0.015)	0.003 (0.016)	0.002 (0.016)
Repeated Entry	0.223 (0.177)	0.211 (0.159)	0.230 (0.177)	0.217 (0.177)
Open call for ideas	−0.186 (0.127)	−0.188 (0.130)	−0.170 (0.131)	−0.198 (0.131)
N° of submissions per year	−0.002 (0.003)	−0.006 (0.003)	−0.005 (0.004)	−0.006* (0.004)
cut1	2.017 (0.701)	1.642 (0.692)	1.523 (0.697)	1.355 (0.701)

(Continues)

Table 3. (Continued)

	Model 1		Model 2		Model 3		Model 4	
cut2	3.258	(0.726)	2.911	(0.701)	2.795	(0.706)	2.643	(0.710)
cut3	4.446	(0.737)	4.148	(0.712)	4.049	(0.716)	3.906	(0.719)
cut4	5.403	(0.760)	5.144	(0.718)	5.057	(0.722)	4.928	(0.725)
cut5	6.086	(0.793)	5.878	(0.728)	5.796	(0.732)	5.689	(0.735)
Number of subjects	392		392		392		392	
Log Pseudo Likelihood	−463.69		−452.97		−455.31		−446.31	
LR chi^2	303.58***		325.03***		334.74***		338.36***	
Pseudo R^2	0.246		0.264		0.262		0.275	

*, **, *** indicate significance at 10, 5, and 1 percent level.

We further observe that feedback diversity has a positive and significant effect on idea quality in ideation contests, while feedback competition has a negative and significant effect. No significant effects are found for feedback elaborateness, feedback within the same function, destructive feedback, and emotional support feedback.

5. Conclusion and discussion

The central notion of this paper is that constructive feedback plays an important role in the front end of the innovation process by affecting the quality of ideas in idea contests, but that its effect is bound by certain conditions. Relying on information on three multi-staged idea contests and 395 ideas organized internally by a global management consulting firm, we find that the relationship between constructive feedback and idea quality is stronger when feedback providers have a higher hierarchical rank, but that this effect does not depend on the hierarchical rank of feedback recipients. Further, we show that (partial) overlap in the content of constructive feedback strengthens idea quality in ideation contests.

Our study contributes to the literature on the role of feedback during firm-internal idea contests (Beretta, 2019; Zhu et al., 2019; Chen et al., 2020; Beretta and Søndergaard, 2021; Di Vincenzo et al., 2021). First, we acknowledge and confirm the finding that constructive feedback is an effective instrument for stimulating idea refinement and idea quality (Zhu et al., 2019). Second, we add new insights to this line of studies by highlighting two boundary conditions that influence the constructive feedback effect, namely the effect of feedback overlap and the hierarchical ranks of feedback providers and receivers.

By demonstrating the important role of overlap in constructive feedback, this paper contributes to the discussion in the idea contest literature on the importance of getting unique *versus* similar feedback from feedback providers. While prior work has stressed the importance of getting unique feedback from diverse and different feedback providers (Beretta, 2019; Zhu et al., 2019; Chen et al., 2020), our paper shows that having a certain degree of overlap between feedback messages positively influences idea quality. This relates to the notion that a certain degree of content overlap in feedback signals consistency of information to the feedback recipient, as well as signaling that multiple persons emphasize the same information, indicating that feedback is likely relevant to implement by the idea holder.

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Additionally, we add to the feedback theory by investigating the influence of the hierarchical ranks of feedback providers and recipients. Whereas a large body of literature studying feedback focuses on job performance appraisals, where there often is a hierarchical communication of feedback from supervisors to subordinates (Ilgen et al., 1979; Ashford and Cummings, 1983; Zhou, 2008; Ashford et al., 2016), our empirical context allows for anyone to give feedback to anyone in the organization. We find that hierarchical influence does not only run cascading down from the top to the bottom of the organizational structure (March and Simon, 1958; Franklin, 1975; Fodor and Carver, 2000; Reitzig and Maciejovsky, 2015; Keum and See, 2017), but that employees tend to listen to and internalize constructive feedback also from their direct peers. We further find that feedback given by low-hierarchy employees to high-hierarchy employees has no effect on idea quality. A possible explanation for this may be that high-hierarchy employees might care less about constructive feedback they receive, unless given by their peers, because of the power and status they hold (De Jong and Den Hartog, 2007; Aime et al., 2014). This raises the concern that high-hierarchy employees may ignore valuable feedback that is provided to them because of power and status differences.

From a managerial perspective, our study affirms that constructive feedback positively influences idea quality in ideation contests. Organizers and moderators of idea contest platforms are therefore advised to stimulate the communication of constructive feedback explicitly, for instance by formalizing 'feedback-giving instructions'. Our study does highlight several boundary conditions under which constructive feedback can positively affect idea quality. First, our findings stress the importance for organizational members of high-hierarchical rank to voice their knowledge and expertise, in the form of constructive feedback, to both their subordinates and their peers. An apt suggestion is therefore for high-hierarchy organizational members to 'lead by example' by actively giving constructive feedback to ideas during idea contests, as this can increase the quality of ideas significantly.

Second, the findings of this study suggest a positive effect of feedback overlap, which contradicts the notion that feedback should not be repeated if it has already been mentioned. We therefore suggest that – when giving feedback – it is a good practice to partially repeat earlier feedback when feedback providers find it relevant or to build further on previous feedback given to an idea, as this makes the feedback provided consistent over time and the information it displays clear and persistent to the idea holder. Feedback instructions given to employees could therefore consist of emphasizing that there is no need to hold back a certain degree of repetition when formulating feedback on ideas in ideation contests.

Several limitations suggest caution in the interpretation of our findings. First, we base ourselves on data of a single firm, which limits the generalizability of our findings. Yet, there are many contexts that resemble the firm's organizational structure, where employees are grouped in departments or units based on a common knowledge and expertise and where members are ranked according to a hierarchical ladder where employees can climb upwards based on merit and tenure. Similarly, the idea contest procedure used resembles ideation processes in many organizations, where preliminary ideas are refined in iterative steps, before considerable resources are invested in the implementation of these ideas.

Second, with exception for the initial quality of ideas when first submitted, we do not have absolute scores of idea quality during the different stages of the idea contests. Instead, we rely on a relative ranking of idea quality by considering how far an idea proceeds during an idea contest. Our measure of idea quality is based on the judgments and decisions by those responsible for selection decisions in the idea contests. Idea selection decisions are however not completely objective but prone to biases, such as a similarity bias whereby evaluators give higher ratings to ideas of idea holders that are similar to them (Reitzig and Sorenson, 2013). Within Apollo, the possible impact of such a bias is countered by working with a team of evaluators.

Third, although we restrict the measurement of feedback variables to feedback that is provided at the start of idea contests only and make use of a long list of control variables, we cannot fully rule out endogeneity concerns on feedback. To better deal with endogeneity, future research can look for instrumental variables (which influence feedback, but not idea quality) or undertake experiments whereby feedback to ideas gets randomized.

Fourth, since our feedback variables are constructed on feedback given early in idea contests, we did not examine the effects of feedback that is given late in idea contests. We consider a potential fruitful area for future research to investigate whether the effects of feedback given early and late in idea contests are different. One may, for example, expect that constructive feedback is especially important when provided early on in idea contests when ideas are still embryonic and susceptible to adjustments. Another interesting avenue for further research would be to examine how constructive feedback impacts on the different dimensions of idea quality: novelty, feasibility, value potential and specificity.

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Data availability statement

Author elects to not share data due to privacy restrictions.

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Notes

[1]We obtain similar results when the variable *number of ideas submitted* is replaced with three year dummies, indicating the years during which the different ideation contests took place.

[2]We rely on coefficients in the full regression model 4.

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APPENDIX A

Idea and feedback example

We provide an example of an idea of our sample and illustrate how the idea and the idea holder were influenced by the constructive feedback that was provided during the idea contest. We base ourselves on information from the idea management platform and a semi-structured interview with the idea holder. The idea example was one of the three winners of the idea contest in 2015. The idea is titled 'Eatify', which is an idea for a double-sided food or meal sharing platform, that would enable people to order home cooked meals by connecting them with hobby chefs and home cooks. Or as originally posted on the idea contest platform:

> Think about this for a second: *We are all busy people, right? This often means that there is no time left to make a proper meal. Don't we all like healthy and freshly made food? Of course we do. We believe that people are fed up with the limited choices for affordable fresh and healthy food delivered at home. People crave for new food experiences and food is being embraced as a vehicle for self-expression and storytelling. Eatify will enable people to order home cooked meals by connecting them with enthusiastic home cooks from the neighborhood. We call them Eatifiers and Cookifiers. Our platform will give Eatifiers an overview of which meals are available in their neighborhood. Users will have the possibility of exploring home cooked meals based on diet, allergy, cook, cuisine, location and popularity. Eatifiers can choose between take away or delivery. Eatify enables Cookifiers to take their passion to the next level. The platform will facilitate them to distribute their famous meals. So what is in it for them? By commercializing their passion, they can basically eat for free or even earn extra money out of it. Eatify will give you the opportunity to order freshly cooked meals and finally try out that famous stew pot from around the corner where everyone is talking about.*

As the idea holder explains, this idea was submitted together with two team members who were business analysts at the digital department, while he started his first year at the company as business analyst in the strategy department. When asked about the idea contest and about the idea development that occurred, the idea holder shared the following:

> I would say the core idea did not change. We stayed close to the core idea…which is connecting the cookifiers to the eatifiers. So the value proposition itself did not change. What we started to do is build peripherals around the idea, like aspects regarding food safety, adding a business model canvas… So obviously the idea evolved a lot… In the beginning, there was just this… (initial idea subscription) … a very rudimentary idea. This is the value proposition, which makes sense in itself, yes. But how to make a business out of it, that is actually what we did through the (idea contest) track.

The Eatify idea received five directive feedback messages (see table below).

Feedback #1	*A thing to pay attention to: food safety regulation and what if people get ill after eating via the Eatify platform?* • From a business analyst at strategy department
Feedback #2	*How do you differentiate from existing players?* (e.g., https://www.platmaison.fr/ http://www.super-marmite.com/) • From a business analyst at the communications, media & technology department
Feedback #3	*How would you minimize the risk for the Cookifiers of not having a consumer for what they have prepared or for what they have bought the ingredients? You could perhaps include frozen meals to (partly) overcome this. Secondly, I think a close look should be taken at tax legislation to inform your Cookifiers on how to incorporate this in their tax declaration.* • From a manager at the digital department
Feedback #4	*Just a couple of thoughts: How to balance supply and demand? How will the eatifiers pay for their meal? What type of delivery service will you offer?* • From a business analyst at the strategy department
Feedback #5	*My main worry would be to know who is cooking (in which hygiene condition) – I guess it would be important to have a good profile of the Cookifiers, and a social rating system so you know what others thought about it…* • From a director at the products department

The very first feedback the team received (feedback *#1*) from a business analyst at the strategy department was the directive feedback to pay attention to the food safety & hygiene regulations and to think about what could happen if someone would get ill after eating *via* the food sharing platform. As the idea holder illustrates:

> Obviously, it makes sense food safety & regulation being asked. Because this question was being asked, it forces you to basically think about this. And it is not that we did not think about it (beforehand), but it is because someone asks it that you also get the validation that other people are thinking about it. It is one of the first things that are on someone else's mind, so we need an answer to this question.

After that the team received more directive feedback, one which posed the question how they would differentiate from existing players (feedback *#2*), another directive feedback that focused on the cooks

on the platform, proposing the use of frozen meals and/or to incorporate the sales of meals in their tax declaration (feedback #3), and a directive feedback *that referred to the balancing of supply and demand, and the delivery services that will be offered (feedback #4). The idea holder explained that those comments prompted the team to think about these important matters. The team decided not to offer frozen meals on the platform (although this would help to balance supply and demand) because they felt that the provision of frozen food was not in line with their focus on healthy and fresh food.*

Further in the idea contest, the team received a feedback message from a director (feedback #5) which returns to the point of the first feedback message: food hygiene & safety. Although similar in topic, the latter feedback adds the recommendation to use a social rating system to tackle the food hygiene issue. As the importance of food safety was repeatedly pointed out, and raised this time by a director, the team decided to refine their idea and add a social rating system for cooks to their platform. As the idea holder explained:

> Basically the same feedback as the first feedback comment. This is again about the hygiene profile.

But here, this person already gives the solution to the issue. It is like 'I would be concerned about the hygiene, so maybe add a social rating system.' So indeed, we knew this was going to be a concern from the first comment that we received, but here they already gave us a very good idea how to answer that. It is like a recommendation, we read and it made sense.

At the finals gate of the idea contest, where ten ideas were considered, the 'Eatify' idea was announced as one of the three winning ideas of the 2015 Apollo idea contest. As a reward, the team behind the idea could continue to work full-time on bringing their idea to market, while being supported by Apollo with a given continuation of their salary for the next three months. During the next months, the team moved to an incubator, where they developed a beta-version of the platform. After the release of the beta-version in the fall of 2015 and positive reactions from the first users, the final platform was launched. Shortly after, the venture closed an investment round of 450.000 EUR with an early-stage venture firm. By fall 2016, the platform hosted 1.200 registered 'home-chefs', 5.000 'foodies' and 7.000 sold meals and the team had grown to eight members and several additional freelancers.